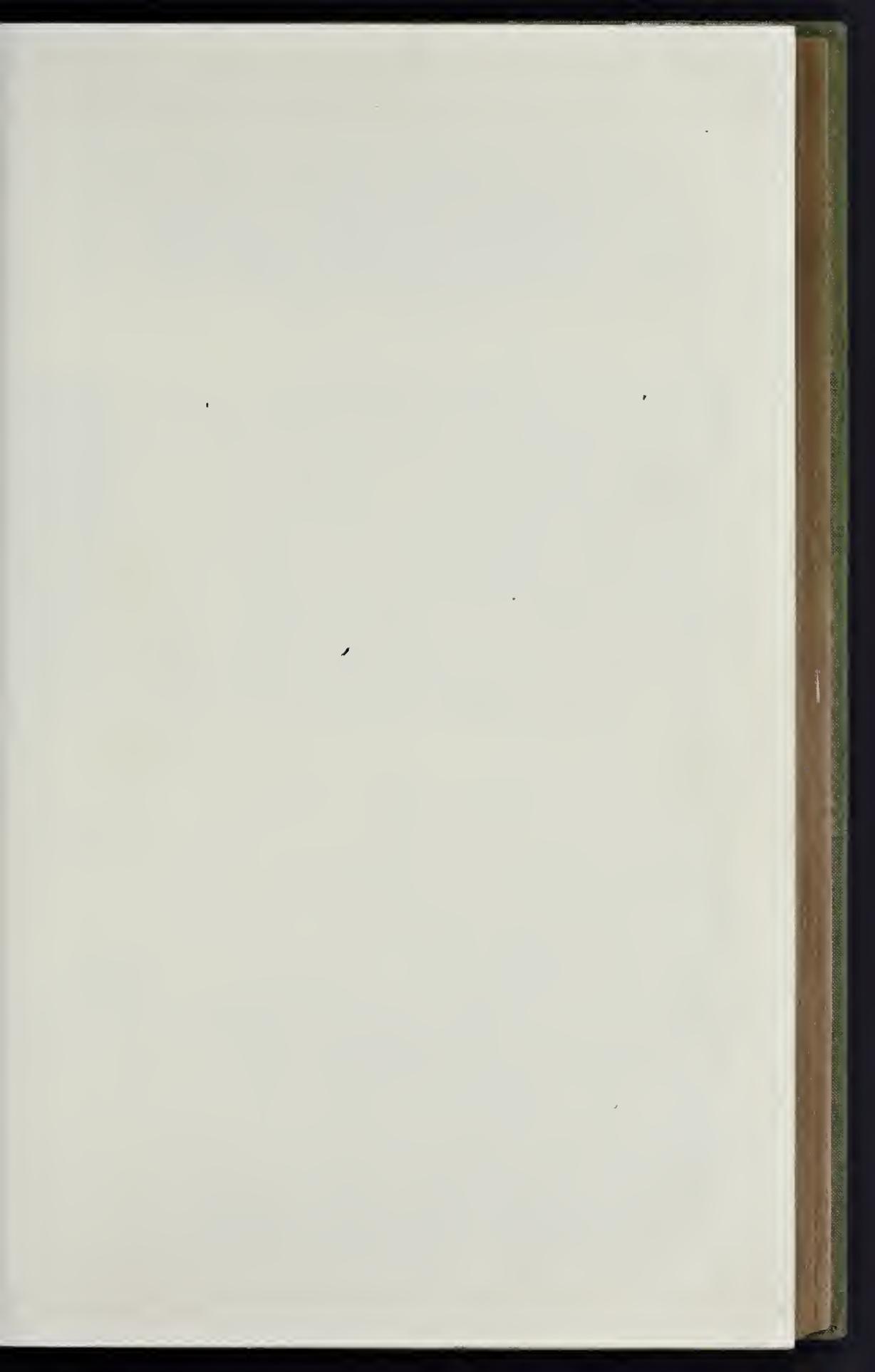




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# The Builder

## The Doings at Alnwick Castle.



IT is now nearly five years since Professor Donaldson read, to a meeting of the Royal Institute of British Architects, an account of the proposed external restorations and internal decorations of Alnwick Castle. From that time to this the sounds of the chisel and the hammer have not ceased to reverberate on the banks of the Alne, for upwards of 300 men have been constantly at work upon the structure. Their united industry, at the close of the past year, had advanced the completion of the edifice so far as enabled his Grace the Duke of Northumberland to order a banquet to be prepared, in the new kitchens, for 650 work-people, employed on the building and estate. Then was the mighty baron of beef roasted for eight hours

before two tons of coal; and then did a hundred geese and turkeys blend their appetising flavours with the spicy odours of countless plum-puddings. Those who were there to see affirm that the spectacle of the mighty haron, borne on a huge dish by four stalwart men, and preceded by his grace's piper, playing the wild weird notes of "Chevy Chase," was as truly a Medieval sight as the fourteenth century could have afforded. And when the 650 Northumbrian retainers rose as one man, and gave three loud cheers, solitary shepherds out on Cheviot side thought they heard vibrations in the air, as of horses' hoofs and border cries, and went home basily. And when the wreek of the noble haron was removed, and the slighter fragments of the feast disposed of, and the Constable of the Castle proposed the health of Algernon Percy, Duke of Northumberland, then the said shepherds heard more distinctly battle-cries floating on the wind, as it swept over the heather and eddied fitfully round their lowly cots; and again, when the aforesaid Constable proposed the health of her Grace the Duchess of Northumberland, then were the shepherds more and more convinced that the noises they heard in the air were not freaks of the imagination, but were real sounds proceeding from invisible causes; and then did they become more and more convinced of the necessity of strict and punctual attendance at kirk (albeit that modest edifice was seven miles off), if a man wished to keep clear of unceasing folk.

Every mile of Northumbrian ground, radiating from Alnwick Castle, is legend-wreathed with the deeds of the ancient Percies. At Otterbourne was fought the moonlight battle in which the Douglas fell, and Hotspur was made prisoner. On Homildon-hill, that flower of English chivalry routed the Scottish forces in a fierce fight, in which the Earl of Douglas was blinded by wounds, and made a prisoner of war. And (still amid the

Cheviots) at Pipenden, his son, heading a thousand men, met the Earl of Angus in great force, when Sir Richard Percy, and other knights and gentlemen were slain. On Hedgeley-moor, where the worn cross stands to mark the spot, fell Sir Ralph Percy, faithful to the Lancastrian cause, in the wars of the White and Red Roses. Woven in with all these deeds is the legendary ballad of that "woeful hunting," Chevy Chase; and fluttering above them all are the armorial ensigns of the sovereign houses of England, France, Scotland, Leon, and Castile, which the distinguished alliances of the Percies entitle them to bear.

The Percies came into possession of Alnwick Castle, by purchase, in 1309. It was then a Norman fortress, built by the noble on whom William the Conqueror had bestowed the hand of the Saxon heiress, of a previous building, on the same site. Many parts of this Norman castle are still in good preservation, though the greater portion of the structure is the work of the Percy who purchased it, and therefore essentially Edwardian. Of the Norman "bits" the inner gateway of the keep, fretted with zig-zag ornaments (of the same character as those upon that invaluable archaeological treasure, the Priory Church on Holy Island), is the most important; although the Norman work preserved in the lower portions of the curtain-wall is scarcely less so, on account of the certainty it imparts as to the original size of the enclosed space.

The Percy purchaser appears to have enjoyed but five years' possession of the castle before his death; but in that time he managed to strengthen and enlarge the building to the form handed down, through storm, siege, and desertion, to the last century. It was a period of unusual vigour in building operations. The conquest of Wales, and the repression and retaliation of frequent invasion on the Scottish border, occasioned the necessity of strongholds for the various lords and their retainers, on whom devolved the responsibility of maintaining the respective subjugations. Hence all the more important and conveniently situated castles on both these frontiers were enlarged to meet this necessity; and many others were newly built. Caernarvon, Conway, and Harlech, on the Welsh border, present precisely the same characteristic features that are to be found in Alnwick, Dunstanborough, Bamborough, and other northern castles. The peculiar forms of the lancet and shoulder-headed windows, with and without mullions and transoms; the transitional treatment of the doorways and archways, sometimes round, and sometimes pointed-headed, and not unfrequently straight-headed, with the penial corbel or shoulder in the angle of the straight head which prevailed at this period in ecclesiastical as well as castellated edifices (witness the choice specimen at Breckbourn Priory), are to be found in all these buildings. The same skilful scheme of defence, though differently wrought out to suit the site and situation of the various castles, is to be found in them all. The well-defended barbican, which, once gained by the enemy, was but a trap in which he could be assailed from four sides, and the artfully contrived sally-port, are all features they possess in common. On stripping off the plaster-work of the renovations that were made in the last century, the *old Percy's dining-hall*

was found intact, showing all the ancient arrangements, the marks of the dais, a curious piscina, and an amby-like euphoard at the same end, and a perfect staircase leading to chambers above, the fireplace and windows of which remained in the walls, the floors alone having been removed to give height to the modern apartment that occupied the site. We are certain that repairs were made at various periods, and that even additions were not withheld, for we read, among the names of nobles applying to Henry VI. for license to embattle their castles, that of Henry Percy, son of Hotspur; but the great mass of the building remained stone for stone as erected by the first Percy, Lord of Alnwick. The grant of this license to embattle assigns the period of the curious stone figures with which the towers of entrance to the keep are surmounted. These forms represent warriors in the various attitudes of repelling an assault. They are life size, and life-like, and must have done good service in their time, in receiving many an aim meant for the garrison when besieged. We have word, again, of the exact state of the building, in the ample survey, exact plans, and isometrical view made by Clarkson, in the sixteenth century. The keep of the castle (described as "very ancient, large, beautiful, and portlie") is in good "repairious;" but the lodge adjoining the "faire gate house," and divers towers, are "rewynoose and in decaye." And then we come to the restorations in the last century. When we have said that they were in the same style as Fontbill Abbey and Strawberry Hill,—those abused precursors of a genuine revival,—we shall say no more against them, for was not the old Percy dining-hall spared, while, with all our aesthetics and talk about Medieval remains, the present restorations have seen it razed to the ground? And were not our eyes sufficed to see the Falconer's and Armourer's towers, with the length of Norman curtain wall between them, that future archaeologists will seek in vain?

If an Englishman's house is his castle, we are aware how much intrinsically a Percy's castle must be his own. Nevertheless, inasmuch as we are all heirs of Old England's fame, so are we all concerned in the fate of her monuments. Wherefore it does not become us to quietly allow an alienation of one of these to take place; even if the loss be counterbalanced by an importation of half the glories of the Caesars. This observation brings us to an important branch of our present subject,—the Italian decorations of the interior of the castle. With our heads full of the ancient Percies, as Wordsworth said,—with our memories stored with images of "Hot Lord Percy" from Shakespeare's page,—with a resonance of Chevy Chase, more than half made out in the breeze that unfurls the Percy banner, and ruffles the Aln, we enter the ancient house of the Percies, prepared to realize the impressions their spirit-stirring associations have conjured up. But it has been decided otherwise. They must be effaced. "The goldsmith's work, garnished with pearls and stones;" the costly, varied, and rich materials which astonished the historian, who records the right-regal manne in which the Earl of Northumberland received and entertained the king's daughter, when on her road to espouse King James IV. of Scot-

land, no longer possess the power to assert the refinement of rank, or the dignity of wealth. The Field of the Cloth of Gold calls up no reminiscent suggestions of how this utmost gorgeousness might have been attained by historically English means. The remembrance of the Medieval magnificence of Westminster Hall does nothing. The rampant Brahmant lion is nowhere.

We should not have a word to say against the style of internal decorations adopted at Alwicks Castle, if we found them on the banks of the Tiber. We believe them to be as elegant, and as fantastically flowing, as Italian art can be. But we are not reconciled to seeing them pervade the home of the ancient Percys. With this protest we will proceed with our lining. We expressed this opinion strongly before the works were done, and have a right to reiterate it with the result before us.

The keep of Alwicks Castle is surrounded with a curtain wall, which was defended by sixteen towers. Of these, two have been newly levelled to the ground,—we trust not without good reason,—and are being replaced by a new one, which will fill more comfortably, perhaps, into a feature of a new terrace-wall, adjoining the front of the castle that faces the river. At the south-east point of the line of circunvallation are built the new kitchen (which must not be spoken of in other than Tudor phrase,—it is so “marvellously a faire vault”), and the numerous offices; while farther out, a gateway leads to another courtyard, in which are contained the stables and coach-houses. Thus it will be seen, that the keep is reserved expressly for the state and private apartments of the noble owners and their guests. The peculiarity of the arrangement of the covered corridor, by which they are approached from the inner courtyard, induced we assume by his grace's desire to preserve the ancient draw-well, is as successful a feature as any in the restorations. The new Prudhoe Tower breaks the hitherto uniform height of the long sky-line, by rising 20 feet above the cluster of towers of which the keep is composed, and forms a fine bold feature that must materially enrich the landscape. The south-west front of this tower is ornamented with an *alto rilievo* of the Hotspur banquet, immediately over a deeply-recessed and treble-corbelled window.

The military character of this tower strongly contrasts with the peculiar mannerism of the adjoining chapel, which building would have the appearance of a huge oriel window, but for the unusually high-pitched leaden roof bearing a cross at the apex of the apsidal west end, which at once proclaims its purpose. In the Tudor survey, “one faire chapel” is described as being “neighe ye said curting wall,” the foundations of which are buried beneath 12 feet of rubbish, on the spot depicted on the ancient drawings. We can, however, by view favourably a selection of a site which does not entail upon visitors and the several members of the household, young and old, diurnal exposure to the weather. The chapel is lighted by long lancet windows, and has a stone vaulted roof with foliated bosses and corbels. So far all is well. But the classicists are to be gratified here too. Marbles and mosaics are being imported from Rome, to render this north country fine as much like an ancient Roman basilica as its size and adjuncts will permit.

On entering the keep, we perceive a broad staircase, wrought in the white freestone of the country, which conducts the visitor to a vestibule, by which the state apartments are gained. These are nearly completed, according to the arrangements proposed by the late Commandatore Canina in his interesting specification, published in this journal, and carried into effect by his coadjutor Signor Montiroli. The fixing of the magnificent ceilings was a problem which required consideration. With an English treatment, the great main girders, which form part of the construction of the floors above, would have been brought into the composition; but Italian art did not so adapt itself; and, in the case of the library ceiling, 3 feet in height were lost to avoid them. The plan finally adopted was a framework suspended to the beams and girders, to which the coffered panels,

mitred, nailed, blocked, and glued together, were separately screwed up one by one. There is so much repetition in the ornament, that it has been ascertained there are positively miles of the egg-and-tongue pattern adorning the ceilings; but the workmanship has not suffered; it merits all the praise that has been bestowed upon it. We are informed that each of the carved walnut panels of the doors has occupied a man four months, and that a whole year's labour has been skillfully applied to each separate shutter panel. Looking upon the inlaid woods of the dados; the pure white marble of the mantel-pieces, the figures supporting which are copies, by Nucci, of the slaves on the arch of Constantine and the Greek Caneplora; the warm, ripe colouring of Mantovani's friezes; and the exquisite carving of Bulletti, and his studio, we have but one regret,—and that is, that such objects, beautiful though they be, should occupy the place that ought to represent the heronial magnificence of a family so eminent in the annals of English chivalry; in other words, that travellers should find on the banks of the Aln nothing more distinctive in the way of style than a faithful rendering of the Roman art the Cæsars fostered and the Cinque-Centists reproduced. Let copies of such things be conserved in our Art Museums, as these are in the Departure of Art at Brompton; let the best knowledge of the style possible be obtained for the advantage of new buildings; but leave us our national and poetical associations undisturbed by their introduction of Italian decorations into our Medieval buildings.

Our acquaintanceship with the public is now of too long standing for us to need any fresh introduction on the occurrence of a new year. Nevertheless, we cannot let the event pass altogether unnoticed, but will, in a dozen lines, express acknowledgments and hopes. During the past and previous years we have sought to discuss for our readers, promptly and in a fair and liberal spirit, every occurrence and proposition likely to interest the numerous classes to whom our pages are addressed, and to illustrate effectively and correctly the most important new buildings and designs, at home and abroad. A glance at our present Number will, it is hoped, suffice to show that there will be no falling off in energy and determination rightly to do the duty that is before us, and to render this journal more and more nearly all that may be desired. We have in preparation engravings of a number of important works; and we invite, frankly and warmly, the co-operation of all who desire to advance the interests of the arts that adorn and serve.

#### A VISIT TO WELSH TIN PLATE WORKS.

THERE are few of the metals possessed of the same interesting relations as the one we have now before us. The archeology of tin is more than usually attractive, and in the very dawn of history it is mentioned by the great Hebrew lawgiver as one of the metals to be purified by fire. The early inhabitants of Etruria and Central Italy were skilled in the applications of tin; the nations of the Levant were likewise accustomed to its use; but the most interesting point to us in the history of this metal resides in the memorable traffic which the Tyrian mariners pursued with the natives of the British Islands. Perhaps the whole catalogue of Phœnician commerce, so eloquently denounced by the prophet Ezekiel, could yield no article of superior value to this Cornish metal; indeed, it ceases of Lebanon or the gold of Ophir. There was at that period an enormous consumption of bronze by contemporary nations in all their instruments of art and war; and tin,—a metal of rare occurrence and limited distribution,—is the most essential constituent of bronze, as we learn from Pliny. If we recollect, too, that the Phœnicians possessed a monopoly of this commerce, we shall then be able to conceive the inestimable value to its discoverers of this prolific tin country. So fully, indeed, was this importance recognized, that those astute merchants anxiously concealed from their rivals and contemporaries the geographical situation of these “tin islands.” But the secret at length transpired. Puffius, a Roman pro-consul in Spain, after several unsuccessful

efforts, opened to his countrymen the treasures of this undiscovered Dorado; and, all through the long period of history which has since elapsed, Cornwall has continued to furnish an inexhaustible supply of the metal.

After the Norman Conquest, Cornwall was settled by Act of Parliament on the eldest sons of the kings of England, who thus became earls, and, finally, dukes of Cornwall. Tin, of course, constituted an important item of the royal revenue. The celebrated Edmund, Earl of Cornwall, was the first to levy a stated impost on the produce of the mines, which, curious to say, was only recently abolished; and it was also that prince who framed the celebrated Statutory laws, which to this day render Cornwall an exception to all the rules of mining jurisprudence. During the reign of Queen Elizabeth, scientific mining was introduced upon the German models. During the Civil Wars the mines were utterly neglected; but early in the last century they were recommenced with a degree of vigour, and an application of skill which has never since suffered interruption.

Our limits will not permit us to enter minutely upon the subject of Cornish mining. We may state, however, that few departments in the wide domains of mechanical science are so profusely enriched with the triumphs of genius or the rewards of enterprise. The great tin-mines of Cornwall are grouped upon that ridge of mineral veins, so well known to geologists, which traverses the district in an easterly direction, and terminates in the Dartmouth hills in Devonshire. Besides the produce of these mines, tin is found disseminated in enormous quantities throughout the alluvial deposits of the valleys. And not only has the miner pursued the deceitful *lode* above or beneath the surface of the land, but he has in some cases actually carried his explorations under the bed of the ocean. Some of these submarine tin mines—which, on account of their perilous state, have been long abandoned—were calculated to excite the highest emotions of terror. The miners, in certain places, had only left between their workings and the sea a partition so frail that the roar of the waves was distinctly heard overhead; while the water penetrated the chinks and crevices of the intervening rocks.

The tin ore of commerce consists exclusively of the native peroxide, that is, one equivalent of the metal united to three of oxygen. It is met with in primary rocks, chiefly in veins traversing granite, gneis, and mica slate, where it occurs associated with copper and iron pyrites, albite, topaz, and other silicious minerals. It is important to know, says Dr. Gregory, that lithionian, a very rare mineral but easily distinguished by its blow-pipe tests, has hitherto only been found associated with albite and topaz in tin districts. Its occurrence thus associated may therefore be looked upon as a certain indication of the existence of tin; to which scientific truth we shall add that, in the universal scramble for gold which distinguishes the period, if some unfortunate gold-digger should perchance alight on a tin-field, it would eventually turn out the most valuable discovery of the two. The principal localities of tin are Cornwall, Bohemia, and Saxony, in Europe; Malacca, Peru, and Banca, in Asia. Cornwall, notwithstanding its prodigious and long continued drain, is still the most prolific tin district in the world. It has been calculated, by Mr. Porter and others, that Cornwall yields annually upwards of 50,000 tons of the metal, the value of which varies from 400,000, to 500,000.

The Dutch possession of Banca, in the Indian Archipelago, is next to Cornwall, the most remarkable tin district. The ore is found there, in the alluvial deposits, in precisely similar conditions to that of the stream-tin of Cornwall. Beds, exceeding 25 feet in depth, are found to exist between the red iron-stone, with which the island abounds, and the superincumbent elevations of granite. This “oriental tin” is now largely imported into the European markets; and 3,000,000 lbs., in addition, are annually exported from the island to China and Hindoostan. “It is a popular mistake,” says Balli, “into which many authors have fallen, that these Banca mines were only discovered so recently as 1720. We have undoubted evidence to show that, so far back as the ninth century, the Arabs exported the metal to China.”

The metallurgical operation of smelting the tin ores is highly interesting. After repeated processes of stamping and washing, the ores are first calcined, in order to get rid of the sulphur and arsenic which they invariably contain; and, secondly, having been mixed with certain proportions of anthracite (carbon) and lime or fluor spar (used as flux), they are transferred to a rever-

beratory furnace. A strong heat is then applied, until the fluid metal is at length run from an orifice into an outer basin, whence it is ladled into iron moulds. The metal so obtained, however, is still contaminated by other substances. Iron, arsenic, copper, and sulphur, together with some unreduced oxide, are still retained in combination, and to effect a separation of these impurities the crude metal is next subjected to a process of refining. About five tons of the fluid metal are collected in the basin, into which billets of green wood are thrust; and it is thus, from the rapid formation of gas, kept in a state of violent ebullition. This last, we were expressly told, is a most philosophical process; a process, in fact, of "de-oxidation by means of carbon"—the oxygen leaving the metal to unite with the metalloïd, and form carbonic acid, which is driven off, leaving the tin pure. This pure tin is laded into rectangular iron moulds, in which form it constitutes the "block-tin" of commerce. At one time it was customary to distinguish these blocks of tin with an impression of the duchy seal; but they are now simply marked with the somewhat fantastic insignia of the manufacturer, together with the name of the Cornish town wherein they are produced. They usually weigh about 3 cwt. each; and their market price ranges from 80*l.* to 120*l.* per ton. The most invaluable property of tin resides in its well-known anti-poisonous qualities. In this it stands alone among the common metals; and hence the important function it performs as a coating to the surface of iron, copper, lead, and such metals whose reaction is poisonous.

We must now ask the reader to accompany us in a visit to the works. It was a delightful day in the month of October when we arrived at one of those beautiful convergent valleys, for which South Wales is so remarkable; and found a neatly-constructed manufactory, almost destitute of the nuisance of smoke, and not surrounded with debris of any description. It lay as quietly on the landscape as a Dutch mill in one of Berghem's pictures. The waterfall of a picturesque rivulet turning peacefully a large water-wheel, furnished the motive-power for the innumerable processes of rolling which belong to the manufacture. The men and women, too, seemed so unmistakably drawn from the commonest order of Welsh rustics, that we were astonished to find the high degree of dexterity and precision to which they had advanced in their several departments.

After a good deal of observation and inquiry, we ascertained that the different processes of the manufacture of tin plate may be described most properly in seven distinct stages. The first begins with the bars of iron which form the plates; the last terminates with an account of the process of tinning their surface. The description is somewhat technical; but a glance at the following heads will enable the reader to comprehend the whole process.

1. *Rolling*.—The first and most important point requisite to the production of good tin plates is the preparation of the *latten*, or plates of iron, previous to the operation of tinning them. For this purpose the finest quality of charcoal iron is invariably employed, which, in its commercial state, generally consists of long flat bars. These are cut into small squares, averaging half an inch in thickness, which are heated repeatedly in a furnace, and as repeatedly passed through iron rollers. A convenient degree of thinness having been attained, the now extended plates are "doubled up," heated, rolled, opened out, heated and rolled again, until at length the standard thickness of the plate has been reached.

2. *Shearing*.—A pair of massive shears, worked by machinery, is now applied to the rugged edges of this lamellar formation of iron plate. It is cut into oblong squares, 14 inches by 10, and presents the appearance of a single plate of iron, beautifully smooth on its surface. A juvenile with a knife soon destroys the appearance, however, and eight plates are produced from the slightly coherent mass.

3. *Scaling*.—This process consists in freeing the iron surface from its oxide and scorie. In the old method this was effected by first immersing the plates in diluted acid, and then, by exposing them separately, bent in the shape of a drain-tile, to the heat of a flame; but this process, alike tedious and expensive, has long been superseded. After an application of sulphuric acid, a number of plates, to the extent, we shall say, of six or eight hundred, are packed in a cast-iron box, a number of which are then exposed for some hours to the heat of a furnace. On being opened out after this, the plates are found to have acquired

a bright blue steel tint, and, in addition, to be absolutely free from surface impurities.

4. *Cold Rolling*.—It is impossible that the plates could pass through the last fiery ordeal without becoming disfigured. The cold-rolling process corrects this. Each plate is separately passed through a pair of hard polished rollers, screwed tightly together. Not only do the plates acquire from this operation a high degree of smoothness and regularity, but they likewise acquire the peculiar elasticity of hammered metal. One man will cold-roll 225,000 plates in a week, and each of them, in the average, three times passed through the rollers.

5. *Annealing*.—This process is also a moderate improvement on the manufacture. Six hundred plates are again packed into cast-iron boxes and exposed to the furnace. There is this difference in the present process from that of *scaling*: that the boxes must be preserved air-tight, otherwise the contained plates would inevitably weld together and produce a solid mass. The infinitesimal portion of confined air effectually prevents this.

6. *Pickling*.—The plates are again consigned to a bath of diluted acid, till the surface becomes uniformly bright and clean. Some nice manipulation belongs to this process. Each plate is, on its removal from the acid, subjected to a rigid scrutiny by women—their eyes, we presume, are the sharpest,—whose vocation it is to detect any remaining impurity, and scour it from the surface. These multifarious and torturing operations, it will be seen, are all preliminary to the last, and the most important of all—that of tinning. Theoretically simple, this process is practically difficult; and to do it full justice would carry us beyond our limits. We shall, however, mention the principal features.

7. *Tinning*.—A rectangular cast-iron bath, heated from below, and calculated to contain 200 or 300 sheets, and about a ton of pure block tin, is now put in request. A stratum of pneumatic fat floats up on its surface. Close to the side of this tin-pot, stands another receptacle, which is filled with melted grease, and contains the prepared plates. On the other side is an empty pot, with a grating; and last of all there is yet another pot, containing a small stratum of melted tin. Let us follow the progress of a single plate.

A functionary, known as the "Washerman," armed with tongs and a hempen brush, withdraws the plate from the bath of tin wherein it has been soaking; and, with a degree of dexterity only to be acquired by long practice, sweeps one side of the plate clean, and then reversing it, repeats the operation. In an instant it is again submerged in the liquid tin, and is then as quickly transferred to the liquid grease. The peculiar use of the hot grease consists in the property it possesses of equalizing the distribution of the tin, of retaining the superfluous metal, and of spreading the remainder equally on the surface of the iron. Still there is left on the plate, what we may term a *scavage*; and this is finally removed by the means of the last tin-pot, which just contains the necessary quantity of fluid metal to melt it off—a smart blow being given at the same moment to assist the disengagement. This "list-mark" may be observed upon every tin-plate without exception. We may add here, that an expert washerman will finish 6,000 metallic plates in twelve hours; notwithstanding that each plate is twice washed on both sides, and twice dipped into the melted tin.

After some intermediate operations—for we need not continue the consecutive description—the plates are sent to the final operation of cleaning. For this purpose they are rubbed with bran, and dusted upon tables; after which they present the beautiful silvery appearance so characteristic of the best English tin plate. Last of all they reach an individual called the sorter, who subjects every plate to a strict examination: rejects those which are found to be defective; and sends those which are approved of to be packed—300 at a time—in the rough wooden boxes with the cabalistic signs with which the most of us have been familiar since the days of our adventures in the back shop of the tinsmith.

Such is a brief sketch of the contemporary manufacture of tin plate. It would be an idle task to comment on its importance, or to point out its varied and innumerable applications to the necessities of civilized life. Articles of tin plate may adorn, and, in fact, do adorn, alike "the cabinet of the prince or the cottage of the peasant." Tin plate, moreover, is one of those cheap, useful, and admirable productions of modern science which, more than anything else of its class, has contributed to the domestic comfort of our working population. Vessels of tin, or of tin-plate,

have rarely been found among Greek and Roman antiquities, although there can be no doubt that the art was at least understood by the ancients. The modern process, our guide informed us as we walked home to dinner, was an importation from Saxony; and it was first introduced into this country at Pontypool, in Monmouthshire, early in the last century.

LUNATIC ASYLUMS IN SCOTLAND.

At the end of our last article on Lunatic Asylums and the Treatment of the Insane,\* wherein we chiefly spoke of what had been done in England and Wales by the erection of new buildings, and additions to county and other asylums, we adverted to the Chartered Asylums of Scotland as institutions of the kind needed for the wants of the middle-classes in England; but at the same time referred to the deficiency in the number of the asylums, in North Britain generally. We propose now to give particulars of the existing provision for lunatics in Scotland, and of merits and defects of the buildings, as we are able to gather the information from the several reports of commissioners and the evidence before the parliamentary committees.

In the improved treatment of the insane, Scotland was early in the field; and the services of the late William Stark, architect of asylums at Glasgow and Dundee, and the author of a work published in 1807, entitled "Remarks on the Construction of Public Hospitals for the Cure of Mental Derangement," should be spoken of with approval, though his Glasgow building at least, has not the form of plan which we now deem suited to the lunatic asylum as distinguished from the prison. The Glasgow asylum, however, was called, in 1817, by the writer in the *Edinburgh Review*, the best in Britain at the time of its erection; and such it was. It had the radiating or *panopticon* form of plan; but this form, by Stark himself, it appears was not considered equal to that of the asylum at Dundee, which was planned in the form of the letter H, afterwards exemplified in the asylum for the West Riding of Yorkshire, at Wakefield. The Dundee building, opened in 1820, and now accommodating 208 patients, is spoken of by the reviewer, as of "admirable construction;" and a similar opinion is given in 1841, by Mr. Samuel Tuke, in his "Introductory Observations" prefixed to the translation of Dr. Maximilian Jacobi's work, "On the Construction and Management of Hospitals for the Insane," &c. The Glasgow building, of which Mr. Stark was the architect, has now been converted into the workhouse; whilst a new asylum has been built at Gartnavel. At the date of erection of the earlier building, restraint of one kind or another was considered desirable, even by humane persons; for, it was not till 1837, that "the non-restraint system" was introduced in the asylum at Lincoln, and that mechanical contrivances for restraint were declared by Mr. Hill, to be "never necessary, never justifiable, and always injurious." The new asylum for the district of Glasgow was designed, as announced, for the system which eschews all appliances of restraint. A modification of the radiating form of plan was adopted at a recent date, by Mr. Charles Fowler, in the Devon Asylum, as described by him in his paper at the Institute of British Architects, and shown with other arrangements in our volume for 1846. Mr. Fowler certainly got rid of some of the defects of the Glasgow arrangement, and imported some advantages; the value of his plan, however, in the present treatment of insanity, as compared with the H form, or more especially (for asylums of the advocated small dimensions) the fiscal form, has been much answered. Yet Dr. Backhill, who is the medical superintendent, regards the building as "not a bad working asylum," though later buildings are improved.

The Commissioners in Lunacy for Scotland are appointed under an Act which received the royal assent in August, 1857; and they are required to report to the Secretary for the Home Department at the beginning of each year. Their first report, however, was not printed till late in last year. The number of lunatics in Scotland, exclusive of single patients in private houses, was, on the 1st January, 1858, 5,748,—the female patients being about 300 in excess of the male. From the evidence of Dr. Cox, one of the commissioners, we get the total number of lunatics in Scotland as 7,500, or 7,600; whereof about 1,700 or 1,800 were private patients resident in private houses; and 1,784, besides those in workhouses (about 839) were pauper

\* See page 721, vol. xvii.

patients in private houses. It seems that in two years prior to 1858 the proportion of pauper lunatics to paupers had increased about one per cent. For the purposes of the Act Scotland is divided into eight districts. The statute, however, contains provisions for the alteration of these; and the actual arrangement at the commencement of the year 1859 was into twenty-one districts, unequal in area and population. The arrangement does not seem to have worked well, and several districts are too small to support efficient asylums. After the appointment of the commission, it became a question how far the private asylums and the lunatic wards of workhouses were to be recognized as "existing accommodation," or whether district boards were not even compelled to adopt such accommodation before proceeding to build. These particular doubts were removed by the passing of a short Amendment Act, which empowered the commissioners to grant licenses, during a period of five years, for reception of pauper lunatics into wards of poorhouses; and which set forth that it was expedient, provision should be made till district asylums could be provided. Notwithstanding this, however, we were informed lately that much disinclination was shown by the district boards to perform their duties. The Act is not stringent in requiring the provision of the asylums within a definite time; and further legislation may be needed.

Before looking to what is said by the present commissioners, of the provision existing and that which still is required, we may remind our readers of what was stated in our last article, and is shown in the report of 1857, as to the localities of the public and private asylums and poorhouses receiving lunatics. We said—"Striking a line from Aberdeen to Glasgow through Perth, there was in 1857, absolutely no provision in the northern and north-western counties, except a few cells in the basement of the infirmary at Inverness, and a pauper institution at Elgin for forty-six patients." That is to say, the greater portion of Scotland is to be considered as wholly unprovided with institutions for the care and treatment of the insane. The commissioners feel difficulty in estimating the precise accommodation required; and some of the reasons which they give for this are important, viewed in relation to those on which the commissioners for England and Wales seem to have acted. The Scottish commissioners have asked themselves whether, taking into account that asylums as constituted, do not provide a diversity of accommodation for patients affected with different degrees of mental incapacity, it might not in some cases be more desirable to leave a patient in favourable circumstances, under private care, than to place him in an asylum of the present kind. They observe that there is a growing conviction in England, France, Germany, Belgium, and even Spain, that the constitution of lunatic asylums requires great modification,—an opinion founded chiefly on the diversity of forms of insanity, but also on the difficulty of suitably providing for the always increasing number of the insane. Yet in pursuing the subject, they come to meet the same conclusions as the English commissioners; and in an Appendix they print instructions for the general guidance of architects and district boards, in reference to the site and structure of asylums, which in most respects agree with those issued by the English commission, but which in points involving the nature of the buildings to be provided, are such as they consider afford greater latitude of action.

It has always been a question whether the constant increase in the number of the insane to be provided for, is due to an actual increase of cases, or to an accumulation through prolongation of lives by better care. We have already adverted to the opinion of Lord Shaftesbury, that there is an increase of lunacy; and the Scottish commissioners say it is not unlikely both causes are in operation, though it is probable the increase is in great degree only apparent, arising from attention paid to the subject and discovery of a larger number of cases. The crowding of lunatics always increases the known number of lunatics. Transference to an asylum is beneficial, judging only from the fact that one-half the patients admitted to these institutions are restored to sanity; but information as to the extent to which asylums have contributed to diminish the disorder, and regarding what the result might have been had the treatment been conducted in private houses, is viewed as defective. Again, however, practically, the Scottish commissioners tend to the same conclusion as the English commissioners,—saying that the influence of asylums in restoring to sanity is not to be judged by the

past, that immediate treatment is most important, that the discipline of an asylum exercises a beneficial and curative influence, and that, therefore, the question is mainly, whether, as asylums are at present constituted, they fulfil all the expectations which the expense of their maintenance might warrant. Eventually they arrive at the opinion that adjunct houses, in which patients affected with certain forms of insanity, could be received without the legal formalities at present required, would prove a beneficial modification of our asylums, and would tend to increase recoveries by inducing recourse to treatment before the malady had become confirmed. Dr. Bucknill, in England, advocates provision of what he would call Probationary Asylums.

Looking at the question of provision required, in all its bearings, we cannot but regret that it should be now argued by Lord Kinnaird, that one new asylum in Scotland, for Inverness, Nairn, Ross and Cromarty, and Sutherland, would suffice for the cradle lunatics; whilst the incurables, for the sake of cheapness, would be lodged in places centrally situated, and therefore often at great distance from their friends. Is not this in tendency opposed to medical teaching, as well as to the legislation, which has aimed rather at the multiplication of asylums,—the legislation, for the due protection of the patient; and the other efforts, for the avoidance of the evils of asylums too large for superintendence?

In the "suggestions and instructions" before referred to, we find the following modifications from those of the English commissioners. As to sites, it is pointed out that the land should be capable of profitable cultivation, besides affording a supply of water. The quantity of water, exclusive of rain-water collected in cisterns on the roof, the Scottish commissioners say, should be not less than 40 gallons per patient per diem,—instead of 25 gallons. The principal buildings only are those which are named as to be placed near the northern boundary of the land. The locality, they say, "should be within such distance of a town as to command the introduction of gas, water, &c., and one of sufficient size to afford the means of amusement of aid recreation for the medical staff, the attendants, and such of the patients as might derive benefit from a change in the asylum routine." We doubt whether this village is practicable without perilling other advantages of the required site. Gas, even for a small institution, is to be made economically on the premises. In the suggestions referring to construction and arrangements of buildings, the chief modification is with reference to the buildings in connection with the washhouse and laundry on the female side, or the workshops and farm buildings on the male side,—consisting chiefly of associated day-rooms and dormitories for working patients,—or to other inexpensive provision in detached buildings, for the idiotic patients. The suggestions say that cottages might be erected for a large proportion of these "working and in-offensive patients, who might be placed either under the care of the families of the attendants, or of cottar tenants of the asylum." The cottages would be calculated to accommodate from three to five patients. Regarding this extent of divergence, from what may be called the principle of plan of asylums, we should observe that care would be required, lest the result might be some of the evils now existing, where single patients are assigned to incompetent persons. As to the number of beds in dormitories, whilst the English commissioners say there should not be less than three in number, the Scottish commissioners say the rooms should be designed for not less than six beds, or more than fourteen. To this point we shall return. Directions as to attendants' rooms, and some other matters, such as placing windows not more than 4 feet from the floor, are omitted by the commissioners for Scotland.

The existing accommodation for the insane in public institutions in Scotland, consists of that afforded in seven chartered asylums, in the pauper institution at Elgin, in the lunatic wards of the Inverness Infirmary; for criminals, in a department of the prison at Perth; and in poor-houses, with or without separate wards. The condition of these, and of the private asylums, formed the bulk of the matter in the Report of the Commission of 1857, and the Appendix; the latter of which extends to nearly 800 pages. Whilst the provision in Scotland is seriously defective in amount, and therefore leads to lamentable results, the chartered asylums, as we have already mentioned, have been referred to by those who have given most attention to the subject of the care of the insane, as offering advantages which are aimed at by an inconsiderable number of institutions, called

lunatic hospitals, in England. These chartered asylums admit two classes of patients, or one class at a rate of payment, which may be moderate, in addition to the paupers. They are, "in many respects," say the commissioners who reported in 1857, "in a highly satisfactory state;" and this opinion is corroborated by others. In the year named, out of 833 private patients in asylums, 652 were in those chartered asylums; and the remainder, only 230, were in licensed houses. This is Lord Shaftesbury's statement to the committee of the House of Commons. Mr. G. Bolden, honorary secretary to the Alleged Lunatics' Society, before the same committee, stated the number of private patients as 1,011, and the number 786 as of the patients of this class in public or chartered asylums. It will not fail to be observed that either statement, showing that the chartered asylums accommodate a very large proportion of those who are private patients, is consistent with the fact that there is inadequate provision in the same asylums, or in any others, for the lunatics in England and Wales, out of other hand, whilst in many as 2,748 were in private asylums, and 1,696 in public hospitals, the latter number including 669 patients in Bethlem, St. Luke's, and Gny's Hospitals, and the Institution for Idiots, leaving only about 1,000 provided for as in Scotland. The conclusion is, that patients of the very class most needing protection against the inducements of gain, whether in the proprietors of asylums or their own relations, are least protected, in England and Wales. The remedy would be the increase of the number of institutions like the chartered asylums, or the eleven English "hospitals,"—whereof one at Coton Hill, near Stafford, often referred to in the evidence, was described and illustrated in our volume for the year 1854. We may also here refer to the percentage of cures at St. Luke's Hospital, 68½, as still speaking favourably for that institution, in spite of what has been deemed defects of its urban site. A large proportion of the private patients in the Crichton Institution, near Dumfries, were lately, natives of England. In the chartered asylums, separation of the inmates into classes, as to position in life as well as nature of the malady, however, becomes necessary; and it is doubtful whether the results in diminished facilities for exercise are entirely advantageous. In some cases, it would seem, there is a disadvantage from the appropriation of the single rooms exclusively to the paying or superior class of patients.

At Dumfries, Edinburgh, and Glasgow, many of the objections have been obviated through the erection of a separate building for the paupers, adjacent to the original structure, whilst rooms originally designed for the wealthy classes have been appropriated to those of moderate means. Hence the funds of the institution not only have been benefited; but patients associated together are placed under more favourable circumstances for treatment and prospect of recovery; and it is desirable that a similar system should be adopted elsewhere in asylums having, through the regulations, considerable accommodation to spare,—as in the case of the Royal Asylum at Perth, a building possessing a combination of advantages "equal, if not superior, to any similar establishment in the United Kingdom." The system of separate buildings, instead of as at Perth, Dundee, Montrose, and Aberdeen, where the rich and the poor are under one roof, is preferred by the best authorities.

The chartered asylums were founded, and are in great measure maintained by private individuals; and whatever the deficiency of national institutions in Scotland, it is believed that no country has voluntarily done so much. As an instance of this spirit, may be cited the abandonment of the first-erected Glasgow Asylum, in consequence of the extension of the city; the similar change being made at Montrose; also the increased accommodation just provided in the asylums at Aberdeen and Edinburgh, and contemplated at Dumfries and Inverness. In these chartered asylums, the building and grounds being provided, the institution has become self-supporting.

The chartered asylums are the following:—The Royal Asylum, Aberdeen; the Crichton Institution, Dumfries, including the Southern Counties' Asylum; the Royal Asylum, Dundee; the Royal Asylum, Edinburgh; the Royal Asylum, Glasgow; the Royal Asylum, Montrose; and James Murray's Royal Asylum, Perth. The estimated accommodation in 1857 ranged from 42 private patients at Dundee and Montrose each, and from 106 pauper patients at Perth, up to 171

private patients at Glasgow, and 407 pauper patients at Edinburgh, where the private patients, 60, are unusually few in number. The sites of these asylums, with exception of the old one at Montrose, have been well selected, though the quantity of land is too small. The buildings are well constructed, excepting that stone floors, deficient means of warming and ventilating, and provisions for seclusion in dark rooms are to be found; but family arrangements of plan, as now regarded, are observable. Thus, the asylum at Perth, and the Critchton Institution at Dumfries, have each "a central staircase, with a curiously contrived double wall; and galleries which radiate from the staircase can all be inspected through glazed apertures over the doors;" whilst at Perth, Dumfries, and Morningside (Edinburgh) there are open spaces or external galleries, enclosed by ironwork, which appear to have been designed to afford the patients means of exercise in wet weather. None of these arrangements are now recommended, either on grounds of expense or treatment of the patients; the buildings of a more ordinary character, and more domestic, being preferred. In the latter point of view, spacious galleries of any kind seem to be to a certain extent objectionable; indeed, the English commissioners condemn them; and comfort to the inmates, as well as economy of construction, would be furthered by devoting internal space, as far as practicable, to sleeping accommodation, and to day-rooms from which ready access to the open air could be obtained.

As regards the proportion of single sleeping-rooms, a very marked contrast is observable in several of the asylums. Confining attention to the pauper department; in the Aberdeen asylum, there are single rooms for more than half the number of patients; at Glasgow, for rather less than a fourth; and at Edinburgh, for less than one-fiftieth. Evidence is quoted by the commissioners in favour of one-fifth as absolutely necessary, or of two-fifths as advantageous. The English and the Scotch commissioners, both, in their instructions, say that "the proportion of single rooms throughout the asylum need not exceed one-third." Regarding size of the associated dormitories, a point already referred to as somewhat difficultly agreed as to rooms 11 feet in height, and for each patient 50 feet superficial, we notice that it was found by the commission of 1857, that mortality was generally greater where there were large dormitories than where small sleeping-rooms prevailed. This view would seem to be opposed to the experience at the Somerset Asylum, where the dormitory in the male division contained at the last visit of the English commissioners, seventy-six beds,—the system being spoken of as working satisfactorily;—but it is quite consistent with that of Dr. Conolly, who would on no account have in a dormitory, more than five or six beds. The earlier asylums in Scotland, or those of Montrose, Aberdeen, Perth, and Dundee, have the single rooms and moderate-sized dormitories; whilst the new buildings at Gartnavel and Morningside have large dormitories. The largest dormitory at Gartnavel would contain twenty-four. Towards solution of the difficulty of warming and ventilating, little seems to have been done in the Scotch asylums. In the Dundee asylum, where the results are considered "in some respects" satisfactory, there are open fire-places and Arnott's ventilators; but the sleeping-rooms are too cold in winter; whilst in the Glasgow asylum, where there is a warming apparatus, the principle of it requires that the windows should be kept shut, whereby the atmosphere is apt to become oppressive. One of Dr. Conolly's arguments for the small dormitories is the difficulty of ventilating those of large dimensions. The number of cubic feet of space per patient in the Scotch asylums appears to be, as in the Morningside asylum, in the single rooms about 1,000 feet, but in the galleries, 600 feet; or in some asylums which are crowded, there are two patients in a room of 900 cubic feet. In the Devon asylum there are about 470 feet per patient in the dormitories, says Dr. Bucknill; the commissioners laying down that there ought to be 550 feet.

Notwithstanding what has been stated, several of the asylums are overcrowded—probably by patients from those parts of the country not provided with institutions; and this absence of provision leading to delay, the results are not more favourable to general treatment of the patients previously accommodated and belonging to the districts, than to the others themselves.

Though mechanical restraint is almost wholly disused, "seclusion" is practised, and padded

rooms are used; whilst contrivances are resorted to in beds for a certain class of patients, such as have, we believe, in England, given place generally to increased attention. A chief defect in the Scotch asylums, however, appears to be the smallness of airing-courts, wherever there is minute classification. At Perth and Dumfries, however, the courts are planted and neatly laid out. We have already adverted to the deficiency of land. This is being remedied at Aberdeen and Dundee. Of the private licensed houses, which are chiefly in the neighbourhoods of Edinburgh and Glasgow, it may be sufficient to observe that they may be classed with those of England and Wales. Only one instance is mentioned of a house originally built for the purpose. In Lanarkshire, 800 cubic feet of air per patient have been fixed on by the sheriff, as the required allowance; but as regards private asylums elsewhere, the amount averages 300 cubic feet, and is even less than 200 feet, or not one-third of what is usually considered necessary. The condition of the insane in poorhouses is alike unsatisfactory. Most of the existing wards of these buildings have been opened lately, and their existence arises from the deficiency of asylums. In five or six cases, however, these wards form a distinct structure. Ventilation in the west of Scotland is attended to in some measure. Air is pumped into the wards, having been heated previously by contact with the steam-pipes of the engine.

The main conclusion in the report of 1857 as to the asylums in Scotland was, that these did not fulfil to the extent of which they were capable, their purpose of curative institutions. Large asylums show a smaller proportion of recoveries, and a greater mortality, than those of moderate size; and do not offer any counter-balancing advantages to the ratepayers, but the reverse. District or county asylums, of moderate size, and economic construction, for paupers, and including accommodation for the insane belonging to the labouring classes, not strictly paupers, are most required, as likewise better accommodation for pauper lunatics. And, from the evidence of Dr. Cox before the committee, it appeared that, whilst there are economic advantages in having one management and medical superintendence, really distinct asylums or buildings are necessary for the poor and the rich.

It appeared by the report of 1859, that the pressure for admission to the public asylums continued; though regarding the criminal lunatics these did not on the average exceed thirty for all Scotland, and might be provided for in special wards in one of the district asylums.

Still, whatever the want of provision for the insane in Scotland generally, the overcrowding in several of the asylums, and defects, there is much to be learned from the institutions we have chiefly spoken of, both in reference to the extension of hospitals for the middle classes in England, and in structural points; and we shall probably find some further particulars useful to our readers, of these structural and other features of the asylums which have been named.

#### THE FRESCO IN LINCOLN'S INN HALL.

MR. G. F. WATTS, who distinguished himself in the first Government competition in connection with the proposed decoration of the Houses of Parliament, has completed his self-imposed and, we believe, gratuitous labour in Lincoln's Inn Hall, the north wall of which he has covered with a painting in fresco, presenting the early lawgivers from Moses down to Edward I. Founded to some extent in arrangement on Raffiello's "School of Athens," the figures are grouped on a flight of steps with landings, and form three main lines. The first represents a sculptured group of Religion, Mercy, and Justice, below a window of Perpendicular Gothic, which, although perhaps open to objection in a synchral point of view, connects the work with the hall, and materially increases the effect of space.

Moses looking upwards with the tables of the law is the centre figure of the second line. To his right, if we are correctly informed, the figures ranged in row are intended to represent Lycurgus, Minos, Draco grasping the sword, Solon, Numa, and Servius Tullius. On the left of him are seated Sesostris, or Ramesses, as representative of Egyptian polity; Zoroaster, Pythagoras, Confucius, and Mencius.

The central group of the lower line is made up of Justinian and Theodora, with scribes transcribing at their feet, while a juriconsult and a doctor of the church distribute the paduets to the northern barbarians—Lombard, Goth, and Frank. Midway between Justinian and a Saxon group, including

Ina and Alfred, stands the figure of Charlemagne, leaning on his sword. In the right of the foreground are grouped two of the Barons of Runnymede, with Stephen Langton and the Legate; Mahomet with the Koran above; and alone on the left, in the corner, sits Edward I, in regal ermine and knightly harness. The picture is about 45 feet long, and perhaps 40 feet high in the centre, the upper part following the line of the open roof timbers. When we add, that the figures are of heroic size, and thirty-three in number, it will be seen that this is the largest fresco in this and, perhaps, in any country. It is, moreover, a very noble work, with blots and weaknesses, doubtless, but still a noble and admirable work, of which the members of the Inn may be justly proud. Carpers will point to the collapsed body of the reclining Indian figure on the right of the second line; and to the legs of the barons below it, in the foreground; but those who give it more thought, and unprejudiced consideration, will admit a greatness of scope, variety of expression, and skill in the designing of the figures seldom found. It is in no respect garish, splotchy, or gaudy, but, "born with its frame," is thoroughly harmonious and appropriate. It would be materially improved, by the way, if the oak panelling below it were covered with a curtain: the marble pavement from which the steps rise jars with the wainscoting below.

It is to be hoped that the successful result obtained here may lead corporations and other powerful bodies possessing halls and meeting places to call in the aid of the painter, and make a right use of art as a teacher. The various vestry-halls which have been erected for the metropolitan districts would afford good sites for such works. As we have said elsewhere, "The Government and corporate bodies should aid more vigorously the progress of the fine arts in this country than they have done, and use them more extensively for the general improvement and delight. What is wanted is, that art should have a real life—should be made to provide great moral and intellectual lessons for the masses—not remain simply the minister of caprice and luxury. Painting and sculpture must be brought into conjunction with architecture, if we would have them playing their proper part—if we would produce a really great school of art. We would see the arts appealing to every passer-by—instructing, encouraging, and exalting."

#### SCENERY AND THE STAGE.

WHEN it is remembered that sixteen theatres in the metropolis alone, if not more, display at this moment a pantomime or extravaganza with new scenery, machinery, and elaborate effects; it will be seen how large a body the professors of scenic-painting and stage-decoration must have become. Since we began, now years ago, to draw attention to their works separately, and to point out the merits of many of their productions, they have taken a very much better position in public estimation than they formerly held. The sort of criticism to which they are subject is unfortunately not calculated to help their progress towards excellence: the daily press, speaking generally, show little discrimination, praising in the face of most preposterous errors, and caring nothing for chronological correctness. Most of our scenery wants finish, completeness, and solidity. It is often flimsy and imperfect, even when displaying in some respects great beauties. Reading the accounts of the various Christmas-pieces in the newspapers last week, it might be supposed that the perfection of a pantomime or extravaganza was to be found at each house, and that the artists everywhere had surpassed themselves. This certainly is not true. Several of the pieces are very good of their class, with very charming scenery, but we find nothing better than we have seen before.

At *Drury-lane*, for example, Mr. Beverley is said to have outshone himself; whereas his transformation scene, with its pillars of glittering faeries, piled one over the other, displays less fancy than many of his previous works of this kind, which are, in truth, wonders in their way. His scene for the ballet is much better, and remarkably beautiful. It represents a stalactitic cavern, extending as far as the eye can reach, with water at the bottom, in which are floating faeries; and the lines of these running on to those on the stage produce a remarkable perspective effect. The pantomime, as a whole, is a work of large proportions, and deserves to be seen.

At *Covent Garden*, on the evening of our visit the house was so full that they could find us no seat: we must try again hereafter. Mr. Mellon's

very pleasant opera appears to gain in favour. Several of the airs are exceedingly pretty; for example, Mr. Haigh's ballads—

"For thee I love alone,"

and—  
"The heart that is too lightly won,"  
and the close of the first act, and the cavatina—

"Oh! bright were my visions in those happy days," charmingly sung by Miss Parpa.

"The *Ingamared* pantomime, "Valentine's Day," has a story of less interest than usual at this house; but it is, nevertheless, pleasantly put together, and very elegantly placed on the stage. The scenery of the fairy story is painted by Mr. Frederick Fenton, including a February landscape, the Spring Flower Dell, and Conservatory of Crocuses, and the transformation scene, the Opening of the Fairy Valentine. The latter is a most elaborate piece of mechanical scenery, some of the changes in which are very beautiful. In "The Evil Genie" Mr. Buckstone is as racy as ever as *Tom Ripstone*.

"The *Adelphi* has a spectacular extravaganza in place of a pantomime, called after one of the prettiest German legends, "The Nymph of the Lurlenburg." Some of the scenes are very good, but we would suggest, from good-will, not so fault-finding, that more care in the arrangement of sky pieces and the general fitting-together of the scenery, would be advantageous. In the first scene, Rupert's Dining Hall, the window is very well painted. The View of the Lurlenburg, on the Rhine, is a nice landscape; and, in a scene beneath the river, some effect is produced by the change of a rock of coral into a regular set of newel stairs, reaching nearly to the ceiling, up which the *personæ* go. Miss Woolgar and Mr. Toole bear the brunt of the piece, and bear it bravely.

#### THE LATE MR. JOHN CRAKE, ARCHITECT.

MR. JOHN CRAKE, whose premature death suddenly took place on the 27th ult., was a pupil, with Mr. George Mair and others, in Mr. Decimus Burton's office in 1828. He became a student in the Royal Academy about 1831, and obtained the silver medal in architecture, for the best measured drawings of the facade of the London University, Gower-street (W. Wilkins's building). Mr. Crake was an original member of the Architectural Society, now no more. He went to Italy, and on his return commenced practice. The long terrace, Hyde-park-gardens, was erected from his designs, and under his superintendence: he also was concerned for the Earl of Cardigan, and designed and superintended the entrance to Dean park. Since his marriage, and for the last ten years, having an ample fortune, he had retired from practice, and resided chiefly at Datchet, where he expended a large sum of his own money in restoring the church. He was liberal and kind-hearted, a staunch supporter of the Architects' Benevolent Society, and much beloved by all who knew him.

#### GLEANINGS FROM WESTMINSTER ABBEY.\*

HAVING now gone generally through the fabric, I will next advert briefly to some interesting documentary information from the public records, which has just been communicated to me by Mr. Barrt. Of the kindness of this gentleman I cannot speak too strongly. He has, while my paper has been in hand, given himself infinite trouble in searching for notices of the works, and with very considerable success. I am aware that the details of antiquarian documents are not well suited to a meeting like this, and I will, therefore, only advert to a few important points. The first of them is this. As Westminster Abbey is about the earliest work of its style in this country, and as the building of the first portion of it by Henry III. extended over a space of twenty-four years, i.e. from 1245 to 1269, it becomes important to ascertain how early in this period the style of its architecture can be proved to have been defined. Now, a single entry in the documents has been found for ever settled this point. I have before me that the most advanced part of the work (as to style) is the Chapter-house, as that contained crozier windows of four and five lights in a developed form, the tracery is not confined to circles, but containing great trifoliate, and the heads of the lights being trifoliate, which is not the case in the church. Now, it would be most useful to know the exact date of these windows, for, though Matthew Paris gives 1250 as the year of commencement of the Chapter-house, it may have spread over an indefinite length of time, and, as it would be long to twenty years after that date. Let us look then to this. Here we find in an item of "300 yards 37th Henry III., or 1258, and expressed that the eighth year from the beginning of the work, an item of "400 yards of canvas for the windows of the Chapter-house," followed immediately by items for the purchase of glass, showing that the windows in question were completed in 1258, which I see was the year before the king, in company with St. Louis, visited the Salate Chapelle, at Paris, which was then scarcely completed, and the style of which commences a new mode of advancement. I find, also, that during the same year, the beautiful entrance or vestibule to the Chapter-house was erected.

\* By Mr. G. Scott. Continued from p. 852, vol. xvii.

The church itself was by this time—indeed, as early as 1249—in a state of rapid progression, so that the architecture must, in the main, have been quite settled from the time of its commencement.

The entries found by Mr. Barrt are, for the most part, of a somewhat general character; but it is stated in the Pipe rolls, that further particulars have been sent in to the Treasury. These bills of materials, it is to be observed, been, for the most part, lost; but Mr. Barrt has succeeded in finding one complete one for about half a year (probably 1253), which is of so interesting a character that there is no doubt that it will be published with notes, by architectural antiquaries. It is a perfect bill of quantities of the work done during twenty-five weeks, giving the names and measurements of every moulding and every detail of the work, and will form a very curious and interesting illustration of the architectural nomenclature of the period. Attached to it are two amusing little letters from the quarry-master at Purbeck, promising shipments of marble, and begging for speedy orders on the ground of other pressing business.

The notices I have adverted to in the fabric rolls of the works from Edward I. are time and again also very detailed, and give curious particulars as to the mode of employing men at that time. They appear to have been fed and clothed by the employer, and the clothing would appear to be by no means to be complained of. In one year we have an entry of 15s. (equal to 8*l.* or 10*l.*) for a fur robe for the chief mason; but after year nothing further for his robe, because the independent gentleman "refused to receive it on account of the delay in its delivery."

Going back to the earlier accounts, I may mention that extensive works appear to have been going on at the same time in the palace and its chapel, including a great deal of decorative painting; also that the bellry of the Abbey was being built, which, if it is true, as the accounts seem to be of the church, and of which, I believe, that some remains existed at a somewhat recent date.

The only upon the Abbey during the first fifteen years of the work, which, if it is true, as the accounts seem to be, considerably exceed half a million. I must not, however, follow up these details on the present occasion.

I have dwelt so long upon the time remains for any notice of the internal contents of the church. Indeed, they would be more worthily treated of in a distinct paper. I will content myself with a cursory notice of a few to which I chance to have paid particular attention.

That most remarkable work, the Shrine of the Confessor, has been largely dwelt upon before this Institute, when the subject was brought forward several years back by Professor Donaldson, that it would be superfluous to go again into the minutiae of the investigation, to which I devote a great amount of time, and which was fully followed up by my talented friend Mr. Burgess.

I will content myself with a summary of results. Shortly after my appointment to the Abbey, in 1849, I was led, in going to a visit paid to the shrine by the Rev. Martin with myself and some members of the Ecclesiastical Society, to devote a good deal of attention to ascertaining, so far as possible, the ancient form of the shrine; the result of which I gave in a paper read before a meeting of that Society. I removed the brick wall which then blocked up the west end, and exposed the marks showing where the shrine once stood, and came to the conclusion that the pillars now at that end were formerly detached, and carried lights. Probably they were the "feet" which King Henry III. is said to have given for certain lamps to be burned before the shrine.

The retabulum occupies, as I ascertained, its proper position, excepting that it has advanced 18 inches above its original level, a fact proved by its interference with the space required for the completion both of the ancient and the more modern inscriptions, for neither of which there is now sufficient room.

The front and what is seen of the back of the retabulum, being decorated with mosaic, and the edge left plain, it follows that the latter must have been more or less concealed. I judge, therefore, that the attached pillars must have been placed very close to them.

Mr. Burgess has kindly lent me the sketch of his conjectural restoration, which, on one side, I am in doubt whether there existed more than two or three attached pillars. As his view does not show much of the existing structure, I have given a rough diagram, showing by way of explaining how I probably came to my conclusions.

Extracts have been kindly communicated to me, by Mr. John Gough Nichols from diaries kept during the days of Queen Mary, showing that the body of the Confessor had been removed, and the shrine wholly or in part taken down at the dissolution, but restored in Queen Mary's time, when the present wooden shrine, the cornice, the modern inscription upon the painted decorations were added. I am inclined to think that the marble substructure was only taken down far enough to allow of the removal of the body, as its parts have been displaced in refusing so far down as that, but no further. The altar either had not been removed or was probably re-erected at the same time, and was, I think, not removed again till the great rebellion, being needed at coronations, on which occasions a table has always been substituted under the old name of "the altar of St. Edward." I found at the back of where the altar has stood, a slab, apparently taken from some monument, and containing a Latin inscription, which confirms this idea. There is, in Abbot Lillingthorpe's service book in the library, in the initial of the service for St. Edward's day, a view of the shrine, though I fear an imaginary one, the substructure being shown as it now presents the mosaic work, but the seven arched recesses for pilgrims to kneel under, which really occupy two bays, and which are shown on one side. The shrine itself is shown lower than was usual, and a number of figures of the Confessor is shown on its sloping covering.

I will only add that I opened the ground round the half brick pillars at the west end, and found them to agree in height with those at the east, which they so much exceed in diameter, and that I have been so fortunate as to re-discover the broken parts of one of the eastern pillars, and to re-erect and set in numerous fragments, and to re-erect one new piece of only a few inches in length, so that we have now one perfect pillar.

In connection with the shrine I will allude to a little discovery which I have shown to my I dare say, not present. There is a sarcophagus-shaped slab in the floor, immediately to the east of the shrine which is said to commemorate a son of William de Valence, the eldest young. The cross and inscription are nearly obliterated, but its eastern end is covered by the step to the tomb of King Henry V. A very pains-taking friend and assistant of mine (Mr. Irvine), in examining the point of junction

between the step and the slab, perceived signs of some substance being laid into the latter. I obtained permission to remove a portion of the step, when we found that the slab had been laid with brass and glass mosaic. There was, no doubt, the kindness of the same was in hand.

I am enabled by the kindness of Messrs. Minton to exhibit a tablet of mosaic, which was prepared before the altar, executed by Roman workmen, and with materials brought from Rome by Abbot Ware, about 1267 or 1268; of the curious inscription, a part giving the list of things concerned in the mosaic, is as follows:—"Terminus Henricus aris Odoricus et Abbas." Odoricus being the artist, and "aris" of course, means Rome, as is proved by Ware's own epitaph, which says, when speaking of these stones, "quos licet portavit ex aris."

The tracing I exhibit was made many years ago for the late Mr. Minton, and under my direction, by my then highly talented assistant, and my now distinguished brother architect, Mr. Street.

It is curious that both in the monuments laid with glass mosaic, and in the pavements in which the inlaying material is chiefly purpura, the artists, as in the case of the crosses, adopted as the matrix Purbeck marble, in place of the white marble they were accustomed to use in Italy.

The tomb of King Henry III. is too well known to need description here, but that of some of his children and grandchildren in the south aisle is but little noticed; indeed, its Italian forms so much resemble those of a modern monument that it usually passes for one. I exhibit several drawings of it.

Taking the tombs of the Confessor, of Henry III., and his daughter, and of young de Valence, in connection with the pavement before the high altar, and that of the Confessor's Chapel, I would doubt whether I will not say any church north of the Alps—but, I may almost say, widely, executed by an artist of some Italian school, such as mass of Early Italian decorative art; indeed, the very artists employed appear to have done their utmost to increase the value of the works they were undertaking to us, by giving to the mosaic work the utmost possible variety of pattern.

Another object, which does not receive the attention it deserves, is the retabulum from the high altar, now preserved in the south-eastern aisle, and which, as I have said, is a very wonderful work of art, being most richly decorated with glass, gold, and painting, and probably with precious stones, and of some excellent design. The glass enrichments are of two sorts—in one the glass is coloured, and is decorated on its face with gold diaper; in the other it is white, and laid upon a decorated surface. The great charm, however, of the work, must have been in the paintings. They consist of single figures in niches of our Lord and St. Peter and Paul, and two female figures, the number of which is not stated in the account fully painted. I give some unfinished drawings of this retabulum, in which the paintings have been very beautifully copied for me by Mr. Marks.

The west end of the tomb of the most interesting is that of William de Valence. I am not aware whether any old account of this monument exists, but I suppose we may fairly set it down as a French work, and, probably, executed by an artist from Limoges, though the custom of referring all enamel works to that particular seat of the art is not, I think, borne out by facts; indeed, it would appear from the account of the work, that the shrine of the Confessor were executed here, whether by an artist from Limoges is unknown, though we know that one was employed in England shortly afterwards.

The execution of the tomb is truly exquisite, so much so that it is only by the closest examination that any idea can be formed of the wonderful delicacy of the workmanship. I exhibit a drawing of the shield made by Bertrando, one of the official artists at the time of the church, and a very talented and zealous student and delineator of its antiquities, who has also kindly lent me several other drawings of the work.

The monument was thus described by Keefe in 1663:—"A wainscot chest, covered over with plates of brass, richly enamelled, and thereon the image of de Valence, seated on a throne, with a sword in his right hand, and a cross of mail with a surcoat, all of the same enamelled brass, gilt with gold, and bea with the arms of Valence, &c."

Round about the inner ledge of this chest, and most of the top of the chest, are ancient Saxon letters, and the rest of the chest, covered with brass, wrought in the form of lozenges, each lozenge containing either the letters of the alphabet, or the names of the saints. Round this chest have been thirty little brass images, some of them still remaining, twelve on each side, and three at each end, divided by central arches that serve as niches to enclose them; and on the outward ledge, at the foot of each of these images, is placed a coat of arms in brass enamelled with the colours.

Since this time, the greater part of what is above described has disappeared, showing that the spoliation of the Abbey is not generally chargeable against the rebels, but has gone on in modern times during the contemptuous dominion of Queen Anne.

The tomb of Queen Eleanor, with its exquisitely elegant effigy, is too well known to need any description from me. I have but the privilege, since my connection with the Abbey, of promoting the restoration to it of the beautiful piece of ironwork which overhangs it, and which had been removed in 1522.

The effigy of that of Henry III. was executed by an artist named Torrell, supposed by Sir Richard Westmacott, I think, without evidence, to be an Italian. It is of the style of the effigy in Canterbury.

Were this paper devoted to the monuments alone, I would have attempted a description of the tomb of Edmund, Earl of Lancaster, brother to Edward I., and of Arthur.

These magnificent monuments, viewed as architectural works, seem to be intimately connected with several contemporary works, especially the Eleanor crosses, and the tombs of Archbishop Peckham, at Canterbury, and of Bishop de Luda, at Ely, all executed between 1250 and 1300. One of their special characteristics is the extreme closeness with which the plastic work is carried out, and the carvings, every portion of which is laid directly from some actual plant, with no further conventional treatment than was necessary to adapt it to its position. These works occupy the middle position between the conventional foliage of the earlier and the almost equally conventional foliage of the later divisions of our architecture. It is, in fact, a mistake to call the foliage, even of the later

\* An excellent description of this work is to be found in Sir Charles Eastlake's "Materials for a History of Old Painting."

parts of the decorative style, *natural*. The use of really natural foliage is very seldom found after the end of the thirteenth and the few earliest years of the fourteenth century, and many of the remaining differences between the conventionalism of *approach* to the conventionalism of *departure* from nature; the conventionalism of strength and of weakness, of vigour and of effluence.

But the most remarkable characteristics of the two monuments is the splendour of their decorative colouring. The figure sculpture, though possessing considerable merit, is not so fine, either as in the nearly contemporary monuments of Henry V. and Eleanor, or in the somewhat later one of Aymer de Valence. The effigy of Edmund is, however, a very noble and dignified work.

The adjoining tomb of Aymer de Valence is evidently an imitation of those last described, but does not equal them either in its architecture or its decorations, though far exceeding them in the merits of its sculpture. I have seen no old accounts of this tomb, but I fancy that the sculpture is French, both from a decidedly French character in the architectural carving of the niches which contain the statues, and from the similarity of the statues themselves to some of the same period preserved in the Hotel Clugny at Paris.

These, and the effigy itself, rank among the finest specimens of Medieval sculpture.

The tomb of Queen Philippa stands, perhaps, next to them in beauty and interest. It is undoubtedly a foreign work, as in the account of its cost, still extant. It is said to have been executed by one "Hawkin Liege, from Brabant." Its character seems to me rather French than French, and very possibly the artist may have been from Valenciennes, the seat of her father's court.

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One of the niches and several other portions were afterwards found to be deposited in Mr. Cottingham's museum, and, having been purchased from him, have been refixed in their places.

The very curious feature in the design is a scroll like the crook of a pastoral staff between the niches at the angles of the monument; the architectural details had no decorative colouring, but the foliage was gilt. The arms were, of course, coloured, and the figures had beautiful patterns, chiefly in gold upon the draperies; the hair was gilt, the pupils of the eyes touched in with blue, and the lips with red. The head-dresses of the female figures are beautifully enriched with gold and colour. One of the heads was unfortunately broken off while opening it out, for I should mention that the figures were enclosed in a solid mass of rubble work. This head I had a cast made from, and the decoration exactly copied on it. I had also a cast made of the angel before mentioned, and most fortunate it was that I did so.

I afterwards most carefully replaced them with my own hands, having them gilded and gilded; but though I told no one I had done so, and though they were quite out of sight, I was disgusted to find, the next time I examined the monument, that both of them had been stolen! They were so close together, that this loss of ornament and depreciation could only have been effected by a person well acquainted with what had been discovered, and that with considerable difficulty. It is most deeply humiliating to think that the artist, in appreciating the value and interest attached to such objects should be so utterly lost to all sense of honour and decency as to perpetrate such a deliberate robbery. I would not go so far as to say this wretched being, as would, perhaps, have been done of old, but I should rejoice in the opportunity, according to the figurative expression still extant among our rural population, of witnessing the "tanning of the rascal's hide." If, however, what I have said should chance to meet his eye, let him know that there is still for him a *locus penitentiae*, and that if he will anonymously restore what he has fled, his baseness shall be forgotten.

I should mention that the head is so like that of the queen herself, that it is not improbable that it may have been intended for her, though she does not appear in the imperfect list of statues given in the old histories. The open-work of the niches over the head of the effigy itself has been filled in with blue glass. The magnificence of the entire work may be imagined when it is known that it contained, when perfect, more than seventy statues and statues besides several brass figures on the surrounding railing.

Somewhat parallel to this, both in material and workmanship, was the monument of John of Eltham, brother to Edward III. I shall not enter into any description of this work, however, further than to advert to its beautiful canopy, which is thus described by Keepe—

"A canopy covering the whole with delicate wrought spires and masonry work, everywhere intermixed and adorned with little images and angels, according to the fashion of those times, supported by eight pillars of white stone, in the same manner as the work."

This canopy is shown in *Dart* view of the monument, but it was taken down about eighty years back, on the ground of insecurity.

It is often being stated that portions of it were preserved at Strawberry Hill, but I have never been able to ascertain the truth of this. If any one should know of the existence of such fragments, I should be truly obliged by his informing me of them.

The original stalls of the choir seem to have been retained in a more or less perfect state till late in the last century. They are shown in the view given by *Dart*, and the general appearance of the accounts of the coronation of James II. The canopies are shown supported by single shafts. I observed when the new stallwork was

being put up in 1819, that a closet under the organ was lined with old boards which appeared to have formed a part of the back of the ancient stalls, for I could distinguish, by the discoloration of the wood, the form of a trefoiled arch supported by a shaft with a band at half its height.

At a later period, on looking into this closet, I was glad to see the heading still there; but, on looking into it again while preparing this paper, I found that our careful clerk of the works had caused it to be neatly painted, so that this little memento is lost.

There remains, however, in Henry VII's Chapel, one of the ancient Early English misereres, and a fragment of another has been preserved. They are both good Early English foliage.

There is a great fund of minor subjects, on which a separate paper could be very advantageously written, but I must leave them unnoticed on the present occasion. I have gone over my ground as rapidly as I was able, but have more than doubled the allotted time; but Westminster Abbey is at least worthy of an extra hour, and I will only add that I recommend all students of Gothic architecture to devote to it every extra hour they have at their command. London has been pretty much denuded of its Medieval remains, but like the Sibyl's books—those which remain are worth as much almost as their all, and to live in a city which, amidst its gloomy wilderness of brick and compe, contains so glorious and exquisite a work of original art as this, is a privilege which few other cities could offer us. *Let us make use of it.*"

A WATER-FAMINE IN THE SUBURBS OF THE METROPOLIS.

INSUFFICIENT and ill-managed as are many poor districts in the supply of this necessary of life, it is difficult to imagine the condition of outlying districts before a somewhat regular supply of water was brought to this great population. Yet some idea of the inconveniences attending such conditions might have been formed lately in north Islington, and other suburban districts. During the late short but rather severe frost, whole streets, which were inhabited by large numbers of persons, were without water in their cisterns; some supplies in this way to houses which were closely thronged were exhausted on the second day of the frost, and those of neighbours and the tradesmen was soon in the same condition, owing to their willingness to lend to those who were waterless. After a lapse of time the plugs were set up, and motley crowds rushed with every variety of vessel for water needed for immediate use: pans, kettles, and pithers were filled with much jostling and difficulty; but what could be gathered in this way was quite inadequate for the purposes of general cleanliness: cooking was managed with difficulty; washerwomen were in despair; cow-keepers were in sore distress; closets and drains became stopped; and those who had large families of children were struck with consternation, when they found that means were not at hand to wash them. The washing of families could not be done: the scouring of floors was out of the question in many instances; and for it was often said, water was as precious as gold; and one of the old cries of London, "Who wants water, water?" was for a time revived.

During this time of famine the most ingenious means were resorted to in the houses to thaw the pipes and taps: in a few instances provision was made to prevent the action of the frost by overwrapping with oakum, straw, or what is better, casing them with wood filled with sawdust. The former operations would, under the circumstances, as we will afterwards explain, not have been the means of allowing the water to flow into the cisterns; nor would the latter method have been effective; for the stoppage took place between the dwelling and the main pipe, and this was caused by the pipe leading from the main being too near to the surface.

When the frost departed, even after four or five days of open weather, the greater number of the cisterns were still empty. People were surprised, and could not divine the reason. "Why should Mr. So-and-So's cistern be full, and ours not?" The turncocks were well rated, but they pointed to the water in the main pipes, which was coming from the temporary plugs. The fault did not lie there, evidently; but how was it,

\* Among other things I should have given a description of the Coronation Chair, and of the figures remaining in the panels of the old sedilia, commonly called the tomb of King Sebert. The former is a truly magnificent piece of decoration, but sadly mutilated. The decorations are somewhat broken, the whole seems to have been gilt on a thick coating of gesso, and while still soft, the foliage, &c., to have been traced upon the gold, and indicated merely by pricking the outline and the intervals between the leaves. Of the sedilia, however, the whole seems to be in perfect order. They appear to have been slightly touched up, but are mainly original. They represent, I believe, King Henry III. and King Sebert. The figure of King Edward, the Confessor, on ascending the whole, given by M. Meibom, in his "Londinium Redivivum," can now with great difficulty be distinguished. The painting in the canopy of the tomb of Richard II. ought also to have been noticed. The diapered ground is still very perfect, but the painting of the figures has almost entirely perished.

when the frost had left for so many days, that the small pipes still continued to be frozen?

If, in the first instance, the house-service pipe had not been placed so close to the surface, it would not have been so suddenly acted upon by the frost, and it will be found that those houses which were first supplied, and which were longest in having the water stopped, had the service pipe at a greater depth than others.

Taking into consideration the expense of pipes bursting, and the very great inconvenience of having no water in the house, it is incumbent on those who are arranging the conveniences of houses, particularly in neighbourhoods exposed to the severity of the weather, to adopt precautionary measures, *ab initio*. While our chimneys smoke, our water-pipes freeze, the drains get stopped, and half the heat from the fires is wasted, the science of house-building amongst us must be pronounced in a low condition.

ST. GREGORY'S (R. C.) CHURCH CHELTENHAM.

WE illustrate, in our present number, the porch of the church of St. Gregory, lately erected by the Roman Catholics of Cheltenham, from the designs of Mr. Charles F. Hanson, architect, of Clifton. The foundation-stone of the tower and spire, which were omitted from the first contract, was laid on the 30th of November last, by Geo. Copeland, Esq., M.D. The new work will be of unusual extent, 25 feet square at the base, exclusive of buttresses, and 205 feet in height, thus overtopping by at least 50 feet the spire of the fine old parish church.

In alluding to the parish church, we may express our regret that it has been indefinitely closed, having been pronounced in a dangerous state. An energetic attempt was made, by the incumbent, to have the whole church restored and resaced; but, as his plan contemplated the demolition of the present "sleeping-pews," alias pews, the opposition of their owners proved too strong—at least, that is the reason given to us—and he was compelled to close the church, and resort to the expedient of putting up a temporary iron one, to serve till such time as some better understanding be arrived at.

AMSTERDAM CRYSTAL PALACE.

THE Amsterdam Crystal Palace is to be inaugurated in the spring of 1861, with an exhibition of industry, science, and art, which will be open to all nations. The building, which is now being erected on the site of the Utrecht Gate, from the designs of Mr. C. Oubshorn, architect, of Amsterdam, is to be a permanent structure, and will be a great addition to the architecture of that ancient city. The total length of the building is 412 feet; the general width, 172 feet; and the width at the transept, 22½ feet.

The foundations of the building consist of timber piles, longitudinal and transverse timbers, and planking, on which are built brick piers, capped with stone, for carrying the internal columns, and continuous external walls, also capped with stone, which form a plinth to the superstructure of the building. The top of this stone plinth is about 2 feet above ground level, and is also the general floor level of the building. The level of the timber foundations is about 10 feet 9 inches below ground level, about 8 feet of this being made available over the whole area of the building, as a basement story.

The skeleton of the building is entirely constructed of iron; and externally, woodwork is only employed for the main cornices, the rest being of iron also.

The general plan of the building consists of a nave, 64 feet wide, with side aisles, 19 feet 6 inches wide, a central transept hall, 136 feet by 68 feet, with polygonal ends, and two side halls, each 150 feet by 34 feet, on each side of the nave; the side halls and vestibules at each end of the transept being separated from the nave and transept by close partitions and glazed iron gates.

A gallery, 19 feet 4 inches wide, and 29 feet 6 inches above the floor level, is continued round the whole of the nave and transept, and communicates with saloons over the vestibules at the entrances.

The columns are similar in section to those of the Great Exhibition Building, 1851, and are generally arranged in pairs, about 2 feet from centre to centre, both internally and externally, except at the angles, where groups, consisting of from three to seven columns, are employed. The



first tier of external columns are  $7\frac{1}{4}$  inches in diameter, and the internal columns, first tier, are generally  $10\frac{1}{4}$  inches in diameter, each tier of columns diminishing  $\frac{1}{8}$  of an inch in diameter. The columns at the angles of the transept, supporting the gallery and the dome, present the appearance of clusters of shafts. The whole of the columns have cast-iron foliated capitals, surmounted by an entablature.

The galleries are supported by cast-iron open-work girders, and ornamental corbels.

The roof of the nave consists of wrought-iron arched ribs, and is covered entirely with glass, carried by curved wrought-iron sash-bars, which are prepared to receive double thicknesses of glass, about  $\frac{3}{4}$  of an inch apart, these sash-bars being carried by longitudinal H-iron purlins. The main ribs are in pairs over the coupled columns, and are connected together by a perforated cast-iron running ornament. The total height, from the floor level to the crown of the arched ribs, is 89 feet. The ends of the nave are filled in with highly ornamented semicircular windows, the framework being constructed entirely

of cast iron, and prepared for double thicknesses of glass, about 4 inches apart.

The external walls of the nave are filled in with corrugated iron, and the nave and aisles are thus only lighted from the roof and the ends of the building.

About 2,500 tons of cast iron, and 500 tons of wrought iron, will be used.

The principal feature of the palace will be the dome, which surmounts the intersection of the nave and transept. The plan of the dome is elliptical. This being a novel feature, the effect has been questioned; but, judging from a model of this part of the building, which has been constructed to a scale of one-twentieth full size, it is anticipated by those who have seen it that the effect, when executed, will fully equal the expectations of the architect.

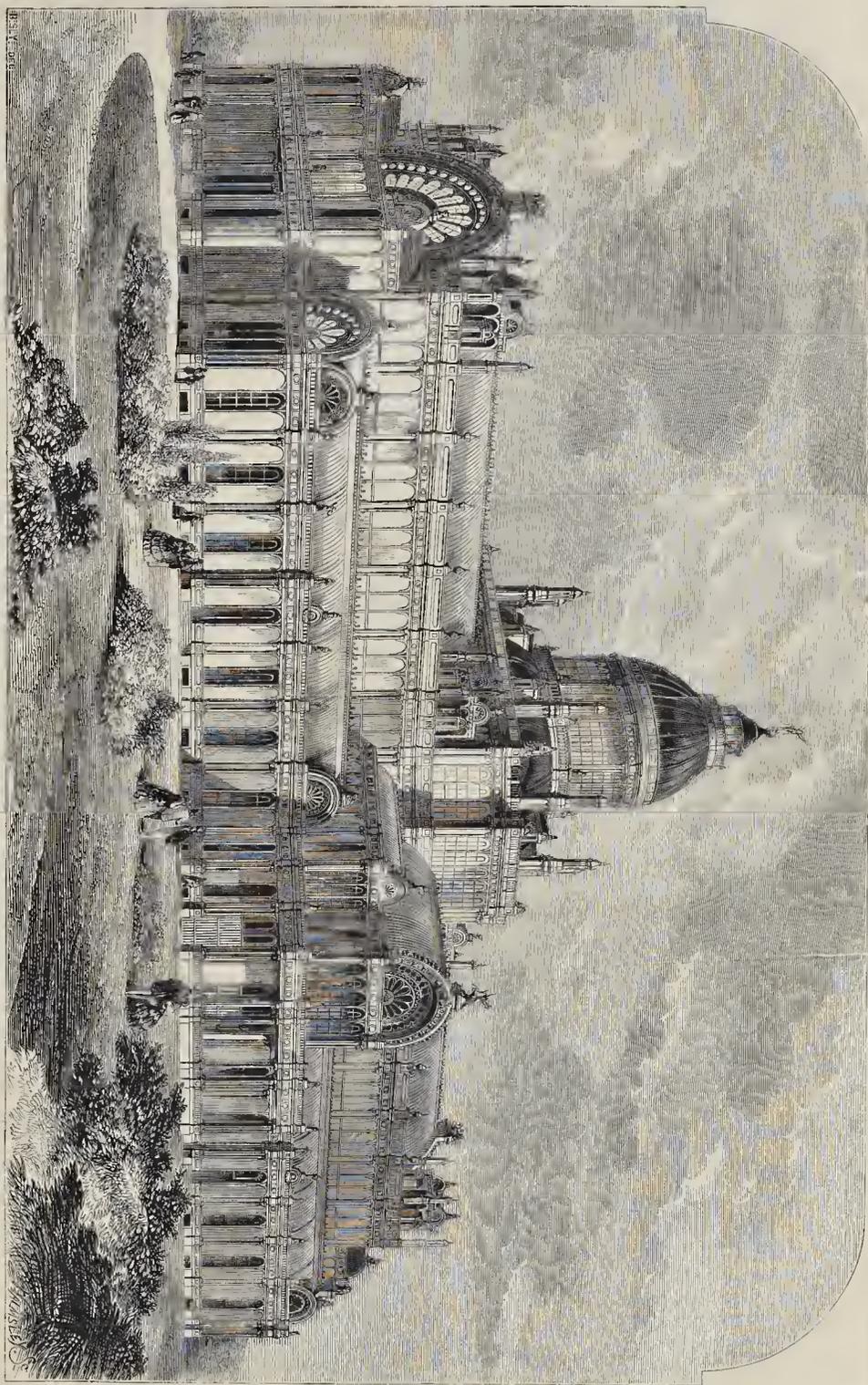
At a height of 95 feet from floor level, open-work quadrant ribs spring from the clustered shafts in the transept, and converge towards the centre of the ellipse which forms the base of the dome, the major and minor axes of which are respectively 70 feet and 42 feet.

On this elliptical base are fixed coupled columns 23 feet high, the spaces between which are filled in with glazed cast-iron framework. These columns support the dome proper, which is constructed of iron, and covered with zinc; the whole being surmounted by a glazed lantern and ball, the total height, from ground level to the top of the hall, being 187 feet.

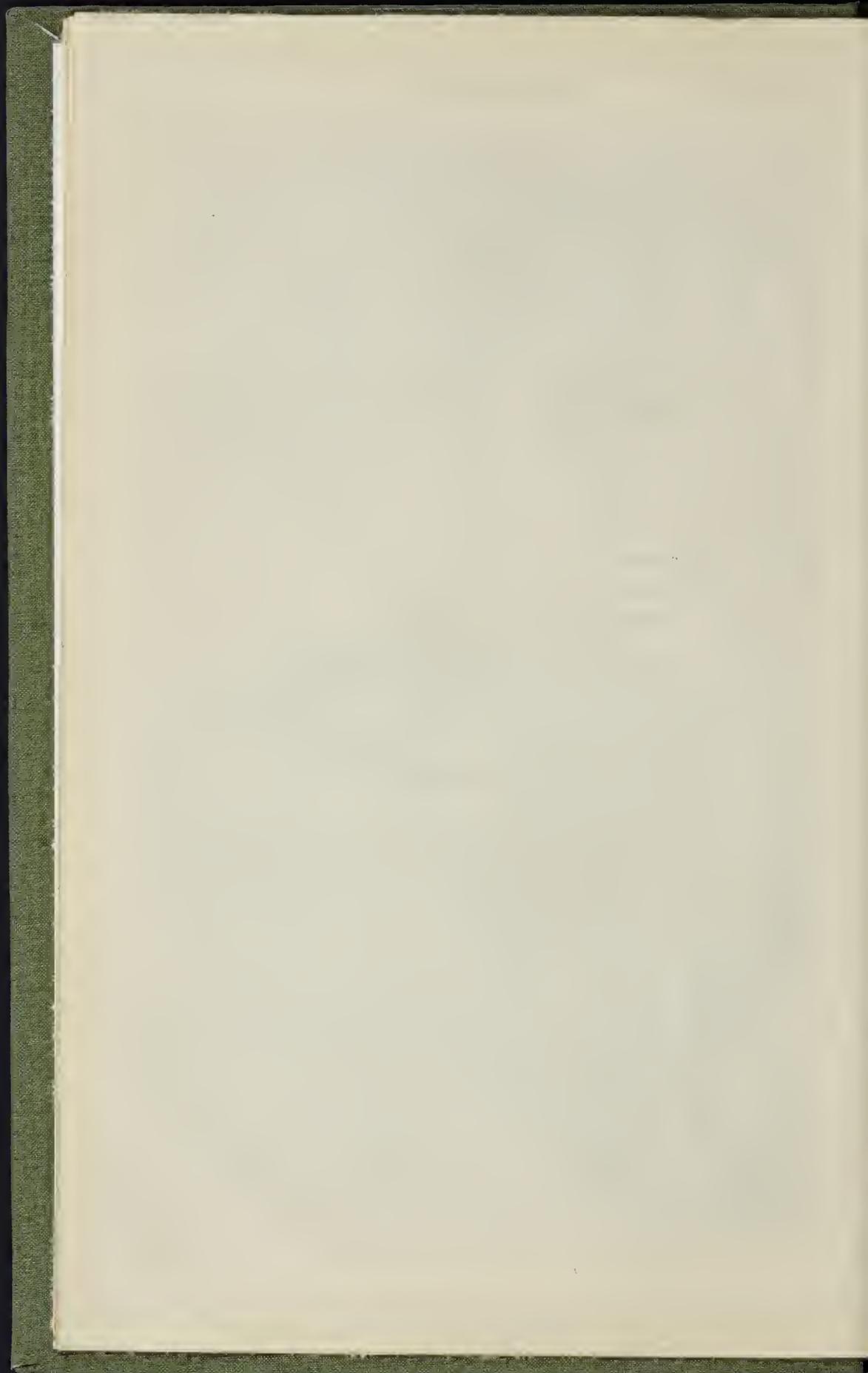
The interior of the building will be of a highly-ornamental character, there being a large amount of decorative ironwork employed. Ornamental painting is also intended to be applied as a decoration, wherever it can be made available, throughout the building.

The total cost of the structure is estimated at 95,000.

The palace, as remarked, was designed by Mr. C. Outhoorn, of Amsterdam; the contractors being Messrs. Van Heel & Holtzman, of Amsterdam; and Messrs. Smith & Son, of Spring-lill Works, Birmingham. The details of construction of the ironwork are entrusted to Mr. R. M. Ordish, of Great George-street, Westminster. The works are progressing.



THE AMSTERDAM CRYSTAL PALACE.—Jr. C. OUDSHOORN, ARCHT.



THE LOUVRE AND THE TUILERIES.

THE LOUVRE, from its association with kings and great men, is one of the first objects of interest in the capital of France. Among the western monarchies there is no other kingdom or empire which more deserves attention. As ancient as the fall of the Roman empire in the East, and formed out of its remains, the kingdom subsisted with glory for more than thirteen ages. Besides, the fertility and the extent of France, the amunity of its climate, the riches that nature and industry produce, the remarkable number of great men of all kinds who have illustrated it, assure for it a pre-eminence which no other nation can have a right to dispute.\* We may say that successively, almost in each part of Europe, all the powers observed a fondness for the art of building, principally in Italy, which seems to have been the first to triumph over the ignorance and fury of the barbarians who had inundated the empire; and at Venice especially, there was not a doge who did not wish to signalise his government by edifices, whether sacred, public, or private; but we easily recognise, in consulting history, that Charlemagne is one of the princes who has the most contributed to the establishment and to the erection of sacred temples.† It was a new era for man, and it was the birth of splendid cathedrals,—of St. Mark's, Venice, and of that of Rheims. Louis le Débonnaire, who succeeded Charlemagne, also caused to be constructed a number of edifices. His illustrious predecessor had covered, as with a zone of beauty and protection, the western empire with churches full of majesty and riches, reflecting the image of the royal founder, and uniting, in a marvellous church at Aix-la-Chapelle, all the inventions of the three Grecian orders with all the forms of the Christian genius; and Louis imitated this peculiar but fascinating taste in sacred piles which he built. Architecture, then employed in the noblest cause, was developed by the co-operation of hard-working monks and wealthy kings until the reign of Philippe-Auguste, 1180.‡ But if we see the happy ages when the sciences and the arts appeared with splendour, experience shows us also, that the splendour is doomed to be soon overcast, and that the duration of the flourishing time is ordinarily included in a short space. The state to which France found itself reduced at the end of the reign of Louis le Débonnaire retarded the progress of architecture throughout the kingdom. Paris attracted the first attention of Philippe-Auguste; he wished to bestow his zeal upon a city on which his throne was set, and which would reward him for the pains. The extent of the capital, since it had extended beyond the limits of its island, named the *Cité*, might be known by the enlargements that this prince gave to it beyond its former compass. Sides exposed to incursions were surrounded by thick walls, flanked by massive towers: the streets were paved (1184),§ and an ordinance issued that they should be cleaned, swept, and kept from dirt which had been allowed to accumulate and infect the air. He established a police, and built a monastery as an asylum for those who wished to quit their bad habits. We recognize in Philippe-Auguste, a genius for fortifications, sieges, and a taste for military machines, for which he nobly recompensed the inventors. The great door and the towers of Notre Dame are the work of his time. He loved buildings. He enclosed Paris with walls. He constructed covered markets, so that the merchandize was protected, and surrounded with cloisters the cemetery of the Innocents, to procure a shelter to those who came to mourn their parents and their friends. He built a palace round the large tower of the Louvre, contributed to the construction of the cathedral already commenced, and to the enlargement of the University. He gave great privileges to learned men devoted to the sciences. He was surnamed Conquerant and Auguste, on account of his victories and his great qualities.¶

The communication with the East accustomed the French to go and seek for themselves the beautiful stuffs and products of India, and the spices that they formerly received from the Venetians and the Genoese. The French have always been celebrated for the textile arts, and have made them a very profitable branch of industry. At this day many combinations of them are still objects of much admiration.

\* Preface to "L'Art de vérifier les Dates." Paris: 1783.  
 † Blondel's (Jacques François) "Architecture Française." Paris: 1782-56; 4to.  
 ‡ "Dictionnaire des Dates." Paris: 1842.  
 § Foot pavement was not laid down in the streets of London to any extent until the fourteenth century.  
 ¶ "Anquetil, "Histoire de France."

In this time heraldry began to become common. Those who returned from the Crusade were not wanting in doing high honour to this expedition; and, to awaken perpetually its remembrance, they placed the banners under which they fought in the most public places of their *châteaux*, as monuments of glory. Families in their alliances with one another commented, to each these signs of illustration, and founded one upon the other. Ladies worked them upon the furniture, upon their clothes, and equipage; the damsels upon those of the knights; soldiers had them painted on their shields; but, as all, they could not hold so many little spaces, they abridged, or condensed, so to speak, the representation of the principal events that should be preserved in memory. We may say that *blazon* has been, in principle, a sort of language which recognizes the rights to public esteem and the alliances.

We owe to the reign of Philippe I. the creation of the most celebrated military orders, which from France have spread throughout all Europe; the Hospitaliers of St. John; the Templars, &c. In the east and in the south of Europe, at Malta, at Cambridge, in London, and in other cities, architecture is indebted to these orders. These orders owe their establishment to Christian charity, and to the desire of being useful to one's kind; whence some others have arisen out of the emulation of piety, and the desire of sanctifying oneself in the exercises of a life more austere than the commonality of Christians, the Chartreux, and other societies of monks.\*

The Freemasons' lodges are as numerous in France as everywhere else. Their famous grand lodge was St. Croix; but I am not aware that they exercise, notwithstanding their principle of humanity, any action of importance upon public opinion.

We shall now mention those kings and those architects who have been concerned in the creation of that interesting palace the Louvre. The Old Louvre—fortress, palace, and prison—was founded in the year 1204 by Philippe-Auguste. The large tower of the Louvre and its precincts, the only constructions that the king erected in this place, were the centre of royal authority. In this tower, known in feudal times, the great servants of the crown humbly came to make their offerings of fidelity and homage.† The king wished to receive there the emperor Charles-Quint, and give, in his lately embellished edifice, a high notion of his power. For a long time the ancient and venerable Louvre was surrounded with *fossés* supplied by the waters of the Seine. Two bridges, constructed upon the boundary of the quay, the only one then existing, admitted into these *fossés* the water which was dammed in by locks. The front elevation of this place, on the side of St. Germain-l'Auxerrois, still preserved its ancient character. It was terminated at two angles by two round towers covered by a roof of a conical form. The principal door was entered by a bridge of arches in stone, and by a bridge raised or lowered as occasion required. The origin of the quays, which now, to a Frenchman, are the pride of the capital, may be traced to the beginning of the fourteenth century epoch, in which Philippe-le-Bel constructed the first quay before the convent of the Augustines, near the tower of Nesle. Near the present site of the Tuileries was under François I., some tile-kilns—called the Sablonnière—like the *céramique* of Athens. From *tuiles* (or tiles) the Tuileries took its name. At that time all the tiles and bricks were ordered to be transferred beyond the walls of the city, near the Tuileries-St.-Honoré, which were upon the Seine, beyond the *fossés* of the chateau of the Louvre. This will give the reader some idea of the circumscribed limits of that quarter in the beginning of the sixteenth century.‡ Constructions in brick at this time were much in use. They were built with little else for a long time, nearly as far as the reign of Louis XIV. The chateau of St. Germain-en-Laye, and many other considerable edifices, were erected with these materials. The roofs of the châteaux were covered with lead, and they, from their size, consumed a great quantity. Plumbing was a good trade. Before François I., architecture consisted only in churches, fortresses, towers, and swing-bridges; but this monarch made all the professions to flourish: with wisdom he sought more the happiness of his people than his personal interest: §

\* Anquetil, "Histoire de France."  
 † Duhaure, "Histoire de Paris."  
 ‡ In the "Atlas Historique," &c., by Lesage, an interesting map of Paris is given, of the gradual and characteristic increase of the French territory from the time of H. Capet to the present day.

foreigners were invited. Cellini and Serlio were working on the royal residences.\* Bramante, architect and painter, who was in the service of François, was, owing to some difference with other artists employed at the court, sent to Rome and other august cities on the continent in the year 1537, with the order to buy and copy antique statues. He cast many beautiful bronzes for the châteaux at Pontainbleau and Saint-Germain. The king could not proceed without having recourse to and aid from the great artists of the day to design and decorate and superintend the two most ancient and the most important palaces of France, and at the same time the immense chateau of Madrid. The artists also threw and made their reputation under his auspices. They came from and were sent to a country where architecture was seen in the greatest perfection, which country was the mother and the ours of literature and of the arts. It is, indeed, a treasury for all things beautiful; and, though Italy is now fallen, its soul once heaved with the noblest impulses. The French architects travelling thither could not but receive from its monuments some advantages, especially on seeing some of a very different character to any in their own country; and when struck with that energy and power so peculiar to the ancient Romans, and so characteristic in their architecture and in every thing they undertook, this influence was not lost. Italy modified France,—France, Spain, long after,—during Napoleon's six years' invasion of that peninsula. The learned curiosity with which all Europe was seized in the sixteenth century turned attention towards these famous countries, whence the arts had departed.† In France, a young Greek nobleman, Lascaris, and some others from Greece, introduced and animated the study of the Greek language and the "Humanities," which later flourished there, as in Italy and Spain.‡ Scholastic theology and the peripatetic philosophy, reigning a long while in the University of Paris, were not less contrary and unfavourable to the progress of letters than clerical intolerance or monastic institutions in other countries.§ François I. effected a great amount of good to his own and succeeding ages by abolishing the Latin, and commanding all the laws and whatever concerned the people to be written in French,—in a language that they could understand. For this he deserves more than many who have acquired the same title,—the name of Restorer and Father of Letters.

Pierre Lescot, abbe of Clagny, commenced the old Louvre in 1528. Schastian Serlio, who was then in Paris, competed for it; but the design of the French architect was preferred, and Serlio had the generous impulse to point out the superiority of his rival's design. Serlio was not the only Italian artist who had failed, and whose designs had been rejected by French adjudicators. Lescot conducted the works with spirit, rapidity, and with success, and the body of the building, named to-day the old Louvre, was, under the reign of Henry II., in 1548, almost entirely terminated, as is proved by a Latin inscription over the door of the Hall of the Caryatides.¶ François I. had been at great expense in the reparations that he executed in this old building; demolishing one part to erect in its place, upon a new plan and after more modern designs, a vast portion intended for residence. The designs, furnished and carried into execution by Lescot, are much admired. It is a monument of the architecture of the sixteenth century. It is to the admirers of the Renaissance what Notre Dame is to the students of the Gothic. One internal order not harmonizing with an external order, the arbitrary proportions of the composition have by some been censured; but if there are slight imperfections, they will not hinder the observer from admiring the effect of the whole. Architects, in the execution of a building of any particular order, are not, in many instances, over scrupulous in following the proportions assigned to them. Even the Greeks regarded the proportions of this art as arbitrary, and we find in the edifices of ancient Rome proportions of all kinds, and which justify all sorts of opinions.¶

Jean Goujon chiselled many of the bas-reliefs of the façade of the court of the Louvre and the fountain of the Innocents, in 1555.\*\* The figures in the court of the Louvre, in the Composite

\* Chambord was completed about 1529 by Raymond Forget.—Victor Caillat's "Encyclopédie d'Architecture."  
 † Denais, "Vicende della Letteratura" (1760).  
 ‡ Lascaris, by Villamain, of the French Academy.  
 § Erasmus, in two or three of his "Colloques," with great humour and discernment satirizes these institutions.  
 ¶ Duhaure, "Histoire de Paris."  
 \*\* Pate, "Mémoires sur les Objets le plus important dans l'Architecture."  
 \*\* "Dictionnaire des Dates," by d'Harmouville. Paris.

order, have great relief and great beauty: their subject is boys at play among festoons: they are well accommodated, as these details should be, to the grandeur of the building and the distance of the place for viewing them, as well as by the character of the order in which they are employed. They are sculptured with so much art and with so much poetic feeling, that they are esteemed by connoisseurs among the best pieces of sculpture of the kind that are known.\*

F. LUSI.

## ON STRIKE.

On! my brothers! to me listen,  
Ere the sorrow and the tears  
Cause each smoken eye to glisten  
With the grief of after-years;  
Ere the wretched mothers weeping,  
Sob as though their hearts would break,  
For their infant darlings sleeping,  
And their thoughtless husbands' sake;  
Ere ye tramp on lonely highways,  
Through the village or the town,  
Or in cities' crowded by-ways,  
Sadly wander up and down;  
For employment ever seeking  
Where there's none, alas! to give,  
Till the hunger-glance is speaking  
That ye scarce know how to live.

True, our path is often dreary—  
True, the joy-hopes seldom shine,  
Clearing hearts with labour weary,  
In the factry, field, or mine;—  
True, that sin and shame oppress us,  
In each court, and lane, and street;  
Where but angels few may bless us,  
With their smiles so pure and sweet;—  
True it is, our children dying  
From the poison breath of drain,  
Of with fever'd lips are sighing  
For their daily bread in vain;—  
Whilst we toilers, bow'd with anguish,  
Aged grow before our day;  
And in paper hovels languish  
Till our spirits glide away.

But these ills last not for ever,  
Not all iron is our chain,  
Not all hopeless each endeavour  
To remove the olden stain.  
Round our hearts for ever clinging,  
Filling them with scorn and hate,  
Truth and reason from them flinging,  
Till we murmur at our fate;—  
Murmur at the rich man's treasures,  
At his houses, at his wine,  
At his dearly purchased pleasures,  
At his halls which lighted shine;—  
But, my brothers, murmurs never  
Taught our souls the crown to win;  
Or with lofty courage sever  
Every link of vice and sin.

Not by "striking," or by spurning  
E'ry boon which Science brings;—  
With the aid of Art and Learning,  
Shall we rise to nobler things.  
Honest toil and temperate living,  
Manly educated mind,  
Earnest soul, and heart forgiving,  
Are the means in each enshrined:  
With their aid, each ill degrading  
We may from us swift remove,  
And around us weave un fading  
Wreaths of Joy, of Peace, and Love.  
Now, my brothers, I have euded,  
And my simple strain is o'er;  
If ye deem truth with it blended,  
Go ye forth and "strike" no more.

Kettering. JOHN PLEMMER.

## "STARCH MAKES THE CALICO."

BEAU BRUMMELL'S axiom that "starch makes the man" has been improved upon by the calico manufacturers, as a correspondent of the "Journal of the Society of Arts" (Mr. V. Stones) points out, while making reference to a paper read by Mr. Calvert at the Society's rooms on the subject of Starch. Mr. Stones declares, and we verily believe with unexaggerated truthfulness, that the cotton "fabric, in some cases, appears to be used merely as a vehicle for the starch! being woven extremely coarse or wide, and the interstices filled with starch;" and "of course, with farina at 2d. per lb. it must be very profitable to sell yards of starch at even a much lower price than the lowest cotton

goods could be supplied." In the antislavery world, in which, as some Scriptural commentators tell us, there was no rain, the farinal fabric might have formed a very passable improvement on the fig-leaf; but it is rather too bad that the cotton (?) manufacturers do not try at least to make the starch a little water-proof, especially since the crinolinian mania has suggested to them the idea of rendering it fire-proof; as, for example, by a judicious mixture of borax, which, we dare say, they have already discovered can be sold by the yard at even less than starch. But what will Mr. Stones think of the starch wavers when we tell him that just as starch or flour has been substituted in the place of calico, so and long or the crinolinian era, water-glass had been substituted in the place of starch,—an adulteration of adulterations, which they, doubtless, found they could dispose of at so much a yard even cheaper than borax; reminding one of the grievous complaint of the coffee-drinkers that even the adulterating chickory was itself adulterated, and suggesting, by the way, a similar mode of getting rid of the abominable and rascally imposition of the parasitic starch and all its parasites. At least the manufacturers and adulterators ought to be obliged to sell these woven "ropes of sand"—these "mixed" and heavy fabrics—as recognized, and definite, if not judicious, "mixtures of cotton and starch," or rather of "starch and cotton."

## THE "ART-JOURNAL," OF AGE.

THE *Art-Journal*, after a career of twenty-one years, has begun the new year well, including two of the best engravings it has had for some time, "Lady Constance," by Vernon, after Winterhalter, and "Una," by Lightfoot, after Frost; a clever sketch of Wilson, the landscape painter, by Mr. Thornbury; the commencement of an illustrated paper on "the Hudson," by Benson Lossing; "Rome," by Mr. Dafforne; and the "Companion Guide in South Wales," by Mr. and Mrs. S. C. Hall. The *Art-Journal* is now of full age, and during all its years Mr. Hall has laboured for it with energy, integrity, and ability. It is not often that one person conducts a journal so long and so well, and we sincerely hope that he may be reaping, beyond the rich reward of an accomplished purpose, those personal and worldly advantages which the qualities we have enumerated ought to command.

## LECTURE ON LABOUR.

LATELY in Guernsey, a local advocate, Mr. P. Jereux, delivered a lecture on the "Dignity of Labour." The lecturer, after adverting to the amount of property existing in every community, and pointing out how unequally property was divided, and that, even amongst those into whose hands it falls, how comparatively few are they who can live without labour,—went on to say, "How poor the pittance of the greater number may be readily imagined, when it is ascertained that there are no less than 90,000 persons out of 260,000 bond-holders whose dividend does not exceed 10l. per annum; while 135,000, or 50 per cent. out of the whole, did not exceed 20s. a year, and that, with all our idea of the immense wealth derived from the English Funds, we are struck when we find that the number of persons receiving upwards of 1,000l. is considerably under 2,000,—say 1,719, leaving on the whole an average for each person of 102l. a year." He then spoke about the Funds in France, and continued, "Hence we see the necessity of labour; and its dignity, if measured by utility, will be easily conceived when it is thus found that it is the *numbers* with their small sums, and not the *few* with their large ones, that make up the account required for the common benefit, which constitutes perhaps the greatest proof of mutual dependence. And yet to obtain property is not the greatest desideratum, but to augment it by labour and retain it by frugality. The property and wealth of every community are the storehouse whence all derive their livelihood, and must be fed. Five great sections are continually drawing upon it,—three who produce and consume, two who consume without producing, and which may be divided as follows:—1. The working man. 2. His employer. 3. The capitalist living without employment. 4. They who can labour but who will not, who are numerous, and whose cost of maintenance is far from being the least. 5. They who would labour but cannot. It is the fourth and fifth class that give rise to those great social questions which are constantly agitated respecting taxation, or relative combinations of capital and labour. Strange as it may appear, the great cause of the present discontent

arises from the altered state of the employer and employed from what it formerly was. The rights were no longer all on the side of the master, and the duties all on the side of the servant. They were exactly balanced in the order of nature, which is immutable; and the sense now entertained of them through education is different from that which was formerly entertained. It is to this altered state that all must make up their minds. As to the destiny of the labourer of every grade, it was in his own hands. Property and comfort, however small, were within every man's reach; and, though few could ever attain to opulence, the road was open to all, and it depended very much on the individual exertions of each how his portion of property and comfort would be ultimately allotted to him. The greatest feature of the present turn in the labouring man's condition was the comparative alleviation of his toil wrought through machinery, and his exemption from many of the greatest hardships to which he was formerly subjected."

## PROVINCIAL NEWS.

*Bingham (Notts).*—The schools recently erected in this place by the Wesleyans were opened last week. They comprise school-rooms, 40 feet by 23 feet; class-rooms, 22 feet by 20 feet. They are built in a very substantial manner, in the Italian style, treated freely. The end windows are combined under a tastefully executed head, containing the inscription and surmounted by a bell-turret. There is a neat stone porch leading into the schools. The master's house is unusually large and commodious. The total cost will be about 700l. Messrs. Clifton and Doneaster, of Bingham, are the builders, and Mr. R. C. Sutton, of Nottingham, is the architect.

*Emeth (Wessex).*—The *Cambridge Chronicle* speaks of various indications of external improvement within a short period in this once aristocratic but for many years much neglected parish. To the principal inhabitants much credit is due for many improvements of a parochial and sanitary kind during the last few years; but the improvements to which it chiefly refers began about two years ago, when Mr. Charles Metcalfe, of Wisbech, erected a mansion on the site of the old rectory-ground, to which he has given the name of Inglethorpe Hall. The architect of this mansion was Mr. Dobson, of Newcastle, and the builder Mr. L. Tomson, of Wisbech. In July last the corner-stone of a school-building was laid by the donor of the site, Mr. T. N. Neale, of Emeth Hungate. The building is now approaching completion. The architect is Mr. W. Smith, of London, who prepared the plans for the restoration of Wisbech and Walsoken Churches, and also for the new school at the latter place. In April last, the Ecclesiastical Commissioners began the erection of a new vicarage-house, a few yards behind the site of the old rectory. The architect of this building is Mr. E. Christian, and the contractor Mr. J. Stimpson, of Lynn. The house stands near to the church. The old parish church needs some consideration.

*Nelley.*—The hundreds of masons employed at the Victoria Military Hospital at Nelley have resumed work; they were lately unemployed for about a week on account of the frost. The officers' quarters and the separate barracks have been commenced. The chapel is progressing towards completion, and the scaffolding of the north wing has been taken down, so that the ornamental masonry of that portion of the building can now be seen.

## STAINED GLASS.

*Church of Mottram-in-Longdendale (Cheshire).* Messrs. M. & A. O'Connor, of London, have just finished a stained-glass window, which has been placed in the parish church of Mottram, to the memory of Captain George Kershaw Sidebottom, late of Harewood Lodge, Mottram. The window is in three compartments, the principal figure in the centre division being a representation of our Saviour rising from the tomb, with the watch asleep on the ground. On the left-hand division there is a group, with Christ blessing little children. The right-hand compartment is a representation of Peter baptizing Cornelius. Below these are three smaller subjects, showing episodes in our Saviour's life: on the left, Jesus is walking on the waters; in the centre part, he is asleep in the vessel, and his disciples waking him with fear; in the remaining division, Jesus is rebuking the waves, commanding them to be still.

*Behington Church.*—A window has been put up by Messrs. Harrington, in Behington parish

\* To be continued.

church, to the memory of the late John Deane Case, J.P., and of Mrs. Case, by their son, Mr. J. B. Case, a magistrate for Cheshire. The subjects are, "The Raising of Lazarus," and "The History of the good Samaritan."

**Heaton Norris Chapel (Stockport).**—Some glass paintings have lately been fixed in Heaton Chapel. They form an altarpiece, of which the central and largest opening exhibits a representation of the incredulity of St. Thomas, to whom the church is dedicated. The principal figure in the group is of course our Saviour, who is represented in the act of placing the hand of St. Thomas on his wounded side. There are two other openings, one on each side. The one to the left contains "The Baptism of our Lord;" the corresponding opening contains a representation of "The Last Supper." There are two windows of considerable dimensions filled with armorial bearings. The windows are by Messrs. Edmundson, of Manchester.

**St. John's Church, Leicester.**—A window has just been placed in this church, to the memory of the late Mr. Thomas Miller. The window is the work of Mr. Wailes, of Newcastle. The subjects of the design are "The Betrayal of our Lord by Judas," and "Pilate bringing forth the Saviour to the Multitude," with a crown of thorns and purple robe. Under each of these groups is the type of each. The type of the first is, Joseph's brethren selling him to the Ismaelites; and of the second, a person leading a lamb to the High Priest, who stands ready to receive it. At the apex of the window is an angel with scroll. It is intended that the five windows of the apse shall be a continuous series on the last sufferings and acts of our Lord; and the three centre ones, which are already in, take their place in this projected series.

CHURCH-BUILDING NEWS.

**Potou (Lincolnshire).**—The church of this parish has been re-opened, after undergoing considerable repairs, both to the interior and exterior. The church is an ancient structure of Norman and Early English architecture. The renovation is of a simple character. The work has been conducted by Messrs. Kirk & Parry, of Stamford, at the cost of about 700*l*.

**Acaster.**—The parish church, St. Martin's, has been repaired and altered. The cost of reseating and repairing, according to the *Lincolnshire Chronicle*, has been about 260*l*. The architect employed was Mr. Charles Kirk, of Stamford.

**Iwerne Minster.**—A new church at East Orchard, in this parish, has been consecrated. The edifice has been erected entirely through the exertions of the Rev. Prebendary Huxtable, and is the sixth that has been erected in consequence of his efforts. It is a simple structure in the first Pointed style of English architecture, and consists of a nave, 42 feet by 21 feet 6 inches; a chancel, 16 feet by 12 feet 6 inches; a south porch, and a vestry, on north side of chancel. The nave is lighted by five acutely-pointed windows, with Early cusping on north side; four of the same description on south side; a triplet with cusped heads at east end of chancel, and a quintuplet of acutely-pointed lancet windows at the west end. The roofs of nave and chancel are framed with braced principals, and are open to the rafters. There is a bell-turret at the west end, surmounted by an ornamented wrought-iron cross. All the fittings are of the simplest character of stained deal. The site and the sum of 100*l*. were given by Sir R. P. Glyn, bart.

**Belper (Derbyshire).**—The cemetery here has just been completed. The buildings consist of two chapels, 38 feet by 22 feet, with robing-rooms and cloisters, connected by a central archway, which is of sufficient size to admit a hearse, and is surmounted by a tower and spire, 100 feet high. The frontage exceeds 100 feet. There is a five-light window in each gable, with tracery heads of varied design. The roofs are open timbered, and covered with slating of two colours, in patterns. Four kinds of stone have been used in the exterior, with good effect. There is a residence for the sexton, with a registrar's office. These, with a detached horse-house, boundary fences, and wrought-iron ornamental entrance-gates, complete the buildings, which have been erected at a cost something under 3,000*l*. The style is Late Decorated. The architect was Mr. E. Holmes; the builder, Mr. William Freeman, of Belper.

**Standish.**—The old parish church of Standish has recently been renovated. The old galleries and pews have been removed, and the edifice cleaned and repaired. The long-backed pews have been removed, and replaced by benches. The chancel has been extended as far as the turrets,

The organ is now placed in the north aisle, beside the chancel, and near it are the stalls for the choristers and the officiating priests. The lectern stands in front of the chancel, and the carved pulpit has been restored, fixed on a pedestal, and placed on the north side of the chancel, in front of the organ. The removal of the west gallery discloses an old arch, formerly hidden, and opens a view of the full length of the edifice. The walls have been cleaned, and all the plaster which disfigured them removed, so that the cut pillars and arches are shown.

**Higher Bebbington.**—Christ Church, the foundation-stone of which was laid on Lammas-day, 1857, was consecrated on Saturday last, by the Lord Bishop of the diocese. The edifice is in the Early English style, and consists of a nave, north and south aisles, chancel, organ, north porch, and sacristy. The total length of the nave is 84 feet 7 inches, and of the chancel 28 feet,—in all, 112 feet 7 inches. Width of nave, including aisles, 57 feet. There is a lofty clerestory to the nave, with seven three-light windows to each side. The roofs are of open timber framing, covered with boarding beneath the slates, which are stained and varnished. The nave is separated from the aisle, each side, by an arcade of six bays. The west window has six lights and is of great size, and the east or chancel window, the gift of Mr. J. Spence, of Rock Ferry, is of stained glass, by Edmundson & Co., of Manchester. The stained windows of the aisles are by an artist of Bristol. The height of nave from floor to top of the roof is 47 feet, and that of the chancel 36 feet. All the stone, both externally and internally, is from the Stourton quarries. It is intended to add a tower and spire at a future period. The cost of the church, exclusive of the stone, was nearly 3,000*l*. Amongst the features of the church are the absence of benches in the aisles, and of plaster and paint, all the walls of the interior being of rubbed stone, and the woodwork varnished. The church will at present accommodate 500 persons, but when pews are placed in the aisles there will be accommodation for about 700. Mr. Walter Scott, of Birkenhead, was the architect. The builder was Mr. James Routledge, of Tranmere.

THE DRINKING-FOUNTAIN MOVEMENT.

A new fountain has recently been erected at the Elephant and Castle, the gift, as recorded by an inscription, of one of the inhabitants of the parish. The structure is about 12 feet in height, and occupies a clear space of about 10 square feet, in the centre of the various junction roads leading to this great centre of traffic in South London; at each corner a large ornamental lamp has been placed. The water gushes from a marble couch, placed on a slab of red polished granite, a buttress of which projects on a level with the capitals of the two front columns. On the opposite side or back there is a small reservoir cut into the stone between two columns, for the benefit of horses or other animals. The structure is coped in the form of a flattened spire, with a projecting cornice, surmounted with a bell-shaped ornamental vase.—Mr. Bryson, town surveyor of Newcastle, according to the *Township Observer*, has presented a report to the Gateshead Improvement Committee, in which he says of the Newcastle fountains,—“Some additional public drinking-fountains have been erected during the last year, at the Leazes, Earl Grey's Monument, Neville-street, and the Parade-ground; the first two of which are supplied with spring water, the others from the Whittle Dean. The expenses of the three latter fountains are to be defrayed by Messrs. Dunn & Co., of this town. A well also has been sunk, and a pump erected, at Albert-street, Shieldfield. Drinking cups for the accommodation of the public have been fixed to all the public wells, pumps, and fountains throughout the borough. Another offer of a fountain has been made by a lady, to be erected at the Baths, Gallowgate. The erection will shortly be proceeded with.” Another fountain is in progress in St. Nicholas square, in front of the new Town-hall, on which a large and brilliant lamp is to be fixed by the Gas Company.”—At the quarterly meeting of the Bath Licensed Victuallers' Association held last week at Amery's Hotel, the tender of Mr. Treasure, marble mason, was accepted for the public drinking-fountain which it is proposed to erect in Fountain-buildings jointly by the Licensed Victuallers' Association and the Society for the Prevention of Cruelty to Animals. The fountain will be completed by the 1st of March, from the designs of Mr. C. J. Phipps, architect. It will afford accommodation

for cattle and dogs as well as for the public. The design is Early Gothic, built of Bath stone, with basins, pillar, &c., of marble; and Minton's tiles are used for inscriptions. The height is about 11 feet, surmounted by an ornamental wrought-iron finial.

THE MAUSOLEUM AT HALICARNASSUS.

In replying to Mr. Pullan's letter, which appeared in the last number of the *Builder*, with reference to my proposed restoration of the Mausoleum at Halicarnassus, I can only express my regret that he is unable to see what is so perfectly obvious to every one else.

Mr. Newton has no hesitation in recognizing both the 9-inch and the 6-inch stones, as roofing-stones.

The authorities at the British Museum are equally decided about the first, as they have brought it out of the court-yard and built it up with and upon the other roofing-stones in the corridor under the portico.

As far as my own eyes serve me, I can see both the "groove and the ridge" in the 9-inch stone. Though, as I admitted in my letter, the ridge is absent from the other, still its dimensions, the weathering, and the position of the clamps, besides other characteristics, make out a strong case in its favour. But its testimony is not needed. The existence of one roofing-stone, of a different dimension from those originally found, is sufficient to demonstrate that the pyramid was not straight-lined.

As far as I, individually, can judge of the facts of the case, even this corroboration was not wanted.

The words of Pliny, and the exigencies of the construction as disclosed by the excavations, seem to me to demand imperatively a curvilinear form of roof as the only possible solution of the problem, though it is probable that without the existence of these stones it might have been difficult to make this as clear to others as it is apparent to myself. Now that they are found, I cannot understand how any one should doubt it.

If, however, Mr. Pullan is determined not to see these facts and to overlook these difficulties, it is to be feared that the work which he is editing for Mr. Newton will be as little creditable to himself as to the trustees of the British Museum, under whose patronage and at whose expense it is about to be published. JAMES FERGUSON.

THAMES MUD.

It is no new subject—the Thames mud. We are going ahead in the right direction, in making the sewers independent of the Thames. Cannot we add to this step that most desirable project, the removal of the accumulation of mud-hanks which abound between the bridges. I believe that the value of the mud would more than pay for the trouble, and carriage down the river. The main cost would be loading and unloading barges; the tide would do the rest. The mud, accumulated at different points below London, would prove a cheap and valuable manure; and, if allowed time to drain, its weight would be much reduced for carting. It is not right that this article should be allowed to remain a tyrant nuisance instead of a useful servant to the public.

PROGRESS.

THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

PERHAPS you will allow me to make a few suggestions which I think may be of benefit to the subscribers. Your correspondent, "A Photographer and a Local Honorary Secretary to the Association," makes some very sensible remarks, but I do not quite concur in all that he says. I admit that Mr. Bedford's pictures in the exhibition last year were second to none; but, nevertheless, I would advise that other photographers should be allowed to compete in the matters both of price and excellence.

I think that it might be arranged something in this way:—The committee should invite a number of first-rate photographers to send untouched prints from untouched negatives, as specimens, and also a scale of prices at which they would be willing to take various-sized negatives, equal in execution to the specimens sent, which specimens and prices should be subjected to the criticism of a sub-committee of the subscribers, having, as your correspondent suggests, a "knowledge of practical photography," who would recommend to the committee the acceptance of certain tenders.

With regard to printing the positives, I think

that the Association ought to have it as much as possible in their own hands, for every photographer knows that a good negative operator does not necessarily possess taste and manipulative skill in the printing department; therefore I would strongly recommend the committee to get specimens and prices, in the same way as for negatives, from eminent photographic printers, who should guarantee that every print would be toned with *alkaline chloride of gold* only, and *thoroughly washed*, so as to ensure against fading. Or the committee might, I should think, make some arrangement to get their negatives printed at the Royal Engineer establishment at Woolwich or Southampton at a very low rate. The beauty of the pictures printed by the non-commissioned officers of this corps, and their economy in execution, being evident to every one from the specimens at South Kensington and the list of prices recently issued.

By some such arrangements as these the committee would get perfect negatives from various buildings of their own selection (in this I do not agree with your correspondent, as I think that the diverse tastes of subscribers should in a certain measure be consulted, some preferring Classic, others Gothic subjects, &c.); the sizes of pictures and points of view being also under the direction of the committee. These considerations are very important, as there is many an excellent photographer who has no architectural eye. In addition to these advantages the subscribers would get prints of equal tone and beauty, all the negatives being printed at the same establishment, and I think they would be universally pleased.

AN ARCHITECT, AMATEUR PHOTOGRAPHER,  
AND LOCAL HONORARY SECRETARY TO  
THE ASSOCIATION.

#### SPECULATIVE BUILDINGS.

SIR,—Pray send one of your staff to inspect the houses now in course of erection in, and adjoining the—road, Holloway, the heaps upon heaps of old broken bricks (used up in party walls, &c.), the vile scumpling building of these houses, will even astonish you, who have often tried to warn and protect the public against "run-up houses." For a seven-roomed house, for ninety years, at 57, ground-rent, the price is 2257. You see how heavy a purchase money is demanded for houses to appearance not likely to stand upright (when we see them shored up while still in carcass) for five years unless underpinned. It seems to me such a fraud should not be allowed to exist. Give a thought to the poor widow, who, probably, invests her little all in one of these rotten erections, the almost unceasing outlay for repairs, and the constant complaints of tenants. Again, how unjust it is to the fair-dealing builder who employs skilled workmen and uses new sound materials.

Once more let me urge upon you to expose speculative building frauds: I am sure, you will confer a benefit in many ways.

I have noticed also at Dalston, near Hackney, a large quantity of old building materials.

#### "OLD MATERIALS."

P.S. I shall have my eye on other parts of the suburbs, wherever I see old rotten materials and scumpling unskilled labour, and immediately call your attention to the locality.

#### SAFETY IN SKATING.

HAVING for many years heard of the frequent disasters occurring at this period of the year in the various waters in the parks of your city (and some of very recent date), while enjoying the healthful recreation of skating, I had resolved, from year to year, and as often neglected, suggesting a plan by which I am of opinion nine-tenths of the lives and limbs so sacrificed might have been saved. Along each side of the edge of the water, and opposite each other, I would drive piles, say 6 inches square, flush with the surface of the ground, at about 30 inches apart (or at greater distances by substituting a waling-piece), with a hole bored through each. Between these piles and the cross in shortest way of the water, I would stretch tight with screws a wire rope of copper or galvanized iron, and fill the same in between with strong wire netting, threading the rope through the two edges of the netting (before stretching), to support the same. You would then have a perfect platform below the ice, and a person breaking in could take no harm.

I am not certain as to whether it would not be better to let the netting freeze in with the under surface of the ice, as a means of strengthening

the same. The netting and rope could be easily fixed and removed at the beginning and end of the season.

WILLIAM CROZIER, C.E.,  
County Surveyor, Durlham.

#### ON THE RECLAMATION OF THE GODWIN SANDS.

THE recent lamentable destruction of the *Blerrie Castle*, the countless spires thrashed to atoms on the Godwin Sands, suggest to the pondering mind whether something might not be done. For generations, the waves lashed the Eddystone and the Bellrock; but now, colossal watch-towers shed their beacon-rays afar. See what the Dutch have done to exclude the wild waters of the German Ocean. If it be true, as tradition seems to warrant, that this was once dry land, could not British skill and enterprise rescue it from the watery waste again. I conceive that it might and should be done; and not only this, but that all shoals and sunken rocks, so far as possible, should be reclaimed, or at least buoyed off or lighted, so as to diminish, so far as may be, the perils of the deep.

HENRY McCORMAC, M.D.

#### THE BELL CASE.

MRS. DENISON.  
THIS notable case came before Mr. Lush, Q.C., as assessor of damages, and a special jury, in the Secondaries' Court, on the 30th ult., when Mr. Bovill, Q.C., addressed the court on the part of Mr. Mears, stating the case, and commenting with some severity on Mr. Denison's conduct in the matter.

The charge brought by the defendant against Mr. Mears, he said, was not merely that he made an insufficient casting of the great Westminster bell, but that he knew it was insufficient, and yet allowed it to be placed in the tower at Westminster; that there were holes in the casting, which made the bell crack; that he had fraudulently endeavoured to conceal these holes, by stopping them up with a mineral substance, and then washed the bell over with colouring matter, the better to carry out the deception and to impose on Mr. Denison (the defendant) and Professor Taylor, with whom the approval of the bell lay. That was the nature of the libel published by the defendant in the *Times* newspaper. Mr. Denison had himself made great mistakes and these were probably the true causes which had led to the destruction of the bell. He had for the first time introduced a new proportion of metals, making it 22 of copper to 7 of tin. The effect was to make the metal more brittle. It could, by the addition of tin to it, be made nearly as brittle as glass. Now, Mr. Denison made it part of the contract that the old metal, which had the proportion of 22 parts of copper to 7 of tin, should be taken for the new bell, and that any additional metal which might be required should bear the same proportions. This was contrary to Mr. Mears's advice, who knew that the effect would be to make the metal more brittle than that used in other bells, but Mr. Denison insisted on his theory being carried out. Mr. Denison, notwithstanding repeated warnings, resolved that a mass of solid iron, 7½ cwt. in weight, should be used, not as a clapper, but as a hammer, and be adjusted this so as to have a fall of 13 inches on the sound-bow of the bell. Now, he asked the jury to mark the force with which this hammer would fall. In the manner in which it was adjusted it was equal to a force of 1,000 lbs. weight upon the bell. No such weight had ever before been applied to any bell, but this was the result of Mr. Denison's theoretical knowledge. Though warned by Mr. Mears and by the clerk of the works, Mr. Denison, conscious of his own experimental knowledge, and full of the theories he had propounded in books and otherwise, determined to use this enormous hammer. It was used as he had described: 7½ cwt. of iron, turned by the clerk, and accelerated by a fall of 13 inches, was directed against the bell, and cracked it.

Mr. Knowles, Q.C., for the defendant, asked his lordship whether he did not think that the time had come when this case might be brought to a close and an inquiry be saved, which, if begun, must last for some days? He would not enlarge Mr. Denison's conduct; but he had withdrawn the charges. Money, he was sure, was not Mr. Mears's object. His only object was to stand well with the world, and that object he had fully attained. Ultimately the following terms were agreed to:—

The jury to be discharged from giving a verdict. The defendant retracts all the charges and imputations made upon the plaintiff; the defendant to

pay the plaintiff all the costs, charges, and expenses which he has incurred or been put to in consequence of the libel, including legal expenses as between attorney and client, from the time of the publication of the libel, and the expenses of engineers, scientific witnesses, and others in preparing for the trial, though not usually allowed in taxation, including expenses of models and plans, and the journey of two engineers to Oxford. In case of dispute in carrying out these terms the whole to be decided by Mr. Lush upon the principle of full indemnity to the plaintiff. On the performance of these terms all further proceedings to be stayed.

#### THE DRAINAGE OF BRIGHTON.

SIR,—As you have honoured me with your notice in a leading article of the *Builder* of the 24th instant, relating to the Brighton sewerage, I shall be obliged if you will permit me to inform your readers that there is no "mistake" in my estimate; that the nature of the soil and the inclination of the ground on which Brighton stands afford almost unequalled facilities for cheap and efficient drainage; and that I have been fortunate enough to carry out other similar undertakings on a like scale of expense.

T. HAWKSELEY.

#### LORD PALMERSTON ON LABOURERS' COTTAGES.

LORD PALMERSTON, at Romney "Labourers' Encouragement Association," in the course of the proceedings, said:—

Mr. Dutton and myself have built some very good double cottages for the labourers on our own respective properties, but I have heard it said by many that it is all very well for us to do that, but that these buildings are altogether too expensive, that they do not pay, and that other people could not afford to erect them. Now, in the first place, I hold that observation to be founded on a fundamental error. When I build a cottage for a labourer on a farm I do not expect it to pay in money. When I build a good farm-house for a tenant I do not expect rent for that house separate from the farm. Well, the cottage for the labourer ought to be looked upon as a part of the appurtenances of a farm just as much as the buildings for cattle, or any of those other erections essential to the cultivation of the land. How can the land be well cultivated if the labourers are not well housed? If they are obliged to travel three or four miles in order to get at their work, and the same distance home again? It is manifest that they must be not only exhausted physically, but that their time must be wasted in walking to and from their work, and that the farmer does not get from them his money's worth for the wages he pays. Therefore I consider that in providing a farm with accommodation for the number of labourers to be employed on it you are giving facilities to the tenant to cultivate his farm, and increasing the value of the farm which you let to a good tenant. If you get a shilling a-week from the labourer, it is more to impress upon his mind that he is earning the accommodation you give him rather than from any idea that it is to repay the expense of the erection. Then, as to the expense of these cottages. Now, the cottages which Mr. Dutton and myself have built contain really no more accommodation than a decent family ought to have. They have simply one room to live in, a back kitchen, and, what is of the utmost importance, three sleeping-rooms. No cottage ought to have without three sleeping-places,—one for the man and his wife, another for the girls, and another for the boys. It is not necessary to pull down old cottages to build new ones. A great deal can be done at a moderate expense in improving old ones. All you require is to put a little porch in front of the door, which costs little; to give them a boarded floor instead of bricks; to make the walls air-tight and the roof water-tight; to give three sleeping-rooms, and to put up a sort of shelving at the back, with a little place below for a wood-house. The effect of improving these dwellings is almost marvellous. In the first place, you know that the comfort of a man's house depends upon the tidiness of his wife and the mode in which she tries to make him comfortable; but there is a temper of the human mind which is denominated recklessness. When a thing seems impossible, it is given up in despair. When a cottage is in such a runshackle state that it is impossible for the wife to keep it clean, she becomes a sattern, everything goes to ruin, the man is disgusted, and flies to the beer-shop. If, on the con-

rary, the wife feels that she can, by a little exertion, make the cottage decent and respectable, she does so.

**Books Received.**

*Historical Sketch of the Church or Master of Lyminge.* By ROBERT C. JENKINS, M.A. London: Simpkin & Marshall. 1859.

THIS account of the ancient church of St. Mary and St. Eadbury, in Lyminge, though including less architectural description of the structure than we desire, is a superior guide-book. We wish every parish church in the country had a similarly good historian. The author says,—

"There can be no doubt that Lyminge formed one of the Roman stations between Durovernum (Canterbury), and the Portus Lemnis (Lyminge), the site of the ancient park at Lyminge being about halfway between them. The fact that this was an ancient residence of the Saxon kings, who uniformly (as at Reculver, Canterbury, &c.) Roman bricks and masses of a reddish concrete, identical with that found in the Roman Pharos at Dover, are built into and imbedded in the yellow Saxon mortar of the church, and in such of the walls of the monastery as have been hitherto uncovered, while fragments of the same pottery are dug up frequently on the same site. The Court Lodge-green, adjoining the churchyard, is covered with irregular mounds, either concealing Roman remains, or marking the spots from which the Roman fragments in the church were taken."

**VARIORUM.**

An excellent suggestion is made in a tract, titled "Barrack Canteens, as they were; as they are; and as they ought to be: by Common Sense." It is proposed to place the barrack canteens under a departmental system of management, the establishments to be let by public competition triennially, for the provision of articles of the best description, at current market prices, for behoof of the soldiers; the proceeds to form a fund to be called the Canteen Fund, at the disposal of the Secretary at War, in conjunction with the General Commanding-in-Chief, and to be expended in providing for the soldiers those amusements and recreations, within the barrack boundary, which are not strictly barrack requirements; such as lecture-rooms, theatres, gymnasiums, fencing-rooms, rifle-galleries, bowling-green, skittle-alleys, quoits, &c. It appears that the sum which would probably be realized from such a system of management, is no less than 80,000*l.* per annum. This is well known from past experience as to privilege money, which it is thus proposed to reimpose, but with new objects in view, namely the recreation and general benefit of the soldier.—In a printed "Letter" to the Home Secretary, On the Supply of Gas in the Metropolis (King, Bolt-court, Fleet-street, publisher), Mr. T. G. Barlow, C.E., proposes the formation of one great amalgamated gas company, under certain regulations and restrictions, by Act of Parliament, as to maximum price, and minimum quality of gas, &c., for the supply of the metropolis, exclusive of the suburban companies, who are already under the provisions of the Gas Works Clauses Act, 1847. This project Mr. Barlow works as a solution of difficulties.—The Sixth Annual Report of the Boys' Refuge, Commercial-street, Whitechapel, shows that this useful institution is in a prosperous condition. Of 100 boys in the Refuge, 27 are learning to be carpenters, 28 shoemakers, 27 tailors, 11 wood-choppers, &c. They have an instrumental band, and are taught music and military drill. Good conduct and industrial stripes on the jacket form an object of ambition to the young candidates, and are highly prized when attained.

**Miscellaneous.**

**RENDING OF IRON GIRDERS FROM CONTRACTION BY FROST.**—The huge iron hoops or girders surrounding a large tank, containing gas, in the yard of the Hibernian Gas Works, at Dublin, burst with a loud explosion, owing to the extreme expansion upon them, produced by the continuous severity of the late frost. The thousands of gallons of tar thus liberated flooded the entire yard, extended to where the retort furnaces were at work, immediately ignited, and the gas was set on fire in all the receivers before the fire was got completely under.

\* Since writing the above, my conjectures have been verified by the discovery, at a few feet from the south wall of the church, of about 20 feet of the foundations of a Roman wall, built almost wholly of brick and concrete.

**STAIR-RODS AND SOCKETS.**—A patent, dated 10th June, 1859, has been taken out by Messrs. G. J. Farmer, Birmingham, and G. P. Hardy, Brompton, for "stair-rods and eyes or sockets, also applicable for other purposes." This invention relates to improvements and various different formations of these articles. The several improvements are also applicable for hanging pictures and straining table-covers.

**COMPOSITION FOR SPLITTING ROCK.**—Mr. Detrets, of Marseilles, proposes to employ as a composition for splitting rock a compound of nitrate of soda, spent tan, and powdered sulphur, in the proportion of 52½ parts of the soda, 27½ parts of the tan, and 20 parts of the sulphur. The nitrate of soda is dissolved in a sufficient quantity of water, over a fire, and boiled; the tan is then mixed with the solution, until every portion is impregnated with it, and then the sulphur in the same manner. The whole is then dried, inclosed in bags, and is ready for immediate use.

**THREE-BRIDGES, SUSSEX.—FALL OF A BRIDGE.**—Consequent on the Horsham junction running into Three-Bridges, it is imperatively necessary to double the width of the bridge contiguous to the Fox Inn. The new division was so far completed as to warrant the removal of the centres on the 24th, when, unfortunately, towards the evening, the span over the road came down with a tremendous crash. Fortunately, although several pedestrians and vehicles were passing and repassing, they escaped by a few seconds.

**STEAM HAMMER FOR WOOLWICH ARSENAL.**—A steam hammer, to be used in forging the Armstrong gun, is in course of construction at the works of Messrs. R. Morrison & Co., of Newcastle-on-Tyne. The hammer-bar and face weigh four tons, and the cylinder in which this bar works, with its glands, within a few cwt. of six tons. The cylinder is supported on two frames, each of nine tons, and each of these again rests on a hot plate of the same weight. Through these hot plates projects the anvil, which is a mass of wrought iron, faced with steel, and embedded in an immense block of cast iron, weighing upwards of twenty-one tons. Morrison's hammer can be worked with great diversity of power. In regard to speed of working, also, it possesses capabilities which seem to adapt it to almost every variety of work, for it can either be made to descend like the heavy sledge, "with measured beat and slow," or to deliver from 200 to 300 strokes a minute.

**LEAD PIPE MACHINERY.**—The nature of this invention, by Mr. Robert Wilson, of Patricroft, near Manchester, consists in a combination of hydraulic machinery for forcing lead or other metal through dies in the form of rods, tubes, sheets, or of any other required form or section; also in an improved mode of constructing the metal container employed in such machinery. Another part of the invention consists in the application of a self-acting apparatus to hydraulic machinery, by means whereof the motive power ceases to increase the pressure beyond a given limit; also in applying to hydraulic machinery an apparatus commonly called a "cataract," by means whereof the sudden starting of such machinery is avoided. The *Engineer* of 30th December gives details of the invention, illustrated by engravings.

**BUILDING ACCIDENTS.**—At Worcester Corn Exchange the other day a piece of cornice fell, and severely injured two persons, one of whom has since died. A coroner's jury found a verdict of accidental death, attributing the fall to the recent state of the weather.—At the Deritend Brewery, in Alcester-street and Moseley-street, Birmingham, the company were adding to the brewery an extensive range of building for malting purposes, and the work, which was entrusted to Mr. Hardwick, builder, was nearly finished. In the interior were a number of arches. Fifteen workmen were employed by gas-light in various parts of the building, when the entire range of arches supporting the second floor suddenly fell in. The weight of the material which fell caused a portion of the first floor to yield to the pressure, and the interior of the building now presents the appearance of a complete wreck. Fortunately no lives were lost, although but few of the workmen escaped without some injury. The accident is attributed to the late frost, and the heavy rain which followed.—Three of the cast-iron columns which support a roadway fronting warehouses at St. Katherine's Dock have burst with a loud report. The columns have become partially filled with water, which entered at the top, and there being no outlet, the frost must have caused the explosion while the water was crystallizing into ice, which occupies more space than the water of which it is composed.

**ARTISTS' AND AMATEURS' SOCIETY.**—The meetings of this pleasant Association, at Willis's Rooms, St. James's, are fixed for Thursdays, February 2nd, March 1st, March 29th, and May 3rd. Some of our readers, wishing to have a few inexpensive and agreeable evenings, may be glad to know that H. Candell, esq., of the London and Westminster Bank, Stratford-place, Oxford-street, is the treasurer, and would give any information that might be wished.

**STONE-TRIMMING MACHINE.**—M. Bataille proposes to cut rough stones into the shape required by builders, by means of an apparatus like a great pair of sugar-nippers, fixed to a frame provided with a mechanism enabling the stones to be moved as the process requires. In its present condition this machine is not adapted to work hard stones, but it is possible it might be modified so as to accomplish this task.

**THE SEVERN BRIDGE OF THE WORCESTER AND HEREFORD RAILWAY.**—From its completion to the present day, some three or four months since, this bridge has been available only for coal and goods traffic, by reason of the Board of Trade inspector, Colonel Yolland, refusing to certify that it was in a condition to be used with safety for passenger trains. Mr. Liddell, the chief engineer of the line, has been engaged in some important engineering work abroad for the last twelve months, and at a distance to preclude them from obtaining his counsel and advice as to the course best to be taken in their dilemma. Thus situated, they have had recourse, says the *Worcester Herald*, to the services of Mr. Hawkshaw, civil engineer; and that gentleman, having minutely inspected the bridge, and examined into objections made to it by Colonel Yolland, has, as we understand, reported to the Board his opinion to be that these objections are too well founded. As respects the centre pier, Mr. Hawkshaw, we believe, condemns it altogether, and considers that there is no remedy for its defects and insecurity but its entire removal and re-construction; whilst, as to the ironwork of the arches, he says, increased strength and rigidity must be obtained by means of more struts and braces. The estimated cost of these alterations and re-construction of the pier is 3,000*l.* Whilst in progress, Mr. Hawkshaw has suggested to the Board a plan by which the arches may be supported by timber erections, so that the traffic will not be interrupted, and we believe the works will be commenced with very little delay. We are told, adds our authority, that the contractors for the bridge, Messrs. Brassey & Co., are regarded to be free from any responsibility for it, having strictly followed the engineer's plans, and executed the work throughout according to the stipulations and contracts upon which they undertook it. The tunnels, both at Malvern and Ledbury, are said to be now making satisfactory progress. Hitherto by the works at both places have been carried on by the company's own staff of artificers, but recently they have been let by contract to Mr. Knowles.

**THE STABLES AT THE LOUVRE.**—The *Sport* gives details of the arrangement of the new Imperial stables at the Louvre.—"The buildings have the form of an oblong square, divided into two courts, one called the Cour Caillecourt and the other the Cour Visconti. The two sides run parallel to the river. On the left of the Cour Caillecourt is the first stable, divided into fourteen stalls for saddle-horses. Adjoining is a second, which contains ten boxes and a place for washing. The architectural character and decoration correspond with that of the other parts of the building, and the ornamentation is in the Italian style. From the ceiling are suspended gas lamps, and cocks supply the quantity of water required for use. The gallery into which the visitor enters, after passing the washing-place, is about 300 feet long by 14 feet wide. It has a row of stalls on either side, and accommodates eighty-two horses. When lighted up with gas at night the effect is exceedingly striking. The ground-floor of the two other sides of the parallelogram is fitted up as coach-houses, harness-rooms, and other offices. In the coach-house on the east side, in the Cour Visconti, are twelve ordinary state carriages, and on the west side fifty of different kinds. Over these ground-floors are apartments for the grooms, postillions, and stable-boys, and other persons connected with the department. The new stables, which are to be built on the Quai d'Orsay, facing the Pont d'Alma, will be capable of receiving 300 horses, and will contain those of the Empress, the Prince Imperial, and the reserve of his Majesty. The stables of the Louvre, which were begun by M. Visconti, were completed by M. Lefuel."

**SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.**—The opening soirée for the year 1860 is to take place in the Suffolk-street Gallery, containing Mr. H. Wallis's collection of modern pictures, on Thursday evening, January 26th, on which occasion the Vocal Association will give a performance of madrigals and part-songs.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The sixth meeting of the present session was held on Wednesday night, the 28th ult., in the Royal Institution, Colquhoun-street, Mr. T. D. Barry presiding. After the transaction of some routine business, a paper was read by Mr. G. A. Andsley, on "Colour as applied to Ecclesiastical Decorations, and the History and Practice of that Art."

**LECTURE ARRANGEMENTS AT THE "SOUTH KENSINGTON" MUSEUM.**—Lectures on the Art Collection will be given by Mr. R. H. S. Smith, Mr. Robinson, and by Professor Knikel, on Tuesday evenings, up to the 21th of January. A course of lectures on subjects connected with the Architectural Museum, as arranged by the committee, will be given on alternate Wednesday evenings, up to the 4th of April. These lectures will be delivered by Sir Walter James, Mr. G. Godwin, Mr. W. White, Mr. E. B. Denison, Mr. John Bell, and Mr. J. H. S. Smith. Dr. Lankester will also continue his lectures on Food. A course of lectures is also in preparation on the Science Examinations. These will be delivered by the examiners appointed by the Committee of Council on Education.

**REMEDY FOR THE IRREGULARITIES IN THE FLAME OF GAS STVES.**—Place a piece of silk over the end of the pipe, and screw the burner over it. The silk will last a long time, can be easily replaced, and answers the same purpose as the regulating burners so much in use.—*Bristol Mirror.*

**WINDMORHILL SCHOOLS.**—These schools are at length completed. The exterior is faced with red brick, with Bath-stone dressings to the windows, doors, &c. There is a master's house adjoining the schools and facing the road, with the usual accommodation. The roofs are covered with slates, and show open timbers stained, in the interior. There are three school rooms (the style of which is Early Gothic), for boys, girls, and infants respectively, with a class-room to each; also, entrance lobbies for the reception of hats, cloaks, &c., having lavatories. The boys' and girls' schools are separated by a sliding partition, which can be thrown open when required for lectures, &c. The boundary-wall is built of brick, with stone coping and ornamental iron railing; and the part where the gates are situated is circular. The whole has been erected from the designs and under the superintendance of Mr. C. H. Edwards, of London, by Messrs. Peard & Co., of Islington.

**STREET DECORATION.**—In some of the London districts this season, an attempt has been made to exhibit the effigy of "Father Christmas," accompanied by music and lights in the streets. It must be confessed that the arrangements were not managed with much taste. A colossal figure of snowy whiteness, with flowing beard, crowned with ivy and evergreens, was mounted on a car. In front of this effigy was a table, on which were spread a huge piece of pasteboard beef, plum-puddings, and bottles formed of the same materials: a naphtha lamp, such as those used by the costermongers, illuminated the upper part of the figure. Another shone brightly on the table. The whole was drawn by a donkey, surrounded by a noisy crowd, drums beating, and other loud music. Notwithstanding the artistic imperfections of this attempt, we could not but think, with a little more taste, a picturesque affair might be made of a gaudy and artificially devised figure of Christmas, accompanied by pageants, maskers, and better minstrelsy. Such a pageant in the evening time at Christmas, if properly managed, would well repay those who might undertake to carry it out. The people must have amusement, and it should be refined as far as practicable.

**THE ART LIBRARY AT BROMPTON.**—Sir: Doubtless you are aware of the removal of the Art Library into one of the rooms underneath the Turner Collection. The accommodation, both with regard to time and place, is far worse than it has ever been before; and it shows a want of thoughtfulness on the part of the managers, in not studying the convenience of the visitors to the library a little more. I need not say what a boon such a library is to the art student. But what is most extraordinary is, that this library is closed just at the time when the student is at liberty, viz., from four to seven p.m., on account of the entrance to the said library being right through the Museum. Surely this might be remedied.

A STUDENT.

**SOUTH KENSINGTON MUSEUM.**—Christmas week. The visitors on the free days were 17,415; free evenings, 9,332; total, 26,747; from the opening of the Museum, 1,190,915.

**AN EPISCOPALIAN CHURCH FOR LEITH.**—The late Mr. W. Moodie, wine merchant, Leith, left 4,000*l.* towards the erection of an Episcopalian church in Leith; and two members of the Leith congregation have placed a like sum at the disposal of the managers for the erection of the church and parsonage.

**A THREE-ACRE BUILDING.**—A building is in course of erection in Peoria, Illinois, which, when completed, will cover three acres of land, under one roof. It is intended for the manufacture of pottery ware.

**THE SUBMARINE CABLE BETWEEN LIVERPOOL AND BIRKENHEAD.**—The submarine cable has been laid between the south landing-stage and Wood-side slip. The operation was successfully performed under the superintendance of Mr. J. S. Gibbons, electrician of the Mersey Docks and Harbour board.

**PROPOSED MEMORIAL AT SOUTHAMPTON TO DR. ISAAC WATTS.**—The sub-committee, formed to promote the erection of a monument to Dr. I. Watts, in his native town, have provisionally approved of Mr. Lucas's design of a statue and pedestal, 18 feet 6 inches high, of Bilsow stone, at a cost of 450*l.* The subscriptions at present amount to 361*l.* The committee have also suggested that the statue be erected in the West Marlands-park.

**IMPROVEMENTS IN PARIS.**—Workmen have just terminated, in the neighbourhood of the Panorama lately built in the Champs-Élysées, the plantation of the trees and shrubs to complete the transformation into a garden, in the English style, of the left side, near the Palais de l'Industrie. The Panorama opposite the Cirque, which, with its dependencies, covers a surface of 1,750 square yards, is also terminated. The canvas round the interior, and on which artists are engaged in reproducing the principal episodes of the war in the Crimea, has a superficies of 1,680 yards.

**THE SCOTTISH ANTIQUARIAN MUSEUM.**—A *conversazione* of the Scottish Society of Antiquarians was held at Edinburgh for the purpose of inaugurating the National Antiquarian Museum in the building of the Royal Institution. Lord Neaves made a speech, in the course of which he noticed the addition made to the Egyptian antiquities by the valuable relics from Thebes, recently contributed by Mr. Rhind, and which were dug out under his personal superintendance during a residence of two winters in the country.

**OPENING OF THE HAMSTEAD JUNCTION RAILWAY.**—This new line, which will bring the healthy and picturesque districts of Hampstead Heath and Finchley within half-an-hour's ride or so of the City and the north and east end of London, is now open for passenger traffic. The line, which is six miles in length, commences by a junction with the North London Railway near the Camden-town station, and terminates by a junction with the New and Acton Railway at Willsons. The principal work on the line is a tunnel three-quarters of a mile in length, perfectly straight, which passes under a portion of Hampstead-heath. There are four stations, viz. Kentish-town, Hampstead-heath, Finchley-road, and Edgware. Twenty-three trains are announced to run to and from Fenchurch-street each way in the course of the day.

**THE ASTRONOMY OF THE ANCIENTS.**—Professor Mitchell, in his lectures on astronomy, stated that he had not long since met, in the city of St. Louis, Missouri, a man of great scientific attainments who, for forty years, had been engaged in Egypt deciphering the hieroglyphics of the ancients. This gentleman had stated to him that he had lately unravelled the inscriptions upon the coffin of a mummy, now in the British Museum, and that, by the aid of previous observation, he had discovered the key to all the astronomical knowledge of the Egyptians. The zodiac, with the exact position of the planets, was delineated on the coffin, and the date to which they pointed was the autumnal equinox in the year 1722 before Christ, or nearly 3,600 years ago. Professor Mitchell employed his assistants to ascertain the exact position of the heavenly bodies belonging to our solar system on the equinox of that year (1722 B.C.), and send him a correct diagram of them, without having communicated his object in doing so. In compliance with this the calculations were made; and, to his astonishment, on comparing the result with the statements of his scientific friend already referred to, it was found that, on the 7th of October, 1722, B.C., the moon and planets had occupied the exact positions in the heavens marked upon the coffin in the British Museum.

**THAMES TUNNEL.**—The Christmas visitors to the tunnel have been numerous. During the week ending 31st December, 23,339 passengers have passed through, and paid 97*l.* 4*s.* 11*d.* in tolls.

**ROYAL INSTITUTE OF BRITISH ARCHITECTS.**—At the next ordinary general meeting to be held on the 9th of January, the following papers will be read:—"Sixty Years Since, or Improvements in Building Materials and Construction during the present Century," by Mr. G. R. Burnett; and "On the Use of Zinc in Roofs, and the Causes of Failure therein," by Mr. James Edmeston. A special general meeting of members only will be held on Monday evening, January 16th, to elect a president in the place of the Earl de Grey, deceased. Also, to consider the reply from the Royal Academy of Arts, London, and to take such steps thereon as may appear necessary.

**THE MECHANICAL DRAUGHTSMEN.**—Of mere copyists there are hundreds too many. Although mechanical drawing may be an art by itself, and without an eminent draughtsman may be always sure of employment, the demand for mere drawing is limited, and really excellent draughtsmen have always been scarce. The gentlemanly nature of the employment is attractive, no doubt, and it is to this circumstance that we must attribute the brisk trade of the drawing-instrument and water-colour dealers. Perseverance will do much; but if mere adventurers in drawing, who would be draughtsmen because they would like an easy, irresponsible employment, were to examine a portfolio of really first-class drawings—such as those of the Great Eastern in Mr. Scott Russell's office,—they might conclude they were missing their vocation, and determine upon looking up something else in which the probabilities of success would be more in their favour. A young man with only sufficient capacity to become a third-rate draughtsman should have very moderate wishes, for he can never command either the respect or salary which would satisfy a gentleman. But if there is more in him than a faculty for mere ink marking and colour daubing, let him develop himself by all means. Above all, let him devote himself to the design of mechanism in its simplest forms. The rough machinery and appliances of railway drainage and building contractors often require more real skill and accurate knowledge of mechanical forces and proportion than would serve in designing machinery in which a surplus of material may cover up serious blunders. A passable knowledge of dynamics, a habit of estimating strains, weights, and quantities, a little tact in ascertaining the prices of work, together with moderate powers of observation and a fair judgment, would enable many a plodding draughtsman to become a successful engineer.—*The Engineer.*

TENDERS

For the erection of Epping Schools, Mr. Pritchett, architect.

Nicholls	2,448	0	0
Glasscock	3,975	0	0
Hall	3,726	0	0
Hack & Son	3,675	0	0
Lawrence	3,294	18	4
Cushing	3,349	19	0
Fritchard & Son	3,394	0	0
Scott	3,238	0	0
Wilson	3,298	0	0
Kirby	3,269	0	0
Dickinson	3,258	0	0
Wilson	3,219	0	0
Stevenson	3,191	0	0
Porter	3,178	0	0
Lawrence	3,147	0	0
Pickard & Co.	2,987	0	0
Honeywell	2,750	0	0

For rebuilding a steam flour-mill at Shad Thames, for Mr. Henry Carpenter, Messrs. Heaves & Butcher, architects. Quantities not supplied.

J. Hayward	2,391	0	0
Messrs. Mansfield	3,792	0	0
J. Macey	3,713	0	0
Messrs. Ashby & Hornor (accepted)	3,600	0	0

For the armoury, &c., to be built in the grounds of the Crystal Palace Company, Sydenham, for the London Rifle Brigade, Mr. J. Jellicher, architect. Quantities supplied.

H. George	2,146	0	0
H. Evans	1,375	0	0
Browne & Robinson	1,347	0	0
Jackson & Shaw	1,250	0	0
W. F. Searle	1,250	0	0
W. F. Stevenson	1,247	0	0
McLennan & Bird	1,237	0	0
J. Hollidge	1,200	0	0
Mann	1,191	0	0
M. Deavin	1,175	0	0
S. Fox	1,170	0	0
J. Porter	1,162	0	0
G. Hammond	1,159	0	0
T. Rudkin	1,056	0	0

# The Builder.

VOL. XVIII.—No. 884.

## The Repairs of the "Hanging Ruins" at Lindisfarne.

IF E counties of Northumberland and North Durham, so often pillaged, and ravaged by fire and sword, are, as may be supposed, pre-eminently rich in ruins. These are not confined to any particular period. There are the deserted and silent camps of the ancient Britons,—bleak places out on hill tops with sweeping command over miles of the neighbouring country; buried Roman cities; the great solemn Roman wall; border castles, Norman and Edwardian; peel towers; and religious edifices of various descriptions. In the foreground of

these, in point of consequence and interest, stand the remains of Lindisfarne Priory, to which attention has been recently drawn in our pages. This sombre and massive pile is built on a semi-island, which is twice a-day cut off from the shore by three miles of ocean-billows; and twice a day left in communication with it across three miles of sea-weed dotted sands. About six miles southwards are the Farne Islands, looking in the distance like so many black-backed monsters of the deep sunning themselves on the surface of the waters. These islands in old times were the scene of many a straightened page in hermit life; and in modern days are more luminous still with the memory of the bright example and heroic bravery of Grace Darling. On the margin of the shore, towering upon a huge basaltic rock, stands Bamborough Castle, the residence, in the days of the Saxon heptarchy, of the kings of Northumbria. The proximity and consequent military protection afforded by this regal fortress are supposed to have influenced Aidan, the first bishop of Lindisfarne, in his choice of this very secluded site; and the great facilities afforded by its frequently inaccessible position for those essentials of monastic life, retirement and contemplation, have also been assigned as reasons for the selection.

King Oswald, the founder of the see of Lindisfarne, is mentioned in terms of the warmest commendation by Venerable Bede. During his reign the land flourished in peace and plenty; and after his death his good influence was enjoyed by his subjects, for he was canonized, and many cures were effected at his tomb. The monks on the island pursued the same pious and actively benevolent career. Their renown speedily became so great, that Ceolwulfus, a successor of King Oswald, resigned his crown to become a monk of Lindisfarne. This prince bestowed so many kingly treasures upon the monastery, and endowed it with such large possessions, "that he seemed rather to resign his kingdom to the church than to his successor. He was doubtless a welcome man to that monastery," continues a quaint authority of King Charles's time, "for, for his sake, it was granted the monks to drink wine and ale, who before were only to drink milk and water." But the chief fame of Lindisfarne is based on the

memory of St. Cuthbert. For twelve years he bore the dignity of priorship, when, leaving all things in order, and a cathedral church, built of wood and thatched with weeds, in full operation, he retired to a hermitage he made for himself on Farne Island. In this seclusion, with no eye for a witness, he is said to have performed miracle after miracle. He touched the rocks, and water flowed forth (singularly enough, more profane mortals at this day find water on digging up a few spadefuls of earth); and the ground brought forth corn without tillage. His sanctity and austerity won him many admirers; and the holy Tuda sent him a stone coffin; and the Abbess of Tynemouth presented him with a linen winding-sheet. On his death-bed he conjured the monks not to leave his remains to the mercy of the fiery Danes; but, in case of invasion and consequent flight, to carry these with them. It was this singular helms that laid the foundation-stone of the immense fortune of the see of Durham. For when the faithful monks opened the saint's coffin, with the intention of placing his bones with their other relics, his body was found to be uncorrupted; and from that time ensued a series of miracles, that drew, for many centuries, kings, queens, nobles, and foreign potentates to his shrine; all of whom vied with each other in the magnificence of their offerings.

The Danish invasion, prophetically anticipated by the saint, soon came to pass; and the monks, having previously piled all their valuables into his coffin, took refuge in flight. The Danes landed: they found nothing but a deserted monastery and an empty church; which they set fire to and retired. The abounding wild fowl must have been left in possession of the island for many years; the seals must have basked on the limpet crusted rocks, watching the green waves tossing their white manes, for many seasons; and the cornuents have reared many generations of their ugly nestlings, with nothing, save the rumble and splashing fall of the breakers as they lashed the island at every tide, to disturb them; for a century and more elapsed before the community was re-established. The wanderings of the monks with their illustrious burden are minutely given by Bede. Suffice it for us to say, that they turned their steps first to Scotland, then attempted to cross to Ireland, but finally settled down at Chester-le-Street, about the time of King Alfred the Great.

After a long repose of 115 years, the saint intimated to the bishop (who was schoolmaster to Edward the Confessor) that he wished to return northwards. Peace having asserted her reign once more, the monks, in accordance with this desire, prepared to return to Lindisfarne. Arriving, after much fatigue and many adventures, at Durham, one of the brethren received a supernatural communication from the saint, to the effect that he decided to remain there. All intentions of continuing their route were immediately abandoned; and a temporary shrine was made of branches and boughs of trees to receive their burden during the erection of a building more in accordance with his miraculous consequence. This circumstance, taken in connection with the exact correspondence of their respective details, links the dates of Lindisfarne Priory and Durham Cathedral. When finally deposited in a marble sepulchre in the latter edifice, the shrine of St. Cuthbert was rendered the most gorgeous of any in the kingdom. His strong aversion to women was humoured to the full, and a particular line in the pavement of the cathedral indicated the distance they were to keep from his remains. At Lindisfarne this exclusion was carried still farther; and a separate church was built expressly for women. He was not so unrelentingly severe on every score, for Reginald, the monk of Durham, writing about the rebuilding of Lindisfarne at this period, tells us that the tired and thirsty country people, piously conveying the stone in wains and carts from Cheswick beach to the island, were regaled with the contents of a cup which was never once replenished by mortal hand!

From the varied items mentioned in the

annual account rolls the Lindisfarne monks were required to send to Durham, we may picture their simple daily life—how they went fishing and brewing, see how much they gave for a new boat, or how much they expended in repairing the malt-house; and we may even learn the number and names of the missals in their scanty library. For more architectural details, Britton, in his "Antiquities" &c., has given three excellent engravings of the priory. But for more recent representation of the island, showing church, priory, and castle, with the silvery light on the wide wet sands, we must look to Fenton's photographs. The fine old "hanging" Norman arch which spans the tower from angle to angle is faithfully rendered, as is that probable mystification of future enthusiastic, but unlearned tourists,—the late reparation.

It is highly commendable on the part of the Commissioners of Woods and Forests to recognize the right Posterity has to have sight of such interesting remains. If Time's corroding hand should be unstayed, Posterity would certainly lose so much of his inheritance, as the delight the contemplation of the works of such remote ages must ever afford; but because of the intangibility of the charm of these treasures, let especial care be taken. The feeling in favour of the strict preservation of every feature and every stone in these legacies from the past is so strong that directly a ruin is touched everybody makes it his business to keep his eye upon it. Attention has lately been called to the rough landing of Lanercost Priory, and the demolition of ancient towers at Alnwick, and it behoves us to plead in time for the more ancient and precious remains on Holy Island. What has already been done there may be briefly described thus:—The inner segmental arch of the decorated window at the east end,—

"That portion of the pile Rebuilt in a later style,"

which

"Showed where the spoiler's hand had been,"

has been rebuilt. It stands out in bare relief against the sky, without the symmetrical outline of an outer pointed arch, or mullions, or tracery, and appears to be an unlovely attempt to repeat the effect of the celebrated hanging ruins over the tower. The intention might have been to conceal tie-rods by which to bind the two side walls together; but the effect produced is certainly an appearance of thrusting the walls outwards. For the rest, composure has been laid on the tops of the walls to keep the rain and damp out, and stray stones, gathered together, and eked out by bran new ones of joiner-like smoothness of finish, have been rebuilt in their old places,—the new stones presenting a painful contrast to the old masonry fretted to honeycomb by "the sea-breeze keen," which—

"Had worn the pillar's carving quaint, And mould'rd in his niche the saint, And rounded with consuming power The jointed angles of each tower."

The fears of our correspondent, respecting the probable roofing in of the building, must be groundless. Many of the pillars are scarcely above ground; and quite one-half of the church would have to be rebuilt. If, therefore, it has taken, as we have been informed, seven or eight hundred pounds to make the slight repairs just enumerated, the cost of re-roofing would be some thousands, and no counterbalancing advantages would be obtained; for the church built contiguous to the priory for women (who, it will be remembered, were not permitted to approach St. Cuthbert's shrine), is still in existence, and in use, as the parish church for the residents on the island. As additional evidence of the unlikelihood of further accommodation being required by the scanty congregation, we may mention, that although this structure is in bad repair, the high pew-pews rotten, and strewn with straw, farmyard fashion, nothing could have been done for it, owing to the poverty of the population (composed for the most part of men who go down to the sea in ships), had not the rural dean received a grant from the Dean and Chapter. With the sum thus obtained, we

are happy to be able to add, it is about to be put in something like decent order.

From the reports in the local papers we glean that the day, on which the northern antiquaries made their pilgrimage to the island, was miserably wet; that the rain fell in torrents; that the only means of conveyance from the railway station to the ferry, a distance of five miles, was, by an undignified, though laughter-moving, jolting along a most unfrequented road, in an uncovered cart. Hence, we must not be considered uncharitable if we come to the conclusion, that the favourable criticisms passed upon the reparations by various members of the society, must have been due to the *couleur de rose* medium through which they made their investigations when seated before the blazing fire, and the substantial luncheon hospitably provided for them at the castle. The wet aspect of the ruins could hardly have conducted to the complimentary opinions formed of the repairs.

It is desirable, now, to leave the venerable pile alone, as far as additions go; to look occasionally to the cement on the tops of the walls, to see whether it is answering the purpose of keeping out the damp; to prevent the grass from growing over the bases of the ruined pillars and fragments of carved stone still strewn about; and to keep tourists from doing further damage,—either in the way of talking away specimens, or of erasing their initials. The last time we visited the island, we waded through the grass, fast fading into hay, to find the fragments of the Saxon cross with its basket-work and sculptured devices. They are invaluable as a link in our short chain of Saxon antiquities. But the long grass would not disclose its secret.

There are men upon the island, officers of the coast-guard and others, who take a proper pride in

"The castle and its battled walls,  
The ancient monastery's halls  
(A solemn huge and dark red pile  
Placed on the margin of the aisle),  
With massive arches broad and round  
That rose alternate row and row  
On ponderous columns short and low,  
Built ere the art was known  
By pointed aisle and shaggy stalk  
The arcades of an alley'd walk  
To emulate in stone."

But good will and commiserate means do not always go hand-in-hand. If the commissioners would set apart a small annual sum, and appoint a permanent custodian, the ruins would be spared any further devastation, and future generations would be secured one of the most interesting historie and archeological studies in our English land.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary meeting was held on Monday last, at the house in Conduit-street, Mr. George Godwin, V.P., in the chair.

Several contributions to the library were announced, and thanks voted to the donors. Mr. F. P. Cockerell, of Carlton-chambers, Regent-street, and Mr. E. B. Keeling, of 3, Upper-terrace, Kingston, were elected associates.

Mr. C. H. Hayward, referring to the recent question raised before the county justices at the Sture Hall, Norwich, mentioned elsewhere in our present number, as to whether an architect was entitled to regard as his own and retain in his possession the plans and drawings prepared at the request of his client (Mr. Welsby, Q.C., having decided, in a case referred to him touching the county surveyor, that he was not), asked whether it was the intention of the Royal Institute of British Architects to take any steps in the matter?

Mr. A. Asplund observed that in a case in which the question was raised by Sir Morton Peto, the eminent contractor, it was decided that the drawings belonged to the architect.

Professor Donaldson was of opinion that, as an architect could not recover commission on the cost of the building at law, but was obliged to charge for the drawings, the drawings prepared to carry out the design were the property of the client employing the architect.

Mr. Jennings was of opinion that where architects were employed to carry out the works they ought not to make a charge for the drawings.

Mr. Charles Barry said he was forced to dissent from the views held by Professor Donaldson and

Mr. Jennings, as he was of opinion that drawings were in all cases the property of the architect.

The Chairman said that, as two papers were to be read that evening, it might be inconvenient to prolong the discussion. The subject was undoubtedly of great importance as regarded the general body of architects and the public, and it was his intention to move that a committee be appointed to take the subject into consideration. He differed altogether from Professor Donaldson, maintaining that the drawings were simply the architect's tools and remained his property. An architect was paid for designing and superintending a building, not for making drawings.

Mr. Robert Kerr said he wished to call attention to the Manchester Academy of Fine Arts. Many years since an academy had been established in London, and subsequently in Dublin; but the requirements of art had increased to such a degree that similar institutions were needed at Liverpool, Birmingham, and Manchester. It was now proposed to establish an academy at Manchester in connection with the Manchester Royal Institution; and, as architecture was not to be excluded, as it had been at Liverpool and Birmingham, he ventured to hope that, if convenient, gentlemen would contribute drawings to the exhibitions whenever they should be held. He was sure that the academy would be conducted with spirit, and in a proper manner, and he hoped it would succeed.

The Chairman said the meeting was indebted to Mr. Kerr for having brought so interesting a subject under their notice, and he willingly supported his request.

Mr. G. R. Burnell then read a paper, entitled "Sixty Years since; or, Improvements in Building Materials and Construction during the present Century," which we have printed in full.

During the reading of the paper, Mr. Burnell took occasion to refer to the disaster which had happened to the *Royal Charter* in October last, in Moeffe Bay, and stated that he had arrived at the conclusion that the vessel broke in pieces because the iron used in her construction was not of the best material, and that she putted from her anchors because the cables were not made of the requisite metal. Having some years ago been brought into connection with the iron trade, and having had opportunities of examining the quality of iron used ten years ago, he was in a position to state that it was immensely superior to that in ordinary use at present. The question was one which materially affected the character of manufacturers; and, with regard to the safety of ships, it was of such paramount importance to the public, that he considered it to be the duty of some constituted authority to interfere actively in the matter.

At the suggestion of the Chairman, it was agreed that the next paper should be read, and that the discussion should be taken upon the two.

Mr. James Edmeston then read some notes on the use of zinc in roofs, and the cause of failure therein, the pith of which will be found on another page.

Mr. Asplund inquired of Mr. Edmeston whether it was true that many of the public buildings of Paris were covered with zinc. He understood that, at the New Palace of the Louvre, the Rue Rivoli, the Boulevard Sebastopol, and other places, it was extensively used.

Mr. Edmeston said that was so. His examination, however, had rather been directed to old than new buildings. Zinc was used in Paris in preference to any other material for the covering of roofs.

Mr. Burnell said that some twelve or fourteen years ago he had inquired into the subject in France, and found it was the practice to use zinc in preference to any other material for roofs, and it was quite possible that in the atmosphere of France it might be the best thing to use. He differed, however, from Mr. Edmeston with regard to the effect of the sea air upon the metal, as his experience went to show that sea air caused decomposition. With regard to the use of zinc for ships' bottoms, it seemed to him that a more dangerous material could not be used for that purpose, and he believed that ship-builders had given it up, except perhaps those whose only desire was to turn out cheap ships irrespective of the consequences. He thought that architects as a body of constructors ought to be careful before they consented to use zinc to a large extent. The great difficulty in the way of its more general use appeared to be in getting the metal pure, as it was generally found mixed with lead or iron. He had himself seen lead and zinc in a mine where the lodes crossed each other. In an atmosphere such as that of London, where a

great quantity of coal was used, the admixture of lead or iron generally acted upon the zinc as a decomposing agent. He was quite prepared to believe that zinc might answer at Paris or at Munich, but he scarcely thought it could be brought into general use in London. Mr. Edmeston had stated that the chemical action might take place when the metal came in contact with oak or chestnut timber, but he (Mr. Burnell) certainly never saw chestnut wood used, though he was aware that when zinc and oak came in contact decomposition took place. In London dripping eaves or gutters were not so usual as the box or trough gutter, and in forming the right angles of the latter in zinc, the zinc generally cracked, and decomposition ensued. He confessed that on the whole his own experience had not led him to look favourably on the general introduction of zinc into this country.

Mr. Morris called attention to a water-colour drawing of the interior of the Corn Exchange in Mark-lane, which had been designed by him twenty years ago. The corn factors had previously met in an open area, and, when the new Exchange was contemplated, they expressed a desire to be protected from the weather, and to assemble for the future in a building thoroughly well-ventilated, but with a means of escape for the dust blown away from the corn. In order to meet these requirements he suggested a perforated dome, which was found to give entire satisfaction. It was found necessary to make that dome of some light and at the same time permanent material. To insure that object, zinc of 18 ounces to the foot, with gutters of 8 lb. lead, were used, and the roof had remained ever since without alteration, and without repair. A portion of the building was subsequently destroyed by fire, but the dome (which was the work of the late firm of Locke and Nesham) remained intact to the present, and had not to his knowledge been subjected to any repair.

Mr. P'anson bore testimony to the durability of zinc as a covering material, when properly manufactured and carefully laid. He had himself visited the *Vielle Montagne* works, where the manager had got into a violent passion with him, because in England zinc had not been tested under circumstances favourable to the development of its merits. He had been told that the reason zinc failed in England was, that we did not use it of the proper thickness. The manager at the *Vielle Montagne* works assured him that 21-ounce zinc was required, and that when used of that thickness it would be found to oxidize very rapidly, and that the result would be the deposit of a permanent oxide which would coat the zinc at both sides, and thus make the substance harder and more enduring. He (Mr. P'anson) had used it in the most smoky parts of London for the last twenty years, and he was bound to say that he had found it to answer the purpose very well. There was, however, a difficulty in getting the metal pure.

Mr. Edmeston said that the old roof of the Palais de Justice at Paris was laid in zinc, and, as he understood, had never been repaired. With regard to the sheathing of ships with zinc, he was not in a position to speak from personal observation, but he had been informed that zinc sheathing lasted as long as copper (which was far more expensive); but that in certain places where barnacles existed, it had been found that the animals would stick to the zinc and not to the copper. He was aware that it was objected to zinc, that it cracked in the working; but he was persuaded that if the metal was pure it would be found as plastic as lead, which did not crack.

Mr. Austin said that in cases where he had used zinc, near Canterbury, he had never made the price of the material an object, and that notwithstanding he had been furnished with zinc which had failed.

Mr. Jennings observed, with reference to the paper read by Mr. Burnell, as well as to that read by Mr. Edmeston, that it was most desirable that architects should have the means of testing the quality of the materials used. It seemed to him that the new woods to which Mr. Burnell had called attention, and specimens of which he had exhibited, were not very suitable to architectural purposes, although they might do very well in engineering. With respect to zinc, he had tried it with varied effect; for in some cases it had succeeded, while in others it had failed. He agreed with Mr. Edmeston in thinking that the principal reason of its failure in roofs in this country was to the adulteration to which the metal had been subjected in the process of manufacture. For this reason it was most desirable that the sheets should be legibly stamped with the name of the maker.







Saint-Maur-sur-Marne, and commenced the gallery of the Louvre, of which the first stone was placed by Charles IV., 1568; continued by Henry III.; taken up again by Henry IV., upon plans by Androuet DuCerceau: to this prince, 1590-1611, we owe the châteaux of Presles and of Montceaux, in Brie; the embellishments of Saint-Germain and Fontainebleau; the completion of the Pont-Neuf, commenced under Henry III.; the Palais Royal; the Briare Canal; the restoration of the cathedral of Orleans. He bought, also, the Hotel-de-Ville,\* that curious attempt of revolution in the art; and he gave a new face to the capital by the care which he took in repairing and embellishing it; and invited a number of savans and artists, who received many proofs of his liberality. He is not thought or spoken of by the French but with love. Under Henry IV. and Louis XIII., the light and gracious, but very often empirical, style of the Renaissance was gradually lost and became disused, and the classic adopted, but sometimes spoiled by bad treatment; and often showed how the best things become bad by their excess, and become so in proportion to their excellence.

Philibert Delorme and Jean Bullant, celebrated architects, were charged to furnish the plans of the Tuileries by Catherine de Medicis. They presented the design of a building much more vast than is that of to-day, but this project was not entirely executed. They first raised the great pavilion, placed in the centre of the façade. This pavilion was crowned by a vast dome, circular, and covered with slates. Afterwards they changed the form of this dome, which now has a quadrangular form—a form much more suitable—this large central pavilion, and the two lateral buildings, and the pavilions which were erected at their extremities, then composed, and composed for a long time, the chateau of the Tuileries. The different parts of this edifice were and are still covered with a roof in slates of a great height, as it may be seen above the greater part of the edifices of Paris built in the sixteenth and seventeenth centuries. These enormous roofs, which do not accord with the classic orders to which they are made to associate, owe their origin evidently to the roofs of feudal fortresses, and the latter owed them to thatched houses. Both here and in the court of the Tuileries there existed features, such as open galleries and arcades, which are not presented in the now existing façade, but which are composed of three regular stages of windows (*croisées*). In 1572, Catherine de Medicis occupied it, but soon deserted it. The reason seems to be unknown why, after having built the chateau of the Tuileries, and having employed upon it considerable sums, the talents of the most celebrated artists, and all the results and the delights of luxury, she should abandon it in so little a time after the edifice was completed.†

Chambray, in his "Parallèle d'Architecture Ancienne avec la Moderne," gives two examples of the Louis orders of each of those celebrated architects, Delorme and Bullant. He shows that the profile of Bullant is precisely according to Vitruvius: the former, he says, ought not to be imitated, not being conformable either to antiquity or to Vitruvius, or even to common sense; and not having any regularity in the parts of its composition; that there are many mouldings placed without any motive, most of them little and poor, where the frieze is larger than the cornice, and where, in the base, the general proper disposition of mouldings is reversed, where the great size of the torus is excessive, above the smaller scrolls below. The caryatides, first perhaps introduced upon the degeneration of the Ionic order, in which women are represented, whose delicacy does not correspond to the weight of the burthen with which they are charged, gave rise to all sorts of extravagancies.

Chambray deserves attention, and has authority. He was, says Errard, almost the first who, by his works, made known to France that greatness of manner which gives to the principal members of every order few parts, but great and of a bold relief, so that the eye seeing nothing little, the imagination may be more touched with it.

There are some artists of original stamp who look upon rules and precepts, in short, any prescription for art, only as fetters to them. Such they probably are to those who have no mind of their own. It is well known that Delorme was inventive and skilled in the principles and science

of construction, and was, in producing fine designs for sepulchral monuments for kings, as in the chapels of St. Denis, not by any means deficient. He did many excellent things without the assistance of imitation, and was exempt from that impediment, which has always been cast upon the French nation, of loving and adopting the productions of foreign countries to a mania. Delorme contrived, on his own approved system, in most confined and difficult situations, plans for staircases; and his roofs have been adopted more than once, since the sixteenth century, and by living architects in Paris, in more than one edifice: as an instance, we refer to that of the corn market (*halle au blé*).\*

The palace of Luxembourg, under Louis XIII., was built by Jacques de Brosse, from whom we have the front of St. Gervais. There are numerous imitations of it in Paris, and which were erected during the great revolution, called the renaissance, that took place in the fifteenth and sixteenth centuries. Quatremerre says, of De Brosse, that nothing particular is known of his person or of his life: we are ignorant even of the place and the date of his birth, and of his death. However, he has acquired fame by the front of this church, and by the palace of Luxembourg. The front of St. Gervais far surpasses that of St. Paul St. Louis, built in 1634, after the designs and superintendence of Derrand, a Jesuit; but that, however, is considered as one of the most curious and most interesting specimens for the study of the style of this epoch. The style of Luxembourg palace is somewhat borrowed from that seen so often in the palaces of Florence, and in the Pitti palace, to which many persons have thought it bears a striking analogy. The Luxembourg, built at great expense by Marie de Medicis, who had no want of it, and lived in it but a very short time, ought to bear her name; but this queen having left it to Gaston de France, duke of Orleans, her second son, he wished to name it Palais d'Orléans, by which name it went until the epoch of the revolution.† The alliance of the house of Medicis with that of France made more easily known to the Tuscans the affairs of France, and their influence was felt, for the first years of the ministry of Colbert, upon the politics, the government, the language, and manners of the French. The private relations of epistolary correspondence increased and animated it.‡

In the *procis-verbal* which was drawn up in 1636 upon the streets of Paris, we might see what was then its deplorable state; streets not yet paved, or which were not paved but on one side, or only in some parts. We need not enter into detail, but the obstruction, the absence of light, the badly-built houses, the long accumulation of dirt, were very active sources of corruption and of contagious diseases for the inhabitants in the quarter of the Louvre. Paris then, says Dulaure, much resembled a poor but proud man, wearing gilded garments upon linen dirty and full of vermin.§

Before the reign of Louis XIV., when the arts wanted patrons, French architects, perceiving that the occasions for building were rare in France, and that, notwithstanding the nobility of their art, they could with difficulty distinguish themselves from artisans, preferred rather to take another part than to follow a profession in which they could not satisfy the passion that they had for glory. This coldness and this indifference for architecture lasted some time, and did not much reassume its former character till under the glorious dominion of Louis XIV., by whose order monuments arose which presented to the people of his time and to posterity the brilliant evidences of taste which this great prince had for the arts. He showed on more than one occasion that he knew how to join to the capacity of choosing able architects and artists, a generous inclination to reward their merit: he exerted and supported the emulation of artists by the foundation of the academies of France and Italy, where not only the experienced artists could confer together, but where the pupils had the facility of instructing themselves under professors of distinguished merit, in such a manner that it is by the institu-

tion of these illustrious schools that the French architects show that the genius of the nation yields not to that of other people, and that they could succeed in anything that they undertook when they were excited by the protection of so great a monarch. It is, in short, through this emulation that we have seen so many beautiful edifices; whose examination contributes no less to improve and perfect the arts of our days than the works of the Greeks once served to instruct the arts of Italy. We may say, too, that it is edifices of all kinds which attract to our capital the most distant nations, to draw from them the science of architecture, as well as other arts. Nothing has, perhaps, served so much the greatness of Louis XIV. as the superb buildings which he has created.—(Blouet's (*Jacques François*) "Architecture Française," 4 vols. folio.)

The façade of the Louvre was commenced, among other beautiful edifices, in 1663. In 1664 Colbert charged Leveau to terminate and repair the palace of the Tuileries. This architect made many changes in it. The staircase, of matchless construction, but much out of place, was taken down and placed more conveniently. The centre pavilion was removed: it was decorated with two orders, the one Corinthian, and the other composite; and an attic with caryatides. Colbert resolved to distinguish his administration by finishing the Louvre, and wished to carry to perfection what he found imperfect. Not content with what Leveau had done, nor either with his project of continuing it, he invited artists to compete. The decoration of the front elevation by Leveau, which was throughout in pilasters, was much censured: it was judged as wanting nobility, dignity, a mark of royal distinction, and as having too little relief: his door was unanimously found little, and of too small importance to serve as an entrance to such a monument. The king himself found fault with it. Among the projects which were exhibited, together with that of Leveau, was one by Claude Perrault. It was designed with much taste and propriety, and was universally admired. Charles Perrault, brother of Claude, thus writes of this competition in his "Memoirs," &c.:—"Whatever knowledge Colbert had of the capacity of my brother, Claude, in architecture, I perceived that he hesitated to execute his design; and that it seemed strange to prefer the conceptions of a medical man, in a matter of architecture, to the designs of the most celebrated architects. The envy of the professors and masters of art in Paris was not wanting in railing against the resolution, and the making bad jokes, saying, that architecture must be very ill that it had need to be put in the hands of doctors. Leveau, who presented the first design, and Lebrun, the king's painter (who was not ignorant of the principles of architecture), could not approve of the design of Claude Perrault (which was preferred to Leveau's), always saying that it was only beautiful in painting, and that assuredly they would find it bad in execution, on account of the too great depth of peristyle, which was 12 feet, and that the architraves made all look low; but such precaution was taken, that nothing in the world is more solid, nor is there anything either so bold or so beautiful in all the works of antiquity. At the invitation of Colbert, Bernini came from Rome, although he was working at St. Peter's. He admired the hand of Perrault in the colonnade of the Louvre, and remarked of it, that if Paris contained such a gem, and such a rare genius, why should he be called away from Italy?" Colbert, the Mæcenas of all the arts, formed an Academy of Architecture in 1674. Voltaire† remarks upon this: "It is little to have Vitruvius without Augustus to employ them." The principal front of the Louvre, commenced in 1660 from the designs of C. Perrault, was terminated in 1670. This façade was 525 feet in length; in height 85 feet. It underwent changes, and was embellished under the reign of Napoleon I.

The wars that France had waged seemed, and were when they had ceased, favourable to the arts. It was the ambition of many kings,—whose battles were executions of justice,—whose battles after they had won battles, were loaded with spoils, had subdued their enemies, and had brought peace to the hearts and homes of their subjects,—to turn their attention to such enjoyments as accompany the possession of the arts and the culture of the sciences. The Louvre, commenced by François I.,

\* Victor Calliat, in his "Encyclopédie d'Architecture" (Paris, 1851), says that the Church of St. Eustache and the Hotel-de-Ville, are the two most remarkable monuments erected in Paris in the time of François I.

† Dulaure, "Histoire de Paris."

\* Unfortunately it does not exist now. Legend and Molinos, architects, introduced it, and it caused a general admiration, but which was of short duration. Consisting of wood, it took fire in 1822, by the imprudence of a plumber, and in two hours nothing remained of that immense work of carpentry. For description, or plates of it, see V. Calliat's "Encyclopédie," and Kraft's "L'art de Construction."

† Dulaure, "Histoire de Paris."

‡ "Dictionnaire des Dates."

§ *Troislois*, recommended by Patte and Girard, architects, were not laid down till 1759 to 1791. In 1783, the maximum height of houses, fronts, and the minimum of streets, was determined and enforced under Louis XVI.

\* And numbers unbuild, in folios, published by Government, namely,—Les Grands Prix d'Architecture," successful designs of construction by French aspirants.

† "Siècle de Louis XIV."

and continued through a long line of kings, was after war, the main object of their ambition, and they resolved to enrich, to enlarge, or to complete it. More than one inscription on a plate of gold has been placed by royal hands in the foundations of the Louvre, and has risen, Phœnix-like, when the swords have been sheathed and victory proclaimed. This ancient ceremony of laying the stone has always been an important event in the history of the Louvre, which is the history of France. The effect of the recent and final ceremony, under the auspices of Napoleon III., on the occasion of the finishing of this palace, and its union with that of the Tuileries, was long felt and talked of after that memorable day in Paris, the 25th of July, 1852, had witnessed it. On that day of triumph for art, of gratification for the public, and of reward to the workmen who had distinguished themselves on it, M. Casabianca, Secretary of State, laid the first stone of this superb edifice. Visconti was the architect-in-chief.

It is still astonishing the position that France and her capital occupy in Europe as a great centre and school of art, when she has been so incessantly distracted by wars, and when, if we read the history of France, and the wars during the French monarchy, from the time of H. Capet, we shall find that they form the most considerable and the most distinguished portion of her annals. Yet we see, in the lappy times of peace, that she can become, by the fine arts, and by favouring the exercise of them, not less than by war, most prominent among the nations of the earth. They were to her both her ornament and her strength. Arrived at a higher point of excellence than preceding ages had been able to carry them, they were felt and seen to be the most wonderful things that could emanate from human hands. Those who excelled in them were sure of public esteem, and their productions were the means of bringing them before great men and great powers. The most powerful of kings chose the arts as the objects of their special patronage, and they were viewed by discerning observers with as much curiosity, as much emotion, as the war despatches in turbulent times had been devoured by a crowd of listening enthusiasts. The great work which was being erected, and which had long absorbed the energies and the ambition of many crowned heads, and many very accomplished architects, was the Louvre, which, as taste existed more pure and more diffused, on account of the number and variety of beautiful buildings which could be examined and compared one with the other, it had become a lever to raise the arts nearer to perfection than heretofore, and to benefit the country and trader to a greater extent. If we contrast it in its present finished state with what it was under the reign of François I., we shall be astonished at the great and material change that has taken place in it,—a change which had been in course of gradual and increasing accomplishment for many centuries. This noble and venerable residence of kings, increased and approached to its long-anticipated and much-dreaded completion, from age to age. It took many efforts, and many epochs. Slow and tardy in its growth, like other vast and difficult works it required the result of civilization, the application of great experience and great influence, to develop and complete it. The failures or the prejudices that occurred from time to time to check its progress, the frequent alterations that were made, and the many difficulties that had to be overcome, only show that, after all, men are often but the creatures of their time, and can only do that which is practicable in the condition of society in which they live. There were some great and gifted men who cooperated upon it at one and another period, and who possessed all the professional experience then known, but whose manner was meaner and inferior to those who followed them and stood on vantage ground. Time—that silent and unceasing worker of the destinies of men and their projects—it was indebted to this Time. The Louvre, however, was seen in its present finished aspect, united with its royal neighbour the Tuileries, was not as if each successive portion of the pile prepared by the first course of operations facilitated the next, but it was deemed necessary in one age often to pull down and build in a new style that which had been built in a former age. However, we now behold it worthy in its completion, the fact of which gives an idea of the multitude of difficulties brought to a level, worthy in its varied and magnificent designs of the refined men who conceived and spent their lives upon it; worthy of the noble race of kings who

commanded its execution and spared no pains or expense to witness its realization. Many things render it one of the most interesting royal residences of Europe—a palace which tempts foreigners from all parts of the world, and which is a model and a lasting resource of design to students.

F. LUSK.

FACTS RELATING TO THE USE OF ZINC ABROAD.

THE reputation of zinc for roofing is not good in England. Abroad the material appears to be used very largely and successfully. To ascertain the reason for this difference the Vieille Montagne Zinc Mining Company have recently commissioned Mr. James Edmeston to inquire into the matter. His report, which was read at the Institute on Monday evening last, and is about to be published, is now before us. The Vieille Montagne Company is a very extensive undertaking—

"In the seven large smelting establishments in Belgium and Prussia, comprising 230 furnaces, 29,000 tons of spelter are produced, and 20,000 tons of sheet zinc are annually made, besides about 7,000 tons rolled at mills which are not the property of the company. In the three establishments for making oxide of zinc, about 6,000 tons of oxide are annually manufactured. The company is besides a large purchaser of spelter in the market.

It is said that the general consumption of spelter throughout the world is about 57,000 tons per annum, of which about 45,000 tons are made to take the shape of rolled sheets, and these are estimated to be applied as follows, each quantity being somewhat below the truth:—

	Tons.
Roofing and architectural purposes	25,000
Ship sheathing	3,500
Lining packing-cases	2,500
Domestic utensils	12,000
Stamped ornaments	3,500
Miscellaneous	1,500
	44,000

Fifty years ago the quantity used for roofing did not exceed 5,000 tons: none was employed for ship sheathing or lining packing-cases, and the stamped ornaments in zinc date only from 1852."

The process of manufacture is simple: the calcimine (carbonate of zinc) is first calcined, by which it loses about 20 per cent. of its quantity: it is then ground in a mill, and mixed, to the extent of one-third of its bulk with powdered coal, to assist the smelting. The whole being much moistened, this mixture is put into the smelting-pots, and these at six o'clock every morning are placed in the furnaces. At six o'clock in the evening, that is, in twelve hours, the smelting is complete. The metal is drawn out and run into metal moulds: it then goes into the rolling-house, and is again melted and recast in a metal mould to produce ingots of the proper size and weight for the required gauge of sheets to be rolled: this second melting is also desirable to obtain proper purity.

In the first place, purity in the metal to be used for building purposes is important: if there be much impurity no after-care will be of any avail. For ship sheathing—and zinc is now very largely used in this—perfect purity is essential, for it becomes immersed in a down-right galvanic bath; and if iron be present in even a small quantity, or lead, it would quickly destroy itself. This is not so much the case in roofs, but purity is most desirable; and impurity may exist to an extent sufficient to spoil the best-constructed roofs, and in many cases has done so beyond doubt.

Mr. Edmeston made inquiries in England previously to going abroad, and all the replies were condemnatory, with two exceptions.

"Some instances of failure were brought before me, and these were mostly as follows:—  
Crumbling to pieces; black spots appearing, supposed to be the effect of London atmosphere; holes and wearing out of the metal in a short time;—all these would arise from impurity in the metal, or from contact with iron. Then,

"Cracking in places; soldered joints parting; drips or joints falling in pits; tendency to buckle and to have an untidy appearance in consequence, and general unsoundness of the work;—all these would arise from bad construction."

Abroad, amongst the failures, he mentions one:—

"But, even if the zinc contains no iron, the contact of iron, where a little confined damp may exist, will be quite as injurious. I cannot find that this is understood here: and nails are commonly used for boarding under the zinc, and if a nail head is in contact, and there is damp, in three months a hole will be eaten through. Generally speaking, for the best roofs on the Continent, zinc nails are used for the boarding, and all iron work, where necessary, and if used at all, is galvanized. Or where iron nails are used for boarding they have small heads, and are hammered well into the zinc, so as to be buried, and a little cement or stopping is frequently rubbed in over them. Practice has found that the nails thus used rarely do any mischief, and as the zinc nails require certain care and take more time, and are dearer than the iron, I found that in Paris, at all events, the iron were used frequently, but always with the above precautions.

I could not discover that the contact of lead was injurious, but it is considered to be better avoided. Impure zinc being brittle will crack when turned up

against the rolls, or it will break off entirely, and the builder, who saves something in first cost, is quite likely to lose more in the end from waste.

The second set of defects to which I have alluded, and other indications of them, will be referable to ignorant construction: they none of them exist where proper knowledge has been exercised in this respect, and the one object to be kept in view is to permit *perfect freedom to the sheets*, to confine them no where, and to separate lengths of guttering, and any other portions of a roof requiring to be made in long pieces, as much as possible."

"Eaves gutters should be made in short lengths, bent in the direction of the way in which the sheet has been rolled, and soldered; the solder put between the sheets and one sheet lapping over the other: they must not of course be sewed to the rafter's feet—a practice, by the way, which occasions a constant failure in the joints of iron eaves gutters. Wherever a down pipe comes there should be a stopped end in the gutter, and the gutter should never be continued longer than possible in one piece: where it is laid behind a parapet, as in all the new and magnificent buildings in Paris, a separate piece of flashing will disconnect it wholly from the sheeting on the roof. For guttering, the gauge used should be increased in proportion to length, say No. 14 for 10 feet, No. 15 for 20 feet, and so on up to No. 18. There should be a proper substance in all cases. No. 14 is ample for London: in Germany it is customary to use a less thickness."

The choir of the cathedral at Cologne is covered with Silesian zinc. The old lead was defective and was removed, and the zinc substituted by Herr Zwirner, in 1829.

The gutters are zinc: it is laid in the old way without wooden rolls or fillets, as is the custom still in Germany. Herr Zwirner, the architect to the Royal Commission, informs me 'that zinc is now commonly used for roofs in the whole of Germany,' and that all his practice has taught him 'the solidness and closeness of a well-constructed zinc roof.'

Oak boarding will spoil the zinc, and the fir should be dry; the boards laid with an aperture of about half an inch between each: if they are damp, as much oxidation will take place on the underside of the zinc as on the top of it.

A good way of laying flats in some situations is without rolls, but with sunk gutters between the sheets, with, in fact, inverted rolls, which form gutters: for London, however, I would recommend the ordinary mode, as the small gutters are liable to be filled with blacks and soot if neglected. In forming laps care must be taken to prevent the water from ascending, by capillary attraction: there must either be space enough to prevent the drops thus rising, or the end of one sheet must touch altogether, and that of the other be kept well away; and this is found the best mode, and the least open to careless treatment by workmen.

The thicker the zinc the less its expansion and contraction. And I find as follows, in a report made to the Academy of Sciences, by the director of the Conservatoire des Arts et Métiers—a government institution existing in the Rue St. Martin, to inquire into scientific inventions, civil engineering, and all constructive science—

"It appears from actual experiment that the oxidation proceeds for about four years, gradually diminishing after the first three months, and that it then hardens into a protecting coat ('craquelé') of a dark grey colour, preserving the metal beneath from any further deterioration.' And it concludes by saying, 'that it becomes evident that as a sheet of zinc exposed to the atmosphere for a series of years loses little or nothing of its weight or thickness, and as its surface remains hard and polished, like enamel, it may be fairly deduced that the following years are not likely to occasion any alteration, and therefore that zinc will be placed in the same condition as bronze, which is protected by its 'patine' for ages.'"

Amongst new works in Paris, Mr. Edmeston mentions—

"The new markets, constructed of iron, under the direction of M. Baltard, architect, in 1856. These great roofs are covered wholly with zinc, No. 14 gauge, the gutters being No. 16, the whole in perfect order, except in one place, where some undulation has occurred in consequence of the workmen having confused the metal by solder very needlessly, because a little extra labour was necessary to lay the zinc properly: the downpipes are of zinc No. 14.

Also the entire roofs of the magnificent houses forming the Boulevard des Capucines, the new mansions in the Champs Elysees, the new part of the Louvre, in which the flats are of zinc and the curbs only of slate; the roof of the Hotel de Ville; the roof of the Church of St. Clothilde; and, in fact, nearly every roof formed in Paris within the last fifteen years.

He mentions,—

"That while cement does no injury to the zinc, the lime of Paris destroys it, and that when cisterns or other zinc constructions are confined with brickwork, or in mortar, the custom is to fill in round them with earth so as to protect the zinc from the lime."

A report of a committee, appointed by the Central Society of Architects in Paris, recommends,—

"That zinc, which was at first rejected, but is now so generally used, should be applied with great care, as certain precautions, very simple, but never to be overlooked, are indispensable: thus contact with plaster, which contains a destructive salt, is to be avoided; also contact with iron, which is very injurious, and liable to cause a rapid oxidation; eaves gutters should always be supported by galvanized brackets, and no gutter or sheet zinc should be laid on oak boards."

Mr. Edmeston deduces from these facts and independent inquiries, that it is impossible longer to contend—

"That zinc is other than a valuable and excellent material for building purposes, too important to be overlooked, and worthy of a more extended use, if a better appreciation than it has yet received with us."

DERHAM CATHEDRAL.—The works at the central tower, recently illustrated in our pages, are under the superintendence of Messrs. Walton & Robson.



PROPOSED CAMBRIDGE GUILDHALL—THE ASSEMBLY-ROOM.

## PROPOSED GUILDHALL, CAMBRIDGE.

In our present number we give a view of the design for the Cambridge Guildhall, by Messrs. Peck and Stephens, of Maidstone, to which the first premium was awarded; and also a view of the interior of the Assembly-room, as proposed. In our last volume\* will be found our notices of the drawings at Cambridge, amongst which the present design appeared under the motto "Utility." We refer our readers to the second of the notices, for particulars of this design, as well as to the extract from the report of the professional referee, which we gave subsequently.†

## THE CENTENARY OF HOGARTH.

PROPOSAL TO EXHIBIT THE ARTIST'S WORKS IN THE FOUNDLING HOSPITAL.

ON the 26th of October, 1861, this, in many respects, the most eminent amongst those painters who may be considered as the founders of the English school, will have been dead one hundred years. Since that date his works have increased in money value to a wonderful extent, and his fame has spread not only throughout his own land, but also in many foreign countries.

It is both curious and satisfactory to trace the onward progress of English art since the days of Hogarth, and it should not be forgotten that to him even more than to the exertions of Sir James Thornhill and others, we are indebted for the establishment of the Royal Academy, and for public exhibitions of pictures.

The exhibition of the works of Hogarth, Hayman, and other of his friends, was made in the apartments of the Foundling Hospital, as we noted recently; and so great was the attraction, that crowds thronged to the place.

It has been suggested that the centenary of William Hogarth should not be passed over without celebration, and that nothing would be so

suitable as the exhibition of as many of his works as could be collected together; not only the paintings, but sketches and fine impressions of the engravings which were executed by the artist's hands. A collection of this kind, which would enable us to glance at once at the results of Hogarth's useful and laborious life, would not only have great interest, but would also be the means of enabling many to form a juster estimate of the high position which this artist is entitled to hold. It has been thought that no place would be so suitable as the apartments of the Foundling, in which Hogarth was so frequently a visitor when in life.

## THE ARCHITECTURAL MUSEUM.

ON Wednesday evening last, Sir Walter James delivered the first of the new course of lectures in the theatre of the Museum at Brompton, and was attentively listened to by a good audience. His subject was "The Norman Architecture of Canterbury Cathedral," and he illustrated it with a large number of drawings and plans. First describing a Roman basilica, he mentioned the resemblance to it in early Romanesque churches, and afterwards showed, following the theories of Hope and Whewell, how Pointed architecture had grown out of Romanesque.

Mr. G. G. Scott, in moving a vote of thanks to the lecturer, commented on the advantages resulting from the devotion of time and thought to such subjects by men in the position of Sir Walter James. It would be of no use art-workmen improving themselves, if the public were not also informed and ready to employ them.

Mr. Joseph Clarke announced that the next lecture of the series would be delivered by Mr. Godwin. It would be addressed especially to art workmen and those who might be striving against difficulties.

Cards of admission may be obtained at our office.

## THE PROPOSED DRAINAGE OF RIO.

The following relates to the proposal about to be introduced for the drainage of the city of Rio. It also appears that the guarantee is in the form of a rate (in Brazilian currency) on each house, analogous to that granted to a gas company some years back. There is no city in the world in which drainage is more needed than Rio:—

"29, Threadneedle-street, London, Jan. 7. Sir.—Referring to the notice in your impression of today of the intention of bringing before the public, at an early date, the proposal for draining the city of Rio de Janeiro, and to the effect which it has had upon the Brazilian Railway shares, it is, perhaps, desirable that you should be informed that, although the aggregate of the capital required will be 650,000*l.*, the sum to be paid for the first six months will be under 100,000*l.*, and for the second six months only 65,000*l.*, so that it manifestly would not affect the existing Brazilian securities.

To this we may add that a portion of the capital is already subscribed, and a list of applicants for the remainder is being privately; thus the amount that will be offered to the public will be limited.

HILL, FAWCETT, & HILL, Brokers to the Company."

Our advertisement columns give further particulars of this important and promising undertaking. The concession is for ninety years. The plans have been prepared by Mr. Gotto. The Brazilian Government is bound, by legislative enactment, to pay to the Company 42 milreis per annum, which, at the par of exchange of 27*l.*, amounts to 4*l.* 14*s.* 6*d.* for every house now erected or hereafter built within the three districts during the term of concession, such payment to be made half-yearly for all the houses, whether occupied or not. The number of houses, according to the last returns, amounted in June, 1859, to 13,739; and adding the average number of houses yearly built in the city, there will be, on the completion of the works (within the three districts) at least 14,891 houses (the number provided for in the contract) from which the revenue of the company will arise. The amount to be received upon 14,891 houses will alone produce a gross income to the company of 70,360*l.*

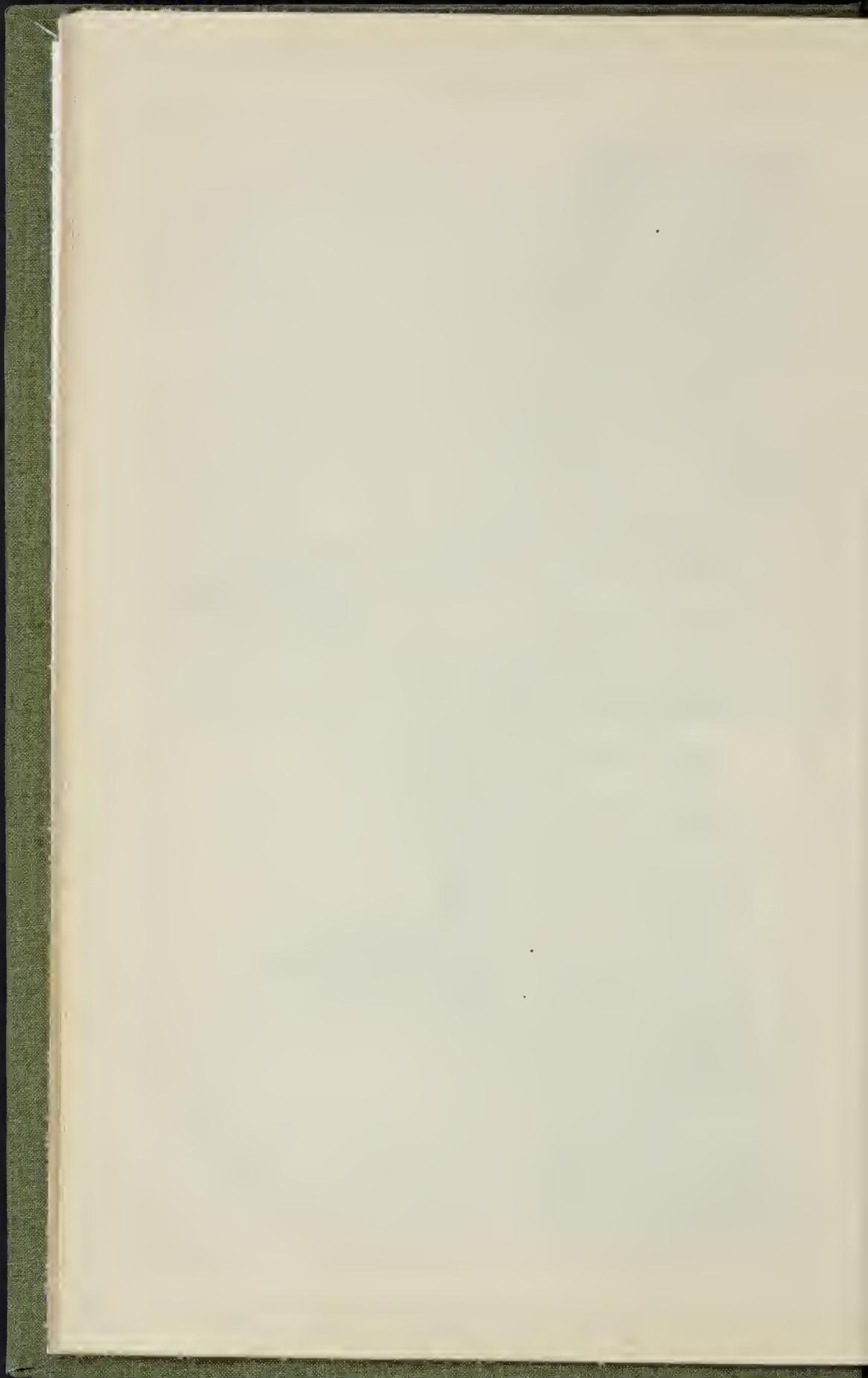
Professor Donaldson is one of the directors.

\* Pages 773, 789.

† Page 813, in last volume.



CAMBRIDGE GUILDHALL: THE SELECTED DESIGN.—MESSRS. PECK & STEPHENS, ARCHITECTS.



BUILDING STONES USED IN  
MANCHESTER.

At the last ordinary meeting of the Manchester Philosophical Society, December 27th, Mr. Wm. Fairbairn, president, in the chair, Mr. Binney read a short communication, entitled "A few Remarks on the Building Stones used in Manchester."

A stranger visiting Manchester, on having his attention directed to the modern buildings in it, will doubtless notice the substantial nature of the bricks of which they are built. Of the stone employed for building, he will most probably be of opinion that it is not of the most enduring character for the climate and atmosphere it is subject to, and the unfair usage by which architects and builders think proper to test it. For, however, well it may be established in theory, that a sedimentary stone in a building ought to lie in the same position as that in which it was originally deposited in the earth, unfortunately in practice architects will persist in attempting to make the stone accommodate itself to their designs of buildings, rather than design their buildings in accordance with the nature of the stones they have to employ. No doubt beds of stone of great thickness and uniform composition are difficult to find, especially in sedimentary rocks, but still that is scarcely an excuse to place it on its end or at right angles to the planes in which it was deposited.

Of late years a considerable number of experiments have been made as to the strength of building stones, just after they have been taken from the quarry, by pressure. This, no doubt, will give an idea of their power of resisting force at the time of the experiment being made, but it will give little evidence of the strength of a building stone after some years of exposure to a climate and atmosphere similar to those which the building stones of Manchester are exposed to, without the stone is of a pure silica, or nearly so. In all stones which are subject to chemical decomposition, these experiments will not surely give us.

Old buildings in country places, remote from the smoke and gases of large towns, are often adduced in evidence of the strength and durability of a stone to be employed in a manufacturing town. However well the dolomite of Bolsover-moor might endure the climate and atmosphere of Southwell, in Nottingham, as it is seen in the Minster there; or the triassic sandstone of Furness might endure, in the abbey of that name, each seven or eight centuries; still, it would be unreasonable to expect that either of these stones could resist the action of the moist climate of Manchester, and the atmosphere of a city in which about forty thousand tons of sulphur are annually burnt in the coal consumed in it, to say nothing of the gases given off by the numerous chemical manufactories, and the exhalations from half a million of human beings.

On examining the buildings of Manchester, we find that the stone employed is chiefly from the middle and lower coal measures; the only instances of triassic or new red sandstones having been used are, as I have been informed, the Portico and St. Peter's Church, from the Oughtrington quarry, near Lymm, and the beautiful church lately built by Mr. Crowther, at Moss-side, which is from Hollington, near Ashbourne.

The cathedral was built from the sandstones of Smedley and Collyhurst, two rocks belonging to the upper part of the middle coal-field. These stones are both soft, and contain a large amount of clay and peroxide of iron. As you proceed farther down into the middle coal-field, you find the sandstones containing less iron in a state of peroxide and considerably smaller proportions of clay; still the stones are not suitable for outside work, as they contain protoxide of iron and sometimes sulphuret of iron, which are scarcely to be seen in the white sandstone when first obtained from the quarry; but, on exposure to the atmosphere, the iron becomes further oxidized, and the stone "bleeds" and becomes discoloured, as well as decomposed. It may be safely concluded that there is no quantity of good building stone, suitable for outside building in a city like Manchester, to be procured from the middle coal-field.

The lower coal-field and the millstone grit yield the only good building stones for Manchester. These strata comprise the beds lying under the Arley or Royley seam of coal and the limestone shale; and, from their being generally found on the high land of the district, are known by the name of "High Moor Stone."

As all the lower coal-field and millstone grit beds have most probably been formed of the debris of granite or granitoid rocks, we find in

them the proportions of silica, alumina, potash, iron, lime, and magnesia, generally met with in these rocks. As a general rule, the more pure silica the rock is composed of, the better building stone it is. A mixture of mica or clay causes the rock to be more schistose or flaggy, as well as softer. Two chief beds of flags, besides several smaller ones, occur in this division; namely, the upper flag of Upholland, Catlow, and Holy Fold, lying between the Arley and Royley coals, and the lower flag or Bradshaw and Shawforth, near Rochdale, lying under the rough rock and above the upper millstone grit. These flag beds yield the stone generally used for par point work.

A fine, sharp grained, silicious grit is found sometimes above the gamister coal, as at Ending Common, near Rochdale, which makes a good building stone.

A stone much used in building is the Halliwell, Woodhead-hill, or Lomax-wood rock, lying immediately under the salts or hest coal of New Mills.

The rough rock, generally known as Summit and High Moor stone (the upper millstone of the geological survey), a stone much used in building, is of a coarser grain than the stones previously mentioned. It is composed of grains and rounded pebbles of translucent quartz cemented together with partly decomposed felspar and a little iron and manganese in the state of oxide. It is soft when first quarried, and works pretty freely, hardening when exposed to the air. As a building stone it is preferred, owing to its working much easier than the two millstones. Parbold, Horwich, Holcome-hill, Blackstone-edge, and Werneth Low, are good examples of the stone.

The upper millstone of Holcome, Bank-lane, Todmorden, Saddleworth, and Tintwistle, is a hard and durable sandstone, composed chiefly of silica. It is much better to work than the rough rock, and stands the weather better, but it is not in great use, owing to its being difficult to work.

The lower millstone, as seen at Reocross and Rhodes-wood, Tintwistle, and the lower part of Pendle-hill, contains some excellent building stones, but they are hard to work, and therefore have not been much used; but it is, no doubt, one of the strongest and most durable stones of the series. In the lower parts of it are some beds of fine grained sandstone, freer to work than the upper beds. A most excellent bed of this description is found at Bailey, near Ribchester.

In selecting a durable building stone for a town like Manchester, the more silica it contains the better. Iron or manganese in the state of protoxide, or sulphuret of iron, as well as clay, all damage the stone. The stones composed of silica, cemented with silicates of soda, potash, lime, magnesia, or alumina, are all durable; but, when clay or silts of iron form the cement, the acids in the atmosphere have a very damaging effect on the building stones containing them.

The sandstones from the lower coal-field in the neighbourhood of Halifax and Huddersfield, and generally known by the name of Yorkshire stone, are much used in Manchester, owing to their good colour and free working qualities. Many of our buildings in which these stones have been used show symptoms of decay, especially in the places where long pieces of stone have been required, and in mouldings and ornamental work.

In some cases the sulphuric acid in the atmosphere has acted on the clay in these stones, and an impure sulphate of alumina having been formed, it is washed by rain out of the stone, and the grains of silica in the latter soon crumble away.

In other instances the water percolates down through the beds of the stone placed on its end until it reaches their bases, and then the frost in winter and the heat in summer expand the water, and thus force off laminae of stone, in addition to supplying acids to act on the stone as above-named.

The under ledges of coping stones, although the stone of which they are formed is placed in its proper bedding, often exhibit evidence of decay. This seems to arise from the moisture percolating the stone and finding its way to the lower parts, which, owing to their being shaded from the sun, are nearly always wet, and thus prepared for the action of frost and heat previously alluded to.

It is surprising to find so small a variety of building stones having been used in Manchester as those above noticed, and it is to be desired that the architects and builders of our city should try other descriptions of stone when they can be had at a moderate price. It is difficult to say how the dolomitic limestones of the Permian group in Yorkshire, like those of Anston, would endure our climate and atmosphere; but so far as my experi-

ence goes no instances of them are to be found in our buildings. By the facilities which railways now afford, one might have expected that some of the beautiful syenite of Shap containing large crystals of felspar, or the grey syenite of Bootle and Ravensglap, would have made their appearance in Manchester; but, to my knowledge, none of them have been used. It is possible that they may not be known to our architects, but most probably the reason why the soft freestones of the coal measures are in such general use is that they are cheap and easily worked. My own impression is, that cheapness is more looked at, both by architects and owners of buildings, in selecting stone, than durability of character.

Some years since a good collection of the building stones of Lancashire was got together and placed in the Museum of the Geological Society of Manchester, where they are open to public inspection without charge. This might be increased with stones from the adjoining counties; and then, if the architects and builders of Manchester would associate together and devote a little time to the subject, we might expect to find a greater variety of building stones, and building stones of greater durability, than are at present to be met with in Manchester. In conclusion, the author of these hasty remarks begs to state that it would give him much pleasure to afford such an association all the assistance in his power to discover the most suitable building stone for Manchester.

THE ARCHITECTURAL ASSOCIATION.  
ARCHITECTURE AND SCULPTURE.

The ordinary meeting of members was held on Friday, 6th inst., at the house in Conduit-street; Mr. Roger Smith, vice-president, in the chair.

The minutes of the last meeting having been read and confirmed,

Mr. Hughes, of 8, Dane's-inn, and Mr. Clever, of Dalston, were, on ballot, admitted members of the Association.

Mr. Randall Druce then read the following paper, entitled, "On the Advantage that a Practical Knowledge of Sculpture would be to all Members of the Profession, and the important Means to that End that the formation of a Class of Wood-carving at the Architectural Association might become."

The Lecturer said:—Mr. Chairman and Gentlemen,—When Orgagna was carrying out the tabernacle in the church Or San Michel, at Florence, as the designer and superintending architect of the work, "he employed various masters in sculpture, selected from various countries, to do all the other parts of the work, but devoted all his attention to the figures;" and then, "having finished them all," he turned his attention to the superintendence of the putting together of the various parts executed by the various artists. "He caused the several parts to be most ingeniously and carefully put together without cement, but with fastenings of lead and copper, to the end that no spot or blemish should lessen the beauty of the polished and shining marbles."

What a perfect combination we have here of artistic skill and love of the beautiful, with business-like superintendence and practical knowledge!

Here is an architect, who has designed a beautiful whole, confident that he alone is most capable of executing the most beautiful parts; a sculptor, taking most delight in the execution of the figures; yet, "having finished them all," being equally confident that no one but himself can so well contrive the mechanical mode of joining the fabric together, and fixing these figures in their place.

Now, I think that all of you will agree with me that as far as this is practicable, this is a desirable position for the architect or designer of a building or any other work which depends on the accumulated skill of many,—the only way indeed in which an architectural work can bear the stamp of the master or be the successful realization of his thoughts and intentions in anything like the same manner as a picture or a statue is, that is the entire work of one man.

Now my intention this evening is to endeavour to investigate how this is attainable. You will probably at first think, and would immediately reply to what I have told you above, that Orgagna was an exception—a great man,—and that an inferior man would have become only a Jack-of-all-trades, not attaining even mediocrity in each of the three callings he followed, much less be able to execute the most difficult parts of the practical work of either of them; and to a certain extent

you are right; only the Organza would take up Organza's position, but the least endowed would surely be at least more competent superintendents of the artists employed for being, even in the very slightest degree, practical artists themselves.

Nor do I think that the attainment of this power of practical superintendence (and I think that you will allow that this of Organza's, although largely concerned in the art-part of the work in question, was practical superintendence even independently of the mechanical contrivance) is so difficult as may be imagined, for much of the knowledge of effect, and the best mode of producing it, that would take years of study of the works of art and writings of the best authorities upon art to attain, practical work with the chisel or brush will teach you in a few hours: the secret of the difference between the two systems—that in practice in Organza's time, and that in practice in our own—lies in this;—that then everything was learnt practically,—now theoretically; then the first step in an architect's education was to apprentice him to a goldsmith or some other practical branch of art,—now, to set him to draw the different by-gone styles in Chambers or Pugin.

Many a difficult point in construction was easily understood and modelled by the hand early trained in modelling the chalice he was to work in gold, which now appears incomprehensible, and consequently becomes distasteful to the artist-mind when presented to him in the unattractive shape of a line diagram; and thus the artistic and practical ornament and construction, now so often antagonistic, were learnt at the same time, and went hand-in-hand, because the knowledge sought for and attained in both was practical. And we have seen incidentally that this knowledge was often begun in the goldsmith's shop; so that we may, I think, fairly argue that the key to the more or less complete attainment of the practical power of design, execution, and masterly superintendence possessed by Organza, is the acquirement of the power of manual dexterity in some one practical branch of art-manufacture. Let us, therefore, before entering on the practical application of these principles to the matter in my title, take a few instances of the first entry into professional life of a few eminent artists of Medieval times.

Arnolfo, who designed Santa Maria del Fiore, and the Or San Michele, at Florence, began by learning painting of his father, and then studied the art of design under Cimabue, for the purpose of employing it in sculpture.

Nicola Pisano, who designed the church of San Antonio, at Padua, first worked under Greek sculptors, and then perfected himself as a sculptor, by the study and practical imitation of Classical remains at Pisa.

Giovanni Pisano, who designed the Campo Santo, at Pisa, learnt sculpture from his father. Giotto, we know, began by painting, but was also a sculptor.

Agostino and Agnolo, both architects, began by studying sculpture under Giovanni Pisano. Andrea Pisano began by studying and practising sculpture.

Organza first learnt his father's calling of a goldsmith, and then studied sculpture under Andrea Pisano.

Brunelleschi, the great architect of the dome of Santa Maria del Fiore, was first placed with a goldsmith, and, as we know, beat Donatello, the sculptor, according to his own acknowledgment, in the design and execution of a wooden crucifix.

Michelozzi, the architect, first studied sculpture under Donatello.

Andrea Verocchio, who was an architect, began as a goldsmith, and was a carver in wood.

Bramanti, the architect, was first taught art as a painter.

Sansovino, the architect, studied sculpture with Andrea di Monti Sansovino, who worked principally in metal, and who had learnt his art from Bartolomeo Ghilberti, a goldsmith.

Michelangelo, the great architect of St. Peter's, began his art education as a painter, but afterwards gave himself almost wholly to sculpture.

Singular it may seem to say that most of these masters were distinguished by their skill in construction when they came to employ their talents in architecture, which I am inclined to attribute to the practical nature of their art-studies, as distinguished from the theoretical nature of those studies, in the so-called art-men, in the profession at the present time. As in the studies in the practical form of goldsmith's work, painting, or sculpture, the sculpture, the practical way of looking at work necessary to design construction was exercised at the same time that the artist was learning art: he was also accustomed to executing work complete in itself, without the aid of others, instead of only

making designs on paper for others to execute; so that when he came to direct, he knew well what directions would be necessary to enable others to execute his designs, according to his intentions.

We see, by the above enumeration of some of the most celebrated Italian architects of the middle ages, and of their mode of education for their profession, that they all began by some practical branch of art, mostly sculpture, although often the very first steps were in the goldsmith's shop; and it appears that, when they had carried on sculpture as a profession for many years, and being as it were perfected in the production of what was then esteemed part of a building, they seem then to have had an ambition to have the entire direction and production of the grander whole; and, probably, it was also from the part that painting played as a means of adornment for buildings, that made the painter also,—when, having practised for some time an art which, still, like sculpture, founded and completeness in itself, with all its beauty, and completeness in itself, grand composition of the building it adorned,—have a like ambition to design the building also.

We see, then, that the way that men in that day fitted themselves for designing and carrying out buildings was by perfecting themselves in some one at least of the sister arts contributing to it; and that required manual dexterity. And what was the result? That which I think might have been expected, viz., that the most ordinary details and accessories of the buildings were works of art, and equally good in their way with the statues and bas-reliefs, which, from the same cause, were first-rate, and were of great frequency, and allotted their full importance as means of architectural embellishment: sculpture and painting became architectural adornments, and architecture became the art of properly and most elegantly supporting and combining these valuable aids to its enrichment.

The architect, or the artist, when he turned his attention so thoroughly to sculpture, or to painting, so thoroughly conversant with the almost resources furnished by the sister arts, and by the practical nature of his training, so able to turn these to their best account, and so well know whether the works he entrusted to other hands were well or ill executed, and, in his branch or branches, was so able to take the leading or most delicate parts, or to give the finishing touches, that a work was turned out as completely a perfect work of combined architecture, sculpture, and painting, as a picture or a statue is a complete work of sculpture or painting alone, and the realization of the ideal of the one sculptor or painter, and as completely a realization of the ideal of the artist; but the two principal best things that they learnt were an intense love of all the arts; while surely, at least an architect should, of all the men of all professions and occupations, except painters and sculptors exclusively, be the best acquainted and the most fond of those arts, and have a conviction of their unity, and how capable they were of combination, and how much they gained by that combination.

Now, there are two things that were, till quite of late years, and to a considerable extent even now are very much required to be learnt by architects of the present day. They seem, till quite lately, very much to have neglected the study of the other arts, even to the extent to which they are cultivated by amateurs engaged in other pursuits, and also to have considered their art perfect in itself, without the aid of the other two; and that the knowledge of by-gone architecture alone was all that was necessary, and that principally at periods when least aided by the others, or from buildings from which the sculpture, which once gave the chief life an expression, has been broken or carried away, and on which the paintings which once shone on the walls, and which gave the chief warmth and constituted their greatest glory, have decayed and disappeared,—content with copying the bodies left by their forefathers, beautiful, no doubt, in their form and proportions, but forgetting to give them the life by sculpture, or the warm and gorgeous apparel by the sublime art of painting, which the originals had when they were first opened to the admiring gaze of the assembled multitude. Now, if a sculptor is the designer of a building, you may be sure that the last thing that he will leave out of it is the sculpture; and that as the chief delight of the sculptor is to represent the human figure, he will be sure, if possible, to find fitting places for it; and, as in studying for the accessories of his figure subjects he has to study leaves, flowers, and animals, you may be sure that he will not forget to wreath and place them in his capitals, and this not only because he can do them, but because he loves them. And if a painter designs a building, you may be sure he will not

forget the colour; you may be sure that the building, when first built, will be intolerable to him,—the cold white stone an eye-sore: everything being the same colour will be unnatural and painful to him, and he will be impatient to alter its tones; to break its monotony with colour, and its dulness with storied subjects; and where the positions are not fitted for painting, he will be only too anxious to enrich his building with beautiful forms, and light and shade, by the aid of sculpture,—and that not only because he possesses the power of enriching the building by painting, but because it is his nature, increased by cultivation, to love these things.

So that I have endeavoured to show you that a genius possessed of the power of working as a painter, a sculptor, and a mechanic, like Organza, will be the best possible architect, i.e. designer and practical superintendence of a large work, or one requiring the assistance of many hands; that an ordinary man possessing as much practical knowledge of these arts as attainable under his particular circumstances, will be a much better architect, as to design and superintendence, than he did not possess that knowledge; that the leading and most celebrated architects of the Italian school of later Gothic, and Early Renaissance, acquired their remarkable skill in designing buildings, in which the most perfect figures, sculpture and imitation of nature in the details harmonized with the paintings and coloured mosaic and inlaying on the walls, combined with many remarkable instances of original and daring construction,—acquired that skill, that love of nature, and perfect and fine work, and knowledge of how work would look and combine, with the practical head and hand required to plan and make models for the execution of those daring feats of construction, in the goldsmith's shop, in the atelier of the sculptor, or the studio of the painter,—each having made many valuable works without the aid of any one else, and been entrusted upon their own responsibility with much valuable material, before attempting to be the sole directors of the work of hundreds, and the sole dispensers of the money of their country, in gigantic works, with many first-rate masters working under their orders.

Also, I have endeavoured to show you the practical knowledge and power of executing works in the sister arts will give men a love for, and an appreciation of them that they would not, and cannot, otherwise possess, to the manifest gain of the buildings, and also to the increased employment of artists' of those branches of art.

This knowledge and power of execution will, in fact, at once, and as a matter of course, produce the sort of feeling which made Mr. Hardwick (according to the *Times* of the other day, in an article on the new fresco in Lincoln's Inn Hall) say, that he was so pleased with it, that he should for the future leave all the spaces he could, in his buildings, for frescoes: and if those are his sentiments, may be long live and keep his promise.

Now, let us turn to the best way of applying these principles to ourselves. Most of us are past the time, and would find it difficult even if we were not, to begin our education as these men began it. Then, what is the next best way of acquiring, in proportion to our opportunities and talent, this practical knowledge of art,—this unprejudiced love of all the arts, and been kept for and love of nature,—and this finger knowledge, that will make even an art man a good constructor, because he looks upon it in a practical manner, and does not waste all his time learning it from books, although much can be learnt from them?

With regard to the love of colour in nature, and the consequent love of the use of it in our buildings, and love and proper appreciation of the art of painting, and all that is to be learnt from a practical knowledge of painting, and a power of producing paintings, as it is not my subject tonight, I will dismiss it with the remark that the best way of obtaining them, for those that are either being educated in the usual system or engaged in the office, is painting from nature whenever they have time and opportunity, and also studying paintings in the exhibitions of the year, and not architecture only. But with regard to the love of form and light and shade in nature, and, consequently, of the expression of them by the art of sculpture in our buildings, and the love and proper appreciation of this art, and all that is to be learnt from a practical knowledge of it, and a power of producing works in sculpture, and of modelling and other means whereby we look on forms of architecture, whether artistic or constructional, from a more practical point of view, and obtain a more perfect power of superintending others in works of sculpture

and other necessary works,—this is the principal object of this paper; and, it seems to me, that as the architects of old obtained these powers by the actual practice of some one practical art, so we, in like manner, although already engaged in some other branch of the profession, may at least correct our deficiencies, and obtain some part of these powers by the occasional practice of one practical art.

I have, after some consideration, selected wood carving, as more cleanly than stone, and propose that those who think with me, or at least thinking that there would be no harm in their acquiring some proficiency in the use of the chisel, should form into a class, on the same principles as the class of design, and engage an experienced carver to set us going, at least in the technical knowledge and right use of the tools, and meet fortnightly for the purpose of learning to produce works of sculpture in wood.

I will conclude with an invitation to all who would like to be able properly to superintend the execution of a capital, a crocket, or a finial, in the words of Donatello to Brunelleschi, when Brunelleschi found fault with his crucifix.—“Take wood then, and try and make one thyself.”

At the conclusion,

The Chairman said that he had been much interested in the paper, which he considered contained some points deserving of their attention as architects and students of art. To these he would venture shortly to refer. The system of education among architects, seemed as if it were likely to be made the subject of change in several respects. He quite agreed with the author of the paper just read, respecting the old plan of studying nothing but drawings and engravings, without becoming familiar with the practical details of a building. Happily, however, for the student of architecture, it had become the custom to visit foreign countries, and there study the most remarkable and note-worthy buildings. To this he was disposed to attribute much of our success in Classic architecture, and the success generally which was beginning to attend the study and practice of architecture in this country. The study of foreign buildings, more especially the Classic and Antique, tended to cultivate a taste for sculpture and painting. An illustration of the development of this faculty was presented in the case of Professor Cockerell, whose pediment of St. George's Hall, Liverpool, showed the great advantage of practical artistic knowledge. As regarded the formation of the proposed class, he entirely approved of the suggestion, and hoped it would be followed up. It had, however, occurred to him that perhaps some person might incline rather to modelling in clay than carving in wood, and upon this point it might be desirable if Mr. Druce were to explain his reason for recommending the latter process. It seemed to him (the Chairman) that there was less difficulty in modelling in clay, owing to the plastic nature of the material; at the same time he was willing to admit that it did not impart the same structural knowledge which was to be derived from carving in wood. The value of knowledge superadded to architecture was notably instanced in the case of England's greatest architect, Sir Christopher Wren, who had acquired a practical knowledge of anatomy, and a European reputation for mathematics, before he commenced to practise the profession of an architect.

Mr. B. A. C. Herring suggested that if students of architecture would regard carving in wood, not as a portion of their daily office-toil, but as a recreation, it might be invested with additional attraction. He quite approved of the suggestions thrown out by Mr. Druce, because he had himself known many instances in which architects had to employ sculptors to design figures for them, whereas, if they had had themselves a knowledge of sculpture, they could have told what figures or groups would have suited their buildings best. That the sculptor's art could be readily attained by the architect was perhaps shown by the fact, that many persons who were neither architects nor professional sculptors, were nevertheless good sculptors. He himself had often heard of cases in which clergymen had executed fountains for their own churches, and why should not architects do the same, and design their own foliage or figures?

Mr. C. M. Lewis observed that if architects could execute their own figures, they would probably introduce sculpture more frequently into their buildings than was now the custom.

Mr. Druce said that the reason why he had suggested wood as the medium for carving, was that, in the first place, it was a cleaner process; and secondly, because, if a complete mastery of the chisel could be obtained, it would be very easy

for the carver in wood to become the sculptor in stone also. It did not appear to him that a knowledge of carving was at all difficult of attainment; and as an illustration he might mention that he knew a case in which an architect in the country, failing to obtain a skilled workman, showed an ordinary carpenter, who had never carved anything of the sort in his life, what was wanted, and, in a short time, he succeeded in producing a very creditable ornament on a weather boarding.

The Chairman called attention to the course adopted by mechanical engineers. When they got a pupil they sent him for a couple of years into the drawing-office; he next went into the workshop to file, turn, forge, and learn what a bit of iron was; and finally, he went for two or three years into the modelling-shop, where he learnt how to make in wood the models from which the machinery was subsequently cast. In like manner, it was the practice occasionally to send young architects into a builder's yard, to learn something of carpentry. If to this could be added a practical knowledge and artistic feeling in the treatment of buildings, it would be most desirable.

The Reader of the paper gave notice of his intention to move at the next meeting that a class for wood-carving be formed, and announced that, should the class be so formed, he had been promised some practical aid in the way of assistance from skilled workmen.

The next subject for the class of design will be a town-hall, and at the ensuing ordinary meeting a paper will be read by Mr. J. Johnson on “Coloured Materials, considered principally with reference to their Application to External Design.”

COUNCILS OF CONCILIATION.

On Wednesday evening, at the Marylebone Literary Institution, Mr. Blanchard Jerrold gave a popular reading, descriptive of the relations between master and man in France, and of his recent visit to the Conciliation Hall of Paris, with a view to the formation of similar institutions in England, for settling disputes between the employer and the employed. The reading did not attract an audience so large as the interest of the question would have led us to anticipate. The subject was treated in an able and amusing manner by Mr. Jerrold; and the reading, which we hope will be repeated under more favourable circumstances, was useful as showing the working of the *Conseils de Prud'hommes* at Paris, existing under the special countenance of the present Emperor. For the decision of cases of certain kinds, and towards the cultivation of amicable relations between masters and workmen, the evidence adduced by Mr. Jerrold showed that the Councils of Prudent Men worked most successfully; but it did not throw any further light upon the question of their use in diminishing the number of strikes about wages, than is to be found in the evidence before Mr. Mackinnon's Committee of 1856, to which we gave attention recently. In the wages question it must be recollected the *Conseils* have no power to enforce decisions; and as it is not argued that similar bodies could have any in this country, their operation in diminishing the most fertile cause of strikes would be indirect, though probably in that way such as would well justify their institution. Mr. Jerrold showed that, in 1857, there were 50,000 disputes, of which only 8,000 proceeded from the “Bureau de Conciliation,” or court of first resort, consisting of a master and a workman, to the “Bureau Général,” or court of appeal, which consists of three masters, three workmen, and a president nominated by the Government; and of this number appeals, 6,000 were withdrawn. Much of the particular success of the *Conseils* in France, or in Paris, was attributed by Mr. Jerrold to the high character and feeling of self-respect in the French artisan,—a feeling, which descended to the class of the rag-pickers, and was in great part the national attribute, of paying respect to the able man as such—one absolutely different from that of society in England. Mr. Jerrold declared from his own observation, that habits of intoxication amongst the French artisans were almost entirely absent. The French workman spoke not of his “master,” but of his “patron.” Whether from these national peculiarities, or from the merits of all such institutions, therefore, it appeared, from Mr. Jerrold's inquiries, that the *Conseils* were working well in France, and that (in corroboration of the evidence before the committee) similar institutions might be of a certain value in this country. But the *Conseils* in France could at any time be swept away by a decree of the Govern-

ment, such as that which re-established them; and in Lyons, in 1831, the attention given to the relations of masters and workmen had not prevented excesses of riot, and in Paris, in 1818, the prevalence of some delusions.

THE WORKS OF ART IN HAMPTON COURT PALACE.

The state of the pictures here, and perhaps still more of the tapestries, requires immediate attention, if they are considered to be worth preserving. Mr. Henry Cole has recently addressed to us some observations on the subject, wherein he urges that instead of being treated as a mere storehouse, Hampton-court Palace would be a much more attractive public sight if the rooms were restored as much as possible to their original state of decoration. He divides the pictures into six classes, and goes on to say,—I would suggest that the works of fine art should be brought to the metropolis where they would be much better preserved, where the facilities for making them available for public instruction would be greatly increased, and all classes of the public infinitely more benefited than by leaving them at Hampton-court Palace, which is visited by the great majority of persons as a palace in the country having beautiful gardens, rather than for the study of works of fine art. The public also possesses pictures and works of art which require constant care, at many institutions, such as the National Gallery, the British Museum, the National Portrait Gallery, Greenwich Hospital, and at the South Kensington Museum, &c. I would suggest that a small committee of consultation, consisting of three artists, with one chemist and one amateur, be appointed to determine what measures should be taken for the preservation of all works of art, either belonging to the public or lent by the Crown for public use, and that premises be provided and skilful persons be chosen for the purpose of carrying into effect, under proper superintendence, the recommendations of this committee.

PRINCIPLES OF DESIGN IN ARCHITECTURE.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

At a meeting of this Institute, held in Edinburgh on the 6th, Mr. James Gowans read a paper, illustrating some of the principles of design in architecture. Mr. Lessells presided. Mr. Gowans, after dwelling on internal arrangements, described the style in which the exterior should be constructed, and the mode in which the materials used should be treated; the first step being to meet adequately the requirements of the inmates of the house, and the second to secure a truthful application of the material which the district afforded. The dressings of the building should, he remarked, be executed with light and cheap material, hewn in such a way as to please the eye, without that accuracy of touch necessary in large public buildings. He pointed out how the coloured stone of particular districts did not find fair play in architecture; observing that it was only when the disposition of these coloured stones was not correct and honest that failure in effect resulted. He had heard it said that it was only in such sunny places as Italy that colour in architecture should be used, and where it could produce its true effect; but he held otherwise; and one of his reasons was, that the deficiency of sunshine in this country called for the application of such material as would give our buildings as cheerful an aspect as possible. With reference to the houses of a larger description, Mr. Gowans instanced his newly-erected mansion at Merchiston-park, Morningside, as an example of the correct principles of architectural design. Whatever might be the effect of that house on the spectator, he assured them that his object in so building it was not simply novelty, but he had endeavoured to erect a building which would put to practical test the system of constructing on squares at fixed angles, thus working out every feature on strict geometrical principles. Another object which he desired to realize was the disposition of colour in the building, so as to assist in developing its general structure and particular parts. Mr. Gowans, in passing, commented upon the importance of thoroughly grounding young beginners in architecture in this anatomy of house-building; so that, instead of borrowing from examples, they might strike out new methods of building, and by mature taste secure a design which would please the eye of the closest critic. He advocated the establishment of a chair of architecture in our colleges, on the ground that architecture had far more to do with our moral and social improvement

than most of us imagined. There should be examinations instituted in such university architectural classes, and diplomas given, to show that a student was well versed in the principles and practical knowledge of the art.

Mr. J. Dick Peddie, in the course of a brief address, observed that the Institute had resolved to have no discussion on papers on the same night as their delivery, but on the succeeding night of meeting. Mr. Gowans had given them some excellent information, but he (Mr. Peddie) did not profess to have much faith in the system of geometrical lines which had been explained. He trusted Mr. Gowans at next meeting would give fuller explanations of this system. But whatever the principles were that Mr. Gowans had worked upon in the erection of his mansion at Merchiston, every one would admit that he had produced a house of highly picturesque effect. If very much doubted whether this effect was the result of the geometrical construction, and also whether it might not have been produced by the ordinary system of architecture. Mr. Gowans reiterated the old complaint against architects, that they were but copyists; but if every architect aimed at producing an original design in house building, the result would be all kinds of monstrosities. The true way was to do as nature dictated, and to make small and gradual steps of improvement in architecture, not to produce new styles. As to Mr. Gowans's remarks regarding chairs of architecture, he agreed with them. We ought in all our universities to have a Professor of Architecture, and it seemed to him to be a disgrace that, in a city like Edinburgh, this art should be so much neglected.

ST. PAUL'S CATHEDRAL.

A COLOSSAL statue of the late General Napier, executed in white marble by Mr. George G. Adams, has been set up near the north entrance to St. Paul's. It is elevated upon a plain pedestal of grey marble, on the face of which is the following inscription:—

CHARLES JAMES NAPIER,  
A PRESIDENT GENERAL,  
A BENEFICENT GOVERNOR,  
A JUST MAN.

It is well spoken of, but we have not yet seen it. We attended the special service there on Sunday evening last, but the building was then too dark, and too crowded to examine sculpture. Mr. Parness's arrangements for the services are more complete than they were, and appear to meet the wants well. He must be anxious, we should think, to get a more satisfactory-looking pulpit than the present. The painting of the flat surfaces in the dome is nearly completed, and a considerable amount of gilding has been done there. When anything is done down below, it is to be hoped that we shall get more colour.

The Rev. Daniel Moore was the preacher, and was heard in every part of the vast edifice by attentive thousands. The effect of the singing, though the organ had been taken down, was admirable.

THE ART UNION OF LONDON PRINTS.

As advertisements have told, each subscriber for the current year will receive, besides his chance of a prize (not at all remote), a volume containing "Thirty Pictures by Deceased British Artists," engraved by W. J. Linton, and a line engraving, by Mr. F. Hall, from the picture called "Come Along," by Mr. J. J. Jenkins. The volume contains "The Corn Field," by J. Constable (an exquisite engraving), Northcote's "Burial of the Princes in the Tower," Reynolds's "Banished Lord," Haydon's "Marcus Curtius," Wilkie's "Rabbit on the Wall," "Death's Door," by Blake; Hogarth's "Marriage à la Mode," Liveriesque's "Cobbett's Register," Fuseli's "Witches in Macheth," Martin's "Joshua commanding the Sun to stand still," Hiltou's "Europa," "A Peat Bog in Scotland," by Turner; "The Defeat of the Spanish Armada," by De Louthembourg; Wilson's "Niobe," Barry's "Victors of Olympia," Etty's "Cupid," "Barrington Old Pier," by Copley Fielding; West's "Death of General Wolfe," poor Müller's "Mennon," Collins's "Cromwell," and others.

The volume itself, we have no hesitation in saying, is alone well worth the guinea subscription. It was an excellent idea, and has been exceedingly well carried out. The line engraving, although necessarily simpler than some of the prints issued by the Art Union (the book of engravings being a costly production), bids fair to be extremely popular and much prized. The *Observer* says of it (and in the case of the Art

Union of London we generally prefer, for reasons, to give the opinions of others rather than our own).—

"The beauty of the scene, the gentle hills, and the gurgling streamlet; the beauty of the subject, a handsome woman and a lovely female child, and the beauty and harmony of the accessories, all contribute to render this engraving perhaps the most perfect, and certainly the most attractive, that has ever been published by the Art Union of London for distribution among its subscribers; the beautiful, are marked in every feature of the original work, and are translated in all but colours by the engraver."

A large subscription, and active proceedings on the part of the council this year, may unquestionably be looked for.

COST OF SEWERS AND PIPES IN PRESTON.

THE following extract from the recently published summary of public works executed during the year ending April 30th, 1859, contains some useful information:—

Variety	E. s. d.	s. d.
69 of Brick Sewers, 2ft. 6 in. diameter, at 7s. ....	21	0
538 3ft. by 2 ft., at 17s. 6d. ....	470	14
294 3ft. 6in. by 2ft. 6in., at 25s. ....	412	12
372 3ft. 6in. by 2ft. 6in., at 28s. ....	520	10
250 4ft. 3in. by 2ft. 6in., at 11s. 9d. ....	524	16
50 4ft. 6in. by 3ft., at 7s. 7d. ....	211	13
93 4ft. 6in. diameter, at 9s. 9d. ....	134	9
<b>3,678</b>	<b>2,397</b>	<b>2</b> 8
12 of Cast-iron Sewer, 2ft. diameter, at 30s. ....	75	12
22 of Earthenware Pipe Sewer, 6in. diameter, at 4s. ....	4	8
1,129 2in. diameter, at 7s. 6d. ....	418	13
545 1 1/2in. diameter, at 8s. 6d. ....	247	9
88 1 1/2in. diameter, at 11s. 3d. ....	40	10
98 1 1/2in. diameter, at 13s. ....	63	14
145 2 1/2in. diameter, at 18s. 6d. ....	131	3
<b>2,917</b>	<b>917</b>	<b>10</b> 8

Total, including superintendence, also man-holes, street gutters, and all appurtenances, £3,286 6 4

PUBLIC WORKS OF WATER SUPPLY.

44 of 2in. iron pipes, including valves, fire-plugs, outlet-pipes, and all appurtenances, at 1s. 7d. ....	3	0	8
1,430 of 3in. ditto, at 3s. 4d. ....	240	0	8
321 of 4in. ditto, at 4s. 9d. ....	70	4	8
625 of 5in. ditto, at 6s. ....	187	10	0
30 of 6in. ditto, at 6s. 6d. ....	13	5	0
<b>2,516 yards.</b>	<b>£350</b>	<b>16</b>	<b>1</b>

THE RIGHT OF COUNTY SURVEYORS TO RETAIN THEIR DRAWINGS.

A MATTER of some interest to the architectural profession came before the Norfolk Quarter Sessions on Thursday, the 6th inst. The county surveyor, Mr. Phipson, it appeared, had intimated to one of the committees of the Court that his predecessor in office, Mr. Brown, declined to give up the plans, &c., which he had prepared during the twenty-three years which he had served the county. The ground assigned by Mr. Brown for this proceeding was that, by the usage of his profession, plans were the property of architects, and not of their employers. A correspondence took place in November and December between the clerk of the peace and Mr. Brown's solicitor; but as no amicable solution of the difficulty could be arrived at, the former was instructed to embody the circumstances in a case to be submitted to Mr. Welsby, Q.C. That gentleman, referring to the conditions under which Mr. Brown was appointed, observed that the question was whether the remuneration which he was to receive, and which was to include all charges for plans, estimates, and attendances, meant only all charges for the labour and skill expended in the preparation of plans, or whether the expression included also the value of the plans themselves. The latter, Mr. Welsby expressed his opinion, was the reasonable construction to be put upon the matter; and he believed the plans had become the property of the persons for whom the work to which the plans related was done. The county magistrates, not being a corporation, could not, Mr. Welsby added, bring an action against Mr. Brown; but he thought the Court might make an order for the delivery of the plans, and that in the event of disobedience an application to the Court of Queen's Bench would result in a *mandamus* being granted to enforce compliance. An animated discussion followed, in which the Rev. E. Postle, the Rev. Lord Bayning, Sir Samuel Biggild, Mr. Fellowes, Mr. P., the Hon. and Very Rev. the Dean of Norwich, and other gentlemen took part; and eventually the Dean stated that he was authorized by Mr. Brown to "offer to the magistrates to allow the clerk of the peace, or any person appointed within a reasonable time, to make, for

the use of the present or future county surveyors, copies or tracings of all plans and specifications for all works executed under his superintendence as county surveyor, or to furnish copies upon being remunerated for the same." It was also proposed, on the part of Mr. Brown, that the matter in dispute should be referred to two eminent metropolitan architects, with power to call in a barrister as umpire. The Court finally determined to instruct the committee who had turned their attention to the subject to enforce their claim, but to endeavour, if possible, to effect an amicable arrangement before proceeding to legal extremities.

ARCHITECTURAL COMPETITION, HULL.

In reply to an advertisement put out by Messrs. Jamieson & Son, for re-building their premises, the following architects submitted designs, viz.—Mr. Brodrick, Leeds; Mr. Brown, Hull; Mr. Peteh, Scarborough; and Messrs. Bellamy & Hardy, Lincoln. The design of the last-named gentlemen was selected.

SCENERY AND THE STAGE.

The *Princess's Theatre*.—Although comparison in such a case is difficult, we are obliged, we are very much disposed to say that Mr. Harris has the best pantomime of the season: that is, if we were to examine each under all the hands involved in getting up, dancing, the actors employed, and so on, Mr. Harris's "Jack the Giant Killer" would get most marks. Miss Louise Keeley is a host in herself, and M. Espinosa certainly one of the most extraordinary ballet-actors that has been seen for a long time. The scenery, painted by Messrs. Gray and Gates, especially "The Queen Bee's Haunt" (a remarkably clever work), and the closing scene, is very satisfactory.

*St. James's Theatre*.—It was a bold thing on the part of Mr. Chatterton to attempt the production of a pantomime at this house, where there were no properties, no scenery, scarcely a trap in the stage. But the public had so well supported him in his undertaking up to that time, that he felt bound to carry out the traditions, and so, at the cost of more than a thousand pounds, there is, for the first time, a pantomime at the *St. James's*. Mr. J. Coventry, a name new to us, has produced one or two very pretty scenes, "The Home of the Queen of Mirth," for example, and the whole is very successful.

ART TEACHING AT THE CRYSTAL PALACE.

It is one of the noticeable signs of the present age that the arts of architecture, painting, and sculpture are brought into use in places where formerly they were but little thought of. In taverns curiosities are used as a means of attraction; many have added concert-rooms to their premises, where good music is to be heard; and of late, pictures of good artists have been collected. There is a gallery of pictures by modern painters in one of these concert-rooms that would be worthy of a place in any of the houses of the rich or noble in the land. While this movement is progressing in a satisfactory manner, it is to be regretted that, in some instances, buildings which have been raised for the distinct purpose of advancing the public art and tastes are being turned from their purpose: one of the most important of these is the Crystal Palace at Sydenham. Here have been copied, at an enormous cost, several of the choicest remains of antiquity. There are the temples of Egypt, Greece, and Rome; curiosities of nature, statues, tombs, the effigies of men of eminence of all ages; flowers, both in and out of season; grounds laid out with great skill, and most carefully kept; and from this palace, provided for the people, is one of the sweetest views in England. Yet all these attractions do not seem to be sufficient. Let us hope, however, that this may partly be in consequence of the distance from town at which this rare exhibition is placed, rather than from a want of general appreciation. It certainly sounds strange, in these times, when we pride ourselves on advanced taste and intelligence, when we hear what is going on in the Crystal Palace, a structure in the first instance devoted to the fine arts. At twelve o'clock Mr. Pepper gives an illustrated lecture in the new lecture-hall, but there is at the same time "Punch" in the centre transept. At one o'clock the band performs the "Riflemen's March," and a French clown exhibits his "whimsical performance." At half-past one "The Chantrell Family, show their surprising feats." At two o'clock there is to be seen a troupe of dogs and monkeys,

from Paris, and a celebrated performing elephant. Then come dissolving views, anything but first-rate; afterwards an "imitable" nigger amuses; and at the close there are grotesque shadows on the great screen. How different is this teaching from that which the anguine looked for when this palæo was first raised. Let us hope that those who throng to see these entertainments may at the same time profit by the more intellectual part of the exhibition which is there provided.

TESTIMONIALS TO THE MANCHESTER EXHIBITION COMMITTEE.

A GALLERY OF ART FOR MANCHESTER.

On the 6th inst., a meeting was held in the mayor's parlour, at the Manchester Town-hall, for the presentation of a piece of plate to each of the seven members of the executive committee of the late Art Treasures Exhibition.

The seven testimonials are made from one model, in silver oxidized and partly gilt, each consisting of a decorated shaft, surrounded by figures of Painting, Sculpture, and Industrial Art (with their emblems), and crowned by an infant Genius, holding aloft his torch, and in conflict with an eagle. The shaft is decked with the rose, shamrock, and thistle, and the base with lustral and ivy entwined with ribands, bearing the names of great artists. There are also medallion portraits of Michelangelo, Titian, and Cellini, and on circular shields the exhibition building, the arms of Manchester, and the arms of the gentleman receiving the testimonial. The work has been executed by Messrs. Hunt & Roskell, from designs by their artist, Mr. H. A. Arnstead.

In the course of the proceedings Mr. T. Fairbairn made an address, wherein he urged the inauguration of an institution, to be dedicated to the arts, which shall be worthy of the wealth and importance and enlightenment of that great city. Let the design of such an institution (he said) be simple and comprehensive; let it be central in its situation; let it be a fitting receptacle for the display of the most costly and the most meritorious works of art,—a home where such works can be well seen and conveniently studied; let it be a free-will offering from the well-to-do among us to those whom we wish to see advancing in prosperity and improving in tastes; and, above all, let it be opened absolutely and entirely free to all, for the sake of the good that it would gradually instil into the public mind; and I will answer for it such an institution shall not lack either noble gifts or public appreciation. I, for one, towards the formation and establishment of such a permanent art gallery, will willingly give my time, money, and whatever energies or influence I possess.

We sincerely hope that the proposition will be immediately acted upon. That such a city as Manchester should be without any public collection of works of art is not creditable or wise. As to the propriety of the presentation of the testimonials above mentioned, all we can say is, that to justify it, the committee should enjoy in Manchester a very different reputation from what they have in London!

IRELAND.

The directors of the Newtownmavady Market Company offer a premium of five pounds for plans and estimates for a market-house, to be built near the railway station.

A new Independent church is to be built at Galway, after designs by Mr. Raffles Brown, architect. The Royal Institute in the same town, recently erected, is an important structure, presenting two principal fronts, and arranged internally both for business, scientific, and dwelling purposes, according to plans by Mr. Carson, of Dublin, architect.

The Ecclesiastical Commissioners for Ireland are about having extensive works contracted for in connection with the church of Ardferd, co. Kerry. The War Department has called for tenders to execute certain alterations and additions at Carrickfergus Castle, in the Belfast district.

The millers of Dublin and eminent mercantile firm in the timber trade are still at variance as to "string" or "calliper" measurement. Mr. Challoners, of Liverpool, was appointed to, to decide the question; and his statements in reply serve to show that in yellow pine (St. John's) string measure is from 1 1/4 to 1 1/2 per cent. less than calliper; birch (St. John's, N.B.) averages 20 per cent. less; Quebec yellow pine, 9 1/2 per cent. less; red ditto, from 8 to 14 1/2 per cent. less; Quebec birch averages 10 per cent. less; Quebec oak, 8 1/2 per cent. less; Danzic and Mamel fir, from 7 1/2 to 8 1/2 per cent. less; Rigafir averages 12 per cent. less; and pitch pine,

8 per cent. less. It is difficult to say how the question may end yet.

The new line between Athlone and Roscommon is expected to be opened about the 1st proximo; it is about twenty miles in length.

The estimate of Mr. Hawkesley for the proposed waterworks at Dublin, including the purchase of land and other contingencies, is 218,558. 8s. 5d.

The Board of Public Works are about executing additions and alterations at the Abbey district model national school-house, and seek for estimates.

It is believed that the Conservative Land Society are about effecting improvements in the dwellings of the Irish operatives and peasantry; also introducing the freehold land system into that country.

The design for the memorial about to be erected by Judge Berwick to the late Father Mathew is by Sir John Benson, and comprises a fountain, with basin 24 feet in extreme diameter, with shaft rising therefrom, and supporting two other basins, 34 feet and 5 feet respectively in diameter. Three dolphins with upturned tails sustain a third basin, above which is a jet, throwing water to a considerable height. Cost, about 150*l*.

Dungarvan has been lighted with gas. Mr. Holloway contractor.

It is proposed, pending the arrangements for the permanent pier and breakwater at Galway, to erect a temporary pier from the point at which the Midland Great Western Railway terminates, to run out far as the pool, and to cost 3,000*l*.\*

STAINED GLASS.

St. Giles's Church, Comberwell.—This church, well known as one of the earliest works of Mr. Scott, has recently been adorned with two stained glass windows placed in the chancel, on either side of the great east window. These two new windows represent incidents in the lives of the Apostles, St. Andrew, St. Peter, St. John, and St. James, and have been designed and executed by Messrs. Lavers and Barraud, being paid for by subscription of a few members of the congregation, one of them entirely at the cost of a munificent lady. The committee, who originated this idea, intend, if they are aided by their fellow parishioners, to complete the other four windows in the chancel in the like style, and have already ordered a third to be placed on the south side by Easter next. This window will, in its two lights, represent incidents in the lives of the Apostles, St. Philip and St. Bartholomew.

METROPOLITAN BOARD OF WORKS.

THE SOUTHERN OUTFALL MAIN SEWER.

At the ordinary weekly meeting of the Metropolitan Board of Works, held on Friday, the 6th, in the council-chamber, Guildhall, Mr. J. Thwaites in the chair, tenders were received and opened for the southern outfall sewer, and were as follows:—Messrs. William Delpech, 330,000*l*.; William Hill, 328,000*l*.; Helling & Co., 315,000*l*.; Joseph Diggle, 328,000*l*.; Edward Thnot, 373,000*l*.; William Moxon, 337,000*l*.; W. H. Rowe, 296,000*l*.; George Baker & Son, 294,000*l*.; Rowland Brotherhood, Chippenham, Wilts, 282,550*l*.; Peto & Betts, 337,715*l*. 9s. 1d.; William Treadwell, 384,536*l*. 11s. 9d. The tender of Rowland Brotherhood, Chippenham, Wilts, was accepted.

THE SANITARY CONDITION OF THE DWELLINGS OF THE POOR.

A communication was received from the Whitechapel Board of Works, calling attention to certain premises now in the course of erection at the rear of Nos. 80 and 81, on the north side of High-street, Whitechapel. It was the intention of the persons erecting the premises in question to construct three houses, in which it was probable that not less than seventy-two persons would reside. The site selected was a pent-up *cul de sac*, with a covered entrance to High-street, Whitechapel, only 5 feet wide, decreasing in width to 3 feet 10 inches, and the height only 8 feet 6 inches. The notice went on to state that the Board viewed with the most serious apprehension this system of constructing dwelling-houses for the poor as subversive to the great end to be accomplished in sanitary regulations, and earnestly requested the Board of Works to cause a special inquiry to be instituted into the matter. A somewhat similar instance existed in Inkhorn-court, also on the north side of High-street,

\* With reference to a note in a recent number, as to the fall of a portion of the works at John's-lane distillery, the architect wishes us to state that it was simply a few perches of brickwork which were thrown down by the accidental upsetting of a water-tank.

Whitechapel, the entrance to which was between the houses 89 and 90, to which their especial notice was also solicited.

The matter was referred to the superintending architect to report upon.

THE ORDNANCE SURVEY OF LONDON.

A report was brought up from the Main Drainage Committee on the arrangements entered into by the committee with the Treasury for the settlement of the claim for the Ordnance survey of London. The report stated that the committee had communicated with the War Department, and had arranged with them that all claims against the Board of Works should be settled by the payment of 10,000*l*. The War Department was to take the plates of the maps, and vestries were to be supplied at a cost only equivalent to their cost to the Government—namely, 1s. per sheet. The original claim had been 24,212*l*. 17s. 8d.

THE TRAMWAYS ON WESTMINSTER BRIDGE.

Stn.—As a great public work must necessarily be open to a certain amount of criticism from that portion of the community who are interested in its utility and successful completion, I feel somewhat inclined to think that the following query will arise regarding the system of tramway adopted on the new part of Westminster-bridge (the privilege of inspecting which the public have now an opportunity of enjoying, by a birds-eye view while passing over the west side of the present structure).

It will be observed that there are two trams in the new roadway, for carriages of various construction; and I presume it is intended that the stream of vehicles should travel reversely. Now I would draw attention to the very small space between these trams, and suggest that it would be impossible for many heavily-laden waggons to pass each other when the burthen they contain hangs over their wheels on either side, even an ordinary distance. I would instance the frequent transit of waggons containing the huge sacks of hops. It would be, I need not say, most unfortunate for two such to meet in the centre, as it would entail the necessity of the one or other retreating by a backward movement.

Of course I may be speaking in ignorance of better and more matured arrangements, but I venture to submit my ideas humbly to your notice. H. C.

THE FOUNDLING HOSPITAL AND BRITISH ART.

YOUR account of the Foundling Hospital and of the congenial efforts of Hogarth and others in 1760 to maintain as well as to embellish that asylum is highly interesting and instructive.

If you would pursue the subject a step further, and supply in more detail the catalogue of the men offering to appear in a Foundling uniform at their next "festival," it would be of great value to the illustrators of the art of that interesting but only half-explored period; when, indeed, we may say, art itself was but a deserted haunting making its first step into existence, and struggling into the full light of public favour. That 7th of December, 1760, may be looked back to as the first dawn of hope for native art, which had just made a probationary effort to "exhibit" itself at the room of the Society of Arts in the Strand, and which was the first of a succession of exhibitions leading on to that of the Royal Academy.

As to the list printed in your number, I could point out sundry slight errors; but if you would supply it correctly, as entered, I should have to thank you for myself and many others interested in the inquiry.

Several of the names are to be found in the catalogue of 1760 and the succeeding years. H. M. Spang, for example, was a sculptor by whom I have a statuette in terra-cotta of Hogarth in the act of making a sketch by stealth, but of whom I find no other trace than that of his being an exhibitor by the side of Rouilliac, Wilton, and Hogarth, at that period. J. H. A.

\*\* Our list was printed from that given by Mr. Brownlow. Since the receipt of our correspondent's letter, Mr. Brownlow has kindly enabled us to see a copy in *fac simile*, and we have found one or two inaccuracies: for example, the fifth name on the list, instead of William Chambers, is William Chambers, the architect of Somerset House; and Nathaniel Honey is Nathaniel Hone. T. White and G. Whately, it may be well to mention to save speculation, were the treasurers of the hospital.

Books Received.

*Moral Emblems, with Proverbs of all Nations; from Jacob Cats and Robert Fairlie. With Illustrations by John Leighton, F.S.A. Translated and edited, with additions, by RICHARD PROCT. London: Longman, Green, & Co. 1860.*

THIS is a beautiful specimen of typography, wood-engraving, and bookbinding; founded, with considerable skill and intelligence, on an existing body of world-wisdom. The binding is especially elegant, a design probably of the illustrator, Mr. John Leighton, the results of whose skill as a designer of such matters are well known to the public, though they may attribute them to one "Lake Linmer." Mr. Leighton has always inclined to typification and symbolical representations; and, in setting forth the works of Jacob Cats, as originally illustrated by Jan and Adrian Van de Venne, he has found a labour that was a delight, and has succeeded in consequence: true indeed it is, the labour that we love "physics pain." Written in Dutch and Latin verse, the Moral Emblems and Proverbs of David Cats are almost unknown in England: they form a code of moral instruction, addressed to the youth of both sexes, and applicable to most phases of life. In addition we have pertinent quotations from the ancient authors, the poems of his contemporary, Robert Fairlie, and a collection of proverbs of all nations. Some of the illustrations are remarkable specimens of wood-engraving. We cordially recommend the book, whether to the scholar, the lover of proverbial philosophy, or the young.

VARIORUM.

"THE Engineer's, Architect's, and Contractor's Pocket Book, for the Year 1860" (Lockwood & Co., Stationer's Hall-court) contains (for a pocket book) an immense variety of useful matter, such as an epitome of measurement, the memorandum book of Mr. Telford, the engineer, tables and general information as to sewers, carpentry, strength of materials, woods, stone, coal, iron, brass, steel, and copper; hydraulics, water-wheels, and a multiplicity of other matter, besides the usual almanac materials, and lists of the office-bearers and members of the Royal Institute of Architects, and Institution of Civil Engineers. "Who's Who," edited by C. H. Oakes, M.A. (Bailey, Brothers, Cornhill) has established for itself a distinguished position as an index to everybody who has anything like a handle to his name, titular or official. The present volume (for 1860) is the twelfth issue, and is dedicated to her Grace the (truly graceful) Duchess of Sutherland.

TENDERS

For forty cottages to be built in Hereford. Mr. J. H. Ewins, architect:—

Riggleson & Bowers (James).....	£2,419 19 0
Stone & Bowers (James).....	2,178 11 0
Price.....	1,979 0 0
Banister.....	1,887 0 0

For Works to St. Saviour's Church, Southwark, Mr. Edward Habershon, architect. Quantities not supplied. The Tenders were sent in with two amounts, one for the screen-walls in brickwork, and the other in stone:—

If screen-walls in brickwork.	
Myers.....	£1,134 0 0
Rider.....	1,108 0 0
Tarrant.....	1,099 10 0
Carter.....	1,074 0 0
Downs.....	1,068 0 0
If screen-walls in stone.	
Myers.....	£1,134 0 0
Rider.....	1,178 0 0
Tarrant.....	1,158 0 0
Downs.....	1,137 0 0
Carter.....	1,149 0 0

The screen-walls in brickwork were decided upon, and consequently Downs's Tender was accepted.

For dwelling house, Homsey-rise, for Mr. A. Davenes. Mr. T. W. Copps, architect:—

Nash.....	£1,065 0 0
Sergeant.....	1,719 0 0
Fowler.....	1,677 0 0
Town.....	1,350 0 0

For alterations, &c., at Bows Manor, Southgate, for Mr. Alderman Silbey; Mr. E. Woodthorpe, architect. Quantities not supplied:—

Piper.....	£1,995 0 0
Jeffrey.....	1,189 0 0
Williams.....	1,144 0 0
Carter.....	1,087 0 0
Filler.....	659 15 0

For underpinning about 2,000 feet run of brick sewer in Bishop's-road and Washborne-grove, Paddington, Mr. W. Merzy, surveyor:—

Thirst.....	£2,656 0 0
Pearson.....	391 0 0
Batterbury.....	465 0 0
Rowe (accepted).....	437 0 0
Surveyor's estimate.....	450 0 0

For workshops, Adde-hill, E.C., for Mr. McDougall; Mr. W. Hudson, architect:—

Burton.....	£2,650 0 0
Child, Son, & Martin.....	634 0 0
Pritchard & Co.,.....	631 0 0
Brown & Robinson.....	625 0 0
Newman & Mann.....	618 0 0
Jefferies.....	598 0 0

For new school, &c., for the Rev. Mr. Eld, Lower Belgrave-street. Quantities supplied:—

Higgs.....	£1,380 0 0
Jefferies, Brothers.....	1,132 0 0
Fish.....	975 0 0

Miscellaneous.

**OIL FOR PAINTERS.**—Oil extracted from the seeds of grapes is recommended as an excellent medium for painting.

**SOCIETY FOR THE ENCOURAGEMENT OF FINE ARTS.**—At the adjourned annual meeting of this society Mr. II. Otley (the chairman) said that the society intended to give two prizes in painting. One would be a square ivory or wood pallet, the "Reynolds pallet," with a silver handle; and that which would be awarded for landscape, or *genre*, would be a silver pallet. A bronze medal would be given for sculpture, and also for architecture.

**THE PURCHASE OF ASTON HALL.**—This purchase, of late regarded as more than doubtful, is now, it is thought, placed on a surer basis. The shareholders have paid 7,000*l.* towards the purchase, and the remainder—about 25,000*l.*—was to be paid in the course of this year, or the purchase would lapse, and the deposit already paid be forfeited. The owners of the hall have agreed to accept new terms. They stipulate that the Interim Managers shall pay 3,000*l.* at once, and thus raise the paid sum to 10,000*l.*, and that the payment of the rest of the purchase-money shall be spread over ten years, if not closed at an earlier period.

**FALL OF HOUSES IN SALFORD.**—During Sunday last two accidents to dwelling-houses occurred in Salford, but fortunately they were not attended by personal injury. About three o'clock in the morning, the front wall of a two-story house in Cross-street, Bury-street, fell with an alarming crash, and rendered the place a ruin. The second accident occurred in Queen-street, soon after two o'clock on Sunday afternoon. A labouring man, named Jones, was about to sit down to dinner with his family in the upper front-room of a cottage house in that street, when there came a loud crack, followed by two others, and a noise "like thunder," as the neighbours declare. The wood-work of the roof had yielded, and the whole mass dropped inward, until it bore upon the top of a four-post bed, in the middle of the room.

**ANNUAL MEETING OF THE EMPLOYED AT POOLE SOUTH-WESTERN POTTERY.**—On the 2nd inst., the whole of the men engaged at Mr. Geo. Jennings's works, together with their wives or friends, according to the annual custom of this establishment, sat down together at the pottery works, to tea. The company were upwards of 200 in number. The tea being concluded, a clearance was effected, and arrangements completed for the evening meeting. At the head of the room a temporary platform was erected, and, arranged on a high table immediately in front of the company, was a collection of electrical apparatus, which in the course of the evening was used for experiments. The meeting was addressed by Mr. J. S. Hudson, the manager of the pottery, and by Mr. G. De Chaville and others, and a lecture on electricity was delivered by Mr. W. Coward.

**INAUGURATION OF THE NEW CORN EXCHANGE AT KIRKALDY.**—The completion of the new Corn Exchange at Kirkaldy has just been celebrated by a public dinner, given in the Exchange, and numerously attended. The site of the new building is in Cowan-street, immediately adjoining the old market, and it is intended to serve for a public hall as well as a corn exchange. The dimensions of the hall are 84 feet by 68. The roof, which rises considerably in the centre, is supported by two rows of pillars placed at regular intervals along the entire length of the hall, at a distance of about 20 feet from the side walls. The height of the hall is about 40 feet in the centre, and 29 feet along the sides. The hall is lighted along the east side, and windows are also placed to the north and south: at the west side there are several doors giving access to side-room accommodation; and any deficiency of light at the west side is compensated by the raised portion of the roof being glazed on both sides. The Exchange will, it is estimated, accommodate about 2,000 people; and it has been erected at a cost of about 2,500*l.*, the architects being Messrs. Hay, of Liverpool.

**NEW APPROACH TO THE TEMPLE CHURCH.**—In a short time a new approach will be made to the Temple Church, from Fleet-street, opposite Chancery-lane. A part of Inner Temple-lane is to be demolished, as also Chureyard-court; and other improvements, it is said, are to be commenced forthwith in that neighbourhood.

**THE LINCOLN FRANKLYN MEMORIAL.**—The sum of 1,500*l.* had been subscribed for a memorial to Sir John Franklin, at Lincoln, and the corporation voted 1,000*l.* to purchase a site in a square in the parish of St. Swithun. To carry out the plan a footpath in the square would have to be diverted: this the parish declined to allow, by a majority of twenty-nine, on a poll, and the money subscribed has consequently been returned to the donors.

**STEEL BELLS.**—Messrs. Naylor & Co., of Sheffield, have lately cast the largest steel bell yet made. The height is 5 feet 3 inches, diameter at the mouth, 6 feet 2 inches, and thickness at the sound bow, 4½ inches. The bell weighs 2 tons 12 cwt., or 5,824 lbs., and is destined for San Francisco, where it is to sound an alarm for fires.

**THE DRINKING-FOUNTAIN MOVEMENT.**—The Metropolitan Free Drinking-fountains Association has received the sum of 100*l.* from the executors of the late James Denington, esq., of Clerkenwell, being a bequest of that gentleman. **MANUFACTURE OF IRON.**—Mr. II. W. Nevill, of Llanelly, has patented an invention which consists in making the molten metal, as it runs from the blast furnace, fall from an elevated position upon a conical surface, which throws it off into the surrounding atmosphere in globules. The globules are puddled, and the hells treated as usual. The granulation of iron direct from the blast surface, and the manufacture of iron by the usual process, from the globules, has long been invented.

**CATHORPE CHURCH STRUCK BY LIGHTNING.**—In a late thunderstorm at Caythorpe, the church was twice struck by the lightning, and damaged to such an extent that it will require some hundreds of pounds, it is said, to make the necessary repairs. The vestry and one of the windows were first struck, with such force that a part of the roof fell in, and of course serious damage was done to the interior by the falling materials. A few minutes afterwards, another vivid flash enveloped the entire building in one mass of flame for several moments; and when the glare had passed away, it was found that about 9 feet of the upper part of the steeple had been knocked off, and had fallen through the roof, some of the pieces of stone weighing several cwt. each. The unfallen portion of the tower was very much shattered, and split almost into quarters. Nearly all the ornamental carving on the steeple was destroyed. Was there a lightning conductor? In all probability there was not—at least a proper one.

**GAS.**—A public meeting of the gas consumers of Pimlico has just been held in support of the delegates from the parish in their application to Parliament to protect the gas consumers against the combination of the gas companies. Sir J. V. Shelley occupied the chair.—At Dingwall, complaint is made of the quality of gas manufactured there. "As we believe," says the *Scott's O'Groat Journal*, "that there is no town in Scotland paying more for gas than Dingwall (13s. 9d. per 1,000 feet), the consumers have a right to expect that the quality be pure. A similar complaint as that referred to may easily be made with reference to Wick. Here the price of gas comes close up to that paid by the inhabitants of Dingwall; while, if their gas is worse than that of Wick, they are to be pitied." The people of Wick and Dingwall ought to agitate in the first place for cheap gas: they may as well have it cheap and had as dear and bad. The companies will then discover that, in order to bring up their profits to the required standard, they must set to work in earnest to occupy the ample field of private dwellings which exists in every ordinarily populous town; and that to secure this field they *must* make their gas purer. The inhabitants will thus have the benefit of gas both good and cheap, in place of bad and dear.—An invention has been patented, which consists in the use of vapours, obtained at a comparatively low temperature, under boiling point, from hydrocarbon liquids of high boiling point, such as coal-oil, or spirit of turpentine, for the impregnation and enrichment of ordinary gas; such vapours having less tendency to condense before combustion. The patentee is Mr. John Amsterdam.

—The directors of the Plymouth and Stonehouse Gas Company have again declared a dividend, for the past six months, of 10 per cent. on the old shares, and 7½ per cent. on the new.—The Hudliffersfield Gas Company have reduced the price of gas from 4s. to 3s. 6d. per 1,000 feet.

# The Builder.

VOL. XVIII.—No. 885.

The Museum of Practical Geology: its Uses to Architects.



WHEN it is said that the value of the mineral produce of the United Kingdom, exclusive of building stones and clays, was, for the year 1855, 31,266,932*l.*, or perhaps half the value of the same kind of produce of all Europe, including the British islands, it will be seen, without reference to the practice of architecture, of what importance is the institution in Jernyn-street; which, under the general designation of the Museum of Practical Geology, comprises, besides the Museum, the offices of the Geological Survey of the United Kingdom, the Government School of Mines, and the Mining Record Office.

But there is no public educational institution, which should be of greater interest to the architect. Besides affording means to the student, of acquiring the essential knowledge of geology as a science; it contains an important collection of samples of building stones, and an extended series of metalliferous and other mineral products, with examples of their application in art. Many years ago, when, as the Museum of Economic Geology, the nucleus of the present collection was located in Craig's-court, and was comparatively little known, we drew to the notice of our readers, and to its capability of aiding in the advancement of architecture and building.\* Subsequently we described the general features of the new structure in Jernyn-street; afterwards,† we gave a view of the interior, an elevation of the entrance as designed (and now perhaps the best work of the kind in the metropolis), and some details of the construction of the iron roof; and more recently, at various times, we have paid attention to the collection, and to different objects of the establishment. We propose to post up our information to the most recent date, and to inquire what points there are in which the value to our profession, of such an institution, may be further developed.

The additional matter, educational and illustrative of the earth's structure, of late put forth, is to be found in the publications of the establishment, rather than in the museum. In the latter, much has to be done to render the collection both instructive to the public, and immediately serviceable as regards the knowledge of elementary geology, and that of the durability and cost of building materials. The maps and sections of the Geological Survey are now completed for Wales and Monmouthshire, and for the counties of Cornwall, Devon, Dorset, Gloucester, Hereford, Salop, Somerset, and Worcester; and those for Wiltshire are about ready. The maps, most of our readers know, are those of the Ordnance Survey, geologically coloured,—those on the scale of 1 inch to a mile. What are called erroneously "the horizontal sections," and which are cross sections along an extended line of country, are drawn to a scale of 6 inches to the mile horizontally and vertically; whilst the "vertical sections" are to a scale of 40 feet to an inch, and illustrate details, such as the thickness of each bed of coal, which it is impossible to give in the "horizontal sections." There is also in

course of publication, an Index Map on the scale of four miles to an inch; and which appears to have extended to parts of certain counties not included in the sheets to the larger scale. For Ireland, maps are published containing the counties of Wicklow, Carlow, Wexford, Waterford, and great part of Cork and Kilkenny. The survey of Scotland is in progress. Specimens for the museum are collected during the several surveys. The collection, however, besides including specimens from foreign countries, extends, as will have been seen, to objects other than the illustration of the nature of rocks, and of remains of organic creation in them. But the main field of the institution is the geology of the British isles, with the commercial value of their mineral products. The complete illustration of geology is supposed to be one of the objects of the British Museum; the Palaeontological collection, in Jernyn-street, however, is very extensive, and is not less interesting than that in the other institution, though not including so many remains of animals of great dimensions. Besides the maps and sections, the publications of the institution in Jernyn-street include "Memoirs of the Geological Survey, and of the Museum of Practical Geology," forming part of which are the annual "Mining Records," or mineral statistics for each year, and papers on the geology of certain districts, such as the Isle of Wight and Cheltenham, and on the iron ores of Great Britain. There are also some earlier publications, including Sir Henry de la Beche's Report on Cornwall, Devon, and West Somerset; a catalogue of the specimens of British pottery and porcelain; and a paper, in the memoirs, on "The Composition of some Building Stones." There are also now published, A Descriptive Guide, and a Catalogue of the Contents of the Mining Record Office, both by Mr. Robert Hunt, the keeper of mining records; and "A Descriptive Catalogue of the Rock Specimens," &c., by Mr. A. C. Ramsay and others. Catalogues, severally, of the Palaeontological collection, the minerals, and the building-stones are in preparation. The "Guide" and the "Descriptive Catalogue" are essential to those who wish to study the collection; they are sold at a very moderate price; and, though we have suggestions to offer, some of which might have been unnecessary with different arrangement in one of these works, both of them are creditable to those by whom they have been prepared.

What the institution mainly requires is, a different arrangement of the specimens in the museum, that is, one more prominently and popularly illustrative of the order of succession of rocks. The present arrangement is intended to illustrate the lithological character, the mineralogical and commercial value, and the organic remains; but these intentions might be better carried into effect. The distribution of the rocks topographically is exhibited by the published plans and sections. The general visitor will neither read through in the museum nor he induced to refer to a volume of 375 pages, like the Catalogue of Rock Specimens; and, for the geologist, or architect, a more lucid arrangement than that which exists at the museum is needed, in order that the formation, or the class of specimens looked for, may be readily found. We do not say that the object we have in view has been disregarded, but only that the arrangement is not sufficiently obvious in the museum, or in the catalogue above named, where it is limited to a list of strata, with cross references to the specimens and to previous pages.

The circumstances under which the collection has been formed seem to have led to preponderant attention to the organic remains as specimens, and to the minerals in their applications in art and manufactures, till the building is now inadequate for that arrangement of the whole contents, or of the specimens of rocks, which would be best both for the popular and educational objects, and for others. To the illustration of the nature of rocks, indeed, considerable attention has been paid by Professor Ramsay, through arrangement of specimens in the second gallery, and by means of his catalogue. In these respects, however, there is room

for improvement, with a view to the objects we have mentioned; and, regarding what is most important to the architect, apparently little has been done at the museum, since the specimens procured by the commission, prior to the building of the Houses of Parliament, were contributed to the museum at Craig's Court. The report of the commission bears date 27th August, 1839. Since that time a considerable amount of experience as to durability has accrued, which should be placed on record; many kinds of stone have newly come into the market in London and the large towns, and questions are suggested as to most of the specimens in the lower hall, to which there is no answer at Jernyn-street. A list, already referred to, of the quarries of the kingdom, with the prices of stone and other information, is understood to have been some time in preparation; and the want of the information of this kind, as well as the desirableness of a stratigraphical illustration in the general collection, are, we may say, admitted. We hope that the catalogue will include the cost of labour and carriage.

The principle to be adopted, as we apprehend, in a geological museum, and *prominently* in arrangement, should be the division of the whole of the specimens, as by the stories of the building, according to the main divisions of strata, primary, secondary, tertiary; by the cantilever galleries, as the subdivisions, lower and upper Palaeozoic, Eocene, and others; by distinctions, say in the cases, as the systems, Cambrian, lower and upper Silurian, Devonian, and so on (the latest in order of time being, as now, in the upper part of the building), whilst the separate strata and their remains would fill the separate shelves. The existing arrangement at Jernyn-street, of the Palaeontological collection, and that of the catalogues, does little to supply this. The space at the top of each case of the collection named, which is given to drawings of restored organic remains, would be better appropriated to drawings of the strata. Such drawings are now confined, nearly, to some sections, and those not very clear, showing the arrangement of the igneous rocks. The visitor to the museum at present sadly wants the means towards a mental synopsis, primarily, of the subject and the collection, other than is supplied by mere names,—though after one visit and elaborate study of the Guide and Catalogue, he would be able to spend a profitable day, and learn much. Ideal vertical and cross sections, as well as the ordinary maps of the British islands, are either wanting; or are not easily to be found. The evil is, that a catalogue is required: yet there is not a catalogue which supplies the key to the knowledge of the strata and the actual arrangement; and the slight differences which will be observed between the grouping of the rocks in Mr. Hunt's Guide (page 282) and Mr. Ramsay's Table of Strata, or in names, will occasion difficulty. One authority uses the term Miocene as that of a group, whilst the other omits it altogether; and the student who happens to go to Ansted for explanation, will find that that author applies the term to the same strata which Professor Ramsay designates "Older Pliocene." The Table of Strata, mentioned, might be improved in other respects; but discrepancies between what emanates from the same department, should, if possible, be avoided. Some of the specimens are marked as of the Quaternary formation; and others, as Post-Pliocene. Either designation (or Pleistocene) would be of advantage, if introduced; but we find them only in the museum, and not in the catalogues. The name Palaeozoic remains over recesses which are filled with remains of recent date. Mistakes on the part of some visitors, and loss of time to others, result. The building, now too small, would have been found well contrived for its purpose, had not the mineralogical and palaeontological departments, from particular and important reasons, absorbed so much space. Light, however, at this time of the year is wanting to the cases in the recesses, though said to be in excess in summer; and we may mention (though it is easier to do so, than always to avoid the inconvenience) that the reflection in the plate glass of the table-cases

\* Vol. III. 1845, p. 87.  
† Vol. VI. 1848, pp. 522, 568, and 530.

interferes much with examination of their contents.

The desirableness of the stratigraphical illustration of the rocks is so far admitted by Mr. Ramsay, that he even intimates that before another edition of his catalogue is issued, it may be well to arrange the rock-specimens on this principle. We would, however, have the arrangement obvious in the whole museum—without omitting the illustration of mineral applications, of the nature of rocks, and of joints and cleavage. In the Scarborough Museum, if not different from what it was some years ago, such an arrangement as we propose is carried out better than in the museum in Jernyn-street; though it is confined mainly to the Yorkshire coast. The stratification of the whole coast is depicted above the cases; and the fossils are laid generally, on shelves inclined to represent the inclination of the strata, in corresponding positions hence.

The catalogue of building-stones will no doubt supply information which cannot be obtained from the specimens in the lower hall. Excepting the specimens of marbles which are worked into pedestals and vases, few of them can be sufficiently examined. The slates are heaped together, almost out of sight. But, besides specimens to be preserved indoors, the architect desires to see others, worked into mouldings, under the action of the weather and exposed in all different positions relatively thereto. No statements of comparative advantages can be satisfactory till tests of this nature are applied, authenticated by a public department. The institution of the commission of 1839 was an excellent measure. Except by the establishment itself of the Museum, and support of its associated undertakings, the Government of this country has hardly at any time seen the value of promotion in a like manner of scientific researches. We regret, therefore, that specimens were not placed some years ago under the test of a London atmosphere. It quite deserves the consideration of the officers of the Museum and the Geological Survey, whether what we speak of should not be attempted now, and Government be moved to provide means for obtaining a site or space for the experiments. Very little space would be needed; but it could hardly be found at the building in Jernyn-street as it exists. The space should be within the populous part of London; whilst for sake of contrast, there should be similar means for placing specimens at some locality in the country. Had something of this kind been done twenty years ago, we should now have possessed knowledge of building-stones suited to London, which would have preserved us from some of the unfortunate failures that have come to light,—allowing that the check often is required over what is sent from a quarry. Experiments might at the same time be made to test effect of preservative processes. A long piece of stone should be worked with mouldings, and then sawn into short lengths (to be marked and registered) in order that the effect might be contrasted, of different processes, and of each with the stone in its ordinary state. The same system of testing by the influence of the weather, could be extended to the different cements, bricks, and terra cottas, and to the metals and their electro-chemical coatings. The "Descriptive Guide" to the Museum says, referring to Keene's cement, that if half a pound of copperas be added to the solution of alim, "the resulting paste has a fine cream colour, and the hardened mass is said to resist the action of the atmosphere." Why should there be left any doubt in the matter? There is need of a good and cheap vehicle for external sculpture.

Though we have shown that the museum in Jernyn-street might be made of greater value, we must repeat that both the collection and the catalogues are very creditable to those whose names are attached. The rock-specimens and the Catalogue by Professor Ramsay, assisted by Mr. H. W. Bristow and others, show "the external characters of such rocks as conglomerate, sandstone, grit, limestone, shale, schist, gneiss, granite, the different kinds of trap, lavas, volcanic tufas or ashes, and, indeed, all

the varieties of stony substances that are of common occurrence;" and the names of the places whence the specimens were obtained are marked upon them. In England and Wales, the general nature of rocks is as follows. The Cainozoic or tertiary stratified rocks, which begin from the south-east portion of the island, and include the neighbourhood of London, are mostly formed of gravel, sand, and clay, with a little soft limestone; and the Mesozoic, or secondary rocks, extending across the island from north-east to south, also circumscribing, as by the chalk, the tertiary rocks, and coming to the surface even in the south-east, as in the case of the Wealden clay of Kent and Sussex, are composed of chalk, clay, soft shale, oolitic and hydraulic limestones, marls, sands, and conglomerates, ending with the New Red Sandstone formation. The Palæozoic, or primary stratified rocks, beginning with the Permian or magnesian limestone system, and including the Carboniferous, Devonian, or Old Red Sandstone, Silurian, and Cambrian systems, include a great variety of mineral substances: in the Carboniferous rocks are shales, ironstones, sandstones, fireclays, coal, and limestones; the Old Red Sandstone has red marl, sandstone, and conglomerate; and the Silurian and Cambrian rocks, the latter much distorted and altered by volcanic action and the rise of the igneous rocks, are in great part of mudstones, grits, and slate, with occasional shales, limestones, and beds of conglomerate, sandstone, and grit. Scarcely any portion of our island presents apparently such difficulties as Wales; yet the arrangement of the strata in Caernarvonshire and Merionethshire, seems to be now as clear as if actual cuttings had been made. To Wales and Shropshire, the "Siluria" of the Director of the Museum is chiefly devoted; but Professor Ramsay has been one of the most recent and useful labourers on the Snowdonian range. There are local peculiarities out of England, in the nature of the contemporary rocks; for example, the secondary limestones of the Alps are often crystalline.

It would be impossible to identify strata by the appearance alone; and it is at this juncture that the value of palæontology is seen. By the organic remains, the uniform succession has been made manifest; and it is shown that however strata may be absent in any locality, the order of succession is otherwise never varied or inverted. When we learn that "it would require 170 years to gather one inch of anthracite coal, and the enormous period of 122,400 years to accumulate 60 feet of the same;" that the formations are measured in thickness by tens of thousands of feet,—the Cambrian rocks in Shropshire having alone been estimated at more than 26,000 feet,—and that, at the base of the vast depth, remains of organic creation are found,—we look with awe at the evidence of the ages over which the work of nature has extended—ages to which the 6,000 years of the existence of man are monuments in comparison. Even should it be proved, as lately supposed, that this existence commenced within the period of the tertiary deposits, we have still the evidence, and in our own island, that ages before that time, the earth and sea teemed with countless forms of animal and vegetable life throughout a succession of changes of climate, and a long series of gradual depositions modified by subterranean forces, and by the action, more recent, of glaciers and floating ice.

One of the cases in the upper gallery illustrates the phenomena of this glacial action, as indicated in North Wales, Lancashire, and other parts of the island, and as now going on in Switzerland. The volcanic action is illustrated by specimens from foreign countries, as well as by specimens from the igneous or altered rocks of Wales and Shropshire. Gneissic rocks and granites are of every geological age. One portion of the collection illustrates the phenomena of alteration and metamorphism of rocks,—by fire, and the intrusion of the igneous rocks among various kinds of strata. From the effects of heat, besides distortion, the new combinations called metamorphic are developed, as mica slate, and all the rocks of the gneissic family. Serpentine is metamorphic rocks. The re-

mainder of the specimens in this department of the museum, illustrate the nature before spoken of, of the substances of which stratified rocks are composed. There are specimens showing the manner in which depositions of carbonate of limo (limestone), as at the present day, from a hi-carbonate of lime in solution, result in calcareous tufas, and stalactites and stalagmites; and others illustrative of formations of beds by chemical action, such as those of gypsum and rock salt. There are many other specimens illustrating the formation of stratified rocks, chemically and mechanically. The manner of chemical deposition has just been adverted to. The mechanical process, which has largely predominated, goes on by the deposition always taking place in the sea, lakes, and estuaries, and the abrasion of the sea-coast. Strata are thus formed, sometimes of sand, mud or clay, or lime, separately or admixed, and sometimes almost exclusively of organic remains. The specimens show the structure of conglomerates, and breccias, grits, sandstones; sands, some shelly or otherwise calcareous; marls, clays, shales, slate, and coal, as well as marls on what was part of the sea-bottom, of ripples and currents, and of the feet of animals. Separate cases are devoted to the siliceous bodies, and concretions and septaria, contained in rocks of various kinds and all ages; and to the limestones of various periods, arranged with reference to their qualities, and the iron-stones.

In the Descriptive Guide, by Mr. Hunt, facts are given respecting the stones and other materials, of which there are specimens in the entrance-hall. The information will be useful; but it does not diminish the argument for something further. The collection on the principal floor is very fully described in the same work. It comprises specimens and models illustrative of the British metalliferous minerals and metallurgy, as of copper, tin, bismuth, cobalt, nickel, arsenic, manganese, uranium, zinc, brass, German silver, antimony, cadmium, silver, gold, lead, mercury, platinum, and iron and steel, and other metals and alloys, and illustrations of mineral lodes, and of processes of mining and smelting. Models of machinery and mines are found on the same floor. The foreign and colonial minerals are classed separately. The specimens include objects of great beauty, as rock-crystal, agates, and precious stones. Iron is shown, both in the ores and as applied in ornamental castings; and the alloys of metals, as copper with zinc, copper with tin, and others, are shown applied to works of decoration and sculpture. The manufacture of gun-barrels and sword-blades is represented in two of the cases; the process of electro-metallurgy in another; and there are Chinese bronzes in a third. Besides this class of works, however, there are on the same floor an extensive series of works of pottery and porcelain, both of ancient and recent date, and other specimens of ancient and modern glass, and of mosaics and enamels. In these departments the materials employed are shown, and information is given as to the manufacture; and of the specimens, many of them are individually interesting historically and as works of art. The composition of several of the specimens, as of those of ancient glass, is given from analyses made at the museum. Bronzes (of the number brought from Assyria by Mr. Layard) which were constructed for some purpose of support, were found on examination to be east with the bronze round a core of iron. There will also be found fragments, from the bed of the sea, of articles of iron, parts of wrecks, showing the cementations incrustation which the metal acquires when in contact with gravel,—a natural process which might be called preservative, and is of great interest to architects and engineers, considering the importance just now of the question, to which on other occasions we have made reference, of the durability of iron in similar situations. In another part of the museum (in the upper gallery) is a specimen showing the rapid decay of the same material when exposed to the alternate action of the air and sea, as by rise and fall of tides from 1811 to 1853. The iron appears to be rapidly destroyed by the

oxidation, ordinarily "leaving a spongy mass of graphite, or impure carbon," but has (as shown in a neighbouring specimen in the same gallery) an "agglutinating power" while undergoing oxidation as in the bed of a river. The subject referred to, however, requires further inquiry. The cramps or straps from the foundations of old Westminster-bridge have been brought up, not greatly altered by oxidation or corrosion.

In illustrations of the structure and products of the earth, and the applications in art and manufactures, and even in the wonderful remains of extinct life, the museum in Jernyn-street, it will be seen, contains much that is of immediate interest and value to the architect. The institution may be made more valuable in points which we have referred to; but by the publications, and the specimens and the geological information continually being obtained, as well as by the lectures and the library, it deserves more attention from our profession, perhaps, than it has gained. The library includes, we may say, upwards of 7,000 volumes, and periodicals, English, American, and Continental, relating to science, as they are published, to which on special application, stating the object in view, access may be obtained. There are also laboratories, metallurgical and chemical; and the College of Chemistry, in Oxford-street, is attached to the Museum.

#### THE NORMAN ARCHITECTURE OF CANTERBURY CATHEDRAL.

The following is the lecture (referred to in our last) which was delivered before the members of the Architectural Museum, in the Lecture Theatre of the South Kensington Museum, by Sir Walter C. James, Bart., the subject being "The Norman Architecture of Canterbury Cathedral." The lecture, as we have already said, was illustrated by many excellent drawings and diagrams.—

It is not possible to add to what such men as Professor Willis, or Mr. Fergusson and Mr. Parker have detailed upon the subject of Canterbury Cathedral, in their various valuable works on Mediæval architecture. It is, perhaps, the province of the lecturer rather to condense what already exists, than to seek too far for original matter, and to give information which, though possibly imperfect, may yet be, as far as it goes, correct, and may, therefore, lead the young inquirer to fresh sources of knowledge, where he may work for himself.

It has been remarked by a modern writer of considerable eminence and talent, that "architectural works enriched by the subordinal arts of sculpture and painting frequently afford the only traces which extinct nations have left upon the earth of their history, their condition, their manners, or their religion." Unquestionably, even in times when the historian has regularly transmitted authentic records of fact, they tend to throw much light upon many transactions otherwise doubtful and obscure.

A description, however, of a single building seldom excites any interest, except in the professional architect or antiquary; and, although there attaches an exceptional interest to Canterbury, on account of the many historical associations with which it really teems, yet, in an architectural lecture, it is perhaps best to make it a type of others, and, as it were, the symbol of a particular age.

For this reason, it may be permitted to look upon Canterbury for the purposes of this lecture as a fair exemplar of our cathedrals up to the beginning of the thirteenth century, when the Pointed or Early English style may be considered to have spread its roots in the soil, and given promise of that rich harvest of architectural excellence which culminated perhaps in the Decorated period.

In considering the state of society which prevailed during the reigns of our Plantagenet kings, we find a clergy united by strong ties of allegiance to Rome as the "mater ecclesiarum." We have a dominant race of conquerors of Norman blood, speaking the French language, and owning the sovereign sway of Norman princes. But we have also, as it were, at the bottom of the scale, an Anglo-Saxon nation gradually rising into importance, and modifying by its own energy the two other elements to which I have alluded.

Thus, it is related that Henry II., on taking leave of the prior of some convent where he had

passed the night, bade adieu to the holy father in the Latin language; while at the same time and place he spoke to his knights and esquires in Norman-French; and to the hegars round the gate, who were asking for alms, in the Anglo-Saxon language.

Indeed, this condition of our English tongue lasted for two centuries at least, after the time to which this lecture must limit its inquiry.

For we find in Chaucer:—

"Let the clerkes endyten in Latin, for they have the property in science and the knowinge in that faculty, and let Frenchmen in their French also endyten their queyt termes, for it is kindly to their mounths, and let us show our fantasies, in such words as we learned in our dames' tongue."

It was not till a century and a half after the building of the Choir at Canterbury, in its present form, that the pleadings of our law courts were required to be in English, and not as heretofore in French, and that all schoolmasters were ordered to teach their scholars in English, and not in French, as they had been used to do.

We should then, arguing *primâ facie* from such a state of society, naturally suppose, that in the architecture of the period to which our attention is directed, we should find a strong but not preponderating Roman element, derived from Christian tradition, and the existing buildings in the great capital of Western Christendom. We should probably have a strong Norman element, intermingled with one of purer French origin; modifying that Romanesque or Romane style which we find in Southern France and the Rhineland, to the exigencies of a northern climate and a northern race. Lastly, we should have our own national forms and English characteristics; our own vernacular developments, stamping, as it were, the impress of the prudent, painstaking English mind upon these grand mediæval churches. Such a statement, it will be found, does not deviate much from the truth. It will be the object of the present lecture to analyse the subject from this point of view, and successively to present to your notice, as far as the limited time at our disposal will permit, an outline of the effects which these different elements have had in bringing to its normal type the English cathedral, of the transitional era, as we find it in the eastern parts of Canterbury, after the introduction of the Pointed arch, both in France and England, but prior to the full development of the Pointed style,—the Cathedral such as it was at the end of the twelfth century.

**Roman Element.**—Rome, as it is the prime fountain whence the stream of modern history issues, so is it the true source of our ideas upon art. To trace these latter to their origin, we may have to go back even to the time of Augustus.

The whole style of Roman architecture, which has been well described as a compromise between the vaulted architecture of Etruria and the trabeated architecture of Greece, was of a transitional character. Grand even in her decay, the imperial city was sowing broadcast over the world fruitful germs of truth, which were doomed to reach perfection under the fostering care of her subject colonies, fated in their turn to become the nursing fathers and mothers of the Christian Church. In the time of Augustus we have forms almost purely Greek. Paganism stamps its genius upon every edifice. In the time of Constantine we have types almost purely Christian.

The temple of the Romans, such as we find it at the dawn of the empire, consisted of an external arrangement of columns without vaults or arches, the cell or internal part devoted to a statue or idol of the heathen god. It was usually darkened, and wholly unsuited to the purposes of the Christian ritual. Towards the end of this period Roman architecture had become an internal architecture, plain in its exterior almost to rudeness. The columns which had adorned the heathen temple were taken, and with "fatal facility" transported or adapted to the interior of the Christian church. A Basilica of the first age after Constantine is almost as well suited now as it was then to the forms and ceremonies of the Christian ritual.

What then were these buildings—basilicas, as we have been accustomed to call them? By the side of the heathen temples (which it may be remarked *passim* never reached the same importance in Rome, that they did in Greece), there were other buildings, courts of justice, halls of commerce (may we not say), providentially well suited to the wants of the young Christian republic.

These buildings seem to have been the outward symbol and expression of much that Rome has bequeathed to us, of real value, her ideas of law, that Christianity which adorns all that she

touches should have taken up her dwelling in such tabernacles as these, is perhaps a theme for thankful praise. For not only do we find everything well suited to the touching rites of the simple primitive ritual, but it seems also (if the phrase may be allowed) that Christianity, by making her home in these scenes of every-day work, declared her great office to be, not so much to debar men from "the world" as to sanctify "the common things," as they are well called, of our daily life by turning them to the highest and noblest of all ends.

The great charm of the buildings to which I refer consists in the unity of idea with which they were invested.

As to the roofs of these buildings—one of their most important features,—six out of seven which we know were covered with timber roofs: the seventh, that of Maxentius, was vaulted.

[The lecturer then described the Christian Basilica. This was seldom, if ever, upon the site of the heathen Court of Justice. Two motives influenced this removal: first, a desire to have buildings *solely* given up to religious uses; secondly, a veneration for the graves of the early martyrs.]

These details have taken up more time than seems fair in an address intended to illustrate Mediæval rather than Primitive Christian architecture, but they connect themselves more readily than might at first be supposed with England and Canterbury.

"When Augustus" (the first Archbishop of Canterbury), says the venerable Bede, "assumed the episcopal throne in that royal city, he recovered therein, by the king's assistance, a church which, as he was told, had been constructed by the original labour of Roman believers. This church he consecrated in the name of the Saviour, our God and Lord Jesus Christ, and there he established an habitation for himself and for all his successors." Now the church so rebuilt by St. Augustine, and subsequently repaired by other bishops, is known to have been copied from the model and immediately upon the plan of that of St. Peter's at Rome. Hence it has been well written, "The Christian architecture of Rome and the Teutonic Romanesque are in the nature of cognate languages; but in each there is a diversity in the inflections—a nationality in the phrase."

The copy is, to a certain extent, a faithful copy; but there is an originality in the touch of the artist.

It is worth noting that Eadmer the Singer, whose account of the building we have, had actually seen St. Peter's, and accompanied Anselm thither about A.D. 1100. He was, therefore, well able to judge of the resemblance, and pronounces it to be good.

[The lecturer then referred to, and explained the plan of St. Peter's, referring particularly to—

1. Its apse at the west—polyandrum and confessionary.
2. Its high altar, under a ciborium or canopy, which rested upon four pillars of porphyry.
3. He then noticed the columns of Parian marble, placed in front, in two rows, ornamented with vine leaves. Tradition states that they came from Solomon's Temple.]

Before quitting the Roman element it may be permitted to ask, first, in what points does the Saxon cathedral coincide with St. Peter's; and, secondly, in what points is the Roman element persistent. What Roman characteristics have been carried forward into the Mediæval cathedral?

1. The position of the crypt extends only under the presbytery and altar end of the church.
2. The entrance into the crypt descends into the confessionary.
3. The position of the matutinal altar is the same.
4. The choir of the singers is extended into the nave—an arrangement quite analogous to that adopted in San Clemente and the other Roman churches.

At the west end was a lady chapel, with an episcopal throne. Professor Willis thinks that this was really the altar end of the church, in imitation of St. Peter's.

In the Church of Lanfranc, to which attention must next be called, we still have, not perhaps all these characters, but—

1. The apses, repeated not only in the presbytery, but in the transepts, and afterwards in the chapels of St. Anselm and St. Andrew. This form is rare in England.
2. The central nave and aisles and clerestory always persistent forms.
3. The wooden roof, the general style in England.
4. Some points of ornamentation.

*Norman and Norman-French Element.*—We may consider the Norman style of architecture to commence with the Conquest. In the account which Gervase gives of the burning and repair of the cathedral, we have a very full account of this church of Lanfranc. The archbishop erected it new from its foundations in seven years. It is upon nearly the same plan as the Abbey of St. Stephen's at Caen, which was built under his direction, begun in 1064, and dedicated in 1077, after his appointment to Canterbury. The present nave, though built in the fourteenth century, is thought with good reason to stand on the foundations of Lanfranc's church. An important part of the building, one of its western towers, was destroyed as late as the year 1834. It is uncertain whether any of the present crypt may be fairly attributed to Lanfranc.

Professor Willis has undertaken the somewhat difficult task of developing three states of the eastern part of the building. First, as left complete by Lanfranc; secondly, as altered and enlarged by Anselm and his Priors; and thirdly, as it came out of the hands of William of Sens and William the Englishman after the fire of 1174.

It is not easy to understand the motives which led to the destruction of Lanfranc's choir so short a time after its completion. It is not impossible that the Archbishop, being intent on the restoration of a stricter discipline in his monastery, and the publication of new statutes to the whole Benedictine order of England, neglected, in some measure, the building of his cathedral in an appropriate style of splendour. Certain it is, that Gervase passes over this somewhat remarkable incident—the destruction of its eastern end—in a mysterious way. We may, perhaps, also find a motive for this change in the vanity of the monks, who wanted more shrine room for the display of their gradually accumulating relics. The simplicity of the earlier Christian ritual was giving way to a more pompous liturgical worship. From the ritual, as has been well said, arises the temple, and the temple again becomes the commentary on the ritual. The form and aspect of the structure appear as evidence of the doctrines taught within its walls.

Of the work of Ernulph and his successor Conrad, considerable portions still exist. From the admirable treatise of Gervase, and the clear explanations which accompany Professor Willis's exact translation, it is easy to trace these parts of the building. The choir itself was long called the "Glorious Choir of Conrad." The murder of Thomas à Becket took place when the cathedral was in the state it was left by Conrad, and it is worth notice how much of the primitive style of architecture, and especially the arrangement of the Presbytery, still remained. The fire took place some years after his death, and appears to have been accidental. It is supposed that when he was murdered he was about to take his seat in the pontifical chair, prior to vespers. Undoubtedly he might, had he chosen, have escaped his pursuers by concealing himself in the crypt, which he was well acquainted.

After the fire, which was the immediate cause of the rebuilding of the cathedral, there would, probably, be no lack of funds for its reconstruction on a splendid scale. The contributions of pilgrims, whether princes or peasants, would furnish these means. French and English artificers, we are told, were summoned to give their opinion on the best plan. Even these differed in opinion. "However, amongst the other workmen, there had come a certain William of Sens, a man active and ready, and a workman, most skilful, both in wood and stone. Him, therefore, the monks retained, on account of his lively genius and good reputation, and dismissed the others, and to him, under the providence of God, the work was committed."

I exhibit a drawing of the cathedral in section, which will give a good idea of what the choir was in the time of Conrad, before the fire, and, as enlarged and beautified by William of Sens—as, in short, it now exists. The whole of the Trinity Chapel, and the crypt underneath it, must be considered the work of English William, and is new from the foundations. Of this, more hereafter. As there remain, however, in the western parts of the choir and transepts some portion of the early work of Ernulph and Conrad, it may not be amiss to mention one or two of the tests by which they may most readily be distinguished.

1. By the style of the masonry. The columns, according to Gervase, were raised 12 feet in height, and exactly at that height a new style of masonry begins.

2. By a different and more elaborate base to the columns.

3. By a nobler and more ornate style of carving.

There are, however, other architectural features introduced by William of Sens in the vaulting and pier arches, and generally in structure, which require some notice, and as it seems conceded by architects and antiquaries, that the Choir and Trinity Chapel are the earliest specimen of the Pointed style which can be authenticated in England, it may be permitted to make a short digression, not upon the subject of the Pointed arch itself, so much as upon the general character which the Round arched architecture of France and England was assuming at the end of the twelfth century. And here, perhaps, I may venture to trouble you with a quotation from the earnest and eloquent pen of the late Mr. Howe.—

"A fortuitous concurrence of circumstances has made many a man invent that which he had not the means to apply, of which he saw not the full use and application. Many a discovery has taken place for the first time at a period when little wanted, it conferred no distinction upon its author, and no benefit upon others, when, like a fire kindled without proper fuel to feed the flame, it again went out, or for many ages smoldered in unperceived obscurity, till, fresh wants and fresh means fanning the latent spark, blew it up into a blaze, when the genius to which it first was owing had already long been forgotten in the darkness of the grave. And thus, for aught we know, it may have fared with the embryo of the arch. If even by some fortuitous meeting of materials, in peculiar relative situations, the embryo of the arch should first have been found in independent Greece; it there remained in a manner dormant and sterile. It received no development. It became not in her edifices a marked feature calculated by its importance to change and remodel the whole face of her architecture."

What has here been said of the Round arch may, with equal truth, be asserted of the Pointed. We find pointed arches in the East, in Sicily, in Greece, in very early times; but it is not till about the middle of the twelfth century that we discern in France examples of what we may fairly term the Pointed style. Thus we arrive at a theory—viz., that it is a great mistake to separate the Pointed from the Round-arched style; and that it is alike more natural and more true to look upon the former merely as the offspring of the latter, perhaps, speaking more correctly, as itself in a more forward state of its development. At St. Denis, the work of the Abbé Suger, whom a modern French theory has stigmatised as the inventor of the Pointed style, we find work of a decidedly Roman or Romanesque character, and yet intermingled with the free use of the Pointed arch.

I exhibit a view of one of the chapels at Noyon, which was built by Bishop Beaudouin, the friend and contemporary of the bishop who built St. Denis. It is notable for a certain general resemblance to Canterbury. I now come to Sens itself, of which I exhibit some details. Their similarity to the architecture at Canterbury will at once be recognized. Of this Mr. G. Gilbert Scott said, in a lecture at the Royal Academy:—"Though a cathedral of the second magnitude, and much injured by subsequent alterations, I know few which have a nobler or more impressive aspect. Even the soaring interior of Amiens, which I embraced to visit a day or two after, did not efface from my mind the sterner grandeur of Sens," and, with the true liberality of thought which marks the English mind, the same architect is reported to have observed to a friend:—"Well! if, as the French say, we may find here the true original of our Pointed style, at least we must admit that we had a noble parentage."

Admitting, then, most fully the interpolation of French work at Canterbury, we must be careful to distinguish,—first:—

That it is not to France as a whole that we concede precedence at this particular epoch, for there are many parts of France where the development to which we allude was specially tardy; but rather to that part immediately round Paris, the domain of her ancient kings. The immense influence gained at this time by the French monastic establishments, and the simultaneous increase of the royal power, brought about the great epoch for building in France.

Secondly, Although this admission with regard to France is just, it should be added that there were in England the same causes at work which were working in France, and which, in all probability, would have led to like results. It would be a narrow view to take, and quite an unnecessary concession, that all other nations followed simply in the wake of the French. The communi-

cations going on through Europe caused each nation to know perfectly well what was passing elsewhere. The tendency to refine and elevate, to substitute grace for sternness, and a sense of beauty for a sense of power, is manifest about this time in all the countries in which the Romanesque architecture prevailed. In all we find the simplicity of its earlier works yielding to that refinement of form, that dignity of elevation, which science and education produce. The barbaric sentiment gives way, and the rude vigour of the early round-arched Gothic is eclipsed by the mechanical skill and the greater taste of the architects of the thirteenth century.

The question remains to be discussed, how did the change take place, and in what parts of the building do we first trace it? To this it may be replied, that the vaulting, as a general rule, may be considered the part in which it first manifested itself.

Up to the middle of the twelfth century timber roofs prevailed in England. At Canterbury we know that the aisles were vaulted, while over the central part a timber roof was used, "excellently painted," as Gervase assures us. But in the south of France, in Provence, and also in Burgundy, vaulted architecture had long been in fashion. The problem seems to have been to combine the advantages of lightness and elegance of form which the timber roof of the north possessed with the greater appearance of substance which the more costly material would naturally afford. Without, then, entering into all the structural details of this question of vaulting, we may ask ourselves what were the great objections to a church in the basilican form, which was then prevalent, in which the semicircular arch was strictly adhered to? Barrel vaults would be those in general use.

1st. There would be a want of light from the clerestory windows. The defect would be generally appreciated, because this mode of lighting, as has been shown, prevailed from very early times; but it would be more than ever felt in the north of Europe, on account of the dark climate and the invention, at that time recent, of painted glass, which is known to have exercised great influence, even on the structural part of churches.

2nd. The enormous weight of barrel vaults, when built over large openings, and their lateral thrust, would cause the question of abutments to be one requiring the most serious consideration of the architect.

3rd. The different forms of the vaults would cause endless perplexity. A semicircular arch is obviously not fitted for a square space of invariable form. The difficulties, therefore, of throwing an arch over a rectangle of variable magnitude were constantly on the increase.

What was wanted was more light, more strength, more height. These three objections were remedied by the pointed arch.

1st. The darkness of the clerestory, by the lighter form of roof, and larger windows.

2nd. The difficulties of abutment, by groined vaults and flying buttresses.

3rd. The structural difficulties connected with the vaulting itself, by using a variable arch to cover a variable space as well as a variable height. Considerably more importance has been attached to the last difficulty by some very able architects than to the two first, and as the vaulting at Canterbury is what is called hexapartite, a word in explanation is permissible.

The hexapartite severy, or ciborium, covers two oblongs. The compartments in the side aisles being square, were vaulted in the usual way by a double cylinder. The question then arose: how to cover the corresponding oblong space in the central aisle? The difficulty was thus met. A square was made out of the two oblongs, but two bays in the side aisles formed only one side of that square. Thus the intermediate pier was brought in, partly as a support, but more perhaps as one of the vaulting ribs, and the difficulty was never met (as Mr. Fergusson says) *satisfactorily*, till the pointed arch came to the rescue. His words are: "This insertion was neither quite a rib nor quite a compartment of a vault, but something between the two, and in spite of all the ingenuity bestowed upon it in England, France, and Germany, in the eleventh and the beginning of the thirteenth centuries, the effect was never quite satisfactory."

The great elevation of the small intervening arches has led some to suppose that in them the pointed arch first appeared: such, however, is not always the case, as in Canterbury, it will be observed from the diagram, they are round, while on the other hand, the large arch spanning the whole central aisle from pier to pier is pointed.

It would be presumptuous in any one in the present day to offer any new theory as to the pointed arch, to the adoption and use of which, as I believe, many causes concurrently gave rise: and yet, in estimating these, perhaps the consideration of what is called the pitch of the roofs has hardly obtained sufficient importance. Pagan architecture in India, in Assyria, in Egypt, in Greece, was essentially, at least in its main features, trabeated—it was the architecture of the lintel; but the transition from the lintel to the gable is easy, and already in Greek architecture we have the pediment,—a form which has been found, curiously enough, by Colonel Vise in the central chambers of the Egyptian pyramids. Again, from the pediment to a rude form of arch the steps are not difficult: the horizontal beam which had been cut in twin to form the gable, cut into three, or five, or seven pieces, gives rise to an arch of which each piece is a voussoir. Thus we arrive at two methods (besides the lintel) of covering a space—the gable and the arch. Now, the pointed arch is a combination of these two methods, and has been well described by a modern writer as an arched or curved gable. Admitting this description to be true, it seems to follow that when we find a vaulted roof in which semicircular arches are used covered with a gable, whether of wood or stone, it is probable that the structural advantages of the pointed arch would be brought to light. Mr. Ferguson, in his excellent "Handbook," cites several churches in the south of France, where, according to M. Felix de Vernheil, a considerable authority, pointed arches were used very early in the eleventh century. No timber roofs were made use of, but the vaults were filled in with rubble: the object of the architect was clear—to avoid loading the arch at its crown to an unreasonable or dangerous extent. The same argument will apply with equal or greater force, where a timber roof is used as a protection. Now, in Italy and Germany, and also in the south of France, the timber roof over a vaulted ceiling gave rise to a very interesting kind of ornamentation—the open arcade. Structurally, perhaps, little can be said of it; but in the eastern ends of churches generally, and especially in their apses, this species of gallery has met with deserved applause. It will easily be recognized, and its adaptation to a southern climate admitted, where little snow falls, and where this kind of double roof would add much to the coolness of the interior. It is not, however, well suited to a northern climate. In Germany we have it travelling up the Rhine as far as Cologne, though generally closed in the north. In France it is confined to the southern provinces. It does not enter into the north of Europe; it shrinks, as it were, from that region which is called the fatherland of the pointed arch. When, therefore, the Northern church builders undertook to alter the Roman or Romanesque style, and suit it to their own taste, this peculiarity would suggest itself as one naturally requiring modification. They found a low, flat roof over a semicircular vault with an intervening gallery. The objections to this form, and the low dark clerestory it involved, have been already stated. To close the gallery and to raise the roof would be the natural course of proceeding, and would, as I contend, very naturally suggest the conversion of the round Southern arch to the Northern pointed.

It would be interesting and possible to show how, in travelling northward out of Italy, every part of the building underwent the same sort of change; to trace the double route, as it were, of the Lombardic architecture into the south of France, on the one hand, and into the centre of Germany on the other; but time does not permit, and will only allow me, in conclusion, to make a few remarks upon our English transition, and the English element, as I have ventured to call it, at Canterbury.

*English Element.*—It is not possible to do so without observing that our Romanesque style is properly called "Norman;" and however justly that nomenclature may be objected to on the Continent, it does not invalidate the claim of that wonderful tribe of Northmen to have founded the English branch of the Romanesque family.

It may, perhaps, be allowed to call our early Norman, "Romanesque, with a strong Gothic tinge," the boldness of the mouldings, and the general sternness of type, indicating a rude energy in the builders. In the choir of Canterbury, as left by William of Sens, we have advanced Norman, with a French, and even a classical tinge upon it, noting our distant connection with Rome and the South, as clearly as the Latin words in our language, or the Latin prayers in our Liturgy.

William the Englishman carried the transition a step farther. In his clerestory, and in other parts of the work, we find the round arches almost superseded. In Becket's crown, the whole of which came from his hand, there is not a single round arch. Of course some difficulty must exist in determining how far his work was his own, and how far he was engaged in carrying out the plans of his predecessor; but the evidence strikes me as in favour of an original mind. He is represented as having been overseer of the masons under William of Sens, and described by old Gervase, "though small in body, yet, in workmanship, acute and honest." I cannot avoid noticing a round base to a clustered shaft, which there is much reason to suppose may have been from a design of English William's, and the two slender shafts in the centre of the crypt, with round abaci, undoubtedly of Early English type. There is nothing at all like them in the work of the Frenchman. To my mind it indicates the birth of that chaste and beautiful phase of the Pointed style, which reached its acme in the lovely spire and perfect proportions of Salisbury.

I shall now only mention one or two more contemporary buildings, of which I exhibit drawings. The choir of Ripon was built by Roger of York, as has been proved by recent research, between 1154 and 1181. The similarity of the clerestory windows to those at Canterbury will be noticed.

Another drawing, for which I am indebted to my friend Mr. G. G. Scott, is that of St. Cross, near Winchester. It was founded by Henry de Blois, brother to King Stephen, who held the church from 1136 to 1171. The mouldings round the windows, which have a peculiar Norman type, are very original.

It is natural to suppose that, in these buildings, English artisans were employed, while at Canterbury, which was the metropolitan cathedral, where no expense was spared, French artists should have had the preference. Looking at the various buildings of this era, in England, it is not a partial verdict to assert, that while they seem to show a knowledge of French development, there is no slavish imitation. On the contrary, there is a freshness of conception, and an originality of design, which is quite captivating. In the Museum here may be seen a doorway from the little interesting church at Barrestron, which will go far to illustrate my meaning.

To sum up the whole. At the beginning of our transition we had a stronger Romanesque character than the French. It had been given us by our Norman conquerors. The keep at Rochester and the nave at Durham exceed, perhaps, in rude sternness, anything we find abroad; but the remarkable converse of this is, that at the close of our transition we had not only thrown off this excess of Romanesque characteristics, but had gone beyond the French in altering those of a less palpable kind. The single column had, in all cases where it was used for a support, become the clustered shaft; the square abacus had given way to the round. Our arch mouldings had become richer and more studied in their profile, composed of distinct and beautiful members. The vertical line in every part of the building had become more pronounced; so that at the end of the period, we had departed much more widely from our Norman type than the French from their Romanesque.

The value of Canterbury as a transitional example, is that its history is well known, and that there is a date for everything, and that we can trace in the work of William of Sens, not what the French would represent as the introduction of the Pointed style, but simply an interpolation of French art, which had its influence, doubtless, on the architecture of the day.

To conclude: If there be, as there perhaps is at Canterbury, a peculiarly foreign type, and if there be French work in the choir, it is also, in many respects, a peculiarly English cathedral: as such it addresses itself very specially to our hearts. It cannot come near the French cathedrals in altitude. Amiens, for example, is, in round figures, double its height. Beauvais, which is a wonderful *tour de force* rather than a work of real art, is even higher than Amiens. But what it loses in this respect of sublimity may perhaps be more than compensated for by the juster proportion of the parts, by its interesting and varied outline, by the pleasing variety of light and shadow, which plays over its double transepts and numerous projections. It is one of the longest of those very long churches—our English cathedrals. It is within 10 or 20 feet the same length as Ely, Winchester, or Westminster, and nearly 100 feet longer than the principal cathedrals of France, Notre Dame de Paris, Chartres, Amiens, and

Rheims. The average is, for the English about 520 feet, and for the French, 420 feet. It is characteristic of England, too, because, whether seen from a distance or close, the masses of its architecture are usually broken by luxuriant foliage. It rises, not like a continental cathedral in the midst of houses, shops, and hovels built up against its sides, but as all buildings look best—almost like a flower from a carpet of green.

It is on the outskirts of the town rather than in its centre, which is also a marked feature of our English cathedrals. The monastic buildings round it are not levelled with the ground, but remain covered with ivy, and here and there a wild rose, full of ruinous beauty. Among them we may remark the Norman staircase, probably of the time of Anselm, which is thought to be a unique specimen, and a building supported upon beautiful Norman pillars, once intended for a tank, which contrary to, even reversing the usual practice, has been converted from a profane to a sacred use, and now forms the baptistery of the cathedral. We may be thankful that these precious relics are no longer desecrated by the hand of Puritanical violence, or left to perish through ignorance or neglect, but tended with all the care of true wisdom which is ever anxious to preserve, and to adapt to present use these noble memorials.

Happy are those who can cherish the traditions and the arts of our ancestors, without sacrificing the many advantages and blessings of modern civilization, who combine with the greatest fitness for a life of business, and the most perfect appreciation of the blessings of liberty in action as in thought, not merely a taste for the refined pursuits of the antiquary, and a love of the picturesque, but a genuine spirit of reverence for whatever may be found of the true, honest, and beautiful in the religion of past times.

SPECIAL MEETING OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE PRESIDENT.

A SPECIAL meeting of the Institute was held at the house in Conduit-street, on Monday evening last, to elect a president in the place of the late Right Honourable Earl de Grey, and to consider a communication received from the Royal Academy in reply to a letter addressed to that body from the Institute.

Mr. George Godwin, vice-president, presided. The meeting was very numerously attended, and included Mr. Cockerell, R.A.; Professor Donaldson, Messrs. Tite, M.P.; Pennethorne, S. Smirke, R.A.; Scott, A.R.A.; H. Ashton, V.P.; Ashpitel, Allason, Baker, C. Barry, J. Billing, Bury, J. Clarke, Ferrey, James Fergusson, Garling, Hakewill, Haywood, PAnson, Jennings, Kerr, Knowles, T. H. Lewis, Mair, Moesta, Mylne, C. C. Nelson, Norton, J. Papworth, Porter, Roumieu, Scoles, Tenlon, Vulliamy, Whitechord, T. H. Wyatt, Digby Wyatt, Edmeston, Hansard, F. R. Wilson, Rickman, and many others.

The chairman having stated the circumstances under which the meeting was held, and read the notice convening it, stated that the Council after deliberating on the subject, and with the view of assisting the meeting in coming to a satisfactory decision of the question, had requested the honorary secretaries to inquire of C. R. Cockerell, esq., whether in the event of his election as president, he was willing to undertake the office; and in the event of the reply being in the negative, to make the same inquiry of Sir Charles Barry. The honorary secretaries had done this, and it was his duty to state that both gentlemen, with strong expressions as to the honour intended to them, had felt it necessary to decline, and had given their reasons for doing so. The matter was in the hands of the meeting, and it was for them to decide on the course to be taken.

Mr. Tite addressed the meeting at considerable length, expressing his gratification at finding that the council were disposed in favour of a professional president, and giving his reasons why, on previous occasions, as then, he had advocated the view. He showed how, shouldered and abowed on all sides, architects had suffered through the president of the Institute not having had architectural knowledge, especially in respect of the Great Exhibition of 1851, and pointed to the Brompton boilers as one actual result of injury to the public. He had no hesitation in saying that Mr. Cockerell was the most learned and accomplished architect in Europe, and he again urged him to accept the position. Failing in that, he moved a resolution to the effect that the selection of a president on the present occasion should be made from the list of Fellows.

Mr. Jennings having seconded this,

Mr. Cockerell, who was loudly cheered, said he viewed the offer made to him as the crowning honour of his life, and yet felt compelled to decline it; firstly, on the ground of his years, which would prevent him from discharging effectively its duties; and, secondly, because he thought it was desirable the president of the Institute should be a nobleman, removed from the possibility of professional jealousy. It was to the House of Lords we must look for a perfect gentleman, and one capable of throwing the oil of gladness on troubled waters.

Mr. C. Barry supported very effectively the proposition that the president should be elected from the professional body.

Mr. G. G. Scott said Mr. Cockerell's was certainly the most illogical speech he had ever listened to. Mr. Cockerell had disproved all his own positions. He had shown by his speech that he could discharge the duties of his office, and he had certainly sketched his own portrait in the individual he had described as dispensing the "oil of gladness." Moreover, if Mr. Cockerell had attained the eminence he possessed in any other profession—the law or arms—he would himself be a peer.

Mr. Pennycuik supported the proposition for an architectural president.

Professor Donaldson differed from that view, and urged that the interests of the Institute would be best served by one who was free from professional predilections, and had access to the throne: he instanced, too, the advantage of such social meetings as Earl de Grey was in the habit of conceiving, and moved an amendment to the effect that the Council should be requested to invite some nobleman or other member of the aristocracy to become the president.

Mr. Mocatta seconded the amendment. Mr. S. Smirke supported it, urging it was desirable to keep to the old course, which had led to most satisfactory results.

Mr. T. H. Wyatt, Mr. Digby Wyatt, and Mr. Asplitt also spoke.

Ultimately, amidst the applause of the meeting, Mr. Cockerell consented to waive his objections; and

The Chairman having put it to the meeting (on the motion of Mr. Tite, seconded by Professor Donaldson), declared him duly elected President of the Royal Institute of British Architects.

In consequence of the lateness of the hour at which the decision was arrived at, Professor Donaldson said he would postpone a motion he had to propose, touching the reply from the Royal Academy, till the General Meeting of the Institute, in May.

We must mention that the discussion was carried on with remarkable skill and kindness.

#### THE PRESIDENT'S ADDRESS AT THE INSTITUTE OF CIVIL ENGINEERS.

On January 10th, the whole of the evening was occupied by the reception of an address from the president, Mr. G. P. Bidder, on taking the chair for the first time since his election. This address has been printed and circulated. Towards the close of it he said:—

As a natural sequence to the preceding subjects, we are led to the consideration of the proceedings which have taken place, with regard to what are termed our Harbours of Refuge,—as it must be obvious that one main object of these works has reference to the operations of our naval forces—and I believe I am justified in observing, from what transpired during a recent discussion at this Institution, that neither mechanically nor financially can they be considered to be in a satisfactory position. According to the present system of conducting such works, it is obvious that the principle of construction employed at Dover and at Alderney must necessarily restrict their adoption to a very limited extent. Whether we look to the time, or to the cost, the results are altogether inadequate to the services required. The protracted time is, to a great extent, owing to the system of voting the funds annually by dribbles,—the result of which is, that neither the Government nor Parliament fairly appreciate, at the commencement of a work, the full extent of the responsibility involved, either as to time or cost. Can it be supposed that Government, or Parliament, when adopting the recommendation of the commission to construct a harbour of refuge at Dover, imagined that the works would involve an actual cash outlay of five or six millions, without interest, or of thirty or forty millions, including interest, and that a hundred years, at least, would elapse before the full efficiency of the works would be secured; or that, after an expenditure of nearly

half a million sterling, and the lapse of upwards of ten years, the constructive resources of Great Britain would be exhibited to the foreigner landing at Dover in the shape of an incomplete jetty, with two inconvenient landing-places? These and other results of a similar character may be fairly attributed to the system adopted, and must not be laid to the charge of any individual or department, and certainly not to the eminent statesmen who guide the helm of the nation for the time being; for in matters of this description they possess no interest, political or otherwise, apart from that of the country at large. No doubt one of the inconveniences of the present system is that of having to apply to Parliament annually for grants—the amounts of which, and the chance of obtaining them, depend upon the financial state of the country and the temper of the House of Commons, even although the period of the session may be selected when the Government has the best command of the attendance in the House. No doubt that, having regard to these circumstances, the original plans of the works have often been conceived on a limited and narrow basis, adapted to the proposed expenditure, but totally inadequate to the objects supposed to be attained; the ultimate result generally being an extension of the design, an enlargement of the estimates, and a final completion of the works in a form or shape which defies investigation to affirm. Thus money is wasted, time is sacrificed, and full efficiency is not attained.

The remedy for this defective state would appear to be, that, antecedent to any application to Parliament, the Government should prepare full and detailed plans of the entire extent of the works intended to be executed, and obtain tenders from competent contractors for the execution, stating the time of completion and the terms and mode of payment. These plans should be deposited, at fixed periods, at the Private Bill Office, for the inspection of all who are interested. Thus, before the vote was taken, there would be ample time for full criticism on all points, and, though additional labour might be thrown upon the public departments in preparing the documents subjected to such investigation, the House of Commons and the members of the State would have the means of coming to the debate fully informed on all points connected with these national works.

In a financial point of view the gain would be considerable, because a work which is executed within a reasonable time is always more economical than one which is extended over an indefinite period; and also for direct financial considerations, which may thus be exemplified. Suppose a work estimated to cost a million is estimated to extend over twenty years, the work being restricted by the annual grant to 50,000*l.* a year. The ultimate cost of this work to the country, supposing the Government to raise the money at 3 per cent., involves an additional annual charge of about 42,000*l.* per annum, whereas, if the work was executed in five years, by annual grants of 200,000*l.* a year, the annual charge to the country would only be 33,000*l.* a year—thus, irrespective of all other advantages, saving 9,000*l.* a year. These observations only apply to works of real utility, and do not apply to undertakings of so useless a character that their execution cannot be too long protracted,—such, for instance, as the pier at St. Catherine's, in Jersey, and others of a similar character.

I cannot but feel assured that, were the principle adopted which I have enunciated, the defects now admitted to exist in the harbours of Holyhead and of Alderney would have been avoided, and the Blue Book mystification at Portland, respecting the expenditure upon the convicts employed upon the breakwater works, would not have occurred, and the nation and Parliament would have had the satisfaction of realizing, on all these works, the full value of the outlay incurred. Ministers, by taking at once from Parliament a grant for the full amount of the expenditure, would avoid the annoyance of the annual appeal and the recurring waste of the public time, in re-discussing all the features of these undertakings.

I have alluded here to certain defects which will always be inherent in the harbours of Holyhead and Alderney; both of which were, doubtless, originally projected on so limited a scale, on account of the difficulty of obtaining parliamentary grants; but, during the progress of the works, their total inadequacy for the objects proposed became so obvious, that it would have been absolutely criminal to have persisted in the original designs; their extension, therefore, became a matter of necessity; but, alas! these extensions could only be carried out in such directions, that

it is now admitted, that, for the same amount of money, the same extent of breakwater might have been constructed, in a form much better calculated to resist the action of the seas, whilst affording more security and nearly twice the amount of accommodation.

Before concluding my address, I cannot avoid contrasting the progress of Government works with those undertaken by private enterprise. There is, within a short distance, an iron bridge, scarcely even partly completed, across the River Thames. There is no doubt that this bridge will be substantially and skilfully constructed; but it cannot be said to involve any feature of mechanical difficulty: it is constructed in London, and thus commands, in respect of labour and materials, the resources of the whole empire. Another iron bridge, spanning the River St. Lawrence in Canada, is entirely completed, and is opened for traffic: this bridge extends nearly a mile and a half across the stream, having a current varying from seven to ten miles an hour; it has resisted the pressure of ice accumulating occasionally to the depth of 30 or 40 feet. The severity of the climate is such as to restrict the actual period of working to a few months in each year: the iron work and the great proportion of the skilled labour were derived from England; and a severe monetary crisis had also to be surmounted, which latter, however comparatively unimportant in Government operations, exercises a formidable influence on private enterprise. Yet this entire work has been executed contemporaneously with the one uncompleted half of Westminster Bridge;—thus evidencing what the civil engineer can do, when impelled by pressure of private enterprise, as contrasted with his exertions when trammelled by the restrictions incidental to the conduct of Government works.

gentlemen, I am well aware that the observations I have made are open to the severest criticism. I have advisedly introduced into my address subjects and opinions of the most controversial character, because it is my design to induce upon them the fullest and freest discussion. I have endeavoured, on the one hand, and I hope with success, to avoid subjects of trivial interest; whilst, on the other, I have attempted to direct my remarks to subjects of national, commercial, and professional importance.

I have now been a member of this Institution for thirty-five years: during that period I have been a careful and anxious observer of its progress, and the result of my observations leads me to believe, that nothing has tended so much to the steady growth of this society as the animated discussions which so frequently occur within these walls. This point may, however, be also a subject of controversy; but, gentlemen, I have only one further remark to make,—upon which I can defy controversy,—that is, that all I have said within these walls, and that my conduct, while occupying this chair, has been and will be inspired by the determination, so far as my humble powers permit, to perpetuate the prosperity of this Institution, and to maintain the reputation of this noble profession of which I am proud to be a member.

The discussion upon Mr. Grantlun's paper, "On Arterial Drainage and Outfalls," was resumed at the next meeting, Tuesday, January 17.

#### MODERN ARCHITECTURE OF GERMANY.

The address delivered by Mr. Tite, M.P., at the opening meeting of the Royal Institute of British Architects, in the new rooms at Conduit-street, fully reported in our pages at the time, has been privately printed in an octavo form, and obligingly presented to each member of the Institute by Mr. Tite.

In an appendix we find the following, under the head "Modern Architecture of Germany":—

"On this subject I applied to my esteemed friend the Hon. Earl Stüler, of Berlin, one of the architects to the King of Prussia, and an honorary corresponding member of the Royal Institute of British Architects. His memoirs are sent to me to introduce the matter into my address, but I gladly take the present opportunity of preserving his valuable and interesting remarks as follows:—

*New Churches and Restorations.*—During the last twenty years about 300 new churches have been erected, among which the chapel of the Royal Palace at Berlin is deserving of special mention.

Among restored buildings the cathedrals at Cologne, Erfurt, Bamberg, and Halberstadt, are deserving of notice; but in all the provinces of the State the restoring of ecclesiastical buildings has been much attended to.

The plans for these churches and restorations have for the most part been made by Stüler and Stüler; but numerous restorations have also been made by Guast and Zwerner.

*Edifices for the Purposes of Instruction and the Study of Art.*—

Stüler.—The new museum, Berlin; the university at Königsberg; buildings for clinical purposes at Königsberg, Halle, and Greifswald.

Gymnasia (high schools) at Magdeburg, Lyck, Trezniez, Bromberg, Inowrazlaw, Posen. — *Rechnhause* at Inowrazlaw, Berlin, Bromberg; Institute for teachers at schools and sundry boarding-schools at Steinau, Munsterberg, Osterburg, Eylau, Pelskretschaw, Ncwuid, Oranienburg. Most of the plans of these edifices are by Zucc.

*Stiller*.—Institutes for the education of clergymen at Wittenberg and Berlin; smaller buildings for schools in great numbers.

*Buss*.—Buildings for purposes connected with the administration of the law; the large edifices for the administration of justice and for imprisonment, at Breslau, Moabit near Berlin, Cologne, Munster, Rathor, Allden, Eisenfeld, Steinau, &c. Smaller buildings of this kind in great numbers. A very considerable number of buildings for the Post-office service, rendered necessary by the increase of communication, and by new railway works.

*Reichinger and Drewitz*.—Numerous barracks and military buildings.

*Huss, Helro, Stutz, Ark, Steadener, Romer*.—Sanitary Buildings.—Great hospitals in most of the large towns. Lunatic asylums at Berlin, J. Schmetz, Ominsk, Commercial Buildings.—Banks in various places; the New Exchange, Berlin.

This activity in architectural matters, on the part of the State, is, if possible, an excessive undertaking, the population having increased in so enormous a degree, that Berlin within the last twenty-five years has doubled her population. The great railway undertakings here have given rise to the most magnificent buildings as termini, and to the activity of engineers; among whom the most prominent are Mellin, Neuhaus, Wiebe, Hentz, Hohmer, Stein, Hartwich, Rosenbaum, and others.

In the principal edifices of Prussia, among whom the most important are MM. Knoblauch and Hetsig, are overwhelmed with commissions; so that the latter for instance has designed and built twenty-seven country-houses and schools, besides many public buildings. In addition to these, the royal architects Stiller, Strass, Schadow, Hesse, Zwiner, Von Arnim, Gotztrux, and others, have been engaged in making numerous plans and designs for private edifices; and have constructed a very considerable number of country and town-houses, besides other buildings.

In reference to the styles in which these buildings have been executed, it must be remarked that they assume an eclectic tendency in Prussia as nearly everywhere else. In the northern provinces, the influence of the Barba school, through the works of Schinkel, renders the tendency to the Greek Antique common; although it is not employed so exclusively and in such purity as it was by Schinkel.

In the western provinces, however, and especially in South Germany, a preference for Medieval architecture, and particularly for Gothic, is to be discovered; and is by many employed to the exclusion of other styles. In Prussia, those who have employed themselves more especially in this direction are MM. Zwiner, Kashiroy, and Stutz of Cologne. Among the most important architects of Northern Germany the following are perhaps the most distinguished:—

*Vienna*.—Forster, Vander Mill, Von Lichtenberg, Hansen, Ferstel, Döderer, Kreuter, Schmidt, &c., having a special tendency to the Medieval style and Renaissance school, first employed with great skill by Martin, for the requirements of the present day.

*Munich*.—Von Klenze, Zuehlund, Lange, and Veit Dürken, whose works are well known.

*Cologne*.—Fulst—see his 'Early Christian Architecture,' and his buildings; Eisenlohr, deceased; see also his publications on architecture.

*Hannover*.—Lubes, Haase, Vogel, Humannus, and others.\*

*Memorial Church of St. James at Gerrard's Cross*.—On this subject Mr. Tito says:—

"In this appendix I may perhaps properly be allowed to say a word for myself on this building, which has been so highly praised, though it did not appear to me to be of sufficient importance to be included in the preceding address. It has been exposed to many remarks and objections, because it is not Gothic. The reasons why it is not at least summed up in the fact that it is a monumental church in the first place, and that, from our earliest associations in architectural history, the character of a tomb is best obtained by a dome being built over it. That opinion is shared by the *Quarterly Review* in the following passage:—'It is remarkable that the dome was first employed in Persia and in India, as in Egypt, for tombs—thus offering a very curious analogy with the sepulchral architecture of the Etruscans, Romans, and early Christians, and suggesting the inference hinted at by Mr. Ferguson, that its use for such purposes was traditional, first among cognate races, and afterwards throughout the whole world.' This led me naturally to the style of architecture which I adopted; and it had also some personal reference to circumstances connected with the history of my gallant deceased friend, but with which the world has nothing to do. I have neither desire nor intention of suggesting that the style I adopted should be imitated or followed. I pleased those for whom I laboured; and, if I may be allowed to say so much, I pleased myself. It has been said it is very costly. I do not think so; but I was not directed to regard the cost. I believe that the total expense of the building has been about 7,000*l.*, which surely becomes a trifle when compared with the lavish though becoming expenditure of the votive-churches of the Arkwrights or the Cubitts; or the still more costly folly of the church in Margaret-street.

If this small example, however, should lead, by the importance which appears to have been given to it, to the propriety at least of considering whether in these days other styles of architecture are worthy of adoption or imitation, I think that I shall 'have done the State some service.'

**OPENING NEW WESTMINSTER-BRIDGE**.—The demolition of Denton's, (late Oliver's) Hotel, the Westminster Hall Hotel, and several of the adjoining houses in Bridge-street, Westminster, has commenced, to form the southern approach to the new bridge at Westminster, which is to be opened for carriage traffic on Wednesday, the 1st of February, foot passengers continuing to pass over the old bridge for a time.

**A THEME FOR THOUGHTFUL ENGLISH WORKMEN:**

OR, OCTAL *versus* DECIMAL.\*

Our fathers, in the ancient times,  
(Tis thus the story goes),  
Did have ten fingers on their hands,  
And on their feet ten toes.

And their fingers oft assisted them  
With numbers upward mounting,  
And thus the number ten became  
The basis of their counting.

They might have counted otherwise  
(So teaches the "Professor"),  
If they had had or twelve, or eight,  
Or other number lessor.

This remnant of the golden age  
Among us moderns lingers,  
The basis of our counting is  
The number of our fingers.

But whether we should use it still,  
Or whether this the season  
To change our mode of numbering,  
Please listen to my reason.

As an integer take the eight,  
Let eight and ten change places,  
You'll have for measure, value, weight,  
A natural, perfect basis.

But should you doubt what I aver,  
And think of disputation,  
I will, with your permission, sir,  
Give you a demonstration.

Thus:—Take at first a little cube,  
Then add a second to it;  
Saying, "One and one are two"  
(A little child may do it).

Add a third, and then a fourth,  
Just behind the other;  
Saying, "Two and two are four;"  
And thus teach one another.

Place four others on the top  
With care, if not with quickness:  
You'll find the eight are twice the first  
In length, and breadth, and thickness.

(And as a child can add them up,  
When once or twice he's tried them,  
So will he learn as easily  
To equally divide them.)

That "Eight of these make one of those,"  
Is true (none can deny it);  
I think, that in arithmetic  
We should be guided by it.

'Tis but a step—but 'tis a step  
(No other step shall differ)  
That leads the mind progressive up,  
Upward and onward ever.

And as it rises, so it spreads,  
Becoming ever greater;  
Embracing all the works of God,  
Our good and wise Creator.

T. G. ATKINS.

**PRIZE DESIGN FOR THE WASHINGTON MONUMENT, PHILADELPHIA.**

THE first premium, of 300 dollars, for a design for a monument offered by the Washington Monument Association of the First School District of Pennsylvania, says the *Ledger*, has been awarded to Mr. George S. Bethel, architect. According to the design of Mr. Bethel, the monument is to be 225 feet high, including a colossal figure of Washington, of about 20 feet. The following strange description is given of it:—Around the base of the shaft will be an octagon-shaped Gothic structure, 80 feet in diameter and 50 feet high, highly ornamented, and to be surmounted on each corner of the octagon by figures representing the patriots of the Revolution. The space between the base of the shaft and the walls of the building is designed as a promenade. Above this structure the shaft has a base of the same shape, in each face of which is a large window, and on the corners figures are to be placed as on the building described. From this base the octagon-shaped shaft rises 72 feet. It is pierced with windows on four sides, and ornamented on the other faces with appropriate devices. The cap or top of the

monument is to be composed of large brackets supporting a cornice with enrichments, and forming a balcony, within which will stand the pedestal to support the figure of Washington. The balcony, from which a magnificent view of the city and surrounding country may be obtained, will be reached by a spiral staircase. It is proposed to build the structure of white Pennsylvania marble, and to use the blue marble for the ornaments.

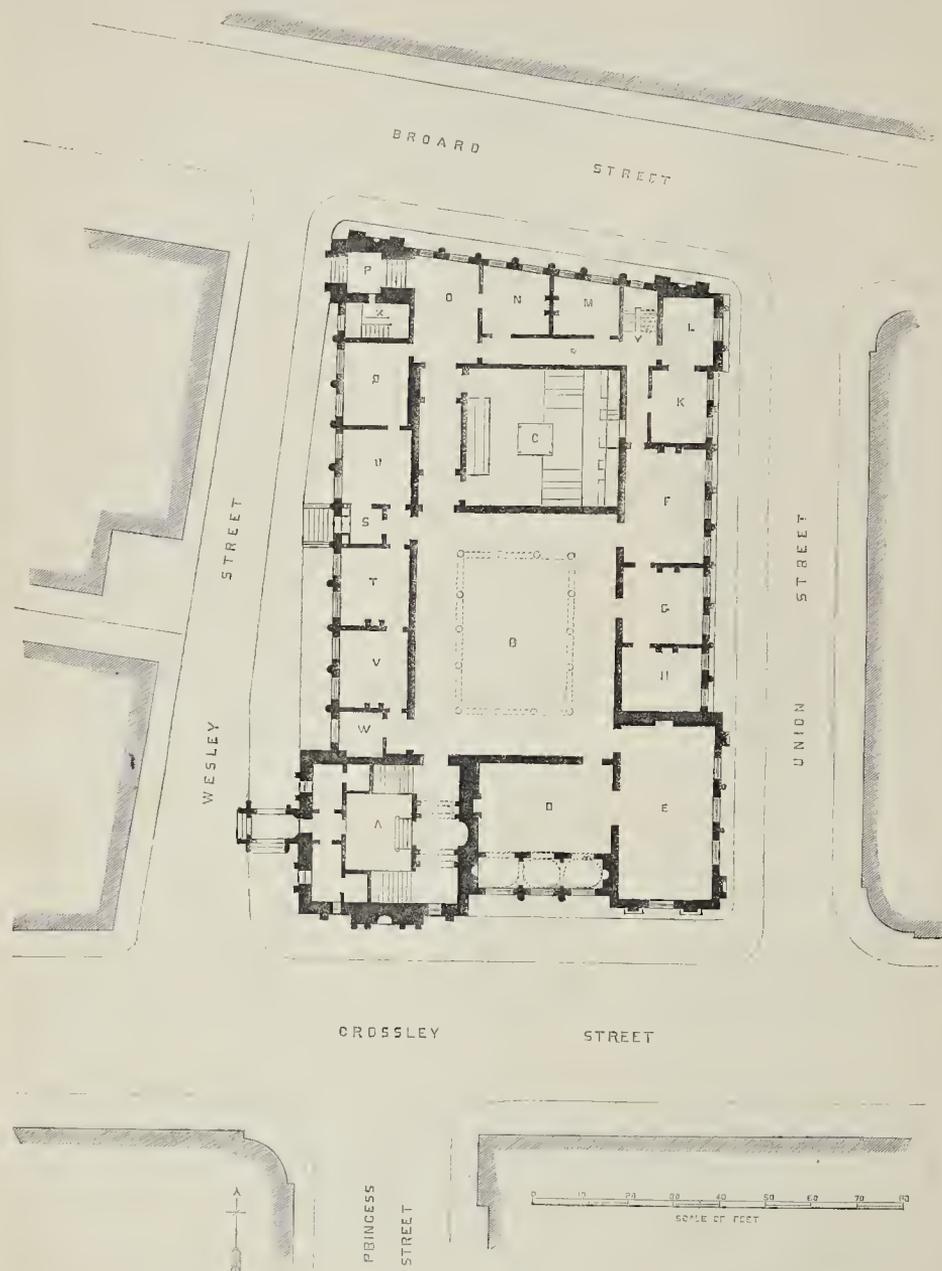
**PROPOSED TOWN-HALL, HALIFAX, YORKSHIRE.**

THE intended Town-hall at Halifax will be placed in the heart of the town, upon property obtained from Mr. Alderman John Crossley, who, when Mayor of Halifax, in the years 1850 and '51, conceived the noble project of removing a considerable portion of the old town, consisting of unsightly and objectionable buildings, and rebuilding that portion of it upon a costly and magnificent scale. With this view he purchased the property in question, and proceeded with the work of demolition and reconstruction, involving, it is understood, an ultimate outlay, on his part, of above 100,000*l.* New and spacious streets have in consequence been since formed on the site of the houses removed, and several public and private buildings adjoining them have already been erected, including a great hotel, a bank, a mechanics' institute, and several costly shops and warehouses. In the midst of these and other proposed edifices of a similar character, is the site for the intended Town-hall, which will be isolated and surrounded by spacious streets and form a conspicuous object at the end of one of the principal new streets, named Princess-street.

After various steps had been taken with reference to drawings for the building, the matter was placed in the hands of Sir Charles Barry, whose design we illustrate in our present number, with a perspective view and a plan of the ground-floor and surrounding streets. The peculiarities of the site, as regards its extent and form, and its position with respect to Princess-street, the great variations in its levels, and the loftiness of the present and proposed buildings, in its immediate vicinity, have suggested the principles of the design. Vertically, it will be obvious, has been striven for. The height of the building, and of the lofty tower and spire, at the south-west angle of it, facing Princess-street, are intended to have the effect of giving importance to the moderate size of the building, whose dimensions will bear no comparison with those of the large and costly edifices recently erected as town-halls in several of the great provincial towns in the North of England; for, unlike those buildings which are generally devoted to festive as well as municipal objects, the new town-hall at Halifax will be exclusively appropriated to the business of the corporation.

The accommodation which the building will afford consists of a large hall, a borough court of justice, with magistrate's room and other appendages, a news-room, a concert-room, three committee-rooms, borough and poor-rate offices, and offices for the town clerk and engineer, the accountant and the market inspector, a mayor's parlour, telegraph-office and waiting-rooms, and residences for a superintendent of police and a house-keeper. All this accommodation is provided in the principal floors of the building. In the basement story, which, on the east side of the building, is almost wholly above the level of the ground, will be the accommodation for the police force of the town, including a parade hall, &c., and cells for prisoners awaiting their trial, also spacious workrooms with engineer's offices and store-rooms attached, required for the gas and water services of the town, which are under the exclusive control and management of the corporation. There are five entrances to the several departments of the building, the principal one being through the great tower, which contains the staircases leading to the upper or principal floor; a chaucer communicating with the terrace flats of the building; accommodation for a clock with four large dials, capable of illumination by night; and a deal of bells. The entire building, with the exception of the lantern-lights over the great hall and borough court, will be covered with a terrace-flat, which, together with the gallery at the summit of the spire, will command extensive views of the town and its suburbs, and afford facilities for occasional public demonstrations by means of flags, illuminations, &c. Tenders have been received for executing the whole of the works for the sum of 23,575*l.*, and the works will be commenced shortly, when the season of the year is more favourable than it is at present for the purpose.

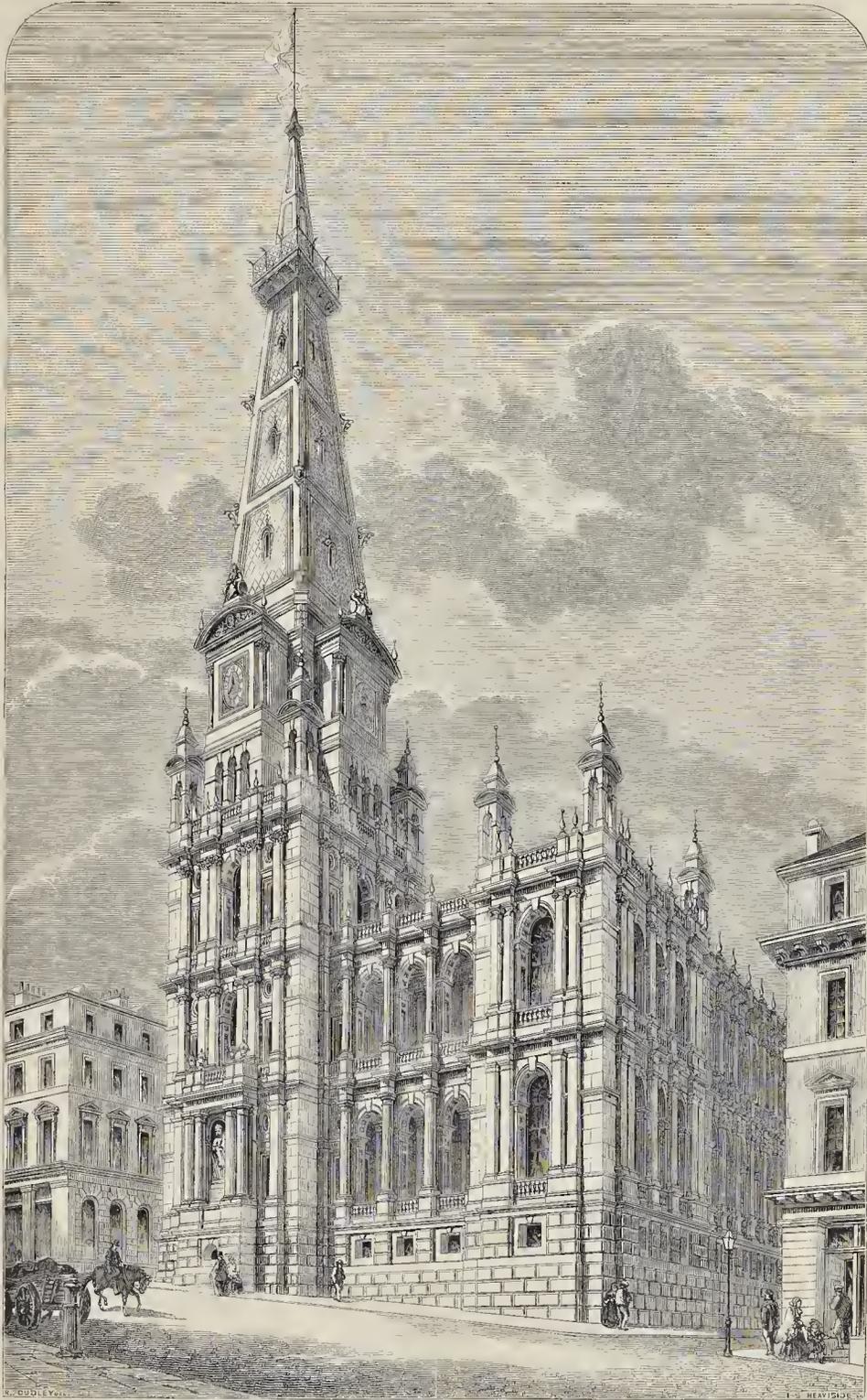
\* We are not to be understood as adopting the opinion set forth.—En.  
† Hennessey.

PROPOSED TOWNHALL, HALIFAX.—*Plan of Ground-floor of Building and the surrounding Streets.*

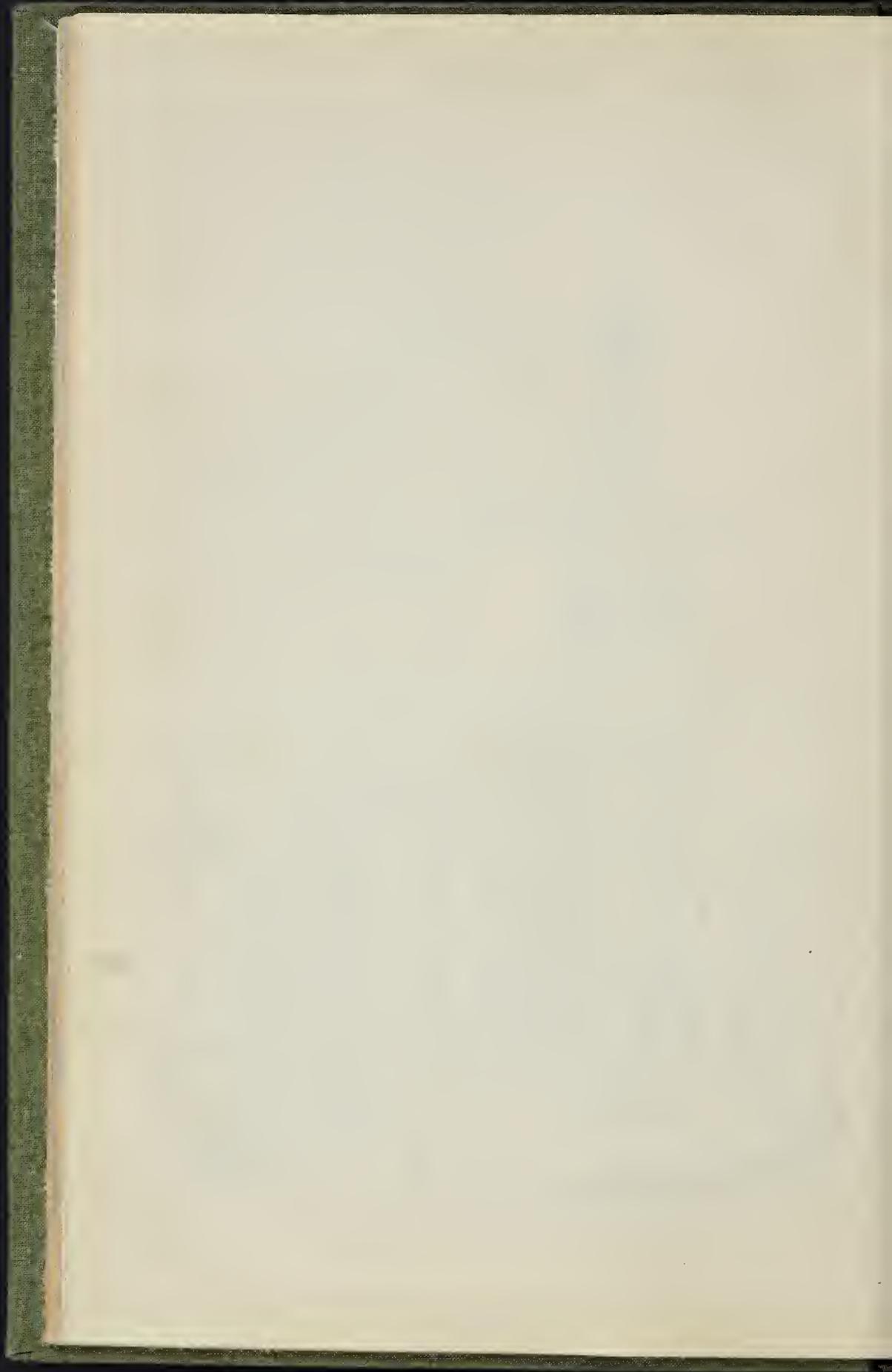
- A. Tower Entrance and Stairs to Council and Committee Rooms.  
 B. The Hall.  
 C. The Borough Court.  
 D. Committee room.  
 E. News-room.  
 F. Magistrates' Room.  
 G. Waiting-room.

- H. Telegraph Office.  
 K. Cloak-room.  
 L. Magistrates' Clerk.  
 M. Police Superintendent.  
 N. Market Inspector.  
 O. The Court Vestibule.  
 P. The Court Entrance.  
 Q. Overseers.

- R. Poor-rate Office.  
 S. Rate-payers' Entrance.  
 T. Borough-rate Office.  
 V. Accountant's Clerks.  
 W. Accountant.  
 X. Housekeeper's Stairs.  
 Y. Police Stairs.



PROPOSED TOWNHALL, HALIFAX, YORKSHIRE — SIR CHARLES BARRY, R.A., ARCHITECT.



**CHELSEA ATHENÆUM CONVERSAZIONE.**

The Chelsea "Athenæum" is a society having for its object, the cultivation of literature and science, especially in the younger members of the community; and a paper is read on some interesting subject by one of the members, every week. Nearly all the members are men who are studying for the various professions. The Athenæum is founded on nearly the same principles as the learned societies of London, and thus differs materially from the "Mechanics' Literary and Scientific Institutions." The subjects are, of course, treated of in a comparatively elementary way. Two or three of the lectures have been printed, and are creditable to the authors of them. The Athenæum has now successfully carried on its operations for a year, and it was thought desirable to commemorate the event by a *conversazione*. This was held last week at the Museum of the Department of Art, at Brompton, by the permission of the authorities. The parts of the Museum occupied, were the rooms containing the Art-Treasures, the Sheepbanks, the Vernon, and the Turner picture galleries; the central hall, and the lecture theatre. At nine, addresses were delivered in the lecture theatre, Mr. Robert Hunt, F.R.S., presiding, by Messrs. Macdonald & Lyon, members of the society. The Rev. J. B. Owen then delivered a suitable concluding address, "On the Usefulness of such Institutions." Votes of thanks were next moved by Mr. Child to Mr. H. Cole, for the facilities he had afforded the committee; and to Mr. P. C. Owen, the deputy superintendent-general, for the way in which the arrangements had been carried out. Mr. Farren (the treasurer) moved a vote of thanks to Professor Hunt, for his conduct in the chair, and the company then dispersed over the various parts of the building. It was altogether a successful gathering.

**ST. LUKE'S HOSPITAL FOR THE INSANE.**

The daily papers a few days ago gave an account of the annual Christmas ball of the patients in St. Luke's. It may be useful to make the position and purpose of this institution better known than they are, and to obtain such improvements in the building as may be possible.

Old-street, and the surrounding neighbourhood of St. Luke's, was in a different condition from what it is now, seventy or eighty years ago when the hospital was raised; then green fields could be seen in all directions; and its projectors, in days when sanitary science was less understood than at present, thought that they had met with a salubrious position. Even in the first instance, however, it could not have been a desirable spot, for the place was little better than a swamp—a continuation of Moorfields—and before this massive building was raised, it was necessary to throw in an immense quantity of bush-wood, and to prepare an artificial foundation: upon this the hospital, designed by Mr. Dance, the architect of Newgate Prison, was placed. It is planned rather in the manner of a prison than an hospital for the cure of one of the most serious ills of humanity.

With thoughts of Hogarth's famous picture of a London Madhouse in our mind, we wandered with painful feelings through the hustling crowd to St. Luke's.

Clanking chains, straight-waistcoats, brutal violence, darkness, filth, and the most terrible neglect were looked upon in his days as the best means of restoring the insane to the world. The architect may therefore be to some extent excused for acting in the spirit of his time; and so came small lights, massive window-frames, which exclude half of the rays of the sunlight, the iron and wire work, and the little care taken for proper ventilation. Modern experience shows that the old terrors of the prison, brutal execrations and violence, and those even worse scenes which were exhibited for a small money payment to the curious, in the madhouses of the metropolis and elsewhere, were errors; and consequently in those buildings which were erected some time ago, it has been necessary to carry out changes, which are made at a large cost. St. Luke's Hospital was reared for about 50,000*l.* during the last six or seven years 15,000*l.* have been spent in alterations, and very much more work remains to be done.

The general plan of this hospital is simple: the frontage extends 493 feet. In the centre is an entrance, with staircase, which divides the building into two equal parts, one of which is formed into apartments for males, and the other for females. The staircase is spacious, but the con-

munication which it has with the cooking operations of the kitchen produces unsatisfactory results. The committee-room, and some of the dwelling-places of the superior officers of the Institution, are situated here, and on each side, the wards for the insane inmates stretch along. Through doors, kept carefully locked, we are admitted into a gallery of great length. The floor is now partly covered with cocoa-nut matting; the other part is painted with a black and white diamond pattern. The walls are neatly papered. At the time Dr. Stephens first became the resident medical officer of this place, these wards had a very different appearance; the brickwork was only imperfectly whitewashed, and a large portion of what is now the principal light of the ward, was blocked up. It is difficult to give an idea of the window-frames. The lower part is fixed; the upper part is moveable. The opening of these windows to the greatest extent, was not a means of ventilating the lower part of the room. When this condition existed,—when there was nothing but the bare boards, and the rough walls, it was necessary to wash the floor frequently. The want of proper ventilation at the right level, allowed the damp and unwholesome moisture to remain long. At this time erysipelas was very fatal in the building, and of common occurrence. Since the matting has been introduced, and the floor painted, which can be cleansed and rapidly dried, this disease has been of very rare occurrence. The wet scouring of floors in hospitals, where large numbers of persons are lodged, is open to objection, for the invisible emanations from the sick are absorbed into the woodwork, which, when wet, gives off unwholesome gases. These have had effects; and experienced hospital physicians and surgeons rightly attribute many bad symptoms, in a measure, to this cause. The painting of the floors of hospitals, and even the rooms of dwelling-houses, is worthy of consideration. If matting or carpets be used, they should be frequently removed to some open place, and carefully dusted.

In those parts where alterations have not been made, there is a comparative gloom. In this curious London picture, which, sad as it is, has its bright side, when we consider the good changes which have been made, we see various neatly-dressed and lady-like young women, singularly different in appearance from the ideas which might be formed of those whose vocation it is to administer to the need of unfortunates of their own sex. A slender chain holds the key of the ward: but for this there is nothing to show their peculiar functions. On the papered walls are some excellent prints, framed, glazed, and mounted by the inmates of the place; and it is a fact worthy of notice that not one of the prints which are ranged round both the male and female wards has been injured. These works of art were the gift of Mr. Graves, the publisher, and will long serve to give pleasure to the inmates. It is an example worthy of imitation. In the light part of the ward a number of females are grouped together, some hazy with needlework, others reading, some carefully wrapped up, lying on couches. Curious eyes peer out at the visitor, and solemnly still the place seems. The song-birds in a large aviary, and a parrot in another part, break the quiet; but the human portions of this scene are peaceable in the extreme. Here is a pianoforte, with some other means of amusement, hooks, a pet cat, but no restraints. "We have not even a straight waistcoat in any part of this house," said the medical attendant. In the darker parts there were figures shrinking, as it were, from the sunlight. The memory of some of these will for long remain. One young girl, with a beautiful face, her long hair flowing behind, led by an attendant, would have been a rare study for a painter. Let us hope the shadow may pass from this fair countenance, for we find that since the establishment of the hospital in 1751 up to the 31st of December, 1858, inclusive, there have been admitted into the hospital 19,463 persons deemed curable on their admission, of whom there have been discharged, cured, 8,667; uncured there have been 6,574; idiots, 1,882; over 500 have been removed by desire of their friends; 1,477 have died. But in the year 1858, of the males, there have been cured at the rate of 65-853 per cent.; of the females there were cured 64-705 per cent.

Proceeding from the main portion of the wards, with the exception of the part which has been thrown open to the light, are various small apartments, some of which are used as bedrooms, bath-rooms, lavatories, &c. There is no over-crowding here at the present time, as the ventilation would not be sufficient, although the alterations just

mentioned have been made. Wirework has been taken away, as have fireplaces, which projected some distance into the ward.

In passing through this and the other female wards where the most quiet of the patients are accommodated, women of different ages are seen, some working without object: one old lady, of pleasant countenance, is nursing a little doll, and pretending at the same time to be stitching; little snatches of song may be heard, and occasionally unmeaning laughter; farther on are heard rougher sounds, which come from the refractory part of the ward, where those who are more violently afflicted are kept. Here there is madness more distinctly shown. At the guard of the fire is a crouching figure: some are expounding in a thrilling manner religious truths; with loud and peculiar voices; language and countenances which to those who are unaccustomed to them are indescribable, are here, but all seem obedient to the management.

In the refractory wards wall papering has been introduced, but here it has been found necessary to panel the wall up to a certain height, with wood. Formerly, before Dr. Stephens undertook the medical superintendence of the hospital, these and the other wards were dingy, and the rough brickwork and heavy window gratings, were most unpleasant to the sight, while owing to the want of proper attendance the inmates camped themselves in parts like companies of wild Arabs.

The sleeping-rooms are arched with brickwork, of great strength, and the windows are most inconvenient. Throughout the entire building the extensive use of bricks is extraordinary; and there is a tradition here that the builder having married the daughter of a brickmaker, received her dowry in bricks, which he was glad to turn to a profitable account. Some of those rooms have been altered: the arches are removed, the lights enlarged, and other improvements made.

In the wards for the males similar improvements to those already mentioned have been made, and the authorities are anxious to remove the prison-like window-frames. To do what is needed, however, would entail a cost of not less than 2,000*l.* In these wards the fireplaces are left unprotected by guards; books and newspapers, bagatelle-tables, and other means of amusement are provided. The furniture here, as well as most of that which is used in other parts of the house, has been made by the inmates. Here, with the exception of the refractory ward, quiet and order reign, and even in the latter, where strong men are violent maniacs, the attendance of the keepers is all the force resorted to.

In this hospital 300 patients might be conveniently admitted, but at present the number is less than that. This, unfortunately, not owing to any decline of the extent of lunacy in the metropolis, but to the ignorance of the public, and even of the medical profession, of the fact that this hospital is for all those who require or have just claims to its use. To those who are really in straitened circumstances this is a perfectly free hospital for the insane. Lately, persons have been admitted whose friends pay partially or wholly for their support, and much good has been done by that means. Owing to the diminished number of inmates, one of the large wards is unoccupied: this has been converted into a ball-room, in which the patients meet once a week, and it very rarely indeed happens that any one has to be removed for rude or improper conduct. The chapel might, at a very small cost, be much improved. Beyond, abutting into the grounds, is a spacious apartment, in which is a capital billiard-table. To add to the means of amusement, a gentleman has presented a complete scenic theatre, which the committee have had fitted up in a suitable building.

In addition to the exercise to be had here, the female attendants take out in rotation four or five patients for a walk in the streets. Many of the male patients have been trusted out on parole without any ill effects having resulted. By the arrangements which have been made more than half of the patients have had an opportunity of visiting the Crystal Palace, the Zoological Gardens, the British and Indian Museums, and the Water Colour Exhibitions.

The basement of the building, for some time past, has not been used for the reception of patients; it was, however, formerly so occupied, and remains since that time in parts unaltered. After passing through the neatly-fitted wards into this dungeon-like place, the contrast is extraordinary. Dimly dark as is this place now, it was worse until a wall, which hindered the light and air from entering, was removed. In these dark-arched and tunnel-like vaults are the kitchens and other

offices, and workshops of various kinds; on part of the ground, a laundry and other offices have been built,—the plan of them is not good.

In glancing at the general arrangements and present condition of this hospital, we cannot but admire the skill and ingenuity displayed by the resident medical officers,—but for the medical officers the condition of the place would have been most unsatisfactory;—and, as we have already stated, still further changes are needed, which will involve considerable expense. It has been properly urged that it is desirable to dispose of this building and site, and erect a new building in the country. We trust that if it is determined to retain this old hospital, vigorous means will be used to raise the sum necessary, to render it more fit for its purpose than it is at present.

#### ON DECORATIVE ART. CONC.

On the 28th ult. Mr. Edward Sheil, the late master of the Cork School of Design, delivered a lecture on "Decorative Art," in the Cork Institution. Mr. Sheil has given up his appointment, in order to visit Rome, and apply himself to painting. In the course of his address, after urging that artists must go to Nature for their highest combinations, he said:—

But Nature's glorious forms, could they be copied literally, are far too perfect and lovely in themselves to be used as secondary things to any work of man. The humblest flower, as the wild geranium, that grows on every bank, would far outshine, for grace, elegance, and marvellous detail, the richest tracery that ever crested a Gothic ceiling. Hence, man, though he must go to Nature for his forms and colours, must adopt a wisdom taught by experience, and be content with only a few of her beauties. The ornamentist is forced to select just as much as may give beauty to his works, and not put them to shame; but, whatever he takes he must hold sacred, and not trifle with; so that, as far as he goes, all who have studied Nature may recognize its truth. This I believe to be the true origin of that treatment of natural forms which is styled conventional, and which is a fundamental principle of all good design, and characterizes beautiful ornaments of all ages;—conventional treatment meaning an arrangement of natural forms, selected and drawn according to certain arbitrary laws. Thus, the cover of the book, which lost its proper character by decorating it with delicately-painted flowers, might have been rendered beautiful in its usefulness by the addition of a few simple lines, leaf-like in their curves, but geometric and unobtrusive. I say geometric, because reducing lines to follow certain laws is merely bringing them within the province of geometry, which establishes such laws with accuracy and truth. This conventional treatment of natural forms has been accounted for in many ways: some derive it from the example of the ancients, others from a horror in the artist of degrading Nature, by applying her forms unchanged to mean and inferior offices. But I fear it is a less noble motive which forces us to strip Nature of some of her glories, and fetter her with geometric forms. I fear it arises more from our secret vanity, which is deeply wounded when we see the hardest work of our hands and brains obscured by the wealth of beauty in any of Nature's works. Now, it might be asserted, with seeming truth, that the copying of any natural form, by man's handiwork, must necessarily be so imperfect as to require no conventional means of degrading it; but admitting that the representation, however perfect, is inferior to nature, yet, because it is man's greatest effort assisted by nature, it must still be far more perfect than man's work unassisted by nature, and therefore unfit to occupy the place of decoration. Having proved, then, the necessity for conventional treatment, and been convinced that the broad field of heaven's work is the great emporium from whence we must draw our knowledge, it is clear that the first step to acquire skill in designing fitly and grandly must be to acquire as intimate and accurate a knowledge of natural forms as our powers permit; and if this is true of all such forms, it applies with greater force to that form which the universal voice of mankind has proclaimed the noblest and most beautiful of all, namely, the human form. The changes that take place from youth to age in a leaf or branch, or even in one of the lower animals, produce no great difference in our ideas of them through all the periods of their existence; but, in the human form, how distinct are our ideas of childhood, manhood, and old age? Innocence and youth, strength and experience, wisdom and infirmity, pass, one by one, across

the lines of the face, which become arched, straight, crooked, or all three combined—as each age and passion thinks fit to impress them. A line in this case is more than a line, it is a short biographical history. It is a mere truisim to say, that the perfect human form is the highest manifestation of God's power upon earth; and as this form is but the external covering of an infinitely complex structure of bones and muscles, which change with every affection of the mind, it is almost impossible by any study thoroughly to understand it. Hence, to draw the human figure well is at once the triumph and the test of an artist's skill. All great schools have founded their knowledge on it.

History proves that it was thus the greatest ornamentists aimed at excellence. The ages which have been most illustrious in great artists were also those that heralded or commenced the best ages of ornamental art—as the ages of Phidias, Paul Veronese, and Raffaele. Hence the proof of my second and third propositions—namely, that art knowledge should be acquired by all classes, and not be confined to one. That this art knowledge must be formed on the study of nature alone, particularly on the human figure. The best practical illustration of the truth of these conclusions consists in the fact, that the schools of design, which were founded on principles contrary to them, failed in realizing the objects for which they were instituted; till at last, under the mastery guidance of the present head of the department, the whole system has been remodelled, to suit all the wants of the nation, and now embraces amongst its students every class in the community,—manufacturers, general art students, and designers; whilst its system of instruction offers almost equal encouragement and honours to every branch of art, decorative or pictorial.

#### SANITARY CONDITION OF LONDON.

##### STATE OF THE CHURCH VAULTS.

In his last report, as medical officer of health for the City of London, Dr. Letheby says:—

"In the corresponding quarter of last year the total number of deaths among the City population was 829, and during the same period of the last ten years the average mortality has been 763; whereas in the thirteen weeks of the last quarter there were but 730 deaths among the inhabitants of the City. This shows an annual saving of 132 lives, or about four per cent. of the whole mortality; and, as I shall presently show, it has been chiefly among adults. As usual, however, the improvement of the death rate, as well as the distribution of deaths in the several unions, has been very unequal. In the western division of the City, for example, with a population of 28,600, there were 190 deaths; in the eastern division, with about 44,600 inhabitants, there were 255 deaths; and in the central, with about 56,000, there were only 255. These are at the annual rate of 26.6 per 1,000 in the first-named union, 25.6 in the second, and only 18 in the third, the mortality of the whole City having been at the annual rate of 22.5 per 1,000. This inequality of the death-rate is sufficiently striking to show that much remains to be done for the sanitary improvement of the City; for although it is not possible to say from physiological data what should be the duration of life, or what the standard of mortality, yet it is manifest from the very inequality of the death-rates that there must have been in some parts of the City an excessive waste of human life. If this is measured by the actual standard of mortality in the whole of England it becomes still more apparent. At this season of the year the mortality in this country is at the annual rate of 21.8 per 1,000 of the population. In the town districts it is 25.2, and in the rural divisions only 18.7; while in many places, scattered over the surface of the country, with every variety of situation, and with a large aggregate population, the mortality is only 15 per 1,000."

Examinations have been made of the vaults under the City churches, seventy-one in number, and it is shown that in some the vaults are even now gorged with corruption, the only partition between the living and the dead being a thin slab of stone and a few inches of earth.

"As far as our investigations have gone," says the officer of health, "we have found about 269 vaults in the City churches, half of which are public; and although it is not possible to obtain accurate information of the number of coffins within them, there is reason for believing that the number is not far short of eleven thousand; besides which there are hundreds of hodies in the graves of the aisles and porches. In most cases the vaults are entered from the general area of the church, the

openings being covered by wooden flaps or by stone flags. The coffins are generally of lead, with an outer covering of wood, and they are often piled up in tiers to the very crown of the vault. When the wood decays, the weight of the upper mass crushes the lead and lets out a filthy liquid of a most disgusting odour. But besides this process of destruction, the lead itself is attacked by the foul gases, and is pierced with numerous holes, as if it were worm-eaten. It then swells up into a spongy mass of porous carbonate, which offers but slight resistance to the passage of putrid vapours, and thus, little by little, the animal part of the body escapes and finds its destination. It is a huge fallacy to suppose that a coffin of lead preserves a corpse indefinitely. The law of nature is that organic matter shall not be idle, it must ever circulate and be in motion."

Years have passed since we set forth the condition of the London vaults in this respect. When we published a view of the vaults beneath a celebrated City church (not one of the worst either), under the title of a Fever-Still, it excited a burst of indignation, and aided in leading to the legislation which has checked, if not stopped the burial of the dead in the midst of the living; but the vaults in many cases appear to have remained in their original abominable state. In consequence "at the night services, or during the winter season, when the air is rarefied by the warmth of the fires, or burning gas, the rank vapours are drawn out in uncontrolled profusion. It is impossible to say what mischief has been done by this, and how many, while worshipping within the sanctuary, have breathed the atmosphere of corruption, and have sickened unto death."

Dr. Letheby appears now to be doing all that is in his power to fill up the vaults, so as to prevent the escape of noxious gases.

#### FOUNDATION OF THE ROYAL ACADEMY.

The *Critic* prints the prospectus originally published on the incorporation of the Academy in 1768. It is dated December 10th, and sets forth that,—

"The principal object of this institution is to be the establishment of well-regulated schools of design, where students in the arts may find that instruction which hath so long been wanted and so long wished for in this country. For this end, therefore, there will be a winter academy of living models of different characters to draw after, and a summer academy of living models of different characters to paint after: there will also be laymen with all sorts of draperies, both ancient and modern, and since casts of all the celebrated antique statues, groups, and basso-reliefs. Nine of the ablest academicians, elected annually from amongst the forty, are to attend these schools by rotation, to set the figures, to examine the performance of the students, to advise and instruct them, and to turn their attention towards that branch of the arts for which they shall seem to have the aptest disposition.

And in order to instruct the students in the principles, to strengthen their judgments, to form their taste of design and colouring, to point out to them the beauties and imperfections of celebrated performances, and the particular excellencies and defects of great masters, to furnish them with an unprejudiced study of books, and to lead them into the readiest and most efficacious paths of study, there are appointed a professor of painting, a professor of architecture, one of anatomy, and one of perspective, who are annually to read a certain number of public lectures in the school, calculated for the purposes above recited.

Furthermore there will be a library of books of architecture, sculpture, painting, and all the sciences relating thereto; also of prints of bas-reliefs, vases, trophies, ornaments, ancient and modern dresses, customs and ceremonies, and instruments of war and arts, utensils of sacrifice, and all other things useful to students in the arts.

The admission to all these establishments will be free to all students properly qualified to reap advantage from such studies as are there cultivated."

Thomas Sandby was professor of architecture, and Sir William Chambers was treasurer. The king had apparently sanctioned the establishment of the Academy in 1767.

#### PRESERVATION OF BUILDINGS FROM WHITE ANTS.

Sir,—I am directed by the Secretary of State for India to transmit herewith a printed paper recently received from India, on the subject of the preservation of buildings from the ravages of white ants, to which you may probably be able to assist in giving publicity. W. T. THORNTON.  
India Office.

#### Memo. by Capt. A. Fraser, Engineers.

In 1856 the flooring and the powder racks in the King's Magazine in Fort Wadia were so far destroyed by white ants, that it was found necessary to renew entirely the former, and nearly the whole of the latter, at a very great expense.

I was then garrison engineer, and, on a suggestion of Major Welser, of the engineers, who had tried the experiment at Ludlow, on his own premises, on a small scale, I adopted the following plan in renewing the floors, &c., of the building:—  
1st. The whole of the old floor was removed, and the

plaster of the walls stripped off to a height of 4 feet above the floor line.

2nd. The earth in the interior was dug out about 1 foot in depth.

3rd. The excavated portion was filled in with concrete, containing a proportion as per note, to yellow arsenic, called in the bazaar "burtal."

In 1856 not only the building, but the whole immediate neighbourhood was swarming with white ants; and in 1859 the Town Major was requested by the Government to make a report as to the effect of the above measures, and annexed is a copy of his reply.

[The reply says, "No traces of white ants have been found either inside or outside the building."]

Memo. by Captain Man. "In 1849 I substituted a planked or a tiled flooring in a room on the ground-floor of my house at Singapore. This was entirely destroyed by white ants in a few months. I laid treble joists and plastered over with the gambier composition, and within two or three days the white ants made their appearance through the crevices between the tiles of the adjoining room, being apparently unable to remain in the vicinity of the protected planking.

I lived in the house for several years afterwards, and the flooring seemed to be in excellent order when I left. I have tried gambier as a preservative against the "teredo navalis" and with equal success, but then I substituted tar or black varnish for dammar oil. I have used it largely on the piles of wooden bridges near the sea, and on the exterior surfaces, and after several years' trial found the timber perfectly free from these destructive animals. I recommended this composition to my successor, Captain McPherson, and he has adopted it with equal success on many occasions.

Gambier Composition. Dissolve three parts of gambier t in twelve of dammar oil over a slow fire, then stir in one part of lime, sprinkling it over the top to prevent its coagulating and settling in a mass at the bottom; it must be well and quickly stirred. It should then be taken out of the cauldron, and ground down like paint on a muller till it is smooth, and afterwards returned to the pot and heated. A little oil should be added to make it tractable, and the composition can then be laid over the material; to be treated with a common brush.

Against the teredo I substituted the same proportion of black varnish on for dammar oil. I of course omitted the grinding down, which would not answer with tar."

From Col. W. Scott, Acting Chief Engineer at the Presidency, dated December 24th, 1858.

"My Lord,—In reply to the second paragraph of the Resolution under Mr. Chief Secretary Young's memorandum, No. 3, 173, of the 14th instant, I have the honor to report that a rule has been in force for some years to eradicate white ants' nests near public buildings. It has, in some cases, been found very effective, but in others white ants abound in places where the nest cannot be discovered, and not unfrequently there are several queens in one nest.

2. Major North used to soak his timber at Belgiam in a solution of sulphate of copper, and the immediate effect was very satisfactory; but Captain De Lisle, from careful experiments with deal, found that the penetration was scarcely appreciable; the effect, therefore, cannot be permanent.

3. When timber is boiled in an antiseptic solution under pressure, the result is very satisfactory, but considerable apparatus is requisite, and the system cannot be economically employed except on a large scale.

4. A mixture of sulphate of copper, or of arsenic, with the lime, in immediate contact with timber, offers, perhaps, the most ready method of preserving it from insects; corrosive sublimate combines with lime, and forms an inert substance (yellow wash of medicine).

5. I have circulated the receipt given below, which is said to answer in the Madras presidency, and requested executive officers to apply it where necessary, taking precautions that it is not applied where it may be accessible, or over any extensive surface:—

Foison for White Ants. Table with 2 columns: lb. and oz. containing ingredients like Arsenic, Aloes, Chunam soap, and Dhobie's mud.

Found the arsenic and aloes, scrape the soap, mix with mud and boil in a large chatty half full of water until it bubbles; let it cool, and when cold, fill up with cold water. The mixture should be boiled for an hour; it is applied as a wash."

VALUE OF LAND IN THE CITY.—At a sale of a portion of the site of the old Rainbow Tavern adjoining the Union Bank, Fleet-street, on Saturday, the 14th instant, the price realized was at the enormous rate of 900,000l. per acre.

\* Two seers (4lbs.) of the yellow arsenic to the 100 cubic feet of concrete.

+ Gutta Gambier is juice extracted from the leaves of a plant of the same name (Uncaria Gambier) growing in Sumatra, and is used in the same manner as Cutch or to cool and harden, and then cut into cakes of different sizes or formed into balls. Chief places of manufacture—Siam, Malacca, and Bintang. It is used by the Malays with the leaves of betel, in the same manner as the Cutch or Cutch in other parts of India. For this purpose the finest and whitest is selected: the red being stronger tasted and rank, is exported to Batavia and China, for the purposes of tanning and dyeing.

THE PROGRESS OF THE ELECTRIC TELEGRAPH.

In various parts of London, high above the busy thoroughfare, numerous workmen are busily employed in passing the electric wires from one situation to another. These will ere long form a curious and striking feature of the streets of the metropolis. Every week this means of communicating information is being more adopted; and, as we have before said, the electric telegraph will prove a means of increasing the power of the police, of spreading the alarm of fire, and important for many purposes of business; it is not unlikely that the laying on of the telegraph, in important establishments, printing offices, &c., will become as necessary as in the case of gaslight and water. Who can say how ultimately this marvellous invention may affect our present post-office system, or to what extent the streets overhead may be covered with wires, like a spider's web? It may be, in business, that the art of working the telegraph may be as necessary as that of writing, and be made a matter of school education; and that tall chimneys and other lofty objects will have a value which is at present not thought of.

GIFTS OF THE LATE MR. MINTON.

I HOPE you will put on record in the pages of the Builder my late friend Mr. Minton's many gifts of beautiful tiles towards the beautifying of God's house of prayer in divers places.

I send you a list as printed.

At the same time commending the introduction of the memorial tile, which I have laid down here (Clyst St. George) to record his gift. It is 12 inches square, and works in well with the other tiles.

The old floor of this church was covered with tomb stones; many of them broken and obliterated. It was my own idea to transfer the names and dates to tiles 12 inches square. Mr. Minton fell in with it, and at once offered to give the pavement for the nave, and these memorial tiles are worked in and form a beautiful design.

We have no right to destroy the records of the dead; as has been ruthlessly done in many churches where tile pavements have been laid down. By introducing these memorial tiles, a beautiful and imperishable record may be substituted.

Besides Mr. Minton's gift, the floor of an aisle has been given, and treated in the same way; and now we have twenty of these memorials, besides the one to Minton's memory.

H. T. ELLACOMBE.

\*\* The list, for which we cannot give space, occupies six octavo pages. It will be found in "Annals of the Diocese of Lichfield, Past and Present."

The memorial tile inserted in the pavement of Mr. Ellacombe's church, Clyst St. George, Devon, takes this shape:—



BUILDING FOR THE PROVINCIAL WELSH INSURANCE COMPANY, WREXHAM.

THERE is but one Welsh Insurance Company, and for this the first stone of a new building in Wrexham was laid on the 3rd instant by Lady Williams Wynn, with some ceremony and great rejoicing. The Welsh Insurance Company was established in April, 1852, for the insurance of property against fire.

The first 10,000 shares of the company were taken up immediately, and the issue of an additional 10,000 shares became necessary to meet the demands of the public. The whole 20,000 were taken up by about 800 persons. A large staff of agents was soon appointed in the United Kingdom and Ireland. A large proportion of the agents from the commencement have been shareholders, so that a vitality was given to the company, at first, which has steadily increased in strength, until up to the present time nearly 20,000 policies have been issued, insuring property to the amount of 7,317,905l. The life assurance business was

commenced in 1854. The site of the new offices is on the south side of High-street, nearly opposite to the office at present occupied by the company, where a block of unsightly dilapidated old buildings has been removed to make room for the new offices, designed by Mr. R. Kyrke Penson, and now in course of erection by Messrs. Lockwood & Farrimond, of Chester. At the entertainment which followed the event reference was made to the energy and ability with which Mr. Dillon, the manager of the company, had conducted its affairs.

WESTMINSTER ABBEY.

SIR W. D'AVENANT'S GRAVE-STONE.

As attention has lately been drawn to Westminster Abbey by the Builder, as well as by the funeral of Lord Macaulay, it has occurred to me that the present is a suitable time to put a question to the dean and chapter or their architect, which I should like to have answered. Some six or seven years ago, strolling in the cloisters, I observed a small slab of stone broken across, with this inscription:— "O Rare Sir William D'Avenant,"

which seemed to identify the stone as having been placed over the grave of the poet of the Restoration.

I do not know where he is buried, so have not been able to ascertain if the slab was ever replaced; perhaps Mr. Scott or some of your correspondents can inform me. J. H.

THE ARCHITECTURAL MUSEUM.

PRIZES FOR WOOD-CARVING.

THE prizes for wood-carving have been awarded as follows:—First prize, 5l. 6s. (offered by the council of the Architectural Museum), to Mr. James Allen, in the employment of Mr. J. B. Philip; an extra prize of 5l. 6s., added by the council, to Mr. William Baylis, of 3, Warwick-place, Bedford-row. Second prize, of 3l. 3s. (offered by Mr. Beresford Hope, the president), to Mr. Charles E. Turner, of 13, Upper North-place, Gray's-inn-road. The prizes will be presented on Wednesday, March 7th. We take the opportunity of adding that the council are soliciting donations in aid of the prize fund for this year. Mr. G. G. Scott, the treasurer, or Mr. Clarke, the honorary secretary, will be happy to receive promises of assistance.

BRIGHTON AND SUSSEX SCHOOL OF ART.

The first annual meeting of this school has just been held, in the Townhall, Brighton, the Rev. Mr. Griffith, Principal of Brighton College, in the chair, in the absence of the mayor, from indisposition. The report stated that the entire number of persons taught by the art-master (exclusive of private pupils) during the past year was as follows:—At public schools, 500. At the School of Art,—Day classes: gentlemen's (A), 11; ladies' (B), 31; total, 42. Evening classes: Artisans, &c., (C and D), 112; schoolmasters, 5; schoolmistresses, 4; pupil teachers, 28; other females, 26; total, 175. Making the total in the School of Art, 217; of whom the great majority would have obtained no instruction in elementary art but for the establishment of this school. In point of finances, the result of sixteen months' operations is a balance of 22l. 10s. 1d. in the treasurer's hands. The committee had at no time been in debt. Mr. W. W. Attree, in moving the adoption of the report, said that if they would give a little consideration to what had been the source of progress in all successful schools of art, they would find that it had been patient, steady, "noble correctness" as it had been well called; and one of the deepest thinkers of our country had said, that of all things that he had any idea of in art, the one that struck him most, as a distinctive characteristic of art, was the mechanical portion of it; and that was the particular thing specially pointed out in the report. That "noble correctness" can only be obtained by constant perseverance and the most accurate study; and, so far as he could learn, that had, in all schools, been the necessary foundation upon which success had been built. They all knew the story of the great master of Italian art, who, when asked to give a specimen of his skill, sent a single curve so accurately done that it had passed into a proverb, and when we would express that a thing is excellent and perfect of its kind, we say that it is "Round as Giotto's O." And that was the foundation of a great and noble school of art. This "noble correctness" lay at the bottom of all art:

it was the only superstructure upon which great artists had rested, or ever could rest their hopes of success. The prizes were afterwards distributed in the usual form.

#### NORTHERN ARCHITECTURAL ASSOCIATION.

##### THE ANNUAL MEETING.

The first annual meeting of this association was held on Tuesday, in the Old Castle, Newcastle-upon-Tyne, Mr. Watson, in the chair. Routine business having been transacted, a report was read by the secretary, and afterwards unanimously adopted by the meeting. In this it was said,—

"At the first quarterly meeting, held, by the courtesy of the Society of Antiquaries, in their rooms in the old Castle, Newcastle, the inaugural address was read by the president, John Dobson, esq.; and on the 6th of July the annual excursion meeting was held at Finchall Abbey, attended by a large party of members. During the examination of the ruins several interesting discussions took place, and some valuable sketches and measurements were obtained. The party afterwards visited Lunley Castle, and made a careful inspection of the more valuable features of the edifice, and returned home much gratified with the day's excursion. Your committee wish especially to draw the attention of the members to the advantages obtained by these excursions in connection with the society. The second quarterly meeting was held on the 19th July, when a paper was read by Mr. Anstlin on 'English Architecture of the latter half of the Twelfth Century,' which was illustrated by various diagrams. The third quarterly meeting was held on the 10th of October, when Mr. Dunn read a paper entitled 'Notes on Continental Architecture,' which he illustrated by sketches made on the spot. Not the least gratifying part of the report which the committee have the pleasure of submitting to you is the highly satisfactory statement of its financial condition, which enables them to say that, after having paid the preliminary expenses, the outlay involved in the publication of the papers, and all incidental expenses, there will be a balance in the hands of your treasurer."

The election of officers for the ensuing year was made, as follows:—President—Mr. Dobson. Vice-President—Mr. Wardle. Honorary Treasurer—Mr. Austin. Honorary Secretary—Mr. Oliver. Committee—Mr. Dunn, Mr. Watson, Mr. Greener, Mr. John Lamb, and Mr. Inaswell.

After a conversation, the secretary was instructed to forward, without delay, to the secretary of the Bishop Auckland New Town Hall and Market Company, an extract from the minutes of the resolutions passed relative to a competition for designs, advertised for by the directors of the company, for a Town Hall and Market at Bishop Auckland.

#### THE RHINE BRIDGE.

On Saturday, the 24th December, at seven p.m., the foundations of the fourth and last pier of the celebrated railway bridge over the Rhine were sunk to the required depth of 20 metres. Thus, the four piers are completed. The first was sunk in fifty-three days; the second in thirty-one; the third in twenty-five; the fourth in eighteen days. These are all taken as days of effective labour.

The abutments remain to be constructed. The cube of the foundations of the four piers is 12,000 metres of masonry. The quantity of gravel excavated is 17,000 metres.

The works of the line from Kehl and from the Kintzig bridge advance rapidly. Next September the line will be open throughout, and the journey from Paris to Baden-Baden will be performed in ten hours.

#### THE SOCIETY OF FOREMEN ENGINEERS.

EVERY one is aware of the value of the steam-engine to the inhabitants of the earth. Whether it be employed in the propulsion of vessels, despite the hostile influences of wind and tide, and fro between the most distant regions, and thus facilitating the exchange of the varied products of every country; whether in the form of the locomotive, whisking passengers from one extremity of the kingdom to the other, and "annihilating time and space;" or whether in the stationary form engaged in the execution of works of the most ponderous and the most minute kind, the steam-engine is equally important, valuable, and wonderful. Surely, then, the well-being and progress of the men—for the most part self-raised men—who overlook their construction, the foremen engineers, have a claim on the consideration of all.

It is impossible to watch the construction of any intricate piece of machinery in an engineering establishment without admiring the careful attention given by all concerned in "setting it out," and in practically developing it. And certain it is that no man is ever selected for the post of foreman over the workmen employed in perfecting machinery who is not at once able, steady, and

economical—that is, economical of material. Hence to say that a man is a foreman engineer is to give him a good character. This fact we commend to the attention of all. The Association of Foremen Engineers has its meetings, monthly, at No. 35, St. Swithin's-lane, City, and is, apparently, in a prosperous condition, financially speaking. To quote briefly from the preface to the rules, it may be said that "The Association of Foremen Engineers does not discuss on any occasion the politics of trade. It has no secrets, but waxes rather complete publicity. Its objects are purely and solely philanthropic and instructional. It essays to assist its members in fairly, creditably, and peaceably filling the important posts confided to them; to relieve them under pressure of incidental difficulties; and to afford timely assistance to their sorrowing relatives when the wings of death overshadow them, and make their homes desolate."

This extract gives with sufficient distinctness the aims and objects of the Association; and we feel convinced that in making it better known we are conferring a good upon society. Already, we learn, that nearly 100 members are on its books, and we feel assured that that number will steadily increase, until representatives of every engineering establishment in London are to be found united to it.

One of the rules enacts that no candidate can be accepted who has not held the position of foreman engineer for at least two years prior to his application for the privileges of membership. The entrance-fee is one guinea; the subscription, 2s. 6d. per month. Mr. Joseph Newton, foreman of the coining rooms, Royal Mint, is president; and Mr. John Jones, of Messrs. Grissell's, Wharfedale, City-road, secretary of the Association.

#### SMALL-POX.

THE great increase and continuance of small-pox are causing much anxiety, and in many parishes notices have been issued directing attention to the necessity of vaccination. Knowing something of the feelings of the poor (who suffer most), we may say that in addition to much carelessness in taking the children to be vaccinated, doubts exist respecting the effectiveness of vaccination, and fear lest other and permanent diseases may be generated. These matters are well worthy of immediate consideration, and means should be used to set the public mind at rest on the matter. In several neighbourhoods occupied by the poorest, owing to unwholesome conditions and other causes, the deteriorated condition of a large number of children is deplorable. Scrofula and other complaints affect so many constitutions, that it is not a very easy thing to find, without looking abroad, a sufficient number of healthy children from whom to procure the necessary quantity of good vaccine. The sum allowed to the medical men who attend to the vaccination of districts, is small, and does not induce much care. The present Act, it is said, cannot be properly carried out: it is, in fact, unworkable.

#### TIMBER MEASURING IN IRELAND.

TOWCHING the "string and calliper" was now raging between the Dublin builders and the Messrs. Martin and Son, timber merchants in that city, and in addition to the particulars already given, we find that Mr. Barcroft, timber broker and measurer, in reply to the request of the Association, writes: "In accordance with an experience extending over twenty-five years, I have found a difference in favour of the string of from five to twenty-five per cent., according as timber was squared or wavy, and agree with Mr. Chaloner that it is necessary to have a sworn measurer to act between merchant and purchaser, to prevent frauds being practised by unprincipled parties, especially upon public companies." Mr. Barcroft proposes a deputation of builders, retail timber merchants, and cabinet makers, to wait upon Messrs. Martin, with a view to amicable arrangement. One in the Trade replies to Mr. Chaloner's letter that he, being a Liverpool timber-broker, takes an unselfish (?) interest in the Dublin timber trade, and that having an aversion to a change that would dispense with his services, he leaves the public to judge how far his statements may be biased. Further, that the custom-house officer who measures by "calliper" ought to be protected enough between merchant and trader without the intervention of a second measurer at cost to the latter. Timber is sold by calliper in all the Irish markets and the English ports except Liverpool; and concludes that Mr.

Chaloner is not to be blamed, being only attending to his business in trying to divert the trade to Liverpool.

#### IRISH NEWS.

THE Ennis-killen terminus of the Dundalk and Ennis-killen Railway, recently erected from designs by Mr. William G. Murray, architect to the company, is an important structure, with a platform towards rails extending 300 feet, and a similar frontage towards street. The main building—which is two stories high—comprehends, on ground-floor, a central booking-office, 30 by 17, approached under a covered way or verandah from the exterior, and wings with gentlemen's and ladies' waiting-rooms, left-luggage room, and master's kitchen, respectively, with spacious apartments for the master above likewise; together with one-story wings containing refreshment-room, kitchen, and yard, at one side, approached from platform; and superintendent's office, porter's stores, water-closets, &c., at the other. The expenditure was about 3,500*l.*, and the materials employed, limestone, from Carrickree quarry, hammer-dressed, with Cairnmore quarry sandstone for quoins, window and door-ops, chimneys, bases, &c. The same company have also erected stations at Ballybay (cost 1,700*l.*), Newbliss (ditto), Clones (2,500*l.*), Newtown Butler (1,400*l.*), and Lisnaskea (1,500*l.*). Mr. John Nolan, of Dublin, the builder of all. The above amounts are exclusive of extras.

#### COMPETITION FOR THE HARTLEY INSTITUTION, SOUTHAMPTON.

WE have received several letters directing attention to a preposterous communication addressed to the *Hampshire Independent*, the object of which is set forth in this extract from it:—"I do not object to plans being obtained through public competition, yet I most decidedly think a preference should be given to a local architect, provided his design embodies the requirements as set forth in the scheme issued by the council, and that it will not exceed in cost the sum at their disposal." And he goes on to request the committee without fail to include amongst the designs "selected for their final consideration those sent in by the architects of the town," showing the value he attaches to the fact that the drawings are submitted under mottoes.

We cannot suppose that such a communication will prevent the council from coming to a decision on the merits of the designs alone; but it is as well that the peculiar views which exist on the subject of competition should be known.

#### SCIENTIFIC INSTRUCTION TO THE INDUSTRIAL CLASSES.

EXAMINATIONS of teachers in competency to afford scientific instruction to the industrial classes were held at the "South Kensington" Museum in November and December last. The certificates are of three grades, giving the teacher who obtains them annual payments, whilst teaching, of 10*l.*, 15*l.*, and 20*l.* for each subject. The following is a list of the successful candidates in the first two subjects:—

##### SUBJECT I.

Practical Plane and Descriptive Geometry, Mechanical and Machine Drawing, and Building Construction.

SUBDIVISION I.—Practical Plane and Descriptive Geometry.

Nine candidates, all of whom failed.

SUBDIVISION II.—Mechanical and Machine Drawing.

Second Grade Certificate.—Washington Hudson, Eagle Foundry, Hunt-street, Manchester. Four failed.

SUBDIVISION III.—Building Construction, or Practical Architecture.

Second Grade Certificate.—Washington Hudson, Eagle Foundry, Hunt-street, Manchester.

Third Grade Certificate.—William H. Goolwyn, Marquis of Salisbury's School, Hatfield. Four failed.

##### SUBJECT II.

Physics, Mechanical and Experimental.

SUBDIVISION I.—Mechanical Physics.

Second Grade Certificate.—Isaac Seaman, 18, Cunningham-street, Pentonville; Benjamin Simpson, St. Matthew's School, Bethnal-green.

Third Grade Certificate.—Joseph Haugli, Mechanics' Institute, Leeds; Walter Jeffrey, Blue Coat Hospital, Gloucester; Edward Atkins, St. Martin's School, Leicester; Moses Pilleu, National School, Paiswick, Stroud; Robert J. Nelson, Navigation School, Mercers'-street, Sandwell. Five failed.

SUBDIVISION II.—Experimental Physics.

First Grade Certificate.—Walter Jeffrey, Blue Coat Hospital, Gloucester.

Second Grade Certificate.—Benjamin Simpson, St. Matthew's School, Bethnal-green; George C. T. Bartley, 1, Rectory-place, Stoke Newington.

Third Grade Certificate.—Isaac Kerby, St. Mary's School, Putney; Edward Atkins, St. Martin's School, Leicester. Six failed.

THE STONE USED IN WESTMINSTER ABBEY.

On reading your report of the proceedings at a meeting of the Royal Institute of British Architects, in your edition of the 24th ult., it occurred to me that the stone partly used in the erection of Westminster Abbey, and described by Mr. Scott as "Beer or Bur, and from Stapleton, which he supposed to be near Pontefract," must be the Beer and Silvertown stones, the same as used in building Exeter Cathedral; for, according to the Fabric Rolls of that beautiful work, it appears that it was built of stone from different quarries; the walls, of Beer, near Colyton, Devon; the vaulted roof, from the quarry at Silvertown, in the same county; and the clustered and small pillars, with their capitals (duly supposed to be artificial composition), from the Isle of Purbeck, in Dorsetshire.

I hope these few remarks may be of some value in deciding the exact locality from which the stone used in Westminster Abbey was taken.

THOMAS G. BROWNING.

APPEAL AGAINST CONVICTION OF WORKMEN FOR INTIMIDATION.

At the Surrey Sessions, on the 16th instant, the appeal of Jenkins, Stanley, and Davis, society men, against the conviction of Mr. Elliott, was heard, in the New Court, before Mr. J. E. Johnson and a full bench of magistrates. The appellants in this case belong to the Builders' Society, for the protection of the men on the late strike and lock-out; and on the 9th of November last they were all charged at the Lambeth police-court with using threats and intimidation to John Roy, a bricklayer and a non-society man; and the case having been proved to the satisfaction of Mr. Elliott, the sitting magistrate, he sentenced Stanley and Jenkins to one month each, and Davis to fourteen days. The appeal lasted nearly the whole day.

Mr. Robinson, for the appellants, contended that it would be much better for the Court to let the matter drop by the men entering into their recognizances. The strike was now over (?), and the men saw their folly, and he was sure that a repetition would not occur. The charges against the defendants could not be supported, therefore he now suggested that the appeal should stand over, with the view of its ulterior abandonment.

Mr. Knapp objected to that course. It had been clearly shown to the magistrates that intimidation had been used, and it was necessary that the case should proceed.

The Court was of the same opinion, and the evidence, accordingly, was re-heard. At the close—

The chairman said that the Court was unanimous in their judgment, and confirmed the convictions; and they regretted that a body of men should have been so foolish as to combine for such a purpose, and hoped it would not occur again.

The defendants were then taken into custody. Jenkins and Stanley stand committed for one month, and Davis fourteen days, with hard labour.

ACTION FOR DILAPIDATIONS.

HIS ROYAL HIGHNESS ALBERT EDWARD, PRINCE OF WALES, v. HEATHER.

This was a suit promoted in the Sheriff's Court, on behalf of his Royal Highness the Prince of Wales, as Duke of Cornwall, for dilapidations arising under five leases, comprising thirty-one houses at Kennington, in Surrey. The damages were laid at 1,000*l.* The first count of the declaration recited a lease of 4th March, 1833, between his Majesty King William IV., of the one part, three officers of the Duchy of Cornwall on the second part, and the defendant of the other part; and a demise of fifteen houses in Golden's-place, Chester-street, Kennington, part and parcel of the demesne lands of the manor of Kennington, and part of the ancient possessions of the duchy. There were the usual conditions as to repairs, and the other counts recited at length the demise of the other houses held by the defendant under the duchy. It alleged that the reversion expectant on the determination of the term had become vested in the plaintiff in right of his Duchy of Cornwall; and the breach set forth was that—whilst the plaintiff was so seized of reversion, and whilst the defendant was possessed of the premises, and before suit was commenced—he did not sufficiently repair according to the covenants, and the premises in consequence became ruinous and decayed, &c.

Sir W. J. Alexander and Mr. Garth appeared for the plaintiff, instructed by Messrs. Lyon, Barnes, and Ellis, of Spring-gardens, solicitors to the Duchy. The defendant was not represented, and the only question was as to damages. The evidence was of the usual character as to dilapidations, and the jury assessed the damages at 900*l.*

GLASS.—A steel drill, hardened and used without drawing the temper, will, if the point be kept wet, drill ordinary glass. Window glass offers greater resistance to drilling than glass which is much thicker.

Books Received.

*Practical Remarks on Belfries and Ringers; with an Appendix on Chiming.* With Illustrations. By the Rev. H. T. ELLACOMBE, M.A. &c. Bell & Daldy, 186, Fleet-street, London. 1859.

THE Rev. Mr. Ellacombe is a well-known authority on the subject of bells and bell-ringing, as many of our readers are doubtless aware, even from our own pages. A pastorly desire to reform the moral characters of the "idle and drunken" bell-ringers appears to have actuated the reverend gentleman, no less than his interest in the subject of bells and belfries. The book under notice contains a set of rules for ringers which it would be worth while for others of our many clerical readers to consult, as well as remarks on the formation of belfries useful to our architectural readers. The Appendix gives a full account of an ingenious plan of chiming devised by Mr. Ellacombe.

The meaning of the phrase "a peal" has curiously changed.

"With the half wheels the bells were not raised to a set pull, but rung a little above stock level and kept there a certain time, and then ceased; and so the ringing would be continued, and each time of its repetition was called a peal; and supposing this to be correct, it is more easy to understand the meaning of so many peals in a day."

"The ringing even of a single bell for any length of time would be called a peal, and so it is now termed, particularly in the North, where single bells prevail."

VARIORUM.

"LES Grandes Usines de France," partie Ire: Algar, Clements-lane, London. Under this title it is proposed to describe and illustrate the most important manufactures of France. The first part contains an interesting account of the *Gobelins* manufactory, with several engravings.

The current number of the *Ecclesiologist* contains two interesting views of the Choir of Lichfield Cathedral, as proposed to be fitted under the direction of Mr. Scott, one looking westward, showing screen and stalls, the second looking eastward, showing roscos and throne.

Part 3rd of the new and rewritten issue of "Ure's Dictionary of Arts, Manufactures, and Mines" (Longman & Co.) has been published for January. It extends from "Doring" to "Calomel," and contains an excellent article on "Brick," illustrated by engravings of brick-making machinery. "Brass" and "Cable" also form articles of some importance.—"Lever's Year-book and Railway and Mining Almanac" (Thomsons, Market-street, Manchester), is a useful compendium, for 1860, of facts relating to railways, mines, metals, minerals, bridges, tunnels, breakwaters, &c. with list of railway officials; literary, scientific, and philosophical institutions, and their officers; returns of imports and exports, &c. It contains two horrible caricatures, however, of Brunel and Stephenson, which it would have been much better without, and which, we dare say, most purchasers of any taste will tear out for themselves.—

Amongst a heap we observe two pamphlets on the "Great Ship" great squabble,—one titled "Two Letters to the Shareholders, from L. S. Magnus;" the other, "Minutes of Proceedings" of the meeting of 13th December, with "A Critical Notice," by H. Guedalla. We have no intention, however, to trouble our readers with these unfortunate misunderstandings, and can only express a hope that, now that the directors have resigned, and a committee been appointed by the shareholders, matters will be placed upon a better footing, and the Great Ship principle obtain a fair trial. Mr. Scott Russell, we observe, is not inclined to be altogether silent under the share of opprobrium he has come in for in the squabble, but has published a kind of report of his own on the state and merits of the big ship, which, he says, it was never intended should be completed till after her trial-trip.—A reprint of "Experiments on the Comparative Tensile Strength, &c., of Steel and Wrought Iron, by Messrs. Robert Napier & Sons," from the "Transactions of the Institution of Engineers of Scotland, Vol. II.," and noticed by us on a previous occasion, has been published by Maekenzie, Howard-street, Glasgow.—"Country Trips," by W. J. Pinks (Piekburn, 35, Rosoman-street, Clerkenwell), is the first volume, just issued, of a little work comprising a series of descriptive visits to places of interest in various parts of England. It contains some pleasant reminiscences connected with various, more or less, well-known localities.

Miscellaneous.

ST. DOULOUGH'S CHURCH, CO. DUBLIN.—The preliminary arrangements of the committee for the restoration of this stone-roofed church are stated to be progressing satisfactorily, and the necessary funds will be soon forthcoming. It would seem to be a matter for much congratulation that this ancient relic, perhaps the most perfect in Ireland, should be rescued from ruin; but it would be better if it should be left alone than undergo the process prevalent now-a-days. We trust that, if touched at all, it will be confined to an experienced antiquarian architect.

THE QUEEN'S ROOM AT THE PRINCESS'S THEATRE.—Determined at any rate to *deserve* Royal favour, and to show his desire to obtain it, Mr. Harris has fitted up a handsome and spacious retiring-room in close proximity to the Queen's box. It includes what was formerly Mrs. Charles Kean's dressing-room (the partition has been removed), and is furnished with handsome chairs, looking-glasses, console tables, a table of looking-glass in the centre, and chandeliers. The walls are hung with a light paper with gold spots, formed into panels, with a rich, though somewhat heavy, border of flowers. The whole is creditable as well to Messrs. Rogers & Dean, by whom the work has been done, as to the spirit and enterprise of the lessee.

IRON NAILS IN WOODEN SHIPS.—M. Kuhlman asserts that the use of iron nails in building wooden ships is one of the chief causes of their decay. The rotting or decay of wood is a process of slow combustion or oxidation; and M. Kuhlman considers that the iron nails act as carriers for oxygen, and introduce it into the substance of the timber. By contact with water and air the iron is rapidly converted into a sesquioxide. In this state it yields a portion of its oxygen to the wood, and is reduced to the state of protoxide, which further action of air and moisture converts it to the sesquioxide, and so the process goes on, by a sort of catalysis.

LEEDS TOWN-HALL BELL.—The Victoria bell, cast for the Leeds Town-hall by Messrs. Warner and Sons, of Cripplegate, London, has at last been permanently fixed in the tower, and can now be rung, tolled, or chimed, on special and festive occasions, and applied to denote the hour so soon as the clock shall have been fixed by Mr. Dent. The instruction to Messrs. Warner by the Town-hall Committee, was to provide a bell of 4 tons, and they have produced one of 4 tons 1 cwt. 1 lb. The design for the bell was prepared by Mr. Boswell, the foreman of the establishment, under whose superintendance it was cast. Its composition was 3*l*bs. of cast copper to 1*l*b. of tin. The note produced, B natural, is said to be rich, full, and sonorous. The diameter of the bell is 6 feet 2 inches, height 5 feet, thickness of sound-how 6 inches, and weight of clapper (which is of wrought-iron) 1 cwt. Upon one side of the waist there is a profile of her Majesty, and upon the other the royal coat of arms and Messrs. Warner's patent. The bell, it may be remembered, was brought down to Leeds in the last week of August, and successfully raised, and fixed temporarily for trial, on the 30th of that month. But beyond this and the first trial, little further was done until last week, when the bell was permanently hung upon a wheel, and provided with the apparatus by which it may be rung. The wheel is 10 feet in diameter, or 30 feet in circumference, having two grooves for a couple of ropes, by means of which the bell may be effectually rung, as it has already been. It is believed that the bell will be heard a distance of about six miles when rung; and, when tolled or chimed, three or four miles. It has the advantage, which the more unwieldy bells do not possess, of being perfectly under control. The Great Peter, of York Minster, which, excepting Big Ben of Westminster, is the largest and heaviest in the United Kingdom (weighing 27,000*l*bs., or nearly three times the Victoria bell, and having a diameter of 7 feet 7 inches), is practically rendered almost valueless, owing to its ponderous weight, and can only be tolled, not rung. Great Tom of Oxford was re-hung in 1834, but it was only rung three parts up, when the wheel gave way; and since then the bell has been chained down by order of the church authorities, though occasionally tolled, like the Great Peter, with a hammer. Great Tom of Lincoln, which weighs 12,000*l*bs., and the great bell of St. Paul's, which weighs 11,500*l*bs., and has a diameter of 9 feet and a circumference of 25 feet, are in the same undignified condition, and simply strike the hours. The cost of the Leeds bell and fittings we understand will be about 1,000*l*.

**SOUTH KENSINGTON MUSEUM.**—During the week ending 14th January, the visitors have numbered 12,564.

**ST. PHILIP'S, CLERKENWELL.**—St. Philip's Church has been closed for some time past for the re-arrangement of the interior. The pews and huge erection in front of the altar, the pulpit, prayer desk, and clerk's desk, have been removed, and replaced with open benches, pulpit, choir stalls, &c. The architect is Mr. W. Butterfield. Mr. John J. Austin is the churchwarden. The church will be reopened on the 26th instant.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The seventh meeting of the session of this society took place on Wednesday night, 28th ult., at the Royal Institution, Colquitt-street, Mr. Barry presiding. After the transaction of some routine business, Mr. J. Audsley read the second part of his paper on "Colour, as applied to Ecclesiastical Decorations; and the History and Practice of that Art." Mr. Audsley, in his paper, considered the art principally in its modern application, and illustrated his subject by several drawings.

**INSTITUTION OF NAVAL ARCHITECTS.**—A meeting, principally of shipbuilders and the shipbuilding officers of Her Majesty's dockyards, has been held at the Society of Arts, for the establishment of an Institution of Naval Architects. Sir John Palgrave, the Earls of Ellenborough and Hardwicke, Sir Francis Baring, Sir James Graham, Mr. Sidney Herbert, Lord Clarence Paget, and Mr. H. T. L. Corry have accepted vice-presidencies. With these are also associated, as vice-presidents, several professional and scientific gentlemen; and it has been resolved to offer the presidency to the Duke of Northumberland. The managing council consists exclusively of professional gentlemen, and includes the master shipwrights of all Her Majesty's dockyards and several of their assistants, the principal surveyors of Lloyd's Shipping Register Office, &c. Mr. J. D'Aguiar Samuda, shipbuilder, of Millwall, has been nominated treasurer. With the council are connected Mr. Joseph Maudslay and Mr. J. Macgregor; and to these names have been added those of Sir W. Armstrong, Captain E. P. Halsted, R.N., and Captain Sullivan and Walker, of the Board of Trade, who will be invited to become associates of the council. Mr. E. J. Reed, the naval editor of the *Mechanic's Magazine*, is the secretary.

**THE NEW GOVERNMENT BUILDINGS AT PORT ADELAIDE (SOUTH AUSTRALIA).**—The foundations of the new custom-house, police-station, and the local court at Port Adelaide being completed, the chief stone has been laid. The building has a frontage to the commercial-road of 135 feet, and to St. Vincent-street of 86 feet 6 inches. The centre portion of the frontage to the Commercial-road is occupied by the court-house. The court-room is 36 feet by 28 feet. The height of this part of the building, from the ground to the ridge of the roof, is 26 feet, above which the cupola is raised 20 feet additional. On either side of the court-house are two-story wing buildings, each 34 feet high. That on the right is to be occupied by the custom-house, having on the ground-floor the Long-room, 44 feet 10 inches by 23 feet 10 inches, and other rooms. The fittings are to be of Sydney cedar. On the left side of the court-house is to be the police-station. The whole of the buildings are to be surrounded by an arcade 5 feet wide in the clear, supported by pillars and arches. The front will be executed in rubble stone, with brick cornices, string courses, and dressings. The contractors for the buildings are Messrs. English & Brown. The clerk of the works is Mr. Abbott, of the colonial architect's office.

**THE IRON TRADE.**—There are 125 furnaces in blast, in the iron districts of Scotland, which are computed to have produced 950,000 to 960,000 tons of pig-iron over 1859; and the demand has well nigh kept pace with this produce, which exceeds 1858 by 105,000 tons, and 1857 by 72,000 tons. The price in 1857 was 70s., while the ruling rates of last year have ranged from 47s., the lowest point, to 58s. 9d., the price obtained in the closing week of December. The average number of furnaces in blast, in the South Staffordshire district, during the past year, was 135, which produced 786,240 tons of pig-iron; the average number of furnaces in Shropshire in blast was 25, which produced 145,600 tons; in the Forest of Denby, 4 furnaces in blast, which produced 23,296 tons; 4 furnaces in blast, which produced 23,296 tons; making a total of 955,136 tons of pig-iron produced during the year in these districts; add to this 960,000 tons the produce of Scotland, which gives a total of 1,915,136 tons; exclusive of the produce of South Wales, North Wales, Derbyshire, Yorkshire, North Staffordshire, and the Ulverstone and Cleveland districts.

**ST. SAVOUR'S CHURCH, SOUTHWALK.**—The east window of this church has been filled with stained glass with three subjects, from the life of our Lord, viz.—the Birth, Ascension, and Crucifixion,—and foliage, with dispersed ruby and blue for backgrounds, surrounded by borders. The artist employed was Mr. Charles Gibbs, of 148, Marylebone-road, who was the successful competitor for the same.

**THE GLOUCESTER WATER WORKS AT WITCOMBE.**—A slip occurred, some time ago, at Witcombe, and another has just occurred. "The whole system of operations," says the *Gloucester Chronicle*, "seem to be a gigantic blunder; and a great deal of public indignation is expressed. The highest engineering skill in the kingdom is to be consulted on the matter. A greater portion of the soil of which the embankment is made should have been burnt before it had been put together, for under present circumstances it does not seem likely that it will ever form a tenacious mass."

**THE EFFECT OF THE STRIKE ON THE HEALTH OF WORKMEN'S FAMILIES.**—For some time past the Registrar General has noticed in the weekly bill of health of the metropolis the number of deaths which have occurred weekly in the families of bricklayers, carpenters, masons, painters, and plasterers,—trades which have been sensibly affected by the strike. The number of deaths of wives and children of such workmen in the first week of the new year, was sixty-nine. It is useful to direct attention to such statistics, as showing the effect of certain conditions upon health. It would be, therefore, valuable to give, at the same time with those figures, the average number of deaths amongst the children and wives of those belonging to the trades.

**SOUTH AUSTRALIAN ASSOCIATION OF ARCHITECTS, ENGINEERS, AND SURVEYORS.** At the first monthly meeting of the second year of the above association (the Hon. Major Freeling in the chair), the paper promised by Mr. Goyder for this meeting not having been forwarded by that gentleman, Mr. G. E. Hamilton initiated a discussion respecting the iron ores of the colony, and gave an interesting account of the methods adopted in the preparation of the pig iron of commerce. The drift of his argument was to show that the probability of the iron ores of this colony ever being manufactured was very faint, for reasons that he advanced. He showed that they were of too high a percentage of iron for successful smelting. At the close of his remarks he promised at an early day to introduce the subject in a paper, and to illustrate it by diagrams; also to couple with it his opinions as to the probability of obtaining coal in the colony. It was resolved that the committee consider the proposition of sending to England for books of reference, &c., and to be prepared with a report as to what books they recommended, &c., by the next monthly meeting.

**ST. ANDREW'S CHURCH, DUBLIN, DESTROYED BY FIRE.**—The church of St. Andrew, commonly called the "Round Church," has been destroyed by fire. Smoke was first observed issuing from the roof. The spread of the fire to the roof of the square wing, at the rear of the round building, was prevented by cutting the roof, and thus breaking off the connection, which was done by the firemen. This wing is separated from the body of the church by a stone wall, and contains the belfry and the vestry rooms. In a short time the ruined roofless walls of the round building, together with the burning *débris*, were all that remained of the church. The entire interior of the church, including pews, galleries, and organ, were reduced to a mass of charred ruins. Providentially, the fire did not break out until after all the congregation who attended the Sunday morning service had dispersed. Had it been otherwise, and an alarm of fire been given while the church was full, fearful consequences might have ensued, as the only means of exit was the one large door in the front. The fire is supposed to have originated from a fire in the roof. The Round Church, which no longer exists, was built in 1793, and opened for public worship in 1807, at an expense of 22,000*l.* The design was an imitation of the Church of St. Mary de Rotundo at Rome, and the architect was Mr. Francis Johnston. The building was capable of accommodating 1,200 persons. It was insured until about two years ago. It is but a few weeks since we expressed our fear of hearing more about the church flues ere the winter was over. The worst of it, too, is the imminent risk of fires breaking out during divine service; for, of course it is while the flues are heated for service that the fires break out.

**PHOTOGRAPHIC SOCIETY OF LONDON.**—This society has opened its annual exhibition of photographs in the gallery of the old Water-Colour Society, Pall-mall East. It is a very good collection.

**GAS.**—"The Town Council of this city," says the *Chester Chronicle*, "have decided on adopting the recent Act for the inspection of gas meters. Many complaints are made that gas is reduced in price, yet that the quarterly bills increase in amount. The dry meter is said to be the best and the easiest managed." Various other towns are moving in this matter.—The price of gas at Winchester has been reduced from 6s. 6d. to 6s., and the quality of the gas, it is said, improved, as well as the quantity increased.—The result of the gas agitation at Inverness is now partially realized, the price being reduced to 7s. 6d. per 1,000 feet for the public lights. No reduction, as yet, has been made to the private consumer.

**INCREASE OF RAILWAY EMPLOYMENT.**—The army of "railway men" which, in 1848, numbered 52,688, increased in ten years to 109,329. The guards and brakemen increased from 1,196 to 3,747, and the stationmasters from about 1,150 to 2,673. The secretaries and managers increased from 111 to 241. Of engineers the increase was only from 95 to 115. Gatekeepers increased from 401 to 2,084. There was a falling off in the number of watchmen and policemen from 2,475 to 2,214. Switchmen increased from 1,055 to 3,431. The increase in the number of engine-drivers was from 1,752 to 3,508.

**CAICATRIS.**—It is probable that almost all the popular ideas of prime ministers and leading politicians have been moulded and shaped by the caricaturist. Who does not know the pompos yet kindly Peel, the versatile large-bearded and large-brained Henry Brougham, Russell, or Palmerston, better by Leech's pencil than by any other portrait? When we see the great originals, we are disappointed that they do not come up to the woodcuts; that "Pam" is not so jauntily, nor Brougham so eccentric, as he is drawn. We shape the ideal head to the speech, and measure the action by the dress. The caricaturist has been up earlier than the historian, and has stolen a march on him. He influences popular knowledge, though forgotten; his ink is said, to the end of time, we shall never be quite sure that Palmerston does not carry a perpetual bit of straw in his mouth, or that the nose of Oliver Cromwell was not as real as the lattice of a country roadside inn, so deeply are we tinged with the teachings of the caricaturist.—*The Leader.*

**TENDERS**

For alterations at No. 37, Frederick-place, Hampstead-road, for Mr. J. Hawes. Mr. J. Tanner, architect. Quantities supplied:—  
Turner & Sons ..... £195 12 0  
Butterbury ..... 328 12 0  
Matthews & Co. .... 292 12 0  
R. Lawrence ..... 291 12 0  
Taylor ..... 296 12 0

For alterations and additions at No. 35, Frederick-place, Hampstead-road, for Mr. J. Hawes. Mr. J. Tanner, architect. Quantities supplied:—  
Turner & Sons ..... £197 12 0  
Butterbury ..... 145 12 0  
Matthews & Co. .... 141 13 0  
R. Lawrence ..... 137 12 0  
Taylor ..... 134 4 0

**Tenders for Southern Outfall Sewer.**—We are asked to add, to the list of contractors who tendered for this work, the name of Mr. W. Webster, 367, 700*l.*, and that of Mr. W. Lavers, 315,000*l.* Further, that the amount named by Messrs. Helling & Yeoman, was 425,484*l.*

**Bowes Manor.**—Sir, in justice to the builders whose tenders for works at Alderman Silvey's, Bowes Manor, appeared in your paper of last week, may I beg the insertion of the following remarks:—The lowest tender, which was evidently considerably below the fair value of the work, was not accepted, inasmuch as it was forwarded without the sanction of Mr. Fuller, in whose name it appeared, and the result has been that the next lowest tender, that of Mr. Carter, has been accepted. EDWARD WOODROFF, Architect.

**TO CORRESPONDENTS.**

**Glass and Stone.**—A subscriber asks to be informed what is the best cement for stopping glass in stone work? "The glass is in large squares, and the joints (instead of grooves, as in ordinary work) are in lead work; the stone is Edinwick freestone, and the situation is one of the most exposed, being on a hill. I have tried Portland cement, but it will not adhere to the stone sufficiently, and plaster of Paris will not stand the effects of wet and frost, especially on the sills of the windows where the wet accumulates."

**Anti-Humbug.**—J. G. Oliver Phillips (we have no recollection of the communication referred to.—It varies from 13 to 1 per cent. and is not an unusual charge.—T. W. C.—Mr. G. W. G. (It was *de*, Brunel who swallowed a half-sovereign.—D. A.—G. P.—J. N.—W. P. W. H. B. A.—P. D.—Inquire (apply to Secretary at No. 9, Conduit-street).—T. W. C.—R. C. (we shall be glad to see the drawing).—G. D. B. (we are forced to decline advising in private questions).—Lady L.—W. W.—C. E. A.—J. R.—T. G. A.—Practice.—J. E.—P. E. H. (Buckley). We have already given some account of the southern oil-well; but will use a portion).

# The Builder.

VOL. XVIII.—No. 886.

Saltire.



PUTTING aside the gigantic size of the establishment at Saltire, it exhibits so many other points of interest, that all who go to Bradford, or any other neighbouring town in thriving, far-seeing, hard-fighting Yorkshire, should visit it. The expenditure which was ventured on, to economise labour, to expedite processes, to obtain completeness, and to ensure the comfort of the 3,000 persons who are engaged in the works, will surprise many; but the wisdom of it, even in a financial point of view, soon makes itself evident. Our readers do not require to be told that the title which the mills and rising town here gives us the

name of its enterprising founder, Mr. Titus Salt, M.P., and that of the locality, the beautiful valley of the Aire, in which it is built. It is a joke against the Prince Napoleon, that in an account he gave of the Paris Exhibition of 1855, he pointed out that Mr. Titus had exhibited some magnificent examples of salt! The place which we are speaking is indeed a magnificent exhibition of Salt, and it is to be hoped that he may long live to enjoy the honour it was deservedly gained him. In a previous volume\* we gave a view and plan of the mill, and showed how, with an extension of the Leeds and Bradford Railway in front of it, and the Leeds and Liverpool Canal behind it, the greatest facilities exist for bringing up the raw materials and coal, and sending away the manufactured goods, while plenty of water is obtainable for the steam engines and the processes. Take a few statistics, all in a heap, and get an idea at once of the magnitude of the undertaking. The buildings for the works cover 6½ acres. The main range of buildings—a fine substantial piece of work, fire-proof, and highly creditable to Messrs. Lockwood & Mawson, the architects—extends 550 feet in length and 72 feet in height; and as the top story runs over the central entrance archway, and reaches the whole length of the mill, we get a room 550 feet in length—the longest perhaps in Europe; and, looking from one end to the other, a fine sight it is. The Weaving Shed, however, attached to the mill, eclipses that in area; for here we have in one apartment 2 acres—room to dine comfortably 7,000 persons. In the Combing Shed, of half its area, Mr. Salt did dine 3,500 persons, when the building was first brought into use. Men, women, and children, are at work throughout the building; steam-engines of 1,250 horse-power collectively give motion by 2 miles of shafting to 1,200 power looms; and when we add that the daily produce of these is 30,000 yards, or 5,000 miles annually; in other words, that the length made in a year and a half is more than enough to reach from one side of our globe to the other, if there were a hole through the middle; the skill, energy, and capital, required to carry on such an undertaking, will be strikingly evident. Professional visitors would examine with

interest the mode of construction adopted in the mill proper, to render it fire-proof,—*hollow* brick arches and *wrought* iron girders for the floors; and would, probably, grieve with us that the same precaution was not adopted throughout. They would observe, too, the mode in which fresh air is admitted to each story, and the foul air allowed to escape; and the satisfactory construction of the great chimney. Those interested in machinery would notice the prompt adoption of new inventions: the beautiful combing machine, which is said to have cost Mr. Salt 32,000*l.*; the arrangement for washing the wool, and for drying it,—in one place by centrifugal action, and in another by warm air. In the sorting-room it would occur to them that some arrangement should be made to free the air, or otherwise to preserve the workmen from the dust of the wool; but, generally speaking, they would find little occasion for comment. The care with which all advantages are husbanded is shown in various ways; in this, for example; that the water resulting from the processes, and containing fatty matter, which was formerly allowed to run to waste in the canal, is now collected and strained, and produces 2,000*l.* a-year. The smoke is, for the most part, consumed; the heat from the boilers utilized to the greatest extent.

Leaving the mill, there will be found 450 houses for the people engaged; a large dining-hall for special occasions, at present used as a school-house; and a costly church, with a steeple and semicircular portico of the Corinthian order, at the west end,—the interior being fitted up with handsome plaster-work and scagliola columns, the latter well executed by Dolan, of Manchester.

Returning to the dwellings for an instant, it may be mentioned that for a cottage with three rooms upstairs and two below, the sum of 3*s.* 8*d.* a week is paid, including the rates and water-supply. With the arrangement of the houses no fault can be found excepting this, that the cesspool system is in use, pending the determination of how best to act otherwise. This should be allowed to continue no longer; and then, if careful records were kept, we might expect to find the death-rate in Saltire a low one. It is a noble monument of private enterprise, liberality, and wisdom.

## AN ERMINED ARCHITECT.

We are not about to confute King Solomon's proposition, that there is nothing new under the sun, by an announcement that a member of the architectural profession is about to be raised to the peerage: we simply purpose to pursue a train of thought suggested by a remark made at a recent meeting of the Royal Institute of Architects. One of the members observed, in reference to another, that had he attained the same eminence in the profession of arms, or law, that he had gained in his own, he would have been created a peer long ago. The first question that rises to the surface is—Why so? How far do the services of a soldier, or a lawyer, exceed those of an architect in a national point of view?

We contend that architecture conduces as much to the enduring fame of a nation as military glory; and, in its care for the well-being of the people in their homes, tends as much to the maintenance of public order, as legal instruments do. We are able to realize the grandeur of the Greeks and Romans, as much by the remains of their architecture—their columns of agate, alabaster, and jasper,—as by the relation of warlike deeds and civic virtues in those portions of their literature that are preserved to us; and in the case of the Assyrians and Egyptians infinitely more so. Their soldiers have perished in numbers nearly as countless as the sands of the scorched desert: the papyrus rolls of the lawgivers have been consumed by time; but the works of their architects endure, and the sun still casts the same shadows from the imprishable fabrics on the banks of the Nile that it did 4,000 years ago. We ask how is the greatness of a people visible to foreigners, if not in the extent of their cities and grandeur of their buildings; and how can it be made evident to future generations by any other means? The Danes conquered the country as well as the Romans; but we have formed very different estimates of the two races. Simply because the one

has bequeathed us but a few legends relating to their conquests, and a few names; while the other has left us traces of fifty walled towns, with temples, baths, and other public buildings in each. By the same rule posterity would think but little of us if we handed down a mere territory unenriched with buildings. When the Crusaders arrived at Constantinople, on their road across Europe to the Holy Land, they were overpowered, say the old writers, with the magnificence of the city. The gilded minarets of the mosques, blazing against the opal sky, appeared to them to represent a land of enchantment. A tented plain could not have produced such an effect.

We are next tempted to inquire how far the popular notion of an architect's acquirements represents the varied learned and accomplished skill he should possess. We suspect that few superficial observers take into consideration the fact that in the matter of mathematics, acoustics, the laws of health, and intimate acquaintance with all the branches of the fine arts, architecture is more exacting than either of the professions now contrasted with it. If a knowledge of the dead languages be required for a study of the law, is it not equally so for the study of architecture? Are not all the old monuments written in Latin, and all inscribed stones up to a certain date in the same tongue? Think of the pale tinted chronicles of the old religious houses, perfumed with the scent of departed centuries, and of all the mediæval memorials, whether on stone, on glass, on wood, or on vellum: are they not all written in Latin? Without going so far as Vitruvius, in his well-known treatise, who insisted that the education of an architect should comprise a mastery of the whole circle of sciences, we repeat that his learning must be very comprehensive.

The importance of the use of these varied attainments in the practice of an architect cannot be too highly estimated. The extent of the population is influenced by them; for, if efficient architects were in all cases employed to superintend the erection of dwelling-houses, more especially those of the poor—too often run up by builders in careless defiance of decency and health, a marked difference would be seen in the number of deaths resulting from preventable causes. We do not hesitate to say that our sovereign lady the Queen would be in possession of many a regiment of fine-grown men, whose premature loss, as proved by the returns of the Registrar-General, is consequent upon undrained houses and unventilated apartments. Surely it is as useful to rear soldiers as to command them.

The chance of sudden loss of life in the pursuit of a profession can scarcely be considered to enoble it; but, if it be so estimated, the architect, being scarcely less exposed to it than the soldier, must be proportionally entitled to distinction. Any visitor to a large building, in course of erection, must be struck at the danger to life from carelessness, on every side. A false step on a scaffolding stage, the fall of an unbalanced stone, momentary dizziness or forgetfulness on a ladder, are accidents of too frequent and fatal occurrence. Probably Ely Cathedral is never visited for the first time unassociated with the remembrance of the architect who lost his life there. William de Sens left Canterbury Cathedral with a broken leg. And there are other instances too numerous to mention. We remember that the old Greenwich pensioner who used to show the chapel of the hospital always recounted, with something like martial pride, the narrow escape of the painter's life in the execution of the allegorical decorations of the ceiling.

It seems to us that the lives of her Majesty's subjects are as much in the keeping of architects as they are in that of their other "brave defenders," the army and navy. A church, built without a knowledge of the laws of resistance and pressure, falling upon a large congregation, would do as much havoc, to as many people, as a grand pitched battle. Or insecure foundations for a parliament house might be as fatal in their consequences as an undetected gunpowder plot. And, by way of inverting our examples, proper attention to the philosophy of architecture, as shown in its sanitary arrangements, would be as beneficial to a nation as a long season of peace.

The Lord Chancellor on his woolsack has always been considered, and is, a fine sight; and so is a regiment of horse-guards, their tasselled plumes glittering in the breeze, and their cuirasses glittering in the sunshine as their steeds curve; but they must both give precedence to architecture in point of beauty. Take any one of our cathedrals, with their clustered columns and vaulted roofs, their "tracery of lace," their exquisite proportions and superb details, and point out, if you can,

\* Vol. xii. p. 478.

a more lovely object. Then own that a mind attuned to such soul-filling harmony, and capable of conceiving similar creations, cannot be unworthy of a place among England's gifted sons. We would not be understood to affirm that architecture has been without any recognition: on the contrary, the barren dignity of knighthood has been frequently awarded within the last two centuries; and, in the old times before us, as in the instance of William of Wykeham, honours were heaped upon its promoters, if not professors; but in modern times they have not been so distinguished. Considering how inseparably history is associated with architecture, to what an extent contemporary and posthumous fame depend upon it, and in what measure the population is scathed by the observance of its laws, it can scarcely be denied that the dignity of the profession is not merited to crumble.

#### RUSKIN ON PERSPECTIVE.\*

It has been somewhere said, on the occasion of an allusion to codification of laws, that not less valuable would be a distillation, periodically, of literature,—the essence of books on a given subject being extracted, and codified in a new work, when all the others could with advantage be burnt. There may be some reason in this view. We would have public libraries instituted in far greater number than at present; books should be cheapened, or placed within reach of every one desirous to be instructed, or to be harmlessly amused; but the multiplication of works on the same subject, especially those which are professedly educational, is becoming an evil; and like multitude in an architectural competition, of designs which time will not allow to be examined, operates against the probability of wise selection. More industrious examination and collation of previously published works, on the part of intending writers, is wanted, to direct towards the character of new work that really may be required. Embodying the result, the new publication is justified: otherwise it must to a considerable extent encumber the way of progress, or its leaves have their fitting appropriation only.

"Clothe pipe, line, trunks, or fluttering in a row,  
Beating the falls of Keelam and Sobu."

We have been called upon, late, to notice several works on perspective, and have hinted at the applicability to some of those on the same subject, of a view such as is expressed here-above. It is matter of fact that the majority of architectural students do not learn perspective from books: as we have shown, after becoming acquainted with the orthographic method of representation, or that by plans, elevations, and sections, they get conveyed to them their first lesson, and nearly all that there is in the science, in an hour; and if they falter afterwards, the reason is the having omitted to practise, or the inability to think consecutively, and to know by sight what is wrongly drawn. If books be necessary, for embodiment and preservation of the science,—or if they are useful in tuition under any circumstances,—time certainly is saved by the method common in offices; or the advantages in any other, involve the use of models as means in contradistinction to diagrams.

We have some difficulty in deciding in what category to place the present work by Mr. Ruskin, for we are very doubtful whether he has succeeded in his intention of making the subject clear to pupils in ordinary schools, or whether the demonstrations could be followed at all, without previous familiarity with perspective as commonly learned and practised. This results, of course, not from any want of truth in the mathematics as an adopted form of explanation, and equally, it does not from inability of the author to handle that or another method, or from any stint of labour on the present occasion. There is, however, want of perspicuity in his teaching, in several essentials. He himself refers to the possibility of his "hereafter" bringing the work into "better form;" but without improvement in points other than he mentions, the work cannot be found to "answer its purpose," or enable, as he says, the student "to solve perspective problems of a complexity greater than the ordinary rules will reach;" and in naming Clouet's treatise† and "a series of illustrations of practical perspective now in preparation by Mr. Le Vaugan," he does not rightly pass over some of the recently published English

\* The Elements of Perspective, arranged for the use of Schools, and intended to be read in connection with the first three books of Euclid. By John Ruskin, M.A. 8vo. pp. xii. 144. London: Smith, Elder, & Co. 1859.  
† "Nouveau Traité Élémentaire de Perspective," Bachelier, 1823.

works which have been noticed in our pages. He says:—

"For some time back I have felt the want, among students of drawing, of a written code of accurate perspective law; the modes of construction in common use being various, and, for some problems, insufficient. It would have been desirable to draw up such a code in popular language, so as to do away with the most repulsive difficulties of the subject; but finding this popularization would be impossible, without elaborate figures and long explanations, such as I had no leisure to prepare, I have arranged the necessary rules in a short mathematical form, which any school-boy may read through in a few days, after he has mastered the first three and the sixth books of Euclid."

Now, in "the modes of construction," or "constructions" (to use Mr. Ruskin's peculiar phraseology) with which we are acquainted, we are not aware of insufficiency or difficulty. The present work would leave much of the difficultly which its author hopes to remove, as in some important steps of the demonstration, as in what relates to the practical method of finding the "sight-magnitude" of objects on the "measuring line" and the use of "dividing-points," the want of clearness which we speak of is to be found; and the use of the term "sight-line" in lieu of *horizontal line*, and "station-line" for the line on which would be measured the direct distance of the picture or the object, is of doubtful advantage, considering that the former term would be very liable to be taken for what the author means by the latter, namely, the axis of vision or of the *cone of rays*. The success of the demonstration is further interfered with by want of precision in some of the diagrams, and by omissions of letters of reference. Draughtsmen and engravers are becoming thoroughly careless in these particulars. The opening of the work, and some portion of the Appendix, on the other hand, are clear in style and explanation; but this not being maintained throughout, though we ourselves have perused the work with interest, and can recommend it as a useful mental exercise, we doubt whether it could claim to be more than a vehicle for instruction *différent* in sort from others, and as such, capable of improvement in several respects. In certain points, however, the scheme of demonstration would have great value as compared with any to be found in the catechisms and other works which formerly were used in schools. The actual dimensions of the object, the direct distance, the lateral distance, and the vertical distance, are taken to be the basis of the perspective representation. Thus, as in the case of a drawing of a pillar, the actual object being supposed to be 42 feet in height, and the station-point 70 feet distant from it, and 5 feet from the plane of the picture,— "Then as 5 is to 70 so will the sight-magnitude required be to 42; that is to say, the sight-magnitude of the pillar's height will be 3 feet." Or in another case, taking the plane of the picture distant 2½ feet, the apparent height will be 1½ feet. That is to say, the sight-magnitude of an object is to the real magnitude, as the distance of the plane of the picture from the eye is to the real direct distance, in all cases of parallel perspective at least,—and although the object may be above or below the eye, or at any distance laterally from the direct line, or what the author calls "station-line." Moreover, it is likely that the method of demonstration in the work, could it be more clearly explained, would be of value in sketching; and at present, many of those who have commenced practice of perspective would find of service to them, the instructions on the methods of delineating circles and arches, pyramidal forms, the capitals and base-mouldings of columns, and the lines of gables, and of finding the vanishing-points of lines in the work is rather curious and suggestive, than one which could be put into the hands of architectural students with certainty of its standing them in stead of the instruction which they now derive by ready means; but if codification of the existing information in books be wanted, Mr. Ruskin shows that he could supply that want, and effect something beyond.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE ordinary general meeting was held on Monday last, at the house in Conduit-street; the president, Mr. C. K. Cockerell, R.A., in the chair. The minutes of the last meeting were read and confirmed.

The following gentlemen were, on ballot, elected Fellows of the Institute.—Mr. J. K. Colling, Associate, of 6, Ridgmont-place, Hampstead-road; Mr. Thomas Aiton, Associate, of Barnes, Surrey; Mr. Cuthbert Boddick, of Leeds; Mr.

Edward B. Lamb, of 3, Hyde-street, Manchester square.

Mr. Charles J. Phipps, of 5, Paragon-building, Bath; and Mr. William S. Barber, of Hanover chambers, Buckingham-street, Adelphi, were elected Associates.

The President, in reference to the election of Fellows and Associates by ballot, expressed his hope that in future members would not leave the room without voting.

Mr. Godwin observed upon this subject, that there could be no possible objection to members exercising their privilege of "black-balling," so long as the result of the ballot represented the general opinion of the meeting; but if gentlemen continued the practice of leaving the room before the ballot, a display of personal feeling on the part of two or three gentlemen might at any time exclude a very efficient and desirable member, whereas if the general body remained, the opinion of the great majority might be in his favour.

Mr. T. H. Lewis (honorary secretary) read a list of donations to the library, and called attention to some beautiful specimens of wood-carving by Mr. W. Perry, executed by desire of the Duchess of Sutherland, for a bath-room at Stafford House.

Mr. Wyatt Papworth then read a paper "On the Superintendants of English Building in the Middle Ages," with especial reference to William of Wykeham, to which we shall return. One part of the paper was devoted to showing the reader's reasons for doubting the right of William of Wykeham to be considered the architect of the buildings with which his name was associated.

At the conclusion, The Chairman said that he had heard with great pleasure the instructive and erudite dissertation of Mr. Papworth, upon a subject which to architects was invested with more than ordinary interest. The subject was one of great importance for the profession to pursue, and he was sure there were many gentlemen present who had, more or less, investigated it. He had himself done a little towards vindicating the fame and genius of William of Wykeham, and he was consequently a little disappointed at the estimate formed of him by Mr. Papworth. Born in humble circumstances, William of Wykeham succeeded in raising himself by successive steps to be, not only a high ecclesiastic, but to be the Lord Chancellor of the empire. Feeling strongly as he (the chairman) did upon the merits of William of Wykeham, and his claim to be considered not only a great Medieval architect, but also as the originator of what might be termed a new era in the art, he would like to hear what gentlemen present might have to say in support of his title to those distinctions. It was, at all events, clear that if he did not devise the buildings imputed to him, he was a person of such cultivated taste and accurate judgment as to encourage the art in others, and earn a reputation for himself which time could not destroy. So versatile were his talents, that he appeared to have discharged many public offices of great trust and responsibility. He was made envoy to France, and he was subsequently able, when master of the Cinque Ports, to design a plan for fortifying those places. Such a man appeared to be wanted in the present day. In estimating the character and attainments of William of Wykeham, it was necessary to bear in mind that, at the period in which he lived, ecclesiastics were the only learned men of the day; and that, when they flourished, there were none of those brochures and pamphlets which now teemed from the press, to enlighten the multitude. Mr. Papworth appeared to have applied himself with great diligence to the subject of his paper: he had pursued his researches through seven or eight centuries, and had thrown much additional light upon an interesting and suggestive theme.

The Rev. MacKenzie Walcott warmly defended the claims of William of Wykeham, not only to the credit of works in Winchester Cathedral and Queensbury Castle, but also to be the author of a new style of architecture in this country. He regretted that Mr. Papworth should have called in question, by ingenious and elaborate speculations which he believed to be founded upon an erroneous theory, the fame of a man who had done so much to elevate the profession of the architect. He (Mr. Walcott) knew of no profession which should be so jealous of the reputation of its members as that of the architect, for if they did not set their face against any attempts that might be made to under-estimate their services, there would be no knowing when some speculative theorist might rise up and allocate the merit of their own designs to their pupils' room, or to their master mason. Sad,

indeed, would be the day for their country and their age, when England would become indifferent to the reputation of her sons, or tire of hearing her Aristides called "The Just." Mr. Papworth, in attacking the claims of William of Wykeham, had flown at high game, but he (Mr. Walcott) was persuaded that there were many who would learn with regret that he had ventured to disparage the merits of one who had been to them *in loco parentis*. Mr. Papworth had fallen into many errors in reference to William of Wykeham, and, among others, he said that he was born at Wykeham, in Wilts; whereas he was born at Wykeham, in Hampshire; he also declared that he had not been a Freemason, and quoted in support of his assertion a passage occurring in the reign of Henry VI., whereas Wykeham had been dead some long time before. Mr. Walcott then proceeded to quote the opinions of Professor Willis, of Cambridge; and also of Mr. Cockerell (the chairman), urging that the former had declared that William of Wykeham was essentially a practical man, and one who had been engaged all his life in works of architecture; while the latter had given his opinion that he had never been sufficiently celebrated, and that the restoration of the Cathedral of Winchester proved him to have been a consummate architect and engineer. With regard to his will, he had the expression *novi operis facti per me*, which were to be intrusted to Master William Wynford and other discreet persons versed in their art; thereby showing that he had been the designer of the new works referred to. But to show that William of Wykeham was not the man to arrogate to himself credit which should justly attach to others, it would be found that in the stained glass at Winchester Cathedral were portraits of Thomas the glazier, the carpenter, and the chief mason, who had assisted in building the church.

Mr. Papworth said he had referred to the circumstance mentioned by the reverend gentleman, as it was far from his intention to detract from what he believed to be the merits of William of Wykeham.

The Rev. Mr. Walcott, in continuation, read a number of extracts from ancient records preserved at Oxford and at the British Museum, which the view of showing that a mass of contemporaneous evidence existed to prove that William of Wykeham devoted the greater portion of his life to the study and pursuit of architecture, and that he well deserved the high reputation which he had acquired as the most skilful and original architect of the middle ages. The rev. gentleman said that he was not sanguine enough to believe that he could convince Mr. Papworth, their Cato, but that, if he was successful enough to obtain the verdict of the meeting, he would console himself with the words, *Victrix causa mihi placuit, victor Catoni*.

Mr. Kerr remarked that they were always glad to hear the views of amateurs, and that they were indebted to the rev. gentleman who spoke last for his observations; at the same time it might be desirable to remind the meeting that the object of the paper just read was not simply to clear the biographical question, or to ascertain whether William of Wykeham was or was not what he was represented to be. What was far more important, was to trace the rise and progress of their own profession, and Mr. Papworth had incidentally selected the most prominent amateur architect, to test his merits, and thereby ascertain whether the class of which he was the representative was or was not what it was supposed to be. For his own part, he did not take that lively interest in William of Wykeham which the reverend gentleman near him did, but he had followed Mr. Papworth with great interest; for it was evident that the early history of the architect's profession was hurried in great obscurity. In early times, the church was the only receptacle of learning, and consequently it was not unreasonable to suppose that ecclesiastics were also architects. It seemed to him that the distinctions drawn by Mr. Papworth as to the supervisors of buildings, opened up an extremely useful subject of inquiry, and he hoped that he would follow it up on a future occasion. But that which architects as a body wanted to know was, not whether William of Wykeham was what he was represented to have been, but how it was that the beautiful in art arose in this country out of the mediæval system. At the present time it was fully recognized that there was a profession for the designing of beauty in buildings. What the substitute might have been in the middle ages was a point upon which opinion might differ, but it was, at all events, clear that a condition of progress had developed itself, out of which the architect of the present

day arose, though it could not be said that he was even now full blown. This appeared to him to be the real subject which the paper was intended to elucidate, and with every desire to acknowledge the superior antiquarian lore of Mr. Walcott, he (Mr. Kerr) felt that he could not allow his observations to pass without saying a word in defence of the paper by Mr. Papworth.

Mr. Street said that it was with much diffidence that he rose to oppose a paper so carefully prepared and so instructive as that which Mr. Papworth had submitted, and for which all Gothic architects had reason to be grateful to him. He confessed, however, that in his opinion Mr. Papworth's arguments were inconclusive, and had been answered by the Rev. Mr. Walcott, who had shown that the architects of the Middle Ages had been described at the period by a variety of names, used indiscriminately. In proof of this, it should be remembered that William of Wykeham was himself clerk of the works before he was an architect; but leaving the case of William of Wykeham, he should like to call attention to an older artist, to whom Mr. Papworth had done but scant justice—he meant Elias of Dereham. Mr. Papworth had dismissed him in six words, although Mr. Pugin, on apparently good grounds, had claimed for him the credit of being the architect of Salisbury Cathedral. Elias of Dereham appeared, like other architects of his time, to have been variously named, and to have undertaken a great number of duties, for there were entries that he was to make or enlarge a window in the castle of Winchester, which was to be painted of a green colour, and that he was to give the disposition of it, as also to give directions as to the decorations of one of the king's chambers. He was a canon of Salisbury, and, as he (Mr. Street) believed, the architect of the cathedral. He was present at its consecration; the bishop appeared to have had great confidence in him, and as the king was present at the consecration, it was most probable that the architect was there introduced to him, and that his subsequent employment by the king was to be traced to that circumstance. It seemed to him (Mr. Street) that if Mr. Papworth had not confined his remarks to England, he might have arrived at a truer knowledge of the architects of the Middle Ages. The ordinary title of a Continental architect, from the thirteenth century downwards, was *MAGISTER OPERIS*, as shown by the inscriptions on their tombs at Rheims, Amiens, and in the church of Notre Dame, at Paris. The architects in those days appeared to have arranged the whole of the work; but as time passed away, and the art of construction became better understood, tradesmen were called in to do separate portions of the work, for which it was to be presumed they were held responsible. With reference to the claims of the clergy to be regarded as the chief architects in the Middle Ages, there could be no doubt but that many of them were entitled to that description; but, on the other hand, many churches were erected (Amiens Cathedral, for instance) by laymen. In England, however, the probability was that the majority of architects in the Middle Ages were clergymen. William of Sens and William the Englishman, of Canterbury, were also laymen. William of Sens, when engaged upon Canterbury Cathedral, fell from a scaffold, and being incapacitated from conducting the works, deputed a young monk who had shown great taste and skill in architecture to represent him, and this ecclesiastic continued to discharge his trust until, on the removal of William of Sens to the Continent, for the restoration of his health, he was succeeded by William the Englishman. With regard to the general absence of all trace of the working drawings used in the construction of the cathedrals raised in the thirteenth and subsequent centuries, he wished to state that on examining the roof of the Cathedral of Limoges, he was struck by finding the outlines of the columns and other parts cut on blocks of granite.

Mr. Ferrey expressed his hope that the subject to which Mr. Papworth had called attention would receive further consideration on a future occasion, as it was almost distressing to find the traditions which they were accustomed to regard with so much admiration and veneration so ruthlessly demolished. With regard to William of Wykeham, the bare supposition that he was not the designer of those magnificent works associated with his memory, was distressing to every Englishman, and more especially to those who claimed to be natives of the county in which he was born.

The Chairman said he quite agreed with the last speaker as to the desirability of renewing the discussion on a future occasion, as it was of great importance to them as architects to learn the

history of their ancestors, from whatever source they might have sprung. It was also desirable to collect all the proofs that could be accumulated on so interesting a subject, and he was convinced that their accomplished friend Mr. Papworth would be glad to receive any hints which their collective learning and research might bring to bear with reference to the theme which he had brought under their consideration. The subject was of too great importance to be disposed of in the limited period which could be devoted to one evening's discussion. He hoped, however, that their friend Mr. Asphitel would favour the meeting with his opinion.

Mr. Asphitel said that at so late an hour of the evening little time remained to discuss so large and interesting a topic as that to which Mr. Papworth had invited attention. With reference, however, to the issue raised, and which Mr. Walcott had met with so much vigour, he might say, with that respectable authority in the *Spectator* that "a great deal might be said on both sides." They were, for instance, accustomed to hear that such and such a building had been built by Wolsey, although it was well known that the great cardinal was no architect at all; and, on the other hand, they were taught to believe that certain structures of great beauty had been raised by William of Wykeham, who had devoted his whole life to the study and pursuit of architecture. It did not, however, follow that because no buildings had been constructed by Wolsey the wreath was to be taken from the brow of William of Wykeham. Then with regard to the designation of the architect, it should be remembered that a good deal depended upon the state of civilization at the time in which he flourished. In a low state of civilization the man who built a hut might be described as "Carpentarius;" but, again, in periods at which civilization had attained a high pitch, the architect was found, as in the case of Vitruvius and others of ancient Greece, occupying a position and taking rank with the jurist-consuls of his age. That the title by which the architect was known was not to be considered as derogating from the dignity and importance of his office, was proved even in modern times by the fact that the architect of royalty was called the "clerk of the works," and that until five or six years ago their friend Mr. Banning, who held the office of architect to the corporation of the city of London, was described by the same humble designation.

Mr. Digby Wyatt said that he could supply in his own person a still more modern illustration, as he himself had the honour of being "clerk of the works" to the East-India Company.

Mr. Asphitel, in continuation, observed, that whatever might be the position of the architect in the present day, the fact that William of Wykeham, the son of a poor man, had sprung from the ranks of the lower ecclesiastics to the position which he successively occupied as Bishop of Winchester and Lord Chancellor of the empire was in itself sufficient to show in what high estimation the study of architecture was held in his day, and with what honours the man had been rewarded who had struck out a new style of architecture.

Mr. Digby Wyatt observed, that although some difference of opinion might exist as to the conclusiveness of the arguments raised by Mr. Papworth, they must all acknowledge the labour and research which he had shown by the collection of his facts and historical data. With regard to the actual architects of Mediæval times, they must all admit that the subject was involved in obscurity, and that great credit ought to attach to those who might endeavour to penetrate that gloom, and bring additional light to bear upon the subject. As Mr. Papworth had applied himself to that task he was entitled to their acknowledgments, and he therefore begged to move that the best thanks of the meeting be awarded to him for his able and erudite essay.

Mr. Godwin briefly seconded the motion, which was put from the chair and carried by acclamation.

#### BRIDGE OVER THE ELBE, NEAR HAMBURG.

The gigantic bridge to be constructed over the two arms of the Elbe, between Harburg and Hamburg, will have a total length of 3,300 feet. The left arm is 2,000 feet broad, and is to have six arches each, of 333½ feet span. The superstructure will be 6 feet, and the rails 9 feet, over the highest tide level imaginable, or 18 feet over the ordinary high-water mark. This height is more than sufficient for the river navigation. The second bridge over the right arm will be 1,300 feet long, and consist of five arches of 325 feet each. Each of the bridges is to have a double line



there are persons who cannot appreciate music. For many a man, — for many a woman, — perhaps, in some instances, be revolting to their taste altogether; but that is a defect in themselves, and not the fault of the colour or the music. There is such a thing as "colour" in music, and many curious facts recorded, of persons, who are deficient in the faculty of distinguishing colours. It is said to exist in one male out of twenty. Professor Wilson discovered one case in thirty-seven in the colour of the ovaries. — It is a matter of fact, that literally colour blindness. They doubted about all colours, and on different occasions named the same colours differently. White and black they had no difficulty about.

We know that music and painting are generally appreciated and admired by the public. It is because the mind is consecutively and rapidly engaged with different impressions, from the variety and harmony of the tones or colours presented to the view. I believe that it is wanting in our street architecture, and being compelled to have so much wall space to the fronts of our buildings, that materials of varied colours and tints afford the means of effecting the object.

There are few persons but who admire the effect of an assembly on any festive occasion. The brilliancy and variety in the colours of the dresses, as well as the forms, gives a pleasing result to the spectator. No matter whether in the church, the theatre, the concert-hall, or out in the open air, large concourses of persons give brilliancy, and add greatly to the beauty of the scene. Of course, again, is accidental; but then it proves the universal admiration of variety in colour as well as form.

We see that the two principal things to be considered, in the design of a building, are colour and form. The more important is, undoubtedly, that of form. It is by the many varieties in form that we obtain the pleasing effects in light and shade, which break up all monotony and vulgarity.

We know that the mind, when active, requires to be constantly occupied with fresh thoughts and scenes. We cannot dwell on one subject or form for long together, without the mind being weary of the same. It is, therefore, more important is, undoubtedly, that of form. It is by the many varieties in form that we obtain the pleasing effects in light and shade, which break up all monotony and vulgarity.

"That the endless diversity of men's tastes, and the ever-changing condition of their education and association of ideas, demand for their productions a variety almost as great as the diversity of human colour," but he goes on to say, "Whenever that craving after variety has been gratified irrespective of fitness, novelty has degenerated into frivolity, design into conceit, and style into mannerism and vulgarity."

In all cases variety should be consistent with fitness in the construction.

The same writer says, with regard to form, that it is in nature "an index to all leading attributes,—a clue to recognize the relation of bodies, or their properties, to one another. Thus from form alone to discern at a glance of what materials, and how any particular object examined has been executed."

In Weale's "Rudimentary Treatise on the Principles of Design," the author says that "forms may be divided as regards their inherent or essential expression apart from association) into at least five classes, according to their degrees of contrast and gradation; from the most grand, severe, and forcible, to the most elegant, fanciful, and delicate.

Thus we may arrange—

1. Rectilinear and rectangular forms.
2. Rectilinear and oblique angled forms.
3. Curvilinear forms without contrary flexures.
4. Curvilinear forms with artificial contrary flexures.
5. Curvilinear forms with natural contrary flexures.

It may be taken, then, as a principle in every admiring of form, that variation is so in art, the grander and more forcible varieties in forms should in every case prevail most in the ruling and structural parts of a work, and that the more elegant varieties should find their place chiefly in the details.

In buildings generally all projections and recesses, all variations from straight lines and flat surfaces, constitute that kind of form which gives shade to parts recessed, and beautiful variety, when the architect has space at his command he is enabled to vary the outline of his design, to break up all flat surfaces, to introduce a variety of forms, and by so doing has less difficulty in producing a design that will be generally agreeable and satisfactory to the eye. So far detached buildings, and buildings in which the line of frontage is continually broken, may be arranged generally satisfactory as to external design, but in those cases where the architect has space at his command he is enabled to vary the outline of his design, to break up all flat surfaces, to introduce a variety of forms, and by so doing has less difficulty in producing a design that will be generally agreeable and satisfactory to the eye.

It follows, therefore, that in most modern street architecture, there must of necessity be a great quantity of flat wall surfaces. String courses, architraves to windows, and mouldings, are, therefore, very usefully introduced. Panelling may, perhaps, also be resorted to very advantageously in some situations. These accessories mostly involve considerable extra cost, and, therefore, except in the case of a palace or a very noble residence, are not to be resorted to. If executed in stucco, they are certainly not what they represent. I think they are better left out, if the proper material and construction are such other expedients may not be resorted to. I would sooner see a building without these ornaments altogether than have them stuck on with plaster. If executed in the real material I admire them, and they, doubtless, serve an important purpose in long rows of buildings by breaking up the wall surfaces, by casting shadows over the fronts, and thereby helping materially to destroy the monotony; but, in other cases, they do not break up the surface sufficiently themselves, and some other resource seems necessary to compensate for the loss of variety in forms, and consequent want of light and shade throughout.

If we must sacrifice many of the advantages of form, let us study how we can atone for that sacrifice, by making ourselves well acquainted with the laws and harmony of colour, so that we shall not be afraid to apply it externally as well as internally in the work of such materials as are required for the construction, especially for town houses. Let us get all the variation in outline we can, and then make up for the deficiency by the application of colour in varied surface forms.

I am one of those who believe that our street architecture will eventually be very much improved by the use of coloured materials. It seems to me just what is wanted for our present requirements. The spotty and streaky appearance, complained of by some, wears off by a few years' exposure to the weather, and is not objectionable where the variation is not caused to look great an extent. In time it becomes less marked. The variety in colour is only brought out prominently in those parts we are near to. In the distance the colours become neutralized, and, unless a very great quantity of positive colour be used, do not appear too prominent.

It, therefore, becomes an important question for our consideration, and is a subject which I think should be frequently brought forward and discussed in societies of this kind, in order that many opinions and more general views may be obtained. It is by such means that a proper taste is likely to be cultivated. Errors and follies will be pointed out and avoided, and general observation and experience will lead to a correct appreciation of what is worthy of adoption in all our work. The effect of the atmosphere upon, and the durability of, the various materials is also an important matter for observation. It is by these means—by real practical experience—that we may be enabled to obtain the best results in all our work. We may then hope that the right use of coloured materials in external design will be properly understood, and that further improvements will be made in our artificial manufactures as well as in our natural ones.

I do not think any regular or complete set of rules could be laid down for general guidance, at any rate not at present. We must learn by experience first. It may, perhaps, be of use to give a few errors; but that has been the case with almost everything else. The improvements made in engineering and other sciences have only been arrived at by experience. The great experiments have not been made, but it is from the failures of our own or others that we frequently owe our success.

The great danger which we are liable to in introducing colour to our brick buildings, is in too free use of the primary applied; but it should be used in small quantities, and always be balanced by the use of the secondary and tertiary colours in the larger masses, as recommended by Mr. Green Jones and others. It will rarely fall then to assist in the development of form and light shade.

If due care and attention be paid to the few rules laid down for the use of colour generally, I don't think that any serious errors need be committed. They will be found to apply, and serve to assist us in many instances in arranging colour externally as well as internally.

I should be sorry to see London or any city built entirely with variegated brickwork, although I think that would be a great deal more tolerable than the dull and dingy monotony of yellow or stock brickwork, without any variation in colour, which has accumulated to so great an extent in our streets and principal thoroughfares.

We are never likely, however, to have such a universal application of coloured brick houses. In the larger and more important buildings, stone and other superior materials always have been used, and where the funds will allow, and the importance of the case demand, I should always be in favour of the best materials, both as to appearance and stability, which we have at our command, with coloured brickwork. With different coloured stones or marbles we can get almost any amount of variety. We can obtain light to dark, or by making the colours very forcible and distinct. In the former case this has been done, in my opinion, with most perfect success, in the Crown Life Assurance Office, erected in Broad-street, and in this style. I think there could be no greater improvement in our street architecture. The Venetian Gothic—or secular Gothic—style is, in my opinion, the very suitable one in my opinion, for introducing variety in colour; but I must not enter into the question of style. The mixed colours and tones in the example I have just referred to are of the most subdued description, and afford a beautiful variety, affording all the repose necessary, and yet a total absence of anything glaring, offensive, or vulgar.

I have prepared a few rough sketches to suggest some of the many ways in which variety may be attained by the most simple forms without the aid of colour. Had time permitted, I should have been glad to have worked these out into more finished illustrations. I hope, however, that what I have brought will be sufficient to excite an interest in the subject, and lead to other designs being made by some of the members of the association. I feel sure that brickwork may be arranged with much greater variety in form than many believe, and that too in the most simple manner, and without necessarily increasing the expense, or destroying the bond of the work.

A dozen of the most simple forms in cast bricks, as suggested by the diagrams, would be sufficient to obtain all mouldings necessary. They need only be applied, like strong or positive colours, very sparingly; in such places as labels to windows, above and beneath string-courses, where the projection is sufficient; also in one or two courses at the impost of doorways and window openings, as suggested in sketches; and more freely perhaps in the principal cornice or crowning member of the building. Another necessary variety in form may be obtained by the use of plain and chamfered bricks; and where extreme cheapness is required, cast or moulded bricks may be dispensed with altogether, and the use of the new polychromatic are good examples of what may be done with plain brickwork, by simple arrangements in form, without any varied colouring.

There are many ways in which different forms may be obtained without any projection from the surface of the front. [He then referred to some sketches, which were intended to convey the idea, and showed a variety of outlines by projections or recesses, and then the reverse way, i.e., from the sides or recesses.]

This kind of variety of form is suitable for surface decoration and where colour is to be employed. It is less liable to interfere with the projection and than projections from the face of the work. Strings, and any kind of longitudinal projection, may always be resorted to with safety, proper bearing being all that has to be considered; but any con-

tinuation of vertical joints must destroy the bond of the work, and thereby injure the stability of the construction. For this reason I should never like to employ any vertical projection, beyond the size of a couple of bricks in height, or near to the principal angles, or where there is likely to be much pressure, in case of fracture. I think the representation of quoins stones, as to size, is the good solution. They are generally arranged in three and four courses, forming a series of vertical joints, and destroying the bond where it is most essential. Such construction involves extra thickness in the walls. . . . I see no objection to the employment of strings, projected round the heads of window openings, if those openings be not too near the angles; because here the bond is already broken by the window opening, and the width of a string cannot add much further to the weakness of the work.

It now remains for me to say a few words with regard to the illustrations of the application of colour externally. If any gentleman present should be disposed to look at the sketches after the meeting, I may mention that the numbers to the sectional parts refer to the diagrams on sheet No. 1.

As, for reasons I have before named, we cannot always get sufficient variety in form, to prevent our street architecture having a monotonous and wearisome aspect; and that a multiplicity of small forms appears frivolous, and is almost as offensive and vulgar as gaudy colouring, I contend that we should try to use colour in our street architecture externally, as an assistance to form—which is the way we find it in all the works of nature. It may be applied in many ways, and serve to define a variety of surface forms, which shall harmonize with any solid forms it may be possible to introduce.

Illustrations were given as to how two different colours may be arranged in arches to window openings. This is Mr. Street's work on brick and marble architecture of the Courty. This method of arranging colour according to the course of the bricks, may be applied to cornices and gables. I think with considerable effect. Circles and diamond patterns of different coloured bricks can be introduced in half-brick rings and huses, without materially affecting the bond. A running pattern, as shown on form a light. I think perhaps look very well under a cornice, or elsewhere.

There is an arrangement of colour in the gable ends of the tower to a church in Lambeth, I believe by Mr. Tenon. It consists of a geometrical pattern of three circles filling up the gable. Within the circles are two triangles, placed reversely, intersecting each other, thereby forming a hexagonal figure in the centre of each. The gable is filled with stones, and shown to form a light. It is in my mind a very happy arrangement, and shows one of the many ways in which colour may be applied externally.

The new church and parsonage-house of St. Thomas's, Lambeth, near the Westminster-road, also shows a very great variety in the arrangement of colour and form in brickwork.

According to Monsieur Chervet, 13 and 14 Prop., "colours on white ground appear darker; on black ground, lighter."

Black grounds suffer when opposed to colours which give luminous complexity. It is important always to bear in mind such propositions as these. With proper attention to them black and red bricks may, I think, be used in combination with each other very advantageously.

[Illustrations were given showing the arrangement of black bricks on a red ground, and the reverse.] I think black bricks have been very judiciously introduced in a new building of Messrs. Lee & Lavers, in Edulstreet.

Having thus directed your attention to a few prominent features in this interesting subject, I trust that they may be considered of sufficient importance to elicit a few remarks and suggestions from the members present.

At the conclusion,

Mr. Hewitt said he agreed with Mr. Johnson that the principal obstacle to the introduction of moulded bricks was the difficulty of procuring them, as it did not answer the purpose of manufacturers to keep them. A few years ago, when there was a duty upon bricks, the manufacturers pleaded that circumstance to account for their not making them; but, since the abolition of the duty, there appeared to be no improvement. Perhaps the reason was, that the demand for coloured bricks would not warrant the expense. If the brickmakers would produce samples for coping and gable stones, they might be found to answer. To use colour in the manner suggested by Mr. Johnson required experience, and he did not feel himself justified in offering an opinion upon the subject.

The Chairman said that Mr. Johnson had dwelt at some length upon truth in architecture, for which he (the chairman) had himself been always a stickler. They might read a great deal about these truths, but the simple question was, what was the use of graining or veneering? Was it to render materials more beautiful, or to signify that there had been an expenditure of money? Was it to denote that they had offered to the lamp of Sacrifice or the lamp of Beauty? It then became a question whether the grain of oak was better than that of deal; in this case there would be no harm in graining a deal door, for no one who would use it would consider that it represented a falsehood. He differed from Mr. Johnson in his opinion as to the application of colour to country houses. Mr. Johnson did not approve of colour in the country as much as in town, whereas he (the chairman) thought that colour could not be so successfully applied in town, unless in cases where the architect built the whole of the street. Moreover, it should be remembered the smoke and atmosphere of large towns would speedily deface colour. While referring to this subject, he might be allowed to recommend the study of "Street con-

Italian Architecture," which would be found an excellent guide to any one pursuing this study.

Mr. Hall remarked that the introduction of coloured bricks was a feature in architecture which had not received from the profession the attention it deserved. In some parts of the country, in Cambridgeshire for instance, where bricks only were to be had, coloured bricks were being introduced from forms made from the designs of the architect. The brickmaker lived at Wisleach, and he had produced some Gothic tracery by working simple geometrical patterns. In Belgium many churches were made entirely of brick—millions, tracery, and all. With regard to colour blending, it was quite true that many persons could not distinguish yellow from green or green from red, and he had himself known cases in point; but whether it originated from the formation of the eye, or other causes, he could not tell.

The Chairman said that a friend of his laboured under this infirmity to such an extent that, whenever he wished to produce a very glowing colour, he used purple in his diagrams. With regard to moulded bricks, he had always found that it was difficult, when using them, to preserve a continuous line, or, unless the brick was cut sharp in the first instance, the effect would be unsightly.

Mr. Hewitt said that, to insure sharpness of outline, the quality of the clay must be uniform, and the brick well made and burnt. He admired a coloured building exceedingly, provided the ornamentation was judiciously introduced. A slight variety in the working would be found to produce many pleasing forms.

Mr. Hall deprecated rubbing brickwork to make a continuous line, as a change of colour was usually produced by the process, while the work was more liable to frost.

After some further discussion, a vote of thanks was accorded to Mr. Johnson for his paper, and the proceedings terminated.

It was announced that the next subject for the Class of Design would be a group of allegorical sculpture to celebrate a national event, with pedestal. At the meeting on the 3rd of February a paper will be read by Mr. T. Blashill on "The Application of Ironwork to Architecture."

#### PROVINCIAL NEWS.

**Worcester.**—The annual report of the Local Board of Health on the new drainage and water-supply works shows that the entire length of new sewers is 84,971 feet, and the total amount paid under the contract for their construction, 18,502*l*. The works of water-supply were performed under several contracts, and the entire length of water-pipes laid down is 93,645 feet. The cost of the pipes was 7,518*l*, and in laying them down, 2,810*l* were expended. There has been paid for the erection of the engine-house, filtering-beds, reservoir, &c., 9,789*l*; for the engines, pumps, and machinery, 2,678*l*; hydrants, &c., 859*l*; making a total of about 22,156*l*. This does not include sums paid for purchase of land, legal expenses, engineer-in-chief's commission, and the salaries of the resident engineer, inspectors of works, &c.

**Reduth.**—The new public rooms erected in the town of Reduth have been completed and formally opened. The year in the Pointed style. The chief front facing into Peury-street is composed of a main building and two subordinate wings, the former being slightly set forward. All the gables and window and door dressings are of stone, from the Box-hill quarries, in Wilts. A brick and stone cornice is carried along the eaves and gables, and the vousoirs of the relieving arches on the entire front are of black and red brick alternated. In the north wing is the public doorway which is reached by a flight of granite steps. This room is 55 feet 6 inches long, 36 feet wide, and 22 feet high. The roof timbers of the room show as high as the collar beams. The spaces between the constructive timbers are panelled with boarding, the centre panels being perforated for ventilation. At the north end is a small gallery, projected from the wall on iron brackets, and having a light iron front, painted red, white, and blue, and picked out with gold. The windows, five on each side, afford light. The walls are stuccoed a warm tint, with St. Agnes sand, and the whole of the wood-work is stained in shades and varnished. There are rooms for the Mechanics' or Literary Institution, billiard and chess room, a news-room, the curator's apartments, a room for parochial business, &c. The cost of the building has been 2,000*l*. Mr. W. G. Habershon was the architect; Messrs. Nicholls & Son, of Reduth, and Mr. W. May, of Pool, the general contractors; Mr. J. Trestrail clerk of the works on

behalf of the proprietors; and Mr. S. Knight the representative of Mr. Habershon.

**Nottingham.**—The new Sunday schools, recently erected in connection with Derby-road Chapel, have been opened. The building is in the Geometric style. It is constructed of Balwell stone, with Ancaster dressings. It comes up to the Park Tunnel on one side, and advantage has been taken of the difference in the level to gain on this a dea lower story, containing four class-rooms, the heating apparatus, coppers, &c. The chief entrance is from Victoria-street, and leads into the principal rooms, which are in the form of an L; that intended for the boys' school being 50 feet by 21 feet; that for the girls', 42 feet by 23 feet. They are divided by sliding-doors. A superintendent's room is contrived in the angle, communicating with the schools. This room will also be used as a library. The infants' school is so placed as to be easy of access from the boys' or girls' schools, and is fitted up with a gallery, which can be folded up so that the room may be used for committee meetings, &c. This room is about 20 feet square. A separate entrance from Victoria-street has been made for the boys, and a private entrance to the chapel. The whole of the flues are carried up in a stone chimney-shaft. Mr. Ferguson was the contractor. Messrs. Haden supplied the heating apparatus, and Mr. Wheeler the painter and glazier's work. The total cost will be between 1,200*l* and 1,300*l*. Mr. R. C. Sutton, of Nottingham, is the architect.

**Leith.**—An extensive structure has recently been completed here, at a cost of 25,000*l*. It is called the Leith Flour-mills, which have been built, the machinery and gearing prepared, the engines fitted up and set to work, within the short space of twelve months; it being but eight months since the first pillars were erected. The mill is six stories high, and the granary the same height, but considerably longer than the mill. Mr. Thomas McNeill, of Glasgow, was the architect employed. The engineers and millwrights were Messrs. Emmerson & Murgatroyd, of the Heaton Foundry, Heaton Norris, Stockport. The engines and gearing are calculated to transmit a power of 300 horses indicated. The mill is fitted up, at present, with twenty-four pairs of French Burr-stones, driven by belts from a centre line of uprights, twelve on each side, which uprights are driven by a line of shafting 30 feet in length, and having upon it twelve large mortise-wheeled gearing into the pinions of the uprights. Mr. R. Young, of Glasgow, has furnished the machinery for the various processes connected with the grinding, prior to the material being ready for the market. Mr. Spiden was the contractor for the masonry work, but he only survived the completion by a few days. The joiners' work was completed by Messrs. Henson & Wilson, of Leith; and the boilers, which are fitted with Young's patent for the prevention of the smoke misgiver, were furnished by Messrs. Hawthorn, of Leith.

#### THE ANCIENT ARCHITECTURE OF CEYLON.\*

There is a trace, in extreme antiquity, of a curious connective link of commercial association between the island of Ceylon in the far east, and the island of Great Britain in the far west, which Sir Emerson Tennent has assisted in bringing more clearly into light; and which, in these days—when Britain has not only close and continual relationships, of a similar kind, with this *ultima thule* of the eastern Indies, but is, in fact, her sovereign mistress,—is peculiarly interesting. "A careful perusal of the Scripture narrative," remarks Sir Emerson, "suggests the conclusion that there were two places at least to which the Phœnicians traded, each of which bore the name of Tarshish; one to the north-west, whence they brought tin, iron, and lead; and another to the east, which supplied them with ivory and gold." Now it is obvious that this author has a British—that is, a Cornish—port in view, as the Tarshish of the north-west, it being well known that the ancient Phœnicians obtained their tin from Cornwall, and probably their lead and iron also from Britain. But what Sir E. Tennent more especially directs his attention and that of his readers to is the probability that the eastern Tarshish of the Phœnicians was the port of Galle in Ceylon, which, he remarks, "is by far the most venerable emporium of foreign trade, now existing in the universe: it

\* Ceylon: an Account of the Island, Physical, Historical, and Topographical; with Notices of its Natural History, Antiquities, and Productions. By Sir James Emerson Tennent, K.C.S., &c. &c. Illustrated by Sir James Mays, Plans, and Drawings. Third Edition, thoroughly revised. London: Longman & Co. 1859.

was the resort of merchant ships at the earliest dawn of commerce, and it is destined to be the centre to which will hereafter converge all the rays of navigation, intersecting the Indian Ocean and connecting the races of Europe and Asia."

We cannot follow Sir Emerson in his lucid exposition of the reasons which induce him to urge the identity of the ancient Tarshish of the east with the port of Galle in Ceylon, and Malacca with Ophir,—on the way to which the island of Tarshish lay; our purpose, in the present article, being simply to dig out a few architectural details from a very valuable, miscellaneous, and interesting quarry which he has presented to the public in his work on Ceylon. We may quote a portion, however, of what he says on the subject of the eastern Tarshish:—

"The Ships intended for the voyage were built by Solomon at Ezion-geber on the shores of the Red Sea. The rowers ceased along the shores of Arabia and the Persian Gulf, headed by an east wind. Tarshish, the best situated in an island governed by kings, and carrying on an extensive foreign trade, the voyage occupied three years in going and returning from the Red Sea, and was a very valuable, and precious. Gold could be from Ophir, after spread into plates, which is particularly by Jeremiah, as an export of Tarshish, is one of the substances on which the sacred books of the Scripture are even now incribed; ivory is found in Ceylon, and must have been both abundant and full grown there before the discovery which the Tarshish of the east effected destruction of elephants: opes are indigenous to the island; and peacock are found there in numbers. It is very remarkable, too, that the terms by which these articles are designated in the Hebrew Scriptures are identical with the Tamil names, by which some of them are used in Ceylon to the present day; thus *lutecium*, which is rendered in our version, in one passage, as being recognized in *luhi*, the modern name for these birds, and apes, is the same in both languages; and the Sanskrit *ivory*, is derived with the Tamil *ivory*.

Thus, by geographical positions, by natural productions, and by the fact of its being from this island, the moral resort of merchant ships from Egypt, Arabia, India, the Persian Gulf, and India, Java, and China, on the other, Galle seems to present a combination of every particular essential to determine the problem so long and particularly essential to determine the problem so long and interfering its identity with the Tarshish of the sacred historians, the great Eastern mart so long frequented by the ships of Tyre and Judæa."

The two volumes of the excellent work under notice are plentifully interspersed with architectural details; but the author has also given a general view of Ceylonese or Singhalese architecture, to which we will gladly have recourse, as affording a condensed abstract, more accordant with our limits, and at the same time affording our professional and other readers some idea of the interest of the other portions of the work,—to them in particular, as well as to the general public.

**Architecture.**—In Ceylon, as in Egypt, Assyria, and India, the ruins which survive to attest the character of ancient architecture are exclusively sacred, with the exception of occasional traces of the residences of theocratic royalty; but everything has perished which the ancients afforded an idea of the dwellings and domestic architecture of the people. The cause of this is to be traced in the perishable nature of the sun-dried clay, of which the walls of the latter were composed. Added to this, in Ceylon there were the pride of rank and the pretensions of the priesthood, which, whilst they led to lavish expenditure of the wealth of the kingdom upon palaces and monuments, and the employment of stone in the erection of temples and monasteries, forbade the use of any other material than such as was found in the occupation with their dwellings of the British army of Kandy, after its capture in 1815, that to find the palaces and temples alone constructed of stone, whilst the streets and private houses were formed of mud and thatch.

Though stone is abundant in Ceylon, it was but sparingly used in ancient buildings. It was but very occasionally employed, but large slabs seldom occur, except in the foundations of dagobas. The vast quantity of material required for such structures, the cost of quarrying and carrying, and the want of mechanical aids to substitution of blocks into position, naturally led to the employment of bricks for the upper portion of the super structure.

There is evidence to show that waggons were employed in the transport of blocks in the quarry, and the amount of labour devoted to the preparation of those in which strength, irrespective of ornament, was essential. In the remains of the 1,650 undressed pillars which supported the Braze temple at Anarajapora, and in the 1,000 stone steps, many of them extending 10 feet in length, which led from the base of the mountain to the base of the mountain at Anarajapora, a single piece of granite lies in the shape of a hollowed-out "elephant trough," with ornamental pilasters, which measures 10 feet in length by 6 wide and 2 deep; and amongst the ruins of Pollanara, still more remarkable slab, 25 feet in length, by 6 feet broad and 3 thick, bears an inscription of the twelfth century, which records that it was brought from a distance of more than thirty miles.

The majority of the columns at Anarajapora are of dressed stone, octagonal, and of extreme graceful proportions (fig. 1.). They were used in profusion to form the colonnades around the principal dagobas, and the pillars which still remain, which still remain, are one of the peculiar characteristics of the place, and justify the ex-

\* The "Rajavali" states that these rough pillars were originally covered with copper; p. 222.  
† See page 59 for illustrations.

profession of Knox, when, speaking of similar groups elsewhere, he adds them to be heavy stone pillars.

Allusions in the Mahawanso show that extreme care was taken in the preparation of bricks for the dagobas. Major Skinner, whose official duties as engineer to the Government were connected with all parts of Ceylon, assures me that the bricks in every ruin he has seen, including the dagobas at Anarajapora, Bintenne, and Pollanarua, have been fired with so much skill that even the most delicate tests has but slightly affected their sharpness and consistency.

The sand for mortar was pounded, sifted, and ground on a grinding-stone, the 'cloud-coloured stones,' the Geyser, and the receptacle for the water, and the sacred relic was enclosed, were said to have been imported from India; and the 'nawanita' clay, in which these were imbedded, was believed to have been brought from the mythical Anantika lake in the Himalayas.

Dagobas.—The process of building the Ruwanweli dagoba is thus minutely described in the Mahawanso:—'That the structure might endure for ages, a foundation was excavated to the depth of one hundred cubits, and the round stones were trampled by enormous elephants, whose feet were protected by leather cases. Over this the monarch spread the sacred soil, and on it laid the bricks, and over them a coating of brown stone pillars. Above this a layer of sand stones, and on all a plate of iron. Over this was a large pholita (crystallized stone), then a plate of brass, 8 inches thick, imbedded in the water of the small red cocoa nut.'

The shape of these huge mounds of masonry was originally hemispherical, being that best calculated to prevent the sun's rays from striking on objects so sacred. Dutakamun, according to the Mahawanso, when about to build the Ruwanweli dagoba, consulted a mason as to the most suitable form, who, filling a golden dish with water, and dipping his hand, caused a curved bubble in the form of a coral bead to rise on the surface; and he replied to the king, 'In this form will I construct it.'

The dagobas at Anarajapora, the Alay-narari and Jeyta-wana-rama, still retain their original outline: the Ruwanweli, from age and decay, has partly lost it: the Thupa-ranaya is flattened on the top as if suddenly brought to a close, and the Lanka-ranaya is shaped like a bell.

Monasteries and Wikaras.—... Simplicity and retirement were at all times the characteristics of these retreats, and the most rapid and accurate accounts are only recorded instances of extravagance in this particular was the 'Brazen Palace' at Anarajapora, with its 1,600 columns; an edifice which, though nominally a dwelling, and a thousand domestics, having been built a vast suite of halls for their assemblies and festivals, and a sanctuary for the safe custody of their jewels and treasure.

Altars are occasionally made to other edifices more or less fantastic in their design and structure, such as 'an apartment built on a single pillar,' a 'house of an octagonal form,' built in the twelfth century, and another of an 'oval' shape, erected by Prakrama I.

Palaces.—The royal residences, as they were first constructed, must have consisted of very few chambers, since mention is made in the Mahawanso of the earliest, which contained 'many apartments,' having been built by Pandukabhaya, B.C. 432. But within two centuries afterwards, Dutugamuna conceived the magnificent idea of the Loha Pasada, with its quadrangle 190 cubits square, and a thousand domestics, with ornamental windows. This palace was in its turn surpassed by the castle of Prakrama I. at Pollanarua, which, according to the Mahawanso, was 'seven stories high, consisting of 5,000 rooms, lined with hundreds of stone columns, and outer halls of an oval shape, with large and small gates, staircases, and glittering walls.'

In what now remains of these buildings at Anarajapora, there is no trace to be found of an arch, truly turned and secured by its keystone; but at Pollanarua there are several examples of the false arch, produced by the progressive projection of the layers of brick. The same species of dome, but in the form of a shell, to be seen amongst the ruins of the latter city, where the material is compact and smooth, and the edges sharp and unsworn. The mortar shows the remains of the pearl grey, and the feet of the columns are decorated with which the walls were coated still clings to some of the towers, and retains its angularity and polish.

Of the details of external and internal decoration applicable to the structure of the Dagobas, which attest a perception of taste, however distorted by the exaggerations of Oriental design. 'Guided ties' in their bright and sunny atmosphere, must have had a striking effect, especially when surmounting walls decorated with beaded mouldings, and festooned with 'carvings in imitation of creeping plants and flowers.'

\* The 'cloud-coloured stones' may possibly have been marble, but no traces of marble have been found in the ruins. Diodorius, in describing some of the monuments of Egypt, alludes to a 'party-coloured' stone, λιθον ποικίλον which likewise remains without identification.—Diodorus, l. i. c. lvii.

\* Mahawanso, ch. xxix, p. 169; ch. xxx, p. 178. The same structure is described at Bilsah, in Central India, presents the arrangement here described, the bricks being laid in mud, but externally it is faced with dressed stone.

\* Mahawanso, ch. xxx, p. 175. This legend as to the origin of the semicircular form of the dagoba is at variance with the conjecture of Major Forbes, that these vast structures were merely an advance on the mounds of earth, piled up by the Hindus, which, in the progress of the constructive arts, came to be converted into brickwork.—'Eleven Years in Ceylon,' v. i. p. 222.

\* Mahawanso, ch. xxvii, p. 165. Like the 'nests' of the pyramids of China, and the 'Maya Paya' was originally nine stories in height, and Ferguson, from the analogy of Buddhist buildings in other countries, supposes that these diminished in succession as the mounds rose. His outline, in which he has assumed the form of a pyramid ('Handbook of Architecture,' b. i. ch. iii. p. 41). In this he is undoubtedly correct, and a building still existing, though in ruins, at Polonnaruwa, and known as the 'Seven-stories palace,' probably built by Prakrama, about the year 1170, serves to support his conjecture.

\* Expressions in the Mahawanso, ch. xxvii, p. 164, which are equally as applicable to the Dagobas, and the Sinhalese were acquainted with this beautiful cement, which is susceptible of a polish almost equal to marble.

On the subject of carving, the author offers some curious and interesting remarks, especially as regards 'the beautiful kala hanza' or 'sacred gose,' ever 'eager to set out for the sacred lake,' and reminding one of the Scripps, and ever ready to fly to 'its windows,' and the Egyptian Isis, ever waiting to fly into the adytum of the temple, where its monolithic stone torso stood (as depicted on mummy coffins, with bare feet in front, and the bird looking out), and where it was probably fed with its favourite serpents. The 'watahali' and 'faithful' gose of the Romans was already sacred to Juno, and domesticated in her temple, as Sir Emerson remarks, previous to the saving of the citadel by the ancestral watchers, so that this latter event does not account for even the ancient Roman respect for the gose. It was also sacred among the Egyptians, by whom, as by the Burmese, balance weights were made in the shape of the sacred gose; and even the Christian crusaders adored a gose, which they believed to be filled with the Holy Spirit, as Mill in his history of the Crusades informs us. Gas (spirit?) is the Swedish name of the gose, which latter word itself seems to have had the same etymological origin. It is remarkable, however, that a carved kala hanza in the Sinhalese royal palace of Kandy much more closely resembles the dodo (a giant of the Columbiad order, believed to be now extinct (in New Zealand), but still extant in Thibet, than any known gose.

In his chapter on the 'Ruined Cities,' Sir Emerson gives an account of the rock temple of Damboul. The ascent is by a steep and toilsome path across the lower mass of the rock; and the grand gateway, profusely adorned with carvings in stone, and disclosing within a seated figure of 'The Vanquisher,' of which we give a view (fig. 2), is approached on crossing a courtyard.

Fig. 3 is a representation of the *Sar-Mahal-Prasada*, whose name perpetuates the memory of the 'Seven-storied House.' In front of this extraordinary building lies an enormous carved slab, called the 'Stone-book,' from its resemblance to a Sinhalese volume of law. It is a monolith, 26 feet in length, 4 feet broad, and 2 feet thick, bearing an inscription containing the intimation that 'this engraved stone is the one which the strong man of the King Nissanga brought from the mountain at Anarajapora, a distance of more than eighty miles.' The inscription is said to have been engraved about A.D. 1196.

We will conclude our extracts on the subject of Ceylonese architecture with a few further remarks on—

\* Temples.—The temples of Buddha were at first as unpretending as the residences of the priesthood. No mention is made of them during the infancy of Buddhism in Ceylon; at which period caves and natural grottoes were the only places of devotion. In the sacred books these are spoken of as 'stone houses,' to distinguish them from the 'houses of earth' and other materials used in the construction of the first buildings for the worship of Buddha; such temples having been originally confined to single chambers of the simplest description, and those which it became the custom at a later period to place a statue of the divine teacher, reclining in dim seclusion, the gloom being increased to heighten the scenic effect of the ever-burning lamps by which the chambers are imperfectly lighted.

The construction of both these descriptions of temples was improved in later times, but no examples remain of the ancient style of the Buddhist religion, and those of the rock temples still existing exhibit a very slight advance beyond the rudest attempts at excavation.

Of the modern temples the author says,—

'It was in all probability owing to the growth of these [modern] institutions, and the establishment of colleges in connection with them, that halls were eventually appropriated for the reception of statues; and these apartments so consecrated were devoted to the ceremonies and worship of Buddha. Hence, at a very early period, the dwellings of the priests were identified with the chaityas and sacred edifices, and the name of the Wikara came to designate indifferently both the temple and the monastery.'

But the hall which contains the figures of Buddha, and which constitutes the 'temple' proper, is always detached from the domestic buildings, and is frequently placed on a calanase from which the view is commanding. The interior is painted in the style of Egyptian chambers, and is filled with figures and illustrations of the legends of Gotama, whose statue, with hands uplifted in the attitude of adoration (or with the two fore-fingers extended, as in the Papal act of benediction, as elsewhere remarked), or reclining [with closed eyes, and] in repose, emblematic of the blissful state of Nirvana, is placed in the dimness of the shrine. Here lamps cast a feeble light, and the air is heavy with the perfume of flowers, which are daily renewed by fresh offerings from the worshippers at the shrines.'

As to a peculiar, but heretofore known, mode of lighting the statue in Indian temples, of which the author suspects that one instance, at least, occurred in Ceylon, he says,—

'Allusion has already been made to the identity in certain particulars observable between the Buddhist temples of Ava and those of Ceylon. Amongst the latter, such as Pagamany, or the Iravathi, is a *pyrota* known as the 'Cave of Ananda,' and in it a gilded figure of Buddha, similar in attitude to that in the Jaya-wana-

rama [an immense edifice of brick, in the highest style of ornamented southern Indian architecture' in Ceylon, 'built by Prakrama Bahu I., after the model, it is said, of one erected by Buddha himself at Kapili-vastu, the place of his birth'], stands in a vaulted cell, situated at the further extremity of a darkened aisle. Into the alcove in which it is placed the only light that is admitted streams through an opening so situated as to be unseen by the spectator in front, and thence it is poured like a beam over the head of the glorified object below. (See fig. 4.)

This mode of illuminating an interior is common in the rock-cave basilicas of India, in which 'one undivided volume of light, coming through a single opening over head, falls directly on the altar or other principal object, leaving the rest of the structure in comparative obscurity.' The similarity of position and the identity of attitude between the two statues, in Ava and Ceylon, suggest the conjecture that the figure at Polonnaruwa, like that at Pagan myo, may have been placed in the recess which it occupies, so as to admit of being lighted in a similar manner on an aperture concealed in the roof; and it will be an interesting inquiry, for some future explorer, provided with the necessary facilities, to determine, by a minute examination of the walls, whether they may not have been constructed as to cast a mysterious light on the gilded idol below.

Buddha himself, as Sir Emerson remarks, is not worshipped as a deity, but 'merely revered as a glorified remembrance,' and certainly such a mode of exhibiting his statue, like that of the Thibetan and Indian rituals, in which lights, flashed round the head, suddenly and momentarily reveal the Buddha, or other statue, in the midst of intense darkness, is capable of suggesting just such an idea as that of a 'glorified remembrance,' and reminds one of the curious 'Buddha rays,' which the morning sun in Ceylon sheds round the head of the *Aradon* of the human form projected on the ground.\*

\* The following very curious extract on 'The Illuminated,' from the 'Diyavanshavi,' of India, 'that most mystic of all mystic books' (as a writer in the *Dublin University Magazine* calls it), will here be of interest, as it seems to comprise an endeavour to describe the nature and appearance of a 'thaumaturgic saint,' in the state of 'divine absorption,' or, in fact, just such some 'glorified' being as that represented by the statue of Buddha, when reclining, as in the divine quiescence or entranced repose of 'Nirvana,' or seated, with uplifted palm and fingers, as in the act of exhorting or of blessing the devotees;—whether, in short, as the 'waking God,' or the sleeping man, or the waking man in the 'sleeping God.'

In this passage the 'glorious body' of 'the illumined' is itself compared (with a touch, mayhap, of the Oriental imagery, descending from the divine thaumaturgic perfection, molten [softened] down; to me, beholding, it appears Quiescent saint, personified with limbs,—as a painting of divine bliss,—a sculptured form of the sovereign happiness, or the divine quiescence, or presence of Light that is sitting on yonder seat? Such becomes the body, what time the annular power [in 'contemplative abstraction'] drinks the moon-fluid of immortality, descending from the brain [by a discharge from above,] into 'the mouth of the power' [beneath]. Then, O Friend! Death dreads the shape of the body. This disappears old age! The knots of youth are cut to the pieces, and the last state of childhood reappears. [See *Dublin University Magazine*, April, 1854, on 'The Dream of Ravan.']

The splendour of the illumined and immortalized body thus 'condensed into that of a perfect man,' or man-god, is described in glowing language. He casts his old skin, like the serpent, as well as his teeth and nails. 'The body,' it is said, 'becomes of gold in lustre,'—like the statue of Buddha, which is generally gilded. It is also compared, among many other things, to 'a vase filled with liquid saffron,'—reminiscent of the 'saffron-hued' baschins of the Greeks; and 'like a pillar lit from within,' or 'of the interior,' allusive, doubtless, to 'the lactiform body,' which, Sudaas tells us out of Jadorus, 'still exists, within this terrestrial body of ours, like light within dark lanterns,'—but it is evoked into autotypic exaltation,—as it would here appear, by 'the annular power'—henceforth the great brain,—whatever may be meant by that 'annular power' and its 'middle chambers,'—and these at all acquiescent with that most mysterious of all mysterious anatomical and physiological subjects,—the structure and functions of the brain, great and small, of the annular protuberance, and of the medulla oblongata,—need have little difficulty in perceiving that here there is at least 'a method' in what others may be led to look upon as little else than mystic 'madness.'

This 'annular power' it is said, 'retires [in 'contemplative abstraction'] into the middle chamber: then, with a discharge [as of 'lightning' from above, the reservoir of moon fluid of immortality, contained in the brain, leaning over to one side, communicates with the mouth of the power, thereby the [artery] tubes are filled with the [immortalizing and illuminating] fluid, and it penetrates into all the members.'

But enough of the physiological *modus operandi* of the regeneration and immortalization of the Oriental 'twice born,' or 'deathless brotherhood' of 'two origins,' who, whatever they may once have been, are linked but a 'glorified remembrance,' with but a few real and objective existence, in this 'iron age' of ours. We may here, however, add a very few words more, from the conclusion of the curious description, just quoted, of 'the illumined.' It is said that 'He is called Kuchara, the Sky-goer. This step being attained is a wonder among people in the [natural] body. Behold the Sadakaka—the thaumaturgic Saint,' in his—

'My extremities and illumined sleep. The body's trance—the spirit's seeing.'

Just such a 'glorified' and saintly human being, 'bound in the bundle of life together with his 'Irradiates' or Illuminator, diesthe statue of the Buddha seem to have been intended, of old, to represent, in the belief of the Buddhists, of the human race. Buddhism and Brahminism are closely akin. See articles, in *Builder* of 16th October, 1858, and 15th January, 1859, on 'Symbols,' by John E. Dove.

## ANCIENT ARCHITECTURE OF CEYLON.\*



Fig. 2. Entrance to the Temple of Damboul.



Fig. 3. The Sri-Mahal-Prasada.



Fig. 1. Column at Anarajapooru.



Fig. 4. Statue and Section of a Buddhist Temple in Anu.

## SELECTED DESIGN FOR THE NATIONAL WALLACE MONUMENT.

The monument proposed to be built on the Abbey Craig, near Stirling, consists of a lofty and imposing Scottish baronial tower, upwards of 200 feet high, and 36 feet square, having walls 15 feet to 6 feet at the top. The masonry is to be of a strong and enduring description, concreted with thin hot lime. At the east side of the tower is the keeper's house, between which and the monument is an open courtyard, entered by a massive circular-arched gateway, having bold mouldings, characteristic of the Scottish baronial style, above which is placed the heraldic arms of Sir William Wallace. Passing through the gateway into a stone-arched passage, a straight flight of steps, set in the thickness of the wall, leads to an open octagon winding staircase, the walls of

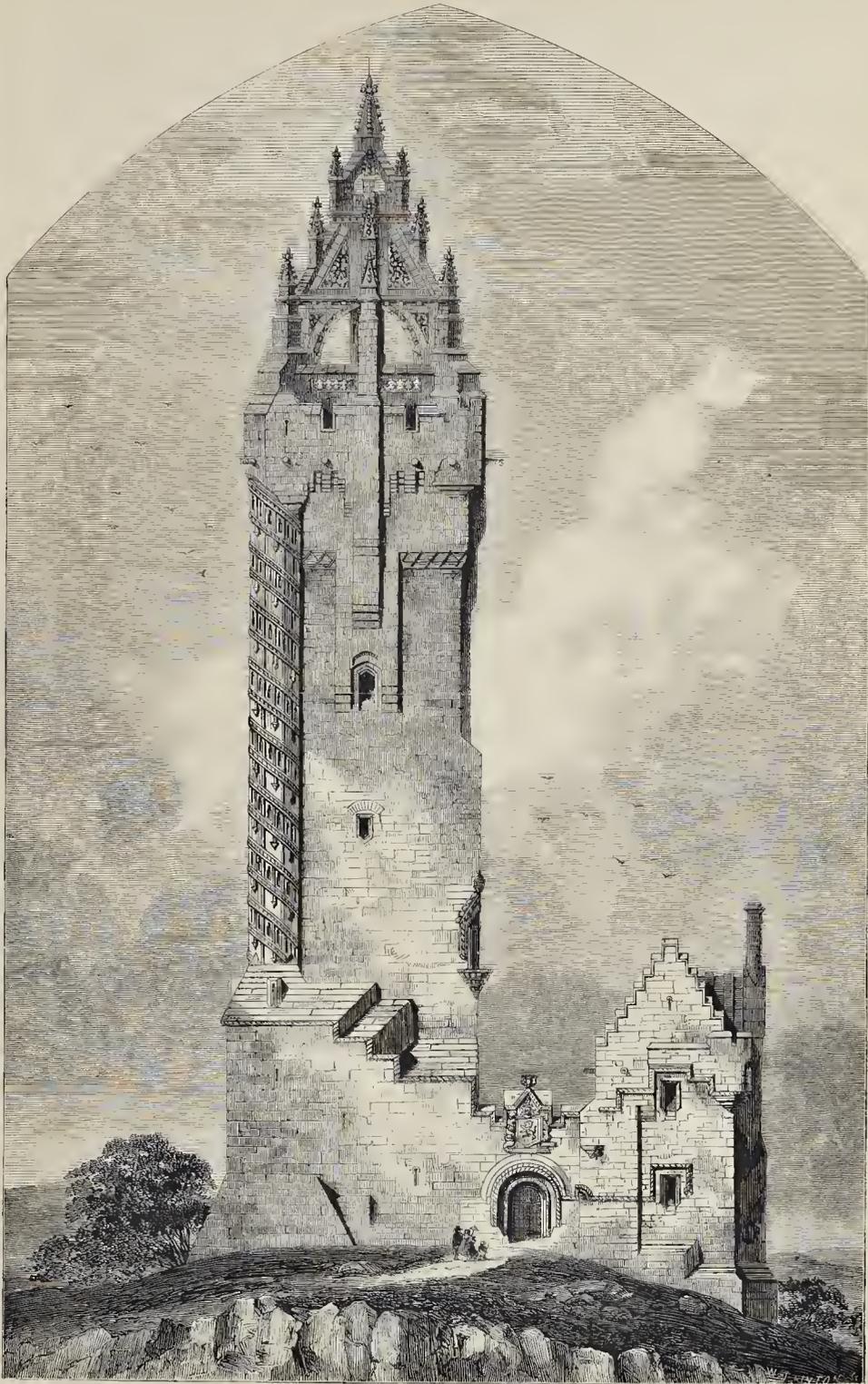
which are of solid ashlar work, projecting from the south-west angle of the tower, and running up nearly its entire height. The walls of the staircase raking with the stair are pierced with arrowlet slits, or lights, continuously in each flight of steps to the summit of the square tower. Externally the walls of the staircase are bound about with imitation rope-work, with bold moulded angles. The handrail is wrought out of the solid newel. This staircase conducts to several spacious and lofty halls, the ceilings and floors of which are fireproof, being arched with brick, having the floors laid with mosaic tiles. It is proposed to set apart these several rooms as visitors' and reliquary rooms, or museums for the reception of old armour and other antiquarian relics illustrative of early Scottish history, and should the funds permit, an appropriate marble statue of Wallace will be placed in the uppermost gallery or hall. The apex of the monument exhibits the

form of an imperial open crown of stone. The whole monument can scarcely fail to present a commanding outline and graceful feature when seen against the open sky. The coronal top or crown is upwards of 50 feet high, and consists of eight arms, from the angles and sides, all converging and abutting on the centre upon an open newel staircase, and forming a series of flying buttresses, broadly ribbed, having the spandrils richly filled in with open tracery; the outer raking flanks of the buttresses are surmounted with massive crocketed pinnacles.

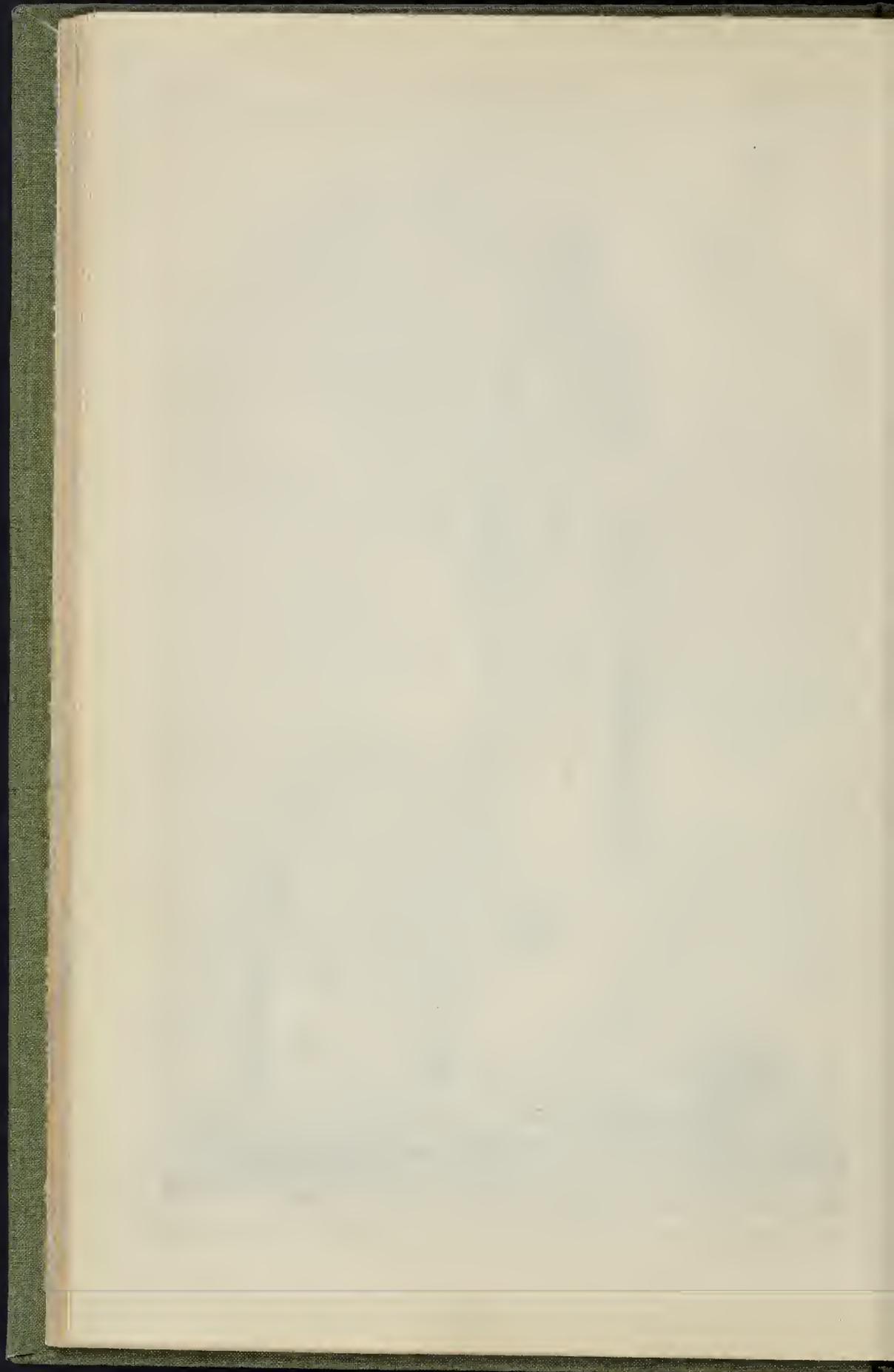
We may add that the site is one of great beauty, and from the monument will be had some magnificent views of a wide and extensive plain of country, overlooking, as it does, the scene of numerous and hard-fought battle-fields.

We understand it is determined to carry out the design. Mr. J. T. Rochard is the architect.

\* See page 54.



SELECTED DESIGN FOR THE WALLACE MONUMENT, STIRLING, SCOTLAND.—MR. J. T. ROCHEAD, ARCHITECT.



THE ARCHITECTURAL MUSEUM.

On Wednesday evening last, Mr. George Godwin delivered a lecture in the Theatre of the South Kensington Museum, under the heading "Memorials of Workmen: the Past to encourage the Present."

There was a very full meeting, including a large number of art-workmen. A. Beresford Hope, esq., presided. On taking the chair for the first time since his election as president, Mr. Hope commented in feeling terms on the loss sustained by the Museum in the death of Earl de Grey, and renewed his own "oath of fealty" to the Institution. In the course of his speech he mentioned an offer received from India to deposit in the Museum some interesting specimens of the architecture of that country, and he then introduced the lecturer.

The lecture was addressed to those who, with abilities and aspirations, doubt their power of overcoming the difficulties that surround them, and treated of those who, in spite of the most adverse circumstances, have worthily developed themselves and benefited others. Bernard Palissy, Quintin Matsys, the men of Nuremberg,—

"Quaint old town of toil and traffic,  
Quaint old town of art and song,  
Memories haunt thy pointed gables,  
Like the rooks that round them throng;"

the weavers, Hargraves, Arkwright, and Crompton; Brindley, the engineer; Watt, and George Stephenson, were passed in review, and such deductions were drawn as seemed valuable. James Tassie, the gem engraver, Wedgwood, Flaxman, Hogarth, Turner, Sir John Soane, John Britton, Chantrey, Thomas Cubitt, and many others followed; and the lecturer concluded with suggesting that it was neither necessary nor to be expected that all should distinguish themselves or take the top place. To do one's work, whatever that may be, so that others will be the better for it, is something; and he pointed out to the workmen of his audience where they might derive advantage, and how easily happiness was to be obtained irrespective of position.

The Chairman, in flattering terms, moved a vote of thanks to the lecturer, and Mr. S. C. Hall, in seconding it, added some interesting anecdotes of John Martin and Allan Cunningham.

BURFORD'S PANORAMA.

The new painting in the well-known building in Leicester-square is not so much "a View of Venice from the Piazzas of St. Mark" as a view of the Cathedral of St. Mark and its surroundings. It does not convey an idea of Venice, but of what it does show a capital picture is made. The cathedral is to a large scale, and the doorways are so cleverly painted that in one point of view they have all the effect of a stereograph. The domes are less deceptive—wanting roundness. At the present moment, when all must feel interested in the miserable condition of Venetia generally, the picture has an extra attractiveness.

PROGRESS OF RAILWAYS ABROAD.

The works of the Limoges and Agen railway are progressing rapidly. The most important portions of the Limoges tunnel have already been arched, and the bridges over the Vienne and Briance rivers have been commenced.

In the spring of this year the new line from St. Gobain to Chaunay will be opened for passenger traffic. Already the produce of the celebrated glass works of the former town has arrived at Chaunay by goods' trains; the reception of the works, by the directors of the factory, having taken place in the first week of last November.

The Western Railway Company of France has demanded three millions for works to be executed in 1860 on the St. Malo branch line. The Government have accepted the proposition. These works will take at least three years to complete them.

On the line from Mans to Angers the works are to commence this month (January).

An order from the prefect of the Jura, issued in conformity with the law of 3rd May, 1811, institutes an *enquête* of eight days' duration for the purchase of land for the Bourg and Besançon railway—a feeder for the Paris, Lyons, and Mediterranean Railway. The *parcelle* plans have been deposited at the *mairies* of the *Communes* of Moncheard, Pagnoz, Aiglepieire, Les Arsures, Montigny, Vilette, Arbois, and Grozon, through which the line passes as far as the Creuse Roadway, in the *arrondissement* of Poligny.

In a month or so the works of the Paris and Granville Railway will be in active progress—that is, as soon as the judiciary formalities are gone through for the purchase of land from refractory landholders, who would not treat à l'amiable with the company.

An important section of the Paris and Soissons Railway is to be shortly opened: it starts from a point on the *Chemin de Fer du Nord*, in the middle of the plains of St. Denis.

A large staff of the *Compagnie du Chemin de Fer du Midi* is at present at Dax busily collecting materials for the construction of the three great structures on the line from Ramous to Dax. These works comprise the bridges over the Adour at Dax, and over the Lay at Oro, and the Habas tunnel.

Surveys are actively being made for a railway from Bayonne to Biarritz, about five miles long, to be open for traffic the next bathing season, according to the *Journal des Actionnaires*.

Biarritz, the "Osborne" of the French monarch, deserves a railway; but, in order to have the works completed within the specified time, and according to contract, &c. &c. he must really call in the assistance of Mr. Robert Houdin, *lunenburg-in-chief*.

At Stockholm the Government has determined to bring forward a railway law, followed up by a loan of twenty-five millions of rixdollars. It is rumoured that many members of the Diet wish the proposed sum increased, in order that the railway resources may be of longer duration.

The preparatory works for the construction of a railway from St. Petersburg to Viborg, in Finland, are terminated. The line is staked out, and the work has only to be commenced, everything being ready for the contractor. It is reported to be of unrivalled facility of construction, the nature of the ground being most favourable, and materials, labour, &c. very cheap.

The Spanish Government has just approved of the concession of the Ciudad-Real and Badajoz Railway granted to Don José Forus, with a subvention of ninety-seven millions reals vellon (about 970,000*l.*) in specie, or in state "obligations" for railways. The concessionist represents four banking houses, besides railway contractors and those for public works.

M. Salamanca, the well-known Spanish capitalist, has obtained the concession for the Albacete and Carthagna line. Before the works commence, the original surveys upon which the concession was based are to be checked by the engineers, and it is said that some important modifications will be introduced into the details.

The line from Seville to Jerez is announced ready for being opened for traffic this month.

It is considered that the Barcelona and Saragossa Railway will be in full working order in the course of the present year. In the first months of the year, 180 kilometres of the line—viz, from Manresa to Llerida—are to be opened. Platelayers are at work on many points of the line, and the necessary buildings, guard-houses, &c. are being run up. The Manresa station is nearly finished, and those of Terrega and Calaf are in a forward state.

The new line from Carthagna to Alicante has been set out by the engineers. It will have stations at Murcia, Oribecla, Callosa, Catral, and Elche.

The concession of the Tarragona and Barcelona railway has been granted to Don Magin de Grau.

The Pamplona and Tafalla line is to be opened next month.

PHOTOGRAPHIC SOCIETY'S EXHIBITION.

We have already said that the Exhibition of Photographs, now open in Pall Mall East, is a good one; but we must go a little into particulars. It consists of 586 frames, some containing several specimens, and is very varied in character. Copies of oil paintings seldom are successful, and we saw no exception to this rule in the present collection. Copies of drawings on the contrary usually are,—witness particularly those by Mr. Thurston Thompson, after Holbein and Raffiello. Mr. Roger Fenton in landscape retains his position: 130, "The Reed Deep, River Ribble," and 140, "Valley of the Ribble," are excellent specimens: Mr. James Mudd (20, "Durham Park"), Mr. Lyndon Smith (67, "View of Knaresborough"), and Mr. F. Bedford, compete worthily with him. "Pagan Rome" (476), "Christian Rome" (473), and "Rome" (484), are three remarkably fine photographs of the Eternal City, made by Mr. Lake Price expressly for the Art-Union of London. "Arcades from

Rome" (244), photographed for the Royal Commissioners, as suggestions for the works in the gardens at Kensington, is such an application of the art as we have before now urged. A frame of portraits near these (249), consisting of a well-known explorer and five female heads, was well christened, by a learned Theban in the room, "Layard puzzled which to choose;" and gains interest under its new title. Herbert Watkins, amongst others, has as usual some excellent male portraits; and the specimens of "Nature's Engraving," by Paul Pretsch, show an advance, but are not yet up to the mark.

THE SOUTHERN OUTLET SEWER.

We have already given an account of the works proposed to be executed in connection with the southern outlet sewer contract just let to Mr. Roland Brotherhood, of Chippenham, Wiltshire, but may add a few particulars.

It consists of a brick conduit or sewer 39,400 feet in length, of a clear internal diameter of 11 feet 6 inches; 5,000 feet of this length being in a tunnel under Woolwich: there are thirty-seven ventilating shafts, twenty-two side entrances, seven bell-mouth junctions, and sixty gullies. Its course we have already mentioned.

The work is to be completed in two years. The brickwork is intended to be of 18-inch work throughout, with the exception of the tunnel, which is to be 22½ inches; all in Portland cement.

Provision is made in the specification for the defraying of extra works that will arise in the course of constructing such a large work, of various items, the most important being a sum of 45,000*l.*, 100 rods of brickwork in cement, and the same quantity in mortar.

It is calculated that in this contract alone 36,000,000 bricks will be required, and where they are to be obtained from appeared to be a question amongst contractors tendering. Mr. Lualgette, as our readers know, is the engineer-in-chief, and Mr. John Grant is the resident engineer, on this particular work, and others on the south side of the Thames.

VAGUE SPECIFICATIONS AND WIDE ESTIMATES.

You occasionally astonish your readers by a comparison of the highest and lowest tenders for particular contracts. A notable instance occurred only last week, when a firm of high standing required 413,000*l.* for work that another equally respectable party undertook at 252,000*l.*

A recent number of your paper contained an interesting report of a lecture on the duties of architects, and informed us that a conscientious man would even specify the weight of the hinges for every door in a house, and the number of screws. This may be the theory: now for the practice.

Some months ago, the guardians of a large union in the country, wishing to enlarge the house, advertised for designs, and selected from a number one as most deserving the premium. Tenders were advertised for, under different trades, and a great many contractors took out quantities and tendered. The sum total of the lowest being very considerably (say 50 per cent.) above the architect's estimate, that gentleman, to use a Persian phrase, ate dirt, and retired from view. The contractors, being common fellows, were not even thanked for the trouble they had taken, but were allowed to gather the state of the case from the newspapers. Some time afterwards, the guardians again appeared, under new guidance, and contractors were again informed that they might estimate for a totally new arrangement; of course involving a repetition of the labour of taking out quantities. Being desirous of seeing the play out, I inspected the specification (?) of the engineer's work, and took notes of all the material points in it, which I send for the benefit of your readers. You will observe I have dropped the formality of office language, but in other respects the summary is a fair condensation of the original, and gives actual dimensions and quantities wherever they could be found to copy. Now, sir, I appeal to you whether you would be surprised, with no better materials than this to work upon, if one tender should be double or even three times the amount of another. Being myself a contractor, I cannot afford to offend the architect by calling the attention of his employers to the shortcomings of their adviser; and, were I foolish enough to do so, should probably be abused by all parties. However, the fact is patent. The specification is a public document,

and possibly this notice of it may induce people who talk of the recklessness of estimating to think that there is often something to be said on both sides of a story. A CONTRACTOR.

N.B.—I hesitated for some time between the *Builder* and *Punch*, but decided to appeal to you first.

**Workhouse.**—Supply two boilers complete, of a good size, for cooking and washing, heating dining-hall, and pumping water from a well the depth of which is unknown.

**Steam-engine.**—Provide a good sort of engine, as big as we are likely to want.

**Heating.**—Supply as much pipe as you like, to make the place comfortable.

**Pump.**—Supply a good kind of pump for a well of unknown depth: the size is not particular, but it must have "all necessary barrels," so that it may be worked either wholly by the engine, or wholly by manual labour, or by a little of both; and mind particularly that it must be so arranged and contrived that you can take it all to pieces, excepting the barrel actually at work, and put it together again without stopping anything. The pumps will be fixed on the surface, with about 40 feet of suction pipe down the well; but this is not particular, and will very likely be more; therefore, suppose we say at per foot.

**Cooking.**—Refix and remove the old cooking vessels, and supply new ones just the very same as the old ones.

**Range.**—Supply Flaxell's, or any other kind you have in stock. The size is immaterial.

**Pipes and Cocks.**—Supply everything under this head that we have omitted to specify.

**Washhouse.**—Remove and refix old boilers, and supply two new ones exactly like the old ones. Supply any wrought-iron tanks you think will be useful.

**Drying Closets.**—We intend to have two: the contractor is to fit them up and heat them.

**Painting Closets.**—The contractor to fit them up on any plan that he thinks a good one.

**Tanks.**—Supply two 700-gallon tanks, six 300-gallon, one 500-gallon; all of boiler plates, bolted together. Refix the present cocks, and supply any new ones and cocks that you think we shall require: we leave the sizes and arrangement entirely with the contractor, and hope he will do it nicely.

N.B.—On consideration he had better state how many tanks and trees there will be in the whole job, and about how much a piece, to enable the guardians to form a comparison between the different tenders.

Carpenters and masons' work, or work of any kind that we have omitted to describe, must, nevertheless, be provided all the same. It will naturally occur to contractors that all the boilers may require to be set in brickwork: the engine will want a foundation, and the tanks will require graders of some unknown length; many other things will arise during the progress of the job, and therefore something had better be put down for contingencies.

Finally, the contractor (s) is to keep everything in repair for twelve months, and to give a very full, clear, precise, definite, and detailed specification of everything that is necessary for the completion of the whole of the work, accompanying his tender with all the necessary drawings, so as to show most completely how everything ought to be done. This is sometimes done by the architect: but, being very troublesome, he hopes contractors will not mind it; and the fund of information the architect will obtain may also be of service to him as some future day.

Give a separate price for every item in the whole job.

**Ventilation.**—Provide some gratings,—probably a good many.

**Wagon-Engine.**—Provide a wagon-engine, and fix, complete, with masonry. Any size will do; but it had better weigh about three or four tons.

#### SHEERNESS DRAINAGE AND WATER SUPPLY.

THE Local Board of Health have resolved to carry out plans of drainage and water supply, by Mr. Burns, of Ely, who has been appointed engineer to the board. His success at Ely appears to have induced the Sheerness guardians to urge his merits upon the inhabitants and their sanitary representatives. A tidal plan of drainage, which had been on the  *tapis*, has been abandoned on consideration of Mr. Burns's plans, although the board had theretofore been tenacious in their approval of that plan. The board, before formally adopting Mr. Burns's plan of water supply, have to recede, as it is said, they have determined to do, their orders in which Messrs. Hirkenshaw & Conybeare's plans were accepted.

The local *Guardian* is of opinion that the hideous picture of the sanitary state of Sheerness, drawn by Mr. Austin in his report to the Privy Council, on application by certain of the residents, was perfectly correct and justifiable, and that it constituted "a righteous retribution on the board for past neglect,—especially on the members who sat previously to 1858."

A report by Mr. Burns on the sanitary condition of the town, and on its drainage and water supply, has been printed (*Guardian* office, Sheerness), in which he opens with a strong exordium against the past and present state of things, which must, indeed, be bad in the extreme, as it is stated, in this report, that, during his investigations, Mr. Burns had several times been made sick, and even to vomit, with the nefarious stench in the streets, and had been twice seized by diarrhoea from breathing the noxious vapours from stagnant cesspools.

In pressing on the board, in this report, the urgency of the case, he says:—

"The Lord instituted certain sanitary laws, for the purpose of maintaining the Israelites in good health, and He threatened them with the most severe judgments if they neglected the sanitary condition of their camp. (Deut. xxiii. 12, 13, 14.) The Lord commands, 'Thou shalt have a place without the camp, and thou shalt cover that which cometh from thee, that He see no unclean thing in thee, and turn away from thee.' This command makes no exception in favour of pounds, shillings, and pence. The expenses are never contemplated. The command is, 'Thou shalt not defile the camp.' Whatever it may cost to keep it clean, it must be done, or they must abide by the awful consequences. That command, to keep the camp clean, is, I conceive, as binding upon us of the present day as it was upon the Israelites of old.

I consider it a greater crime to poison the atmosphere which we breathe than to poison a public well; because, when the water of a public well is poisoned, the well can be shut up as soon as it is detected, and the public can go to another source for their supply; but, when the air is hourly poisoned by emanations from cesspools and privies, the people who live in the vicinity of these cesspools and privies cannot avoid breathing the poison, and thus destroying their health and lives; therefore Boards of Health, Town Councils, and Guardians of the Poor, and all others who are in authority, and who allow the atmosphere to be contaminated with fith of any description, are guilty of culpable neglect of duty."

The estimate of the cost of sewerage on the plan resolved upon includes 4,450*l.* as the total amount for sewers, and 2,200*l.* for a pumping establishment; total, 6,650*l.* annual working expenses, 202*l.* By an alternative plan the total cost would be 5,220*l.*, and the working expenses, 295*l.*

The cost of the waterworks, complete, "including well, tank to contain 633,315 gallons, two engines and pumps (duplicates), each capable of working up to 60-horse power when required, a set of twenty-four public baths, board-room, manager's and engine-men's houses, and about eight miles of public pipes with 150 hydrants, all completed in the best style of workmanship, and with the best materials (exclusive of the cost of site)," will be 11,700*l.*, and the annual working expenses, 450*l.*, which will be about 0*id.* per thousand gallons.

#### CARELESSNESS OF GOOD.

PERHAPS you may think the following paragraph, which I extract from Louis Figuier's scientific *feuilleton* in *La Presse*, not unworthy of a place in your miscellanea. P. D.

"We live in the midst of the ease and comfort of civilization, nearly as fishes live in water, that is to say, without taking any notice of the medium which surrounds us, and without explaining what kind of influence it exercises upon us. Science presses us on all sides; but its yoke is so light and gentle that we scarcely feel it. We travel by steam, we correspond by electricity, we are indebted to coals for light and warmth; in order to shelter and clothe ourselves, we lay contributions upon minerals, metals, and the lumberless materials furnished by vegetable life; and, nevertheless, most men are still ignorant of the true nature of the air which they breathe, of the water which they drink, of the food which they eat, of the different elements which serve to sustain their lives, to satisfy their desires, interests, or fancies."

#### JOB AND TASK WORK IN WOOLWICH DOCKYARD.

A PRELIMINARY meeting of the operative shipwrights employed in Woolwich Dockyard was held on the 18th, for the purpose of conferring on the grievances under which they labour, with especial reference to those arising out of the system of "Job and Task Work."

It is asserted that great injustice has been done by the mode adopted in the payment of the shipwrights, which is now, and has been for some time past, regulated on the "job and task work" principle. Under this system the work is measured, and the price to be paid for it fixed by a measurer; and there being no recognized scale of charges, the workman has no idea as to what amount of wages his work will produce. It not infrequently happens, therefore, according to the speakers, that he receives at one time, for the performance of a certain task, about half the amount of wages which, at another time, he obtains for the same work. The remuneration of the workman, in fact, constantly varies according as his work is estimated by different measurers, and one group may receive the full or more than the full amount of wage for the labour performed, while another—working perhaps on the same ship, and doing similar work and the same in quantity—is positively paid a much smaller sum.

By the statements of several of the men who spoke, it was shown that the rate of wages at

present paid at Woolwich Dockyard is barely sufficient for the support of a man with a wife and family.

"The system," the chairman observed, "seems to possess a most elastic property, as proved by the fact that, in the month of April last, he had earned 8*l.* 8*s.* for four weeks' labour, while, working at the same work, and the same number of hours a day, and performing the same amount of labour, his earnings for the four weeks of December only amounted to 5*l.* 5*s.* 6*d.*"

Several resolutions were passed unanimously, empowering the committee to make the position of the men known.

#### STATE ARSENAL, NEW YORK.

THE New State Arsenal, on the Seventh Avenue, at the corner of West 35th Street, in this city, is one of the largest military edifices in the State of New York. It is built of brick and stone, three stories high, the corners on the streets being finished with towers, which are made useful as well as ornamental. The building is about 190 feet long, and 82 feet wide, within the walls. The ground story is designed to be used for ordnance and cavalry equipments; the second story for a depository of small arms and infantry accoutrements; and the third story for a spacious drill-room.

The trusses originally adopted for supporting the roof proved insufficient in strength, and the roof fell, bringing with it the upper portion of the walls, and crushing down the floors. It has, therefore, been rebuilt, and a different form of truss adopted. The American *Architect's Journal* gives an illustration of it. The span is considerable, and the peculiar uses of the upper story, as a drill-room, required that the roof should be self-supporting. The following are the scantlings of timber:—

	Feet.	Feet.
Tie beam .....	12 by 10 length 85.	
In two lengths, each .....	" " "	27 6 ins.
Collar-beam .....	12 " 8 "	" "
Queen-posts .....	11 by 12 " 8 "	16 "
Principal rafters .....	10 " 8 "	43 "
Auxiliary rafters .....	10 " 8 "	20 "
Braces .....	8 " 8 "	13 "
Small braces .....	8 " 8 "	7 8 "
Foot to upper braces .....	8 " 8 "	3 6 Oak.
Corbels .....	12 " 10 "	7 0 "
Wall plate .....	12 " 6 "	" "
Purlins .....	10 " 6 "	" "
Hips .....	11 " 4 "	18 "
Common rafters .....	6 " 3 "	48 6 "

Each truss has five tie-bolts from the principal rafter to the tie-beam of iron, 1 inch 6-8ths in diameter. In the middle of the span, the tie from collar to tie-beam consists of two tie-bolts each of 7-8ths inch diameter. The scarp in the tie-beam is 10 feet long, in three strips: it has three cogs, and is strongly secured by ten screw bolts of 7-8ths iron passing through broad iron plates 11 feet long on the top and bottom of the beam. The corbels are fastened to the tie-beam by two screw bolts; and a stout iron strap confines the toes of the principal and auxiliary rafters to the ends of the beam and the corbels.

#### ARCHITECTS' CHARGE BY COMMISSION.

COMMENTING on some observations made recently at the Institute of Architects, Mr. John Bull Gardner, who, though he has withdrawn from active duties, keeps an eye on the profession, writes as follows:—

"Elmes, with my assistance as to the introductory matter—which he was perfectly welcome to ask for—printed in his 'Annals of the Fine Arts' a true and faithful account of the often-quoted case 'Chapman v. De Tastet.' Now, whoever may read such introductory matter would see readily that in sober truth and reality the cause might have been handed down as 'Gardiner v. De Tastet.'—my late respectable and well-known uncle Chapman had really nothing practically to do with this individual matter.

In this our so noted case, the verdict was for 5 per cent. on the amount, with a small exception amongst the artificers' bills. Almost all the various works were done by separate tradesmen in their respective departments. The carpenter brought his action against De Tastet; so did the plasterer;—each of them obtained a verdict in the Sheriff's Court (judgment having in each case gone against the defendant by default), and both obtained their money. After this, De Tastet paid all the others; and this being accomplished, we then brought our action, and obtained, before the late Lord Ellenborough, a verdict of 5 per cent. on, save as aforesaid a small exception, the collected amount of what had been, on our part, so paid to the artificers. We had to

put every one of them (at last three at a time) into the witness-box; and we had respectable witnesses, since dead, of our profession, to speak to usage and custom. The defendant dared not bring a single witness to confront ours.

Who were our counsel I really nor forget, but De Tastet's lawyer (the late notorious Jimmy Lowe, of Southampton-buildings) had Scarlett (before, of course, he became Lord Abinger), and his son-in-law, Campbell (before also, of course, he many years afterwards became Lord Campbell).

The said exceptional item was this:—It appeared to me judicious to introduce in one of the country-houses or offices a descending stove,—an article not then universal,—one of Moser & Co.'s patent affairs. I, of course, had not only to make attendances at Frith-street, but also to confer with Moser's people at my office and at the works, in reference to this matter. Their bill for it amounted to 40*l*.

The verdict passed at 2*l*. less than the sum which, founded on a 5*l*. per cent. commission, had been sued for.

A Fishing Bill in Chancery was immediately put forward, under the auspices of the said Jimmy Lowe, as in bar against the verdict sued; and it put me every now and then into gidgets, *i.e.*, at the several stages of it, during thirteen years. The amount was then settled. We received it, minus 50*l*., through our respectable and truly conscientious solicitor; and De Tastet had paid, before the verdict sum, not less, certainly, than 400*l*. to his said confidential adviser."

THE DUBLIN WATERWORKS.

This discussion appears to have arrived at a climax for decision. For the necessity that exists of an additional supply of pure and wholesome water in the city of Dublin we might refer to many proofs. However, until comparatively recently (*viz.*, February, 1859), the project, which has now assumed a tangible shape, was not brought forward, and even at that time was condemned by its present promoters; not on account of its infeasibility, but from economical views; it being expected that as pure and abundant a supply, at much less expense, was obtainable conjointly from the canals, *viz.*, the Grand and Royal. The particulars of this scheme are briefly as follows: to place a weir across the river Liffey, at Coyford, in Blessington, County of Wicklow, and thence, through a reservoir in the vicinity, to conduct the water by a necessary aqueduct, conduit, or pipe, laid along the shortest practicable route to another reservoir at Templeogue, in the parish of Tallaght, county of Dublin (south side), and thence to the several parishes of the city by service mains. The sub-committee, to whom the corporation have confided the carrying out of this scheme, consists of three members,—Dr. Gray, J.P.T.C.; Mr. Francis Codd, J.P.E.C.; and Alderman Kinahan, J.P., each of whom has devoted much time and labour to the task.

THE STRIKE.

ACCORDING to the statement made at the weekly meeting of delegates held on Tuesday evening last, 2,300 skilled workmen are still out of work, and last week, the twenty-sixth of this unhappy struggle, they received a dividend of 4*s*. each. Who shall tell of the privations and distress that have been endured?

On the 11th instant a crowded meeting of the trades was held in St. Martin's Hall, Long-acre, to protest against the enforcement of the document. Mr. Ayrton, M.P., took the chair, and made a long address, after which, resolutions moved and seconded by Messrs. Potter, Macintosh, Dunning, and Arnot were unanimously adopted.

The "Conference" has issued a new appeal to the working classes, signed by their secretary, calling for further support to enable the men on strike to continue their resistance to the "document."

THE METROPOLITAN RAILWAY.

THIS railway appears at last to be fairly started; and the works, we are told, are to be forthwith vigorously proceeded with. The western portion, from Paddington to Euston-square, are contracted for by Messrs. Smith & Knight; and the eastern portion, from Euston-square to Victoria-street, City, by Mr. John Jay. The route will be from the Great Western Railway Station at Paddington along South Wharf-road, Praed-street, Marylebone-road, Euston-road, Bagnigey Wells-road, to Victoria-street, near the foot of Holborn-hill. There will be a branch in connec-

tion with the Great Northern Railway at King's-cross. The railway, nearly throughout, will be in a tunnel, the crown of which will be just under the surface of the present roads. Besides terminus stations at Praed-street and Victoria-street, there will be numerous intermediate stations along the route for the accommodation of passengers. The first essential work to be done of course is to provide for the necessary drainage of the railway and of the sewers intersected by it. For this purpose Messrs. Smith & Knight, the contractors before mentioned, have begun a new main sewer in Conduit-street, Paddington, which will be continued across Westbourne-terrace, and along Praed-street and South Wharf Road, to the Edgeware-road, at a depth of 30 feet below the surface. We understand that the workmen in Conduit-street have already laid bare an interesting relic of the past,—no less than the foundation of the famous old conduit that formerly supplied a portion of the City with the sparkling spring-water which abounded in the extensive bed of gravel and sand about Paddington.

WHO LOOKS TO THE METROPOLITAN SEWERS WORK?

I THINK the little (and very long) job in Park-road, St. John's-wood, deserves a remark. Much has been said about the difficulty of enlarging the sewer over the bridge; but why not have divided it into two by iron pipes, there being only about 7 feet from the crown of the arch to the surface of the road, instead of the startling piece of brickwork it is now being finished with? This consisting of two-arched courses of 4-inch work in Portland cement and sand, within about twelve inches of the surface of the road, filled over with loose granite rubbish, and with nothing in the way of an abutment.

A short time since a railway waggon sank down about 2 feet in North Park, several weeks after the road had been "made good" by the parish, and two teams were required to draw it out. Something worse will probably happen in Park-road, and the fault will, of course, be laid on "the weather."

Q.

The Sewer in the Fulham-road.—Several correspondents complain, and with justice, of the time during which their houses have been blocked by the works now being executed by Walker & Neave in enlarging, by tunnelling, the existing sewer. The road opposite one house that we have in our eye has been enclosed more than a month, being used for some weeks as a material store. It is time some one walked down from Greek-street, and looked into the matter. The nuisance is insufferable.

NEW CHURCHES AND SCHOOLS IN AMERICA.

THE Church of St. Joseph, Albany, New York, is nearly completed, and is said to be a good specimen of ecclesiastical architecture. Interiorly it has marble columns, a "sparkling roof," oilen wainscoting, stained glass windows, and the spaces between each are filled in with bas-reliefs representing "The Stations," and executed in Munich.

An Irish church has been built at Lafayette, Illinois, and is one of the largest in the city. In the same town the old county seminary property has been purchased for 4,900 dollars for church and school purposes. A female school, under the direction of the Sisters of Providence, will be built, together with a church, 160 feet by 65 feet, early in spring.

The new church at Weymouth, diocese of Boston, has been dedicated and opened for Divine service. It is 86 feet by 45 feet, and contains sittings for 500 persons. There are a chapel, vestry, and two upper rooms behind the altar, besides a gallery for singers over the western entrance. It was built by Mr. Butler, of South Boston.

A new German church has been dedicated at Poughkeepsie, New York diocese; also another (St. Patrick's) at Rosae's Point, diocese of Albany. The Roman Catholics of Camden have built a commodious edifice at the corner of Fifth-street and Taylor's Avenue.

"METROPOLITAN BUILDING COMPANY."—A general meeting of working men has been convened for this Thursday, 26th, at the Eclectic Hall, 17, Denmark-street, near St. Giles's Church, to establish a company to undertake building works and contracts. Mr. J. C. Arnand is secretary, *pro tem*.

STAINED GLASS.

Lincoln Cathedral.—In October last, the Rev. Augustus Stutton, and Mr. H. F. Sutton, commenced to place stained glass in the large window over the west entrance of this cathedral. The lower part of the window, which is in the Perpendicular style, is divided into five compartments, and the head of the window into eight; all the quatrefoils and cusps of the latter were filled in at that time. The upper centre compartment of the lower part of the window was filled in with the figure of King David, under a Gothic canopy, with a crown on his head, a sceptre in his right hand, and the orb and cross in his left; and as the Messrs. Sutton had not at that time prepared any further figures, the window remained in an incomplete state. Since that day, however, these gentlemen have been engaged in filling up the remaining portion of the centre compartments of the window with four figures of kings of Judah, representing Jehoshaphat and Josiah on the north side of David, and Hezekiah and Asa on the south side. The lower centre compartment has been filled in with a demi-figure representing Melchisedek, and four other figures of prophets will be placed in the remainder of the compartments before Easter. The reason demi-figures are being placed in the lower compartments is because the screen, which was put up some years ago to save the towers, blocks up the lower part of the window. This is the eighth window placed in the cathedral by Messrs. Sutton.

St. Blazey Church, Cornwall.—A stained-glass window has been placed in the north aisle of the parish church of St. Blazey, in memory of Major-general Edward Carlyon, and also of Anna Maria, his wife. The window is of three lights, with tracery above. The figures chosen are Faith, Hope, and Charity. These are placed under canopies; and at the foot of each figure is an angel bearing scrolls, with a Scripture text. The head of the window consists of two angels under canopies, each holding a Scripture text. The upper spandril is a device of Faith, Hope, and Love, represented with the anchor, cross, and heart entwined. The smaller spandrils are filled with ornament. At the base of the window is the inscription. The window is of the Perpendicular style of architecture, and has been executed by Mr. Charles Gibbs, of Marylebone-road, London.

CHURCH-BUILDING NEWS.

Winchester.—The restoration of the west front of the cathedral is progressing. The termination<sup>s</sup> of the north and south aisles are already completed, the former by Mr. S. Newman, and the latter by Mr. H. J. Gillingham. Mr. Newman is now engaged upon the central portion of the façade, which is accessible by a lofty system of scaffolding and stages. The work, which is carried on under the supervision of the architect, Mr. J. Colson, will occupy some months in its execution. —A new font is about to be placed in the church of St. Lawrence, in this city, through the liberality of the rector. The font, which is formed of Caen stone, is octagonal in shape, and partakes of the Perpendicular style in its mouldings and decorations. The sculptor was Mr. S. Newman.

Charlton (Devon).—A sepulchral cross, from the stationery yard of Mr. Thomas Lidsting, of Dartmouth, has been set up in Charlton churchyard, near Kingsbridge. It is made of Forest of Dean stone, and stands altogether fully 6 feet high. It is a pity there is not more regard paid to the designs for things of this kind, and for memorials in stone generally. The fault lies with the statuary themselves.

Worcester.—The Watermen's Church, intended, says the local Herald, as a memorial of the late Rev. John Davies, now approaches completion. The building is constructed of wood, with an outer casing of corrugated iron. The structure is in form an oblong room, with a recess at the east end for a chancel. The roof is pointed, having iron rods for girders and ties. Interiorly the walls are covered with canvas, strained tightly, to hide the shrinking of the boards, and the roof is protected with felt between the wood and iron. There is an entrance at each end of the south side, and a little vestry has been provided north of the chancel. In the side walls are two-light pointed windows, at the west end two long and two short lancets, and three lancets in the east window,—all the windows being edged with blue and red glass alternately. Local critics, with some reason, condemn such a "memorial" church.

Pershore.—Considerable alterations and improvements have lately been made at Wick Church, and an increase of accommodation, espe-

cially for the poorer classes, has been thereby afforded. The church, which is of the Early English style, is situated near to Pershore, and in a numerously populated district. The additions which have been made consist of a new aisle and gallery, and partial reworking of the whole edifice, according to the design of Mr. Whitfield Dawkes, the architect engaged in carrying out the improvements at Lord Ward's, whose services at Wick, it is stated, have been rendered almost gratuitously. The builders who have been employed are all tradesmen of Pershore, viz., Messrs. C. Coombe, John Nicholas, and J. Osborne and Son. There are four windows, with stone mullions, in the new aisle, one at the east end, another at the west, and two at the north side. There is likewise a porch at the entrance.

**Manchester.**—St. Peter's Church, Oldham-road, Manchester, has been consecrated. It is a district church, says the local *Advertiser*, and situated in Blossom-street. The church is from designs by Messrs. Holden & Son, architects, Manchester, and is built of brick, the style of architecture being Lombardic. Its distinguishing characteristic is the absence of anything like decorative stonework, the harmony of its parts being dependant entirely on the distribution of red and white bricks used in its construction. The building comprises nave, side aisles, gallery (extending along the aisles and across the west end), a semi-circular apse at the east end, and a lofty tower at the north-west angle. The extreme external length is 120 feet, and the breadth 66 feet. The tower is in three stages, the upper portion being formed of a truncated spire, covered with green and red slates. The height of the tower is 125 feet. The interior, which will seat 1,350 persons (500 free), is divided by two rows of ornamental cast-iron columns, supporting the clerestory arches, which are formed, like the other arches, of white brick. The roof of the nave, which is panelled, is divided into bays by semi-circular wood ribs. The ornamental ends of the benches are of cast iron. The organ is placed in the gallery, at the west end, over which there is a wheel window. The total cost of the structure, including the furniture, heating apparatus, lighting, and bells, is about 4,200*l.*, or 3*l.* 3*s.* per sitting. The general contractors were Messrs. Clark & Jones; and the contractors for the brickwork, Messrs. Rutherford & Lamb.

**Jarrow.**—It is proposed to enlarge and restore Jarro church, according to the *Shields Gazette*. As it at present stands it is of very different ages. The nave is considered an unsuitable addition, from its style or rather want of style, apparently built in the beginning of this century. This it is proposed entirely to remove, and instead to build a nave with a narrow south aisle, and a broad gabled aisle on the north. The tower was at one time claimed as Saxon, but is not now considered earlier than Norman times. At various dates new windows have been inserted in the chancel, and in perpendicular times a flat lead roof has been substituted for the high pitched one, whose mark still remains on the tower. These old parts of the tower, and the chancel, it is not intended to alter, except what slight repairs are necessary for their stability. Mr. Scott, the architect, has been applied to, and has furnished plans for the alterations. By his recommendation the tower and chancel should remain in their present state; while, for the present nave, he proposes to substitute another with a narrow side aisle on the south,—the old monastery buildings not permitting more; and a broad gabled aisle on the north. For the new nave he has chosen the earliest style of Pointed Gothic, while it is yet in its transition from the round-arched Norman, and while it retains many features in harmony with the Norman tower, its pointed arches giving it a relationship with the latter Gothic insertions in the chancel. The new nave is solid and quiet, but full of character. This work has been delayed for years, solely on account of want of funds. The congregation are mostly poor. The restoration of the church of the Venerable Bede, however, should be of more than parochial interest.

#### COMPETITIONS.

**Kersall Moor, Manchester.**—In a limited competition for schools connected with St. Paul's Church, Kersall Moor, near Manchester, the plans of Mr. William Walker were selected by the committee, and the architect is commissioned to carry out the works immediately.

**Croydon.**—The *New Cemetery Buildings*.—Last week, at the meeting of the local board, several architects were proposed to prepare plans or designs of the projected chapels, lodge, &c., to be

built on the new burial-ground lately purchased of the trustees of the Banahm Estate at Broadgreen. In accordance with a resolution passed at the last board, the number of candidates to be nominated was restricted to twelve: the following were therefore proposed.—Mr. Woodcock, proposed by Mr. Bean; Mr. Gough, by Mr. Rigby; Mr. Carter, by Mr. Swinburne; Mr. Nullens, by Mr. Crowley; Mr. Davidson, by Mr. Drummond (the chairman); Mr. Cross, by Mr. Sutherland; Messrs. Morpew & Green, by Mr. Parley; Mr. Robius, by Mr. Castledine; Mr. Berney, by Mr. Close; and Mr. Scott, by Mr. Crafton. The board agreed that each candidate should adopt some motto to his own design, and the successful competitor should receive twenty guineas, and a commission of 5 per cent. upon the outlay, which was to be limited to 1,000*l.*; the second best to receive a premium of twenty guineas, and the third ten guineas. Other gentlemen, including several of those proposed above, were then nominated to furnish plans for the laying out of the cemetery; and the designer whose plan should be chosen was to be remunerated by a premium of twenty guineas, with a commission of 5 per cent. on the outlay; while the second was to be paid ten guineas.

**Kinlock Monument.**—At a recent meeting of the subscribers held for the purpose of selecting a design for the above monument, according to *Dundee Warder*, Mr. Thomas Wighton moved, "That a selection be only made on the express condition that the plans selected can be executed by a competent tradesman for a sum not exceeding 400*l.*, and that offers to that effect, and with such security as the committee may think proper, be in possession of the committee before the selection be considered final." The motion was seconded by Mr. McDonald. There were twenty-five designs and two models shown, fourteen of which were not voted for; and, on the motion of Mr. T. Wighton, No. 24 was put aside, in consequence of its being too costly. Nos. 10, 12, 15, 23, and 31, a model were voted for again, they having obtained the highest number of votes. Out of these, No. 12 was unanimously selected by the meeting. The designer's letter was opened and read, from which it appeared that Mr. James M'Laren, architect, Dundee, was the successful competitor.

**Bishop Stortford High School.**—The trustees have selected the design submitted by Mr. Murray for their new buildings.

**The Hartley Institute at Southampton.**—Professor Donaldson has been appointed, by the corporation of the borough, to select a design for the building of the Hartley Institute from among forty-seven which have been sent in from all parts of the country. The whole of them, by arrangement, provide a great hall to accommodate 2,000 persons, for lectures, concerts, and other public purposes. It will be recalled that Mr. J. H. Hartley, a former resident at Southampton, left 100,000*l.* for the promotion of literary and scientific pursuits in that town, 60,000*l.* of which were spent in Chancery and in arrangements with the claimants of his family, leaving still the princely sum of 40,000*l.* for carrying out the purposes named in the testator's will.

#### "SO MUCH FOR BUCKINGHAM" PALACE.

SIR.—Such are the words of *Punch*, who, joking, says, sad havoc is being made with the façade, and that it is desirable a new face should be put on this stucco abomination, as it has been an eyesore long enough. Now, *Punch* is wrong in terming it a stucco abomination, for it is stone.\* One contemporary says, soon after the erection of the new façade, the stone was protected by many coats of paint, and the process of decay goes on. The *Times* of June, 1855, says, 2,000*l.* were expended in repairing and painting the stonework of the new façade. So much for stone. Now for stucco abominations. I know innumerable cemented façades or buildings that are unaffected by weather, after twenty or thirty years; and, with the excellent cements we now have, it can be and is in some instances executed to endure as long as any building stone, though of course much is very badly done for cheapness, and frequently by inexperienced or careless workmen, of which there are plenty. Sometimes the cause is that the work is under a clerk of works, or a master who is by trade a joiner or painter, and the workmen are guided by his notions of how it should be done. The proportion of sand is an important part, for the best cements require two or three

\* It was, nevertheless, to a considerable extent faced with cement.

parts of sand to one of cement, which makes it more troublesome and expensive to use, and too little sand is a very frequent cause of failure: hence the abomination, or, at least, the cements that get hard enough to form earl-horse stable floors, it need not become an abomination.

JAS. PULHAM.

#### THE SPURGEON CHAPEL COMPETITION.

SIR.—You have often directed attention to the great unfairness usually displayed both by committees and architects in reference to competition designs; and, unfortunately, it is so general that any additional fact scarcely needed to render it more glaring. However, that to which I am about to allude is so gross, I really think you should, by a circulation of the statement, try to awaken a condemnation in the public mind of so flagrant a departure from the principles of right.

It is respecting the "New Tabernacle" for the congregation of the Rev. G. H. Spurgeon that I pen these few lines. It will be, I doubt not, in the recollection of many of my professional brethren, that the committee distinctly stated that the cost of the building was to be limited to about 10,000*l.*

This induced several who sent in designs, myself among the number, to so arrange them that they could be executed for any practical price exceeding a few hundred pounds of the same. It was, however, very manifest, on the exhibition of the drawings, that a large proportion of the designs could not be carried out for anything like the sum proposed.

Well, the committee fixed on a design, the cost of which was stated by its author as 15,450*l.*, although I am certain that any practical price looking at the same would have said it was self-evident it could not be erected for some thousands beyond that figure. The result has been that this idea was quite correct; for, at a meeting of the friends of the undertaking, held for the purpose, it was stated that the total amount required for building and ground would be 30,000*l.*; and as the latter cost something under 7,000*l.*, it follows that the building is to be about 23,000*l.* I must say I think such treatment is enough to prevent any respectable architect entering on a competition; for, either he must be disingenuous enough to profess to get a design exceeding a sum which he must know to be erroneous, or submit to find he has pursued the more honourable course of sipping his design in accordance with the instructions given, that he has passed by in favour of a person less scrupulous.

MSA GORDIA FIDES.  
\* We have submitted the foregoing to the architect, and submit his reply:—

If your correspondent looks to your columns he will find the lowest tender was 18,800*l.* which, adding 5,000*l.* for the cost of foundations, and 600*l.* for heating, gives 24,400*l.* instead of 23,000*l.* as the cost. Then, the Tabernacle is 10 feet wide wider than designed, i. e. 30 feet instead of 20 feet; and the ceiling is 10 feet higher, 91,000 cubic feet more than in the design. In fact, the building, as designed, if taken at the same price per foot cube as the lowest tender, would have come to 27,700*l.* instead of 19,800*l.* which I consider moderately near to 16,450*l.* for a competition estimate.

But the building tendered for was worth more per foot cube than the design, for the whole of the walls of the interior were to be match-boarded instead of plastered, open iron gallery fronts substituted for deal framing, the ironwork gilt, the paving made more expensive, an extensive allowance for sundry omissions, added, as I estimate them, 1,500*l.* to the amounts of the tenders.

Lastly, materials and labour were both higher in July than January; the work alone was worth 200*l.* more than when I made my estimate.

W. W. POCOCK.

#### DECISIONS UNDER THE METROPOLITAN BUILDING ACT.

A CASE some time under investigation, in hearing and consideration, has been settled by Mr. Bingham, at the Marlborough-street Police-court, under the Metropolitan Building Act, 18 & 19 Vict., c. 122, and excited considerable interest.

The defendants were Messrs. Loible and Sonnhammer, the lessees of the London Pavilion, a building in Tieborne-street, Haymarket, which, with its appurtenances, has been recently opened for public amusements of a somewhat varied character; for, besides being a concert-room and *café*, it is a bowling-alley and shooting gallery, and the summons, taken out at the instance of Mr. Mayhew, district surveyor for the parish of St. James, sets forth in effect that the defendants had neglected, after expiration of the term of notice according to the Act, to cause certain alterations, in and about the building in question, to be made, to render the same fire-proof, for its own and the safety of contiguous premises, and to make the same stronger in parts the better to support any large number of visitors assembled.

Mr. W. Donaldson, solicitor, attended in support of the summons; whilst Mr. M'Namara, as counsel, instructed by Messrs. Paul & Co., of New Inn, appeared for the defendants, and Mr. Edward Lewis, of Marlborough-street, watched over the interests of the builder, Mr. Honore.

A question arose as to the builder; and Mr. M'Namara said his clients would, irrespective of Mr. Honore, the builder, abide the issue of the case.

Mr. Mayhew, the district surveyor, then stated,

in categorical order, the alterations which he required in the premises, which, by previous pulling down and re-erections to make the place what it is, had, within the meaning of the statute, it was contended, become a new building; for the 10th section lays it down that, "Whenever any old building has been taken down to the extent exceeding one-half of such building, such half to be measured in cubic feet, the rebuilding thereof shall be deemed to be the erection of a new building, and every part of such old building that is not in conformity with the regulations of this Act shall be forthwith taken down." In the present case, Mr. Mayhew said, it could be proved that considerably more than half the old fabric had been taken down.

Mr. McNamara said that to do what was required by the district surveyor would be to rebuild the structure altogether, which would be seriously interfering with ancient and vested rights and interests. The Act under consideration is to apply to new buildings, and he contended that the one in question had not been made so: it was still the old premises, with just sufficient alterations to adapt it for new purposes, and these were not one-tenth part of the whole, whilst the Act specified in clear and direct terms that half should be altered before it could be construed as a new building, and his worship had opportunity of proof of this in personal inspection. In the Loudon Pavilion place of amusement there were no galleries, the piano was on the ground-floor, where a few singers attended, under engagement, simply for the amusement of visitors to the café.

Mr. Bingham, in delivering judgment, said.—The defendants took an old coach-house and stables in Titchbourne-street, painted the walls, covered an intervening court-yard with a glass roof, obtained a license to sell beer by retail on the premises, and converted the whole into a large apartment, or coffee-room, for the sale of refreshments: with a view to enticing customers they added the attractions of a musical performance, a skittle-alley, and a rifle-gallery. The district surveyor, considering the premises occupied for such purposes to be a building within the meaning of the 30th section of the Building Act, 18 & 19 Vict., c. 122, summoned the defendants to this court for not having made certain portions of it fire-proof, or sufficiently separated by party-walls from adjoining occupancies, as required by that Act. He also contended that what had been done was such an alteration of the old building as brought it within the regulation applied by the Building Act to new buildings, whether public or not.—(See sec. 7.) It is difficult to draw a precise line between what shall be deemed a public and what a private building, within the meaning of the Act. A theatre, a church, a school, or any edifice which people are likely to frequent in great numbers at one time, such as a public ball-room or concert-room, would seem to be the objects contemplated under the words "public building" in the 30th section; but the application of the term in each particular instance must depend on the use to which the structure is applied. Here, the principal object of the defendants' occupation is the sale of refreshments: the music, skittles, and rifles are merely accessories to lead to the consumption of viands and liquors; and the apartment is no more a public building, within the meaning of the 30th section, than Evans's Rooms, or any other beer-shop or public-house where people assemble to drink beer and listen to jocular singing. Then, with respect to the alterations, which are said to be such as to bring the premises within the provision of the 7th section. After a careful inspection of them, I find there has been much superficial decoration, but no material structural alteration. There has been an addition of a glass roof over the open court; but that is admitted to be in conformity with the Act; and, therefore, my judgment must be for the defendants.

The real question appears to have been whether a building existing before the Act, and used as a public building afterwards, must be altered when works are being done on it to make its construction such as the district surveyor approves. In this case a decision was given avoiding the question, the magistrate holding that a place like the Loudon Pavilion was not a public concert-room within the meaning of the Act, as music was incidental to the sale of refreshments. It is difficult to reconcile the statements of the district surveyor and the magistrate as to the extent of works done.

SOUTH KENSINGTON MUSEUM.—During the week ending 21st January, 1860, the visitors have been in number 12,248.

Books Received.

Some of my Bush Friends in Tasmania. By LOUISA ANNE MEREDITH. London: Day & Son, Gate-street. 1860.

In this *livre de luxe* Mrs. Meredith, formerly Miss Twamley, depicts from life the flowers, berries, and insects of Tasmania, and accompanies them with some graceful compositions in verse. Although the greater number of the flowers there are new to an English visitor, members of many of the Old World families are found amongst them, and must gladden the eyes of the immigrant, and fill the mind with recollections.

Some will be surprised at not finding the flowers of a richer character than is presented here; but then, on the other hand, they will learn, contrary to an equally well-received opinion, that many of them have sweet scents.

This is an elegant specimen of Messrs. Day's skill in lithography and colour printing. Plate 4, the Waratah and native Arbutus, and Plate 7, the Tea-tree and Epacris, will serve as proofs. We can cordially recommend the book for the drawing-room table.

Gog and Magog: the Giants in Guildhall; their real and legendary history; with an Account of other Civic Giants, at Home and Abroad. By B. W. FAIRHOLT, F.S.A., Hon. M. of Societies of Antiquaries of Normandy, Picardy, and Poitiers. With Illustrations by the Author. London: J. C. Hotten, Piccadilly. 1859.

THE history of the legendary and civic giants is a subject of curious interest, and no one is better able than Mr. Fairholt to turn out a pleasant little book upon it, such as this is. Mr. Fairholt is an antiquary and draughtsman of distinguished ability, whom many of our oldest readers will remember as an occasional contributor to our columns.

The scope and purpose of Mr. Fairholt's present volume may best be given by a quotation from his own pages:—

"The popular love of giants led the municipalities of many cities in Flanders and Belgium to provide figures of the kind for grand fete days. Thus Antwerp, Louvain, Malines, Asselt, Brussels, Ath, Ghent, Bruges, Tournay, Lille, Dunkirk, Ypres, Poperingue, Cassel, Douai, &c., have each their communal giant, which, upon certain days, is carried about these towns. They are constructed in various styles, and habited in still more varied costumes, ranging from the Roman (as at Antwerp) to the court dress of the last century (as at Brussels). Sometimes they are formed of osier, as at Cassel, Hazebrouck, and Asselt; sometimes of elaborate wood-carving of a fine and expensive kind, as at Antwerp.

In directing attention, therefore, to the carved figures which so strikingly decorate the old Guildhall of London, it will be necessary to carry our researches far beyond the comparatively recent period at which they were fabricated; to look a little at the guild observances of the great commercial trading towns, as well as to take a retrospective glance at the once-popular fabulous history of the early foundation of London."

He has carried out his purpose very well, and the result is both amusing and instructive. The foreign giants have never before been brought together.

Miscellanea.

EARTH-BORING.—At Forbach, a shaft was bored by Kind, a few years ago, of a diameter of 14 feet, to a depth of 100 yards, by means of chisels fixed on iron arms, worked by a 12-horse power engine. At the Paris Exhibition, in 1855, M. Mulot exhibited a boring-cutting for a similar operation. At Rthort, in Westphalia, a short time since, a shaft was in course of boring of the diameter of 20 feet.—*Mining Journal*.

INAUGURATION OF THE CLIVE MONUMENT AT SHREWSBURY.—A grand demonstration took place at Shrewsbury, on Wednesday in last week, on the occasion of the inauguration of the statue erected in the Market-square to the memory of the great Lord Clive. The statue is of bronze, by Baron Marochetti, about 10 feet high, and stands upon a pedestal of Portland granite. The design of erecting this monument originated at a meeting held at Willis's Rooms, London, two years ago, on the anniversary of the victory of Plassey. The statue cost 2,000 guineas. A grand procession took place to the foot of the statue, a great many of the aristocracy of the district being in attendance. Earl Stanhope, on behalf of the subscribers, presented the statue to the mayor and corporation of Shrewsbury. The company afterwards adjourned to partake of a banquet at the Lion Hotel, to which they were invited by the mayor. The statue stood in Whitehall for some time previously.

GLASGOW ARCHITECTURAL SOCIETY.—The monthly meeting of this society was held on Monday, 16th inst., in the Scottish Exhibition-rooms, Bath-street. Mr. Salmon occupied the chair. After the reading of the minutes, and nomination of several new members, M. C. Bowie read a paper on "House Painting, its Means and Results." After comments by several members, a vote of thanks was awarded to Mr. Bowie.

LABOUR IN AUSTRALIA.—The *Melbourne Argus*, speaking of Victoria, says,—“We are in the midst of a renewed and more widely-spread struggle between the workmen and employers for the extension of the eight-hours system, and for other and perhaps more immediate advantages to the former. Men of different trades are out on strike for the eight hours in its integrity. The masses on the northern line of railway determined to leave their work unless Messrs. Coruish & Bruce would discharge all masons who did not belong to the union of their trade; and, as this demand was not complied with, they are out on strike too; and the bricklayers on some portions of the same works are out on strike for an advance of wages to the extent of 2s. a day. Tradesmen are still hanging about town in considerable numbers, complaining that they cannot obtain anything to do, and yet men who have employment throw it up thus foolishly in the hope of compelling masters to accept the very unreasonable terms dictated by the agitators at head-quarters, who are mostly men with other means of living than by the trades to which they nominally belong. The bad feeling against the contractors has been increased by the importation of masons and labourers from Germany under engagement at lower rates of wages than are current here, and the renewed agitation of the eight-hours question has been fostered and extended by the lately-formed Eight-Hours-Labour League.”

PORTLAND HARBOUR.—Once a Week contains a pleasant paper on the harbour of refuge at Portland. We take a paragraph: “The first object of the engineers here has been to construct a rubble bank; and with this view a temporary staging carried on piles into the water is erected in the following manner. A pile is loaded heavily and sunk into the blue waves; its lower end is shod with a large cast-iron screw, while its top is fitted with a cap, having long radiating arms of wood. The ends of these arms are notched, to carry a strong rope coiled round them, one end of which passes to the shore. The arms thus form a kind of large skeleton reel, or drum, wound about with a rope, the loose end of which is then hauled up by powerful machinery; and the pile steadied by guys, being thus made to revolve, slowly screws its way down into the solid earth, becoming firmer and firmer with each revolution. One row of piles is thus fixed, and another parallel row at thirty feet distance from the first is also screwed into the soil. Upon these as a foundation, longitudinal timbers are laid, and on the timbers a strong platform erected. We have thus progressed thirty feet into the sea, and the bauling machinery is now worked from the staging thus formed over the spot where the blue water gurgled uninvaded yesterday. Another row of piles at thirty feet distance from the last is now screwed in, and another thirty feet won from the water. Simply told, this is all that is requisite to carry out the wooden staging far into the sea. Of the practical difficulties involved in the work we say nothing here: that they are often considerable will be easily inferred, when we remember the great depth of water in which many of these piles are screwed, and the immense weight and size of the piles themselves. Strictly speaking there are now two separate breakwaters being constructed at Portland, the first running due east from the shore for about 1,800 feet; and an outer or main breakwater, which is to be about 6,000 feet long, separated from the first by an opening 400 feet in width, and sweeping in a circular curve away to the north-east. The first of these, now nearly completed, is not only a sea wall, but a landing and coaling stage for large vessels as well; while the outer or main breakwater is at present nothing more than a line of rubble stonework rising above the sea.

“THE LADS WITH THEIR APRONS ON.”—A reverend correspondent sends us a version of this “Masons' Song,” differing somewhat from that we printed. We can find room only for the last verse:—

“Now you masons bright, take great delight,  
In what is called sound masonry;  
Stake plain your signs, with squares and lines,  
And well maintain your mystery.  
But mind, though you may tramp and shift,  
And seek for jobs both here and there,  
No scamping work should e'er be done  
By the lads who build with their aprons on.”

**GLASS IN STONE.**—Sir: In reply to your "Subscriber," inquiring for the best cement for stopping glass in freestone frames, I can recommend mastic, mixed with boiled lincsed oil, to be well mixed and beaten to a tough consistency. The stone and glass, as far as the cement is required to cover, should be previously treated with two coats of boiled oil.—C.

**ELECTRO-ISOLATED CASTINGS.**—After all our knowledge, the uses performed by electricity, pervading everything as it does, are but little understood. Mr. Adams, of Pittsburgh, it is said, has discovered that in casting common iron, by insulating the moulds together with the man who pours the liquid metal into them, the castings are quite a different article—coming out as white as silver and as hard as steel. The value of the discovery has not been tested. As, however, there is doubtless a measure of electricity constitutional to, and which must become latent in, every formation, the idea is a promising one. Moreover, positive electricity, we have always maintained, is a concentrative or concrete principle, more analogous to cold, for example, than to the heat which electricity itself evolves.

**FALL OF A MILL AND LOSS OF 180 LIVES.**—On the 10th instant, at Lawrence, Massachusetts, the main body of the Pemberton Mill suddenly fell to the ground, and buried in the ruins several hundreds of the workpeople. The mill consisted of a large main building of six stories in height, and of two small wings. The mill employed about 600 operatives, some of whom had fortunately left, and others were in the wings, which were not destroyed. There were probably from 300 to 500 buried in the ruins. About one in four who were taken out were dead, and nearly all the others were more or less wounded, some of them probably fatally. Many of the rescuers were killed by the still falling ruins. The disaster was rendered still more terrible by the bursting out of a fire amidst the ruins about midnight. It is supposed that most of the lives were lost through the fire.

**COVERING THE WOLVERHAMPTON MARKET-HALL.**—At a recent meeting of the Wolverhampton Council, the minutes of one or two meetings of the Markets Committee were read by the town clerk, and stated that as the plans of Mr. Bidlake, architect, for covering in the Market-hall, could not be carried out for 2,006*l.* 10*s.*—Mr. Bidlake's estimate,—the lowest tender being 2,600*l.*—his plans had been returned, and the plans, specifications, &c., of Mr. Henry Lloyd, of Bristol, had been accepted, under the same conditions as those laid down in Mr. Bidlake's case, namely, that they could be carried out for the amount specified in his report. In this case the estimated outlay was 2,000*l.*, and of five tenders sent in that of Mr. R. Stap, of London, who agreed to execute the works for 1,670*l.*, had been selected, conditionally upon the contractor finding the necessary securities. A letter from Messrs. Deakin & Dent, Mr. Bidlake's solicitors, was also read, informing the committee that Mr. Bidlake claimed compensation for the loss he would sustain in not being allowed to carry out the works. After a good deal of discussion, chiefly as to Mr. Bidlake's claim, the minutes were adopted by a majority of 20 to 7, a few of the councillors refraining from voting.

**A NAIL SHOP BLOWN UP AT CRADLEY.**—One of those cowardly attempts to destroy property and life by the use of gunpowder, which have lately become so frequent at Sheffield and its vicinity, has just taken place at Cradley; and we are sorry to say, as far as the former count is concerned, with complete success; and the man whose property has been destroyed had a narrow escape of his life. A horse-nail maker, named Dunn, was aroused from his sleep by a violent shock. He of course got up, and found the walls of his room shaking to such a degree that he feared they would engulf him before he could get away. His nail-shop had been blown to atoms. The wall opposite was down, windows broken in all directions, and bricks sent by the shock to a distance of 10 or 50 yards. The wall of the bed-room in which he and his wife lay was forced in, and had not the wall been very strong, they must have been crushed in the bed in which they lay. Two men, Czerahiah Willets and William Feldon, were apprehended: they are both horse-nail makers, and were identified by Dunn as amongst four or five men whom he saw running from his premises immediately after the explosion. They are union men. A remand was granted, and the magistrates refused bail. The explosion was caused, it is supposed, by lowering a bag of powder down the nail-shop window with a cord, which was found at the top of the chimney. A long fuse would give the rascals time to escape in safety.

**ACCIDENT AT THE RAINBOW TAVERN.**—Last week the new wall of the Rainbow Tavern fell down. Unfortunately six poor fellows, who were at work, were injured, and were conveyed to King's College Hospital.

**THE VICTORIA RAILWAY BRIDGE AT MONTREAL.**—The English engineers sent out to Canada to inspect the Great Victoria Bridge have reported favourably upon the structure. The tests applied are said to have exhibited very satisfactory results.

**A FREE PUBLIC LIBRARY AND MUSEUM FOR BIRMINGHAM.**—A number of gentlemen who feel an interest in the progress of popular enlightenment are taking steps to secure the adoption in Birmingham of the Act for promoting the establishment of free public libraries and museums in municipal towns. They are said to entertain confident hopes of success.

**MARXON'S PATENT LADDERS.**—In these ladders the rounds are made with a shoulder, which is let into the inward side of the ladder about a quarter of an inch, and a smaller hole for the pin of the round is bored through to the outside. The hole is then made to taper inwardly, to allow for the expansion caused by a wedge which is driven into it from the outside. Ladders made on this principle appear to have an advantage, as the sides cannot be driven farther than the shoulders; and, being wedged on the outside, the pins obtain a dovetailed shape that keeps them firmly in their places.

**MEMORIAL TO BISHOP PEARSON.**—A proposal is made to raise a memorial to John Pearson, Bishop of Chester, author of "The Exposition of the Creed," who died in Chester, July 16, 1686, and was buried in the cathedral, within the rails of the altar. The memorial is intended to consist of a monument of stone, alabaster, or marble, in accordance with the architecture of the cathedral, bearing an effigy of Bishop Pearson. The promoters say, a canopy of rich metal-work may be erected over it, and the monument itself enriched with inlaid marbles, in the character of the improved style of the present day. This enrichment will depend on the amount of contributions. Subscriptions are being sought.

**SANITARY AFFAIRS IN CHATHAM.**—On the 20th instant, the shocking state of some property in Holborn-lane, belonging to Watt's Charity, was brought before the Local Board of Health, and the trustees were requested to appoint a committee to meet one from the Board to confer on the subject. The *Chatham News*, which appears to take an active part in the promotion of sanitary reform at Chatham, describes the state of this charity property as indescribable and horrible in the extreme, from want of accommodation for the poor people of the locality. The Board surely cannot fail to bring matters to a satisfactory state in dealing with the property of a well-to-do charity such as this appears to be.

**BRIDGEWATER SCHOOL OF ART.**—This school was opened on the 23rd inst., in the Public Room of the town. The walls were hung with works of art. As president, the mayor occupied the chair, and addressed the meeting. The committee reported that their labours had been thus far attended with success, so that the school is about to be opened under favourable auspices. Mr. Bowler, the Government Inspector of Schools of Art, afterwards addressed the meeting, in a speech fully reported, together with the whole proceedings, in the *Bridgewater Times*. In course of his address, Mr. Bowler said there was one great point which he wanted to refer to before going into detail regarding the course of instruction, which he might do more fully in the evening, when he understood there would be a second meeting, and more students would probably be present. It was a point in which schools of art did not stand alone. The workmen wanted occupation after their work: more than this, they wanted recreation, which must be provided for. It was in supplying these wants of the majority of the people that these schools were most valuable. Undoubtedly all active, smart, intelligent men could get through their wood and their timber, make sockets and window-frames, all in their degree of intelligence. But notice three or four intelligent men at their work, and look at them when their day's work was done—when they had knocked off at six o'clock: they would find a great difference between them. These Government schools would prove eminently useful to carpenters and blacksmiths, and furnish an innocent and suitable recreation after their work. He believed the man was more himself after work than during the whole day whilst at work. At work he must obey some one else, but after work he was no slave, but had his own pleasure to seek.

**THE BRUNEL MEMORIAL.**—Upwards of 1,600, have been subscribed towards the proposed memorial to the late Mr. Brunel; but, as this is scarcely sufficient to accomplish the design of the promoters, the subscription lists will remain open till the committee shall determine as to the specific appropriation of the fund.

**CASELLI'S PANTELEGRAPH.**—The *Pays* contains an account of a visit by the Emperor of the French to the establishment of M. Froment, for the purpose of witnessing experiments in the working of the Pantelegraph at the Abbé Caselli, of Florence, which reproduces, it is said, as exactly as can be done by a photograph, every species of writing or drawing.

**ALL SAINTS', WESTBOURNE-PARK.**—We hear that the presentation to the church of All Saints, adjoining Westbourne-park, erected by Dr. Walker, which has remained long unfinished, has been made, and that it will be completed and consecrated early in the summer.

**CONGRÈS SCIENTIFIQUE DE FRANCE.**—Will you please to announce to your numerous readers that the "Congrès des Délégués des Sociétés Savantes" will be held this year at Paris, on the 9th of April, in the Rue Bonaparte, as usual; and that the "Congrès Scientifique de France" will be held at Cherbourg, on the 2d of September. The presence of English antiquaries on either or both of these occasions will be particularly acceptable to their brethren in France. It is highly desirable that the leading persons occupied in the same pursuits in the two neighbouring countries should be personally acquainted, and ready to assist each other.—A. DE CAUMONT (Paris).

**VENTILATION: LIVERPOOL POLYTECHNIC SOCIETY.**—At the usual meeting of this society, on Monday evening before last, at the Royal Institution, Colquhoun-street, Mr. Scott in the chair, Mr. George Reid, of Bootle-lane, read a paper "On the Principle of Ventilation." He showed a series of experiments with his carbon test, rendering the effects of foul air visible, and with other apparatus demonstrated several improvements in the art of ventilating. A discussion followed, and a vote of thanks was accorded to the lecturer.

**WORKMEN'S INSTITUTE AND BENEFIT CLUB FOR LAMBETH.**—Endeavours are being made to establish, at 84, York-road, Lambeth, a branch of the new institution at 239, Euston-road, under powerful patronage; the Duke of Northumberland being the president; the Earl of Carlisle, Lord John Russell, Lord Overstone, Lord John Manners, Earl Spencer, and other noblemen, being vice-presidents; Baron Rothschild, Mr. H. E. Gurney, Mr. Thomas Hartley, Mr. Gladstone, and other gentlemen, trustees; Mr. St. Leger Glyn, treasurer; and Mr. Thomas Piper, Mr. C. Lucas, Mr. J. Nigby, and various other gentlemen, form the committee. The rules of the benefit club connected with the institute have been approved by the Registrar of Friendly Societies, and are now printed, and may be obtained, we presume, at York-road, Lambeth, or at Euston-road. The Lambeth branch was to be opened on the 18th instant. These new institutions are designed to extend their influence and advantages to workmen in all branches of trade, but particularly to the building trades operatives; and, without, of course, committing ourselves to all its details, and although we would like to see one powerful and extensive institution rather than many small ones, the endeavor to benefit the workmen in this way has our hearty good wishes.

**HOLLOW WALLS.**—Air is a poorer conductor than stone, and costs nothing save the box or hollow in the wall which holds it, and this is only a question of slightly increased labour in construction, and not a question of material; for the same amount of materials may be made stronger if hollow than if solid. Here we come to the great and common mistake which too often renders hollow walls no better than solid ones, viz., instead of absolutely confining the stratum of air, and isolating it from the outer atmosphere, they permit it to change, to escape when heated, and make room for fresh air from without; in short, to circulate, in which case they are worse than a single wall. Many attempts are made, especially in the country, to prevent the dampness of brick or stone houses by making hollow walls, and they generally fail because the contained air is not absolutely confined. Dampness does not come from without, through the wall, but is deposited from the air within when it comes in contact with the walls, which have been made cold simply because they are not thorough non-conductors. The greatest care should be taken to stop all holes, however small, especially between the outside atmosphere and the enclosed non-conducting stratum.—*Engineer.*





# The Builder.

VOL. XVIII.—No. 87.

"The Handbook of Specifications."



H & C

properly educated architects write their specifications, may be seen in the two volumes recently issued by Professor Donaldson.\*

Amongst the other known buildings, the specifications of which are given, are the Wilshire Lunatic Asylum (Wyatt & Brandon); Fotherhill's Prison (E. Abraham); the City Prison, Holloway (Bunning); the High School, Edinburgh (Hamilton); Clothworkers' Hall, London (Angell); Wellington College, Sandhurst (J. Shaw); houses in Grosvenor-square, and elsewhere; St. George's Church, Doncaster (Scott); several works of smaller size by the author, including Messrs. Shaw's warehouse, in Fetter-lane, a very successful elevation; the Newcastle-upon-Tyne railway station (J. Dobson); new Westminster Bridge (Page); the High-level Bridge, Newcastle (K. Stephenson); various works on the Great Northern Railway (Brydson); and one French specification for houses in the Rue de Rivoli,

Paris (MM. Armand, Hittorff, Pellechet, & Rohault de Fleury, architects.) The last is a very elaborate composition, occupying seventy pages. The majority of the specifications have illustrations in the shape of elevations and plans; but these, for the most part, are not executed in a worthy manner,—indeed, some of them are positively discreditable to a hook of cost and character. It is evident that the author has not had control in this department.

In the introductory address the author alludes to the intention which was first entertained of reprinting the volume of specifications by Mr. Alfred Bartholomew, now out of print, and says,—

"But the state of science connected with construction has made large advances. Vast experience has been brought into play by the great engineering and architectural works which have been carried out during the last twenty years; a period rich in important improvements introduced by men of extraordinary capacity, skill, and experience, who have been engaged in operations of the first magnitude. It was felt also, that the preliminary matter of Bartholomew's specifications is now out of date; that the errors of taste and construction therein alluded to are confined to the inferior practitioner; and such a revolution has been effected in various operations, that the professional man required a work more in accordance with the improvements of the age and the actual state of construction at the present time."

We are most glad to have the present work. It is valuable as a record, and more valuable still as a book of precedents: nevertheless, we shall be rejoiced to see a reprint of Bartholomew's hook, or at all events great part of it. It is full of valuable observations and advice,—advice which, so far from being "out of date," is still much needed. It may be, as Mr. Donaldson says, that "the errors of taste and construction therein alluded to are confined to the inferior practitioner," but so many structures are raised under the inferior practitioner, or under no practitioner at all, that bad building—inferior building—is to be seen everywhere. Much of what Bartholomew says will never be out of date, and should never be lost sight of. His skeleton specifications, too, paragraphed, with side-headings and an elaborate index, afford great facilities for easy reference. In fact, we have no hesitation in asserting that it is one of the most valuable works that can be placed in the hands of the young architect. We say this of course in no disparagement of the new work before us, to the usefulness of which we have already borne strong testimony.

At the commencement Mr. Donaldson gives some suggestions on the Principles of drawing up a specification; a skeleton specification for erecting a building; hints for specification of dilapidations; a model contract; general conditions of contract for engineering work (drawn up by Mr. James Simpson); model forms of terms for letting building grounds (why does he describe the houses in this as "first-rates" and "second-rates" terms which have now no precise meaning?); notes on the mode of estimating the probable cost of a building by the cubical contents; and some observations on competitions. We give his notes as to valuation by cubical contents:—

"Measure from the bottom of the brick or stone footings of the walls to half way up the roof, and this will give the dimension of the height.

This should be multiplied by the superficial area, including all the walls.

The cubical contents so produced are multiplied by the sum, per foot cube, which it is supposed would be proper for the class of building to be estimated. The amount will be the probable cost, exclusive of fittings, which will of course vary according to the taste and requirements of the occupier.

Whenever a house, mansion, or other building has attached or detached offices, each erection must be taken and priced separately, according to the rate to which it properly belongs.

A dwelling-house in London of the third rate or class, and a plain country lodges, may be assumed to be worth 5d. or 6d. per foot.

An ordinary dwelling-house of the second rate or class may be supposed to be worth 7d. per foot cube.

A first-class dwelling-house may be supposed to be worth 2d. or 3d. per foot more, it being presumed that the construction is more solid, and the finishings of a superior character.

A plain country house, or club-house, with stone elevation and internal finishings of a high class, may be taken at from about 1s. to 1s. 3d. per foot.

The above may be supposed to apply to town houses; but villas and detached country-houses, having all the parts of an architectural character and no party-walls, may be taken at 1d. or 2d. per foot more, according to the difference of style and finishing.

In the case of any superior materials being employed, or of any decorations of a high sculptural class of art being introduced, a special sum of so many hundreds or thousands of pounds must be put down in addition.

The domestic offices may be taken at 5d. per foot. Thus stable buildings of the ordinary class may be calcu-

lated at that figure; but, if the finishings be expensive or fanciful, it may be increased to 1d. per foot more.

Workhouses, hospitals, warehouses, schools, and such-like buildings, having large internal spaces and few divisions, and with the architecture of a simple and substantial character, in brick-work, may be taken at from 4s. to 5d. per foot cube. Lunatic asylums and hospitals, requiring more special provision, and greater subdivisions, would be somewhat more expensive than ordinary buildings of this class.

Churches, chapels, or large rooms or halls for meetings of large assemblies, may be considered to be worth 6d. per foot cube; if, however, a tower or spire be added to the church, a distinct sum must be allowed for it. A Gothic tower of brick, faced with Kentish rag and with Bath stone dressings, and surmounted by a spire, rising to a height of 100 feet, would cost about 800l. or 1,000l., or if rising to a height of 130 or 150 feet might reach 1,500l. or 2,000l."

About 140 pages of the second volume are appropriated to an exposition of the Law in relation to the legal liabilities of engineers, architects, contractors, and builders, by Mr. W. Cunningham Glen, barrister-at-law; intended rather for these persons than for the legal practitioner. This part of the work treats of—1. Contracts generally; 2. Contracts with corporations; 3. Extra works; 4. Party walls and injuries to buildings; 5. Arbitrations; 6. The relation of architects and surveyors to employers; 7. The liability of contractors for damage done to works; 8. The liability of masters for injuries to servants in the course of their employment, and other persons; 9. Differences between masters and workmen; 10. Combinations of masters and of workmen, strikes, &c.; and, 11. The Truck System. No. 6, headed "The Relation of Architects and Surveyors to Employers," requires fuller treatment: it scarcely touches the subject. The chapter on Contracts with Corporations, and that on Extra Works, are valuable. Suffice it, in conclusion, to say in words, what our readers will have gathered for themselves from the particulars we have given, that Donaldson's Handbook of Specifications must be bought by all architects.

## LECTURES ON ARCHITECTURE AT THE ROYAL ACADEMY.

On Thursday, 26th of January, Mr. Sidney Smirke, R.A., delivered the following lecture at the Royal Academy, before a numerous audience:—

My distinguished colleague and coadjutor, Mr. Scott, two years since, addressed to you some interesting remarks on the transitional style that intervened between the Romanesque and Pointed styles of architecture, and noticed the peculiarly productive energy that appeared to have characterised the efforts of the artists who were then engaged in revising and moulding the forms of existing architecture, and laying the foundations of a new manner of building, which ultimately settled down into the regular, consistent, and beautiful style designated by later artists as the Gothic style. There is another very analogous period in the history of our art to which I wish now to invite your attention. Throughout that history no epoch appears to me more interesting and important than the Early Renaissance, or that which was marked by the first abandonment of this Medieval style. The Medieval style retained its beauty and consistency in Europe for about a century and a half. Between the years 1200 and 1350 European architecture was constantly enriched with buildings which have ever since been deservedly accounted the boast and glory of our art. At about this last date commences a downward course, that *facilis descensus* which is the natural, and, perhaps, inevitable, tendency of so many human inventions. At Milan, Nuremberg, Rouen, and elsewhere, we have to lament the degradation of styles which, though not without many claims to our admiration, displayed itself in a profuseness of ornament, indicating in its execution a greater solicitude about the quantity than the quality of the ornamentation, and in an addiction to surprising novelties, and to those *lours de force* which prevailed in the later days of Gothic architecture. The increasing pride and wealth of the Church, not content with the dignified moderation of earlier days, may have been one of the latent causes of this excess; or perhaps our art, in its excesses, was but obeying some great fundamental law of the human mind. It is not, however, my purpose here to enter upon such an inquiry. I have but to note the fact that a progressive degradation of style certainly took place; not, indeed, at a uniform rate, nor in the same manner throughout Europe, but still in a constant and very sensible progression.

In England the style lost its stern grandeur of manner, but it lingered on and became frivolous, feeble, nervous, and ungraceful. In France, as might be expected from the character of art in that country, it became exaggerated and even violent in its efforts at effect, and departed widely from the quiet dignity of former, better times. In Italy the style was straitened in its birth. Life departed nobly in its veins for a short time and threw out a few very brilliant scintillations; but in that classic land the style died away before it had time to reach a complete and consistent maturity, as I shall have occasion to mention hereafter to remark, it became so adulterated by the mixture of generically different modes of art that men like Montevera and Robert de Luzarches would hardly have admitted, but their brotherhood such heterodox practitioners as Arnolfo or Giotto.

In Germany, the deterioration of this style was marked by aberrations of taste equally extravagant, and the classic art in the style and its accessories, such as such as Vischer and Eisinger, became a sort of legerdemain, such as we see it in the extraordinary works of those artists at Nuremberg and Ulm.

The Medieval style had reached this stage of its decadence, when one of those great revolutions com-

\* Handbook of Specifications, or, Practical Guide to the Architect, Engineer, Surveyor, and Builder, in Drawing up Specifications and Contracts for Works and Constructions. Illustrated by Precedents of Buildings actually executed by the following eminent Architects and Engineers:—E. Abraham, Angell, H. Baker, Sir J. Barry, I. W. Brydson, C.E., J. B. Bunning, T. Cundy, J. Dobson (Newcastle); B. Ferrey, T. Hamilton, Hittorff, Locke & Kerrington, engineers; G. Muir, H. Mawley, T. Page, C.E., J. G. Scott, J. Shaw, James Simpson, C.E., Robert Stephenson, C.E., Y. Thomason (Birmingham); W. Eite, M.P., T. H. Wyatt. Preceded by a Preliminary Essay, Forms of Specifications and Contracts, &c., &c., and explained by numerous Illustrations. By T. L. Donaldson, Ph.D., Architect, Professor of Architecture and Construction, University Coll., London, M.B.A., Correspondent of the Institute of France, Member of various European Academies of Fine Arts. With a Review of the Law of Contracts, and of the Responsibilities of Architects, Engineers, and Builders. By W. Cunningham Glen, of the Middle Temple, Barrister-at-Law, author of various legal works. London: Archley & Co., 106, Great Russell-street.

menced its course which form the epochs of art, and which we are sometimes disposed to attribute to accident, perhaps because our powers of vision are too faint to let us perceive the true connection and sequence between causes and their effects.

Various attempts have been made to account for the great change of style which I am about to advert. The irresistible power of the Turks drove out and scattered the remnants of the Greek people over Europe, and thus were sown the seeds of Classical art as well as of literature, in the territories over which Medieval art had been exclusively dominant.

Then Span and Genoese merchants imported from the ruins of Athens and Greece fragments of the ancient to be regarded first as the trophies of war and then as lessons and models of art. We must also bear in mind, when seeking for the causes of this great change, that the pride of ancestry will survive the wreck of fortunes; and even in their darkest times, Italians never ceased to cherish the proud recollection that they were the direct descendants of the dictators of the civilized world. Could they, then, regard the material relics of the world's masters otherwise than with reverence and admiration, and ultimately with the desire to imitate them? At all events, whatever may have been the cause, a combination of causes, we find the first germs of the Renaissance budding out in Central Italy as early as (perhaps earlier than) the middle of the fourteenth century.

It is not for me to turn aside from my own proper path in order to show you how a similar revival became contemporaneously established in six other parts of Europe. Vasari traces even to the early days of Bramante the first dawning of a Classic taste, that master having, with especial honour, studied at Pisa a certain fragment of antique sculpture which seemed to have been made to serve as a tomb in the cathedral there; a study which no doubt materially modified not only his own style of design, but that of the great school of sculpture which he founded, and which subsequently exercised so important an influence over the whole domain of art. I suppose it may fully be inferred that it was in the Pisian school that the light of the Renaissance first appeared. Those who are piecied to trace to insignificant causes events of great importance may, perhaps, bid us pause and reflect, that if a noble remnant of Classic art, like this, had been lost or had happened to escape the destruction of N. Pisano; or had there been no sculptor at Pisa capable of appreciating the value of that marble, how widely different might have been the destinies of art! The marble, however, did attract the attention of Pisano, artist, and no doubt other similar arguments soon became the object of his interest and study. N. Pisano was then at the head of the most important school of art then existing in Europe, and his recognition of the merits of this Classic relic may be said to have first awakened the attention of men to the study of the antique, and laid the foundation of that style of art which has been characterized as the Renaissance, or new birth of ancient genius.

That this revival should spread itself from sculpture to architecture was inevitable, for at this time architecture and sculpture, as in the days of Phidias, were twin sisters, and the same minds conceived, and the same hands executed works in both arts.

In architectural design the result of this new light was at first a singular combination of Classic and Gothic details; an imitation which, commencing in subordinate parts, gradually extended to the more important features of design. I think, indeed, it may be observed that all the great changes in style that mark the progress of our art, have in like manner, become discernible first in the details rather than in the masses.

It must be admitted that the architecture of Italy was well prepared for this change, for it had ever retained a very perceptible trace of the Classic forms and modes of design. It is true that close observers of Italian medieval art recognize two varieties as contemporaneously prevalent, designed respectively by architects like Giotto, Iabana and la Giotto, Fiesoles, by which latter term they meant to describe a style, still traceable in a few surviving examples, very nearly allied to the Gothic, while the former described an indigenous variety of Gothic. Of these, the one exhibited more unity and consistency of character, while the other was distinguished by its greater elegance and variety of detail. But besides the revival of Classical types, which would naturally operate to modify Italian medieval art, there was the important element of climate, which must have exercised an influence on the Italian manner, causing it to deviate widely from the type of its northern congener. The highly pitched roofs, suggested by the requirements of a climate to the Teutonic nations, were out of place in the genial south, and were totally at variance with the oblique pediments which had been transmitted to them by ancient tradition, and examples of which must ever have been extant before their eyes. These discordant elements had to be harmonized, but there is reason to believe that if this composite style, the result of antagonistic principles, had been allowed to continue unshaken by external causes, it would, in the hands of such aesthetic genius as then abounded in Italy, have developed itself into a perfect unity of character, and have probably rendered this Italian variety of medieval architecture one of the most admirable of all the varieties of the Gothic style.

Such, however, was not to be the fate of architecture; a new phase was given to all the arts of design; and our art, like the rest, was destined to receive a new impulse, and await fresh impressions from the reanimated vestiges of Greek and Roman art.

It is very interesting to watch the rise of the coming style, and to record its progressive advances.

As far as we know, the public buildings of the Loggia dei Signori, in Florence, is the earliest example in Europe of a tendency to return to the ancient Classic type. It is a building to many minds known to all here to need from no many description; although strongly tinged with the feeling of the Renaissance, it is yet a curious specimen of the transitional state of the art. The date assigned to this Loggia by Vasari is 1355; the author, Andrea Orcagna. Although 50 years have passed since its erection, the work stands but little impaired in time, bearing testimony at once to the fine taste and great constructive ability of Orcagna. It may be seen reproduced with great accuracy in the Maximilian Strasse at Munich.

That to the genius of Orcagna may be traced the earliest efforts to give our art a new path may be inferred from the fact that his earlier works are peculiarly Gothic; if, indeed, that can be correctly said of any Italian Gothic. Florence, known as the Or San Michele, the conception

and elaboration of which was to Orcagna truly a labour of love, yet we perceive in it exclusively the canopied heads and slender columns which we find in the mouldings and other details which mark Italian Gothic architecture. Still to Orcagna certainly is due the merit of being among the earliest pioneers of Classic art. His great genius enabled him to perceive that there was a region of art to be explored, more nearly allied to nature than that rigid mannerism which had then prevailed for centuries. The Pisa and Giotto had, it is true, already led the way in this respect, but it was Orcagna who corded, and sapped the basis of medievalism in architecture also.

What he conceived, Brunelleschi, another great and original genius, may be said to have accomplished. Orcagna had evidently become alive to the dignity of the works of ancient Rome; but Brunelleschi realized the aspirations his predecessor, and by the time he had closed his career, in 1446, the great revolution in art had been effected, and the new style firmly established, at least in his own country.

The onward movement, however, was not that of any one individual, but of the spirit of the age. Neither was it, as we have seen, effected abruptly; for there is generally a *raison d'être* in art which is not easily overcome, but yields reluctantly to change, so that new styles have never been the result of a slow partition. Influenced perhaps, by some accidental discovery (and such was the Greek tomb seen by Nicolo Pisano), and the antique remains exhibited to Raphael, an original genius, so influenced, gave birth to some new conception: the same intellect, and power which Michel Angelo realized this conception, enable him also to clothe it with those claims which secure for it popular approval: a herd of imitators follow close behind, and perchance, among them one appears who is able to improve upon the ideas of his predecessor, and thus a fresh advance is made.

It is so that extensive and important changes in the social fabric may be brought about, gradually and without any such convulsion as we witness in the revolutions in the political world are sometimes effected.

Almost contemporaneously with Orcagna's work, other faint indications may be traced of the approaching change, especially in Florence.

In the fresco decorations by Taddeo and Memmi of the Cappella del Spagnuolo, in the church of S. Maria Novella, of the date of about 1350, we may trace the first of the new style to be detected. At San Miniato, which dates from the latter end of the fourteenth century, may be seen very characteristic illustrations of that bigamous state of art, where the forms peculiar to the past are not just and the future; the hard, angular lines suggestive of the early mosaic work of Medieval times, being intermingled with the flowing foliage of the new style.

In the painted windows of the cathedral at Florence, stated to have been executed in 1434, by Domenico Gaddi, we will trace a strange intermixture of the Pointed and the Renaissance feeling; where the Gothic canopies, crocketed pediments, and other Middle Age forms occur with paintings and mouldings belonging to the Revived style. The same mixture occurs in the church of Sta. Croce, bearing a date early in the fifteenth century, where the Virgin is represented sitting on a throne designed under the influence of the Renaissance, in immediate juxtaposition with decorations unequivocally Gothic.

Again, the silver altarpiece preserved in the cathedral at Florence, which was commenced in 1366, and not finished till 1477, is perhaps in itself an epitome of the history of the revival of Classic architecture; for whilst its leading features are strictly and perfectly Gothic, there is represented upon it—human and arched interior architects as completely classical as any design of the sixteenth century.

The frescoes of Benozzo Gozzoli, in the Campo Sato at Pisa, afford us many curious examples of this Early Renaissance, and among the drawings belonging to his Majesty is a remarkable evidence of the ambiguous state of the art of design at this period, in a delicately executed drawing by Fra Giovanni, in which a figure is introduced where a statue is placed in a niche of pure Renaissance, surmounted by a foliated and crocketed canopy of strictly Medieval character.

It would be easy to multiply examples of the same transitional character, and I would point it out to you as an interesting and profitable study to search through the works of the revival of Classic architecture; for whilst its leading features are strictly and perfectly Gothic, there is represented upon it—human and arched interior architects as completely classical as any design of the sixteenth century.

I say that this would be, if wisely conducted, a profitable, as well as interesting study; for we may be able to derive some valuable suggestions for our own guidance. It is impossible not to perceive that at the present day our art is in a similar, transitional state; we also, are dissatisfied with the present; we also, are averse to tread in the footsteps of our fathers, and are pressing forward in pursuit of untrodden paths of aesthetic excellence.

Upon the wisdom with which our present onward course may be directed, and the right spirit in which our present studies are pursued, must mainly depend the result of ultimate success or failure.

The enthusiastic and labour-loving artists of the fifteenth century succeeded in creating a style which may justly and unquestionably be regarded as one of the most successful emanations of architectural genius that the world has yet seen.

Let us hope that the aspirations of the present generation may be rewarded by a like measure of success. In indulging this hope, let us not be lulled by the perils that beset our future. The pursuit of mere novelty is not more likely to produce effective and striking results than to betray us into deplorable failures.

There is also a spirit of paritizenship abroad, even in the most remote parts of the world, which is leading to conflicting opinions on the comparative value of the various known styles of art for modern requirements, and which stands, indeed, in a critical position, almost ready to give its latitude to the judgment and taste of the generation which now presses on, and which has not yet hastened to revert to the more legitimate subject of my discourse.

The genius of Italy, at the period to which I have been adverting, had been rekindled into such ardent life, and human invention had been stimulated to such extraordinary activity, that a surprising rapid progress was made in all the arts of design; and by the close of the fourteenth century we find the new style, in Decorative style, at least, nearly emancipated from the still and conventional forms of the preceding centuries. There was a long period of conflict; for it was not until the middle of the fifteenth century that the graceful, and, in

many respects, original style which I have selected as the special subject of my present address had reached its highest and its happiest equipment.

As Italy is the birth-place, so also it may be said to have been the most successful, among European States, in the cultivation of the revived style, and to the present day may be justly regarded as the storehouse of the richest treasury of examples of the re-animated art. It happens that this epoch was coincident with, perhaps, the most flourishing and pre-eminent period of Venetian history.

Towards the close of the fifteenth century, that Republic had reached its loftiest elevation. Her subsequent course, though often brilliant, was a descending curve. By a coincidence that can hardly be regarded as accidental, this period, I say, of political eminence was distinguished by a corresponding aesthetic excellence; and whilst eminent statesmen and warriors were extending the political influence and commercial relations of the Republic far beyond the limits of Europe, the most renowned artists were rendering her capital one of the fairest cities in the world.

I am tempted here to read to you, from an English translation of the date of 1506, the remarks of Philippe de Comines, who, towards the close of the fifteenth century, visited Venice as ambassador from France. He says, referring to the Grand Canal:—"Sure, in mine opinion, it is the goodliest streets in the world, and the best of all that I have seen. The buildings are high and of state, and of fine stone. The ancient houses be all painted, but the rest, which have been built within these hundred years" (that is, during the fifteenth century) "have their front all of white marble," and are beautiful with many great pieces of porphyre and serpentine. In the most of them are, at the least, two chambers, the ceiling whereof is tiled; and the windows are high and of fine stone, with a graven marble; the bedsteads are of the precious painted and varnished with golde, and marvellous well furnished with stuffe." To be short, it is the most triumphant city that ever was, and where all nobles, princes and strangers are most honourably entertained, the commonwealth best governed, and God most devoutly served and worshipped."

Such was the Frenchman's opinion of Venice at the period of which I am speaking, and we can well understand that the observant traveller, whose eye was accustomed to the dreary and uninteresting buildings of the north, must have been struck with surprise and admiration by the magnificent and festive architecture of the Gran Canal.

To those who are not personally acquainted with Venice, the great work of Cicognara, and the many readily accessible photographic representations of its buildings are well calculated to give an idea of their singular, yet graceful architecture.

Other northern states of Italy also are rich in examples of the style. One of the most conspicuous of these, as indeed, it is one of the most beautiful and imposing buildings of the north, must have been struck with surprise and admiration by the magnificent and festive architecture of the Gran Canal. To those who are not personally acquainted with Venice, the great work of Cicognara, and the many readily accessible photographic representations of its buildings are well calculated to give an idea of their singular, yet graceful architecture.

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I admit, therefore, readily, the viciousness of ornament in the very remarkable building just adverted to. But, from its great comparison with its neighbour, it is an elegance of manner and style, which, in my opinion, disarms the critic—an excess almost pardonable for its beauty; and whatever censure it may have to its profusion, and its want of attention to the conditions, it is to be pronounced upon the equally overladen and inappropriate ornamentation of some buildings in the later Gothic style. If, for example, we turn to Henry VII.'s chapel, we see excessive surface decoration presenting the most monotonous effect—a fatiguing repetition of the same unmeaning forms of the same frivolous ornaments, whilst at this Certosa at Pavia we are charmed by the most surprising variety, and by the richest and most luxuriating over the whole structure.

It is too true, as I have already stated, that, notwithstanding their eminent individual beauty, the ornamental details of this building are excessive; but to the student of ornament they are, indeed, a mine of wealth. There is a power of execution, a grace, a vigour, and an originality of design, which exact our warmest praise and deserve our most careful study. Let me not, however, fail to add that to erect a building for a fraternity of religious men as their place of retreat from the cares and frivolities of the outer-world, where they are, presumably at least, to devote themselves exclusively to a contemplative life and to the services of religion, and to convey that into the architecture of their sacred buildings, a profuse ornament, is a violation of decorum and consistency which no beauty of design or dexterity of execution can justify.

Added to the ornamentation, the architects of the early Renaissance period certainly were; for men will ever love to do that which they know how to do well. Yet men will also, in a distant and a distant way, be attracted by which present great simplicity of character. Indeed, in their general outlines, buildings of the best period of this school are usually simple. It is in the ornamental details applied to these simple forms that the excess to which I refer occurs.

An instance of eminent beauty exists in the church of San Francesco, at Rimini, by Leo Bal. Alberti, which, I think, may be regarded as a masterpiece of the style. It is an extreme severity of outline, unenlivened, nevertheless, by enrichments of great purity of design, in this case very judiciously introduced in a discreet and judicious manner. The church of Sta. Maria dei Miracoli, at Venice, by the elder of the Lombardi, is another example of great characteristic beauty, full of elaborate details of a rich and lively fancy, although the general form of the building could hardly be more simple or severe.



to the workmen of other countries. It is, I think, very doubtful whether, in practice, the constructive arts have not rather retrogressed than advanced in this country within the last quarter of a century.

No doubt we owe much to science during that time, and many most important improvements have been introduced into the practice of building. New materials have been made available, and the principles of construction have, perhaps, become theoretically better and more generally understood. But, notwithstanding these modern aids and increased facilities, the building art has, in practice, I fear it must be said, at the present day, generally deteriorated.

I am well aware that this is not a fitting place to inquire into the causes of this deterioration. It may be that our impatience to raise huge piles in the least possible time precludes the exercise of that forethought and care without which no good work is done: it may be that in our struggle to reduce expenditure to its lowest level, we are tempted to run dangerous risks, to introduce erroneous principles of construction, and to encourage the employment of inferior, slovenly, and dishonest workmen. At all events, I apprehend that to urge the necessity of improving the art-education of workmen is by no means an inappropriate subject of exhortation within these walls.

I am fully sensible of the efforts now, at length, being made to promote the art-education of the working classes; efforts which are already bearing good fruit. To further these efforts, and to express my own humble conviction that upon the success of them will depend the advancement of our art in this country, is my only motive, and must be my apology for now touching on this subject.

We turn to the example of our nearest neighbours on the Continent, we shall find a far higher scale of qualification generally prevalent among workmen engaged on such works; and we extend our views to the Continent, and symptoms of a far more eager desire of self-education than is usually met with among our own artisans.

I think it well to avail myself of this occasion to repeat to you the words, carefully translated, of a distinguished friend holding a high public appointment connected with the fine arts in France, whose position affords him peculiar facilities of observing the artistic acquirements of that class of workmen on whom the architect must depend for the just and faithful execution of his designs. My friend thus writes:—"With regard to our countrymen, it is but just to say that for some years past much has been done to extend a taste for study among the working classes. There are, in various parts of Paris, gratuitous drawing schools, where are taught arithmetic and geometry. At the Conservatoire des Arts et Metiers there are various courses especially frequented by workmen, where very superior professors give them lessons on the application of the sciences to industry. All these establishments are open at such hours as will enable workmen to attend them after their ordinary day's work, and these educational courses are much frequented and highly prized by them.

French workmen, especially those who live in Paris, differ greatly in their habits, their manners, and their origin. Most of the stonecutters come from Normandy; they are an intelligent and prudent class of men, who love their work, and are ambitious to become not only thoroughly acquainted with their business, but also to qualify themselves to undertake works on their own account, which they frequently succeed in doing. The carpenters are also a very intelligent class, although, perhaps, not quite so steady a character as the stonecutters. In other classes, however, value highly the advantages of instruction, and strive to acquire some knowledge, at least, of geometry and design.

"They are, moreover, fond of travel, and, according to an ancient custom, they consider themselves bound to make a tour through their native country, and to visit a certain number of celebrated ancient works, and especially as the Pont du Gard, and other similar monuments, before they can enter into full companionship with their fellow workmen.

That which French workmen shun above all things is idleness in their labour: they are especially anxious to undertake some novel work, involving difficulty in its execution.

So, also, in the execution of public works, we often find men willing to receive lower wages than they might obtain elsewhere, solely for the pleasure of doing something which is considered extraordinary or difficult.

"It has been observed that the workmen so engaged are never found to take part in *casualtes*, the deep interest which they feel in their daily work engrosses all their attention. It is *ennui* that gets them into evil ways."

Such are the very important observations of a gentleman eminent for his profound knowledge of art, his extensive experience, and most reliable judgment.

I would that those observations were applicable to the like classes in our own country. It must in candour be admitted that the voluntary acceptance of low wages expressly in order to secure an opportunity of triumphing over the difficulties of some new or unwonted piece of work implies a degree of enthusiastic attachment to his craft that does not, I fear, very commonly distinguish the ordinary English workman. Many honourable exceptions no doubt exist, and probably every one of us could, within his own experience, point to individual workmen of an intelligence and of aspirations not inferior to those of the workmen of any other country, and, perhaps, of more indefatigable powers of application; but as a body I fear we must admit, that our building artisans are far more eager to shorten their hours of labour, than to improve their hours of leisure.

I ought to apologise for this digression from the special subject to which I have appropriated the evening; but the education of art workmen is a matter not only of professional, but of national importance, and considerations bearing directly upon it can hardly be inappropriate within the precincts of the Royal Academy.

It trust that the remarks which I have addressed to you will lead you to study well the beautiful conceptions presented to you in the architecture of the fifteenth century, but in doing so I would beg you to understand that I am by no means disposed to encourage a tame, unthinking, servile practice of mere copying, or to tempt you to indulge in an indolent repetition of existing examples of art.

It certainly behoves the student in his early essays to make most careful transcripts, and so long as he copies, the more correct and faithful his transcripts the more useful and profitable will be his studies. But the making of such copies must be regarded only as supplying the means and materials of his ulterior aim. I think it may be said of all the fine arts that no one has ever become a really great artist who has been an idolatrous worshipper

of any one master, or school, or style. He may have laboriously obtained such an intimate knowledge of a manner as may have enabled him to reproduce work closely resembling the original exemplars, and he may attract the admiration of his contemporaries by the perfection of his type. But such imitative dexterity (except by way of exercise and practice) is not a worthy occupation of real genius. It is inconsistent with that freedom which is the life of art, and contributes little to that progress which is alone the result of freedom.

I repeat, therefore, that your attention is invited to the works of art of the fifteenth century, not that you may merely learn to repeat them, but because they are full of beauty and freshness and originality, and were the produce of an epoch in the history of civilization that has been, perhaps, more fertile in men of genius than any period before or since.

I will ask you to devote a few minutes to a contemplation of the phenomena which distinguish this epoch. It was within the limits of this fifteenth century that printing was invented, that oil painting became generally practised, and engraving first known as a fine art. To the same age belongs the beautiful mode of decoration known as *terza vita*, and the revival of terra-cotta work, which had slept since classic times, but which was now carried to a degree of excellence never again equalled.

Then, too, was effected the disintegration of the long-hidden remains of Roman decorative painting led to the brilliant conceptions of Raffaele and Giulio Romano.

Were we to extend our view beyond the limits of the arts, we should find the fifteenth century distinguished beyond others by its vast acquisitions in every realm in which man has sought to extend his intellectual conquests. But I am sure that the magnitude and the importance of the events and discoveries of that date must be too familiar to my hearers to need any enumeration by me.

Combining, therefore, our own feelings to art, it is impossible not to recognize the ardent aesthetic impulse which marks this period.

There was in the twelfth and fifteenth centuries, no doubt, a deep feeling which moved men to raise the magnificent ecclesiastical edifices which ennobled those times. A certain devotional fervour and a profound submission to ecclesiastical institutions were, doubtless, the bottom of these striking manifestations of architectural genius; but in the fifteenth century the development of the fine art in all its departments was due less to any religious impulse, or to any striving after otherworldly grandeur, than to a real living, loving, enthusiastic attachment to art for its own sake.

It is difficult, indeed, to form for ourselves any adequate conception of the state of feeling in this respect which prevailed on the revival of art in Italy. The love of art was at that time no isolated taste, cultivated by a few selfish individuals, and coldly regarded by the great body of the people.

When Cimabue exhibited his picture of the Virgin, painted for St. Martin Novello, the population of Florence locked in crowds to see and admire it. It was conveyed to its destination with all the accompaniments of music and festivity, and the whole city seemed to be party to a great professional triumph. Can we wonder that art triumphed in so congenial a soil?

Descending now to a somewhat later period, when Venice was alarmed at the anticipated approach of a Turkish invasion, and taxes were levied on the city for the national defences, that renowned republic, in the midst of all these alarms and anxieties, remained still mindful of the interests of art, and especially exempted Sansovino and Titian from the poll-tax, in honourable and grateful recognition of the meritorious claims of their countrymen to public distinction.

The day is indeed remote when we, in England, can hope that the tax-gatherer shall be forbidden to cross our thresholds, or to remit his calls upon even the most favoured of our countrymen.

Art has certainly not yet acquired, among us, such valuable privileges; nor does it ask or need them. We value our independence too highly to require more from the State than may justly be expected from its pledged faith, and our acknowledged public services.

Let us look hopefully, then, to the future, and let us endeavour to secure public favour by learning to deserve it.

#### CAMP HOSPITALS A HUNDRED YEARS AGO.

It is only within the last decaunium that, after a long pause, the practice of establishing standing camps in this country has been revived; and in the course of that short period the idea has, so to speak, passed through three distinct stages of development. First, we had the canvas camp at Chobham; then the streets of fragile huts at Aldershot and elsewhere; and now there is a barracks town of stone, brick, and mortar, springing up in the midst of it. It seems as if, in these matters, we must always recur to a bad type, and that, however free from fault our first conception of a *Castra Stalina* may be, we must always end in the contractor's and bricklayer's type, and reproduce, no matter where, the huge, solid barrack, with a fermenting reservoir of fust just in rear of it, polluting the atmosphere and even obscuring the light; and that is just what we see in the very latest, and, it may be added, most expensive style of camp architecture. But at the date of this present writing, when, within some six months, so many soldiers of one sort or another have been added to the fighting strength, and when already a talk is springing up of the necessity of massing large bodies of the soldiers of the new sort and brigading them with the regular troops, it becomes a matter of no little moment to consider how best and least expensively the housing of a few thousands, for temporary purposes, is to be accomplished. Further, there are now more men under arms, by very many thousands, than there is accommodation for. Were there an occasion to arise now for calling into active service every available and enrolled fighting man, the

very first difficulty would be to find some place in which to put them. To say, in a loose and

ignorant way, that such a difficulty can never be felt in a densely-populated country, is just to put an argument into the hands of those who may wish to cry down the popular movement. It is almost as foolish as to say that an armed population before an enemy need never fear for its commissariat, when, as a matter of fact, those who are well able to judge have predicted that an English army of any size, and under these circumstances, would, under the present system, be starved in less than a week. That by the way, however. Our present purpose is to say that this time seems to be a very proper one for looking back and trying to find out how these things were managed by our great grandfathers,—at a time, too, when they were invading France, and, in their turn, looking out for French invasions. Such information we possess in a little book which is not known so well as it deserves to be,—not at all, indeed, beyond the range of a few old medical libraries,—Dr. Brocklesley's "Medical and Economical Observations." As a matter of mere curious reading, it is interesting to know something of the actual life of the men whom Hogarth, and Smollett, and Sterne painted, who could speak of Fontenoy and Dettingen, and who were so soon to speak of Minden and Quebec; but there is much more in the little book that might be turned to useful account at the present time.

No one who is familiar with the most charming biography that ever was written, can need to be told who Dr. Brocklesley was. Every one who counts *Boissell's Johnson* among the select number of books to which he gladly returns at any season, and with always greater pleasure, must remember the friend and physician whose name so frequently recurs in the narrative of the later years of the great sage's life.

It is with regard to the provision for temporary accommodation of the sick that we wish to speak, and, in this respect, Dr. Brocklesley gives us three distinct experiences.

In the autumn of 1758 a large number of sick who had belonged to the unfortunate expedition against the French coast, in the previous summer, were landed at the Isle of Wight, and billeted around Newport. There was terrible crowding, and the hospitals themselves were the most wretched hovels and outhouses. The result was an outbreak of fatal disease. On this, "the ill-fated spot underwent a most rational purification; vinegar fumes, burnt gunpowder, kindled resinous substances were used in abundance; all the contiguous parts were scraped, washed, and fumigated." It was all without effect on the pestilence. Then it was ordered that "no more men be lodged there till after a longer interval than seven or eight days." Still the disease was not stayed. Driven by this necessity, a bold experiment was had recourse to, and the result should be described in Dr. Brocklesley's own words. "Some gentlemen of the hospital proposed to erect a temporary shed with dead boards, upon the open forest, and to have it thatched over with a coat of new straw, thick enough to keep out wind and rain, and capacious enough to hold 120 patients or upwards; for doing which, and the use of the boards, the country workmen exacted 40*l*. Although the hovel was finished in a fashion the most slovenly, and apparently inadequate to the end proposed, upon trial it was found that, notwithstanding much extraordinary cold, as well as moisture, which the sick there lodged had suffered, remarkably few died of the same diseases, though treated with the same medicines and the same general regimen, than did anywhere else; and all the convalescents recovered much sooner than they did in any of the warmer and closer huts and harses hired round Newport, where fires, and, apparently, better accommodation of every sort could be provided for them." While the sickness continued to a certain extent, and remarking "that this currency of fresh air had such amazing salutary effect on the men huddled in the forest," the inspector of infirmaries "procured an order to convert Carisbrooke Castle itself, situated on the extremity of a very high ridge of land," into a hospital for 400 sick." For the result of this experiment we shall again quote the words of Dr. Brocklesley. "At first it was expected the sick brought to that place would do better than their comrades who were lodged up and down in the miserable huts of the town, or than those upon the wild bare forest near Newport, under that occasional hovel; yet the event verified our conjectures only in part; for, though the castle was more prosperous to their recovery than the small rooms in low-roofed houses, yet more proportionally of the foresters were recovered, and that much sooner than any of the rest; and it evidently

appeared that all the damage and inconvenience from cold and redundant moisture in that place was much fiercer to be tolerated upon the whole than the mischiefs complicated on the sick by huddling together three or four hundred men and upward under one roof, and in the outhouses adjoining to the castle."

Our author's next opportunity of observation was at Sandhead Camp, near Guildford, where, in 1760, he found a great prevalence of "putrid, petechial fever." The hospital at Guildford being crowded with more than four times the number it ought to have contained, he "strenuously remonstrated against that pernicious practice of building so many sick in so closely confined a place," and, having obtained from General Cornwallis full powers to act as he pleased, he proceeded as follows:—"I drove perpendicular stakes, about 6 feet high, and placed wattles between them, well coated on the side next the weather with fresh straw: rafters were laid over in a workmanlike manner, and coated thick, like the sides: this made it spacious and airy overhead, and yet abundantly warm and dry for the intended purpose. On this plan, at an expense to the public of only ten guineas, the thatchers in the respective regiments covered in an ample and comfortable hovel, capable of containing about forty sick." The effect on the progress of the disease was most marked and immediate, and the doctor concludes his description by saying, "I candidly ascribe their fortunate escape more to the benefits of a pure, keen air they breathed therein every moment, than to all the medicines they took every six hours, or oftener."

At Winchester Camp, in the following year, the troops were found to be suffering to a great extent, and, for the use of one militia regiment, Dr. Brocklesley was enabled to introduce an improved form of his wattled huts, which he adapted to some special requirements of the ground. Again, with the best results. The same regiment carried the system out more fully in the subsequent year, and was able to congratulate itself on a very light sick-list and low rate of mortality, while "some other regiments of the brigade who had inveterate prejudices against the above practice, lost several more of their sick proportionally; and all that time the militia themselves were known to give ten guineas or more for a good recruit to supply the place of the deceased."

It is worthy of note that, a hundred years ago the register kept of the mortality produced by fever of various kinds, in military life, showed that full eight times the number of men had been lost from that disease than had fallen by their wounds in battle." And this was in the time of the greatest war minister that England has ever seen, at a time of great wars in both hemispheres!

Dr. Brocklesley's "putrid petechial fever" is the disease to which Pringle, a few years previously, had applied the term *gaol fever*, a term subsequently adopted by Howard, when publishing his prison and workhouse revelations. It is what we now call *typhus*. The distinction was not recognized in those days; indeed, it is only within the last twenty years that it has been accurately defined; but we must be careful to remember the essential difference, in respect both of cause and phenomena, between that disease and what we now call *typhoid*, or *pythogenic fever*. The former is the result of overcrowding and destitution; the latter of the decay of animal excretions. The first is the disease of towns and dense populations, and times of general depression. It selects for its victims the middle-aged, the robust, the bread-winners of families. The second lurks in smiling villages, and in places that often seem to be most healthy. Like its congener, *diphtheria*, it smites down children and young people. It is of it, under the name of *gastric fever*, that we read in the papers as slaying young women in isolated country-houses. Where it is present there will always be found a choked water-closet or an open drain.

The prejudices and superstitions from which Dr. Brocklesley was enabled to disentangle himself, but which he found potent for evil on all sides of him, are by no means extinct in these days of progress and enlightenment. For instance, the Secretary for War has recently published a series of rules and the particulars of a process which is to be uniformly followed "in disinfecting hospital bedding and clothes used in cases of *yellow fever*, small-pox, or other contagious diseases." The process is, simply, to close the doors and windows, and then to proceed to make a very nasty smell in the room. Nothing is said about incantations or weird dances to be performed around the stinking cauldron. The gentlemen at

the War Office are too prosaic to admit the introduction of the poetical element, the one thing that might have saved their plan from being quite ridiculous; and yet it is possible that they may have been able to preserve the dramatic unities by finding among the ranks of what is quaintly called "medical administration," some of whom there may be reason to say, as Macbeth said at Forres, that they

"Should be women,  
And yet their beards forbid us to interpret  
That they are so,"

and who would have acted the parts of first, second, or third witch with, probably, as much benefit to the commonwealth as results from the discharge of their more ordinary functions.

In view of such an evidence of retrogression as this order displays, it is not uninteresting to look back and remember that, a hundred years ago, in the days of dress wigs and gold-headed canes, there were men of enlightenment who knew,—and acted on the knowledge,—that the best disinfectant is to open the windows,—that it would often be better to lay a patient out on the barrack-field, *sub jovo frigido*, than to leave him in a reeking ward,—that the first essential in the prevention or treatment of disease is not pills, potions, or globules, but the best and cheapest of all medicines—one which Heaven bestows on us in boundless profusion—fresh air. CWM.

THE PROPOSED MEMORIAL OF THE GREAT EXHIBITION.

OUR readers will be glad to learn that there is at last reason to believe the long-talked-of Memorial of the Great Exhibition of 1851 will now speedily be raised. A meeting of the general committee was held on the 20th at the Mansion House, Alderman Challis in the chair, when the following report, which sets forth the course of events, and shows the difficulties the sub-committee have had to contend with, was read:—

"In 1855, when the sum of 5,212l. had been subscribed and paid in for the erection of a 'Memorial of the Great Exhibition of 1851,' circumstances occurred which led to the postponement of the proposition. The money was invested, and the matter remained in abeyance for a year. In June 1856, the Rev. Dr. Booth and George Godwin, Esq., at the request of the executive committee, consented to act as honorary secretaries, and a sub-committee was appointed to endeavour to carry out the original design of the subscribers,—the erection of a commemorative monument of the Great Exhibition of 1851. Various obstacles were removed, and the then Chief Commissioner of Her Majesty's Works, now Lord Llanover, undertook, so soon as a design should be submitted to him, to decide if a site in the park could be given for it. Advertisements and a circular were accordingly issued, inviting artists of all nations to submit designs under certain stipulations, and these were translated and published in several foreign journals. In reply, twenty-two models and twenty-seven drawings were sent in. With the permission of the committee of Privy Council, these were exhibited to the public, during five weeks, at the museum of the department of art at South Kensington; and the committee of the Architectural Museum allowing the use of their gallery for the purpose. Earl de Grey and Ripon (then Lord Goderich), Lord Montagu, Mr. Pitt, M.P., Mr. Westmacott, R.A., and Mr. Maclellan, R.A., agreed, on invitation by the committee, to assist them in coming to a decision on the merits of the various designs. Several meetings were held, and ultimately design 29, afterwards suggested by Mr. Joseph Durham, was selected as the best. This was submitted to the then Chief Commissioner of Works, Lord John Manners, who after some time gave the committee to understand that, if pressed for an official reply, he should not be disposed to recommend to Her Majesty the appropriation of a site in Hyde-park for its erection; but would willingly decide on any fresh design that might be submitted to him. Under these circumstances the committee looked about for some other course, and, an impression prevailing that an obelisk design would be more favourably received, invited one of the competitors who had submitted an obelisk, Mr. John Bell, to co-operate with Mr. Durham, in order that a design including that feature might be laid before the Chief Commissioner. Such a design was accordingly prepared and submitted to the Chief Commissioner, no longer Lord John Manners, but the Honourable Mr. Fitzroy, since deceased; and after various interviews, letters, and long consideration, the committee were informed, on the part of the Chief Commissioner, that, inasmuch as all permanent structures within the limits of the Park were in his opinion undesirable, he could not grant the permission they sought!

While these negotiations were going on, the determination to form a permanent gallery for the Horticultural Society, on part of the land belonging to the Royal Commissioners for the Great Exhibition, in South Kensington, was arrived at, and the sub-committee have reason to believe that an application being made to the proper authorities a prominent and fitting site for the original design, modified to suit the altered circumstances, would be granted, with the full concurrence of the Royal Commissioners. Under these circumstances the sub-committee have thought it right to lay this statement before the general committee, and to obtain their concurrence in making application for a site on the land of the Royal Commissioners. The amount now in the hands of the committee is 6,045l. 6s.

They entertain a confident hope that if this step be taken, and no fresh difficulties intervene, a memorial will yet be raised creditable to the arts of the country, and satisfactory to those illustrious and eminent persons who carried out to its successful issue the Great Exhibition of 1851.

January, 1860.

GEORGE GODWIN, Hon. Sec.

The Chairman explained that, after payment of all expenses, the interest on the money which had been invested left the amount in hand larger than the sum originally subscribed.

On the motion of Colonel Wilson, seconded by Mr. F. Fuller, the Report was received and adopted; and the committee were empowered to apply for a site on the land named. Thanks were voted to the chairman and sub-committee, and the meeting broke up.

Application has since been made to the Council of the Horticultural Society, who have appointed a committee of three to confer with the promoters of the Memorial. The Royal Commissioners have also expressed their willingness to concur in the proposed arrangement.

STEAM NAVIGATION.

A PAPER "On the Rise and Progress of Steam Navigation in the Port of London," by Mr. P. L. Simmonds, was read by that gentleman at the meeting of the Society of Arts on 25th January. From the mass of statistics, of which the paper largely consisted, we may quote a few items:—

The total number of steamers owned and registered in the United Kingdom, exclusive of the colonies, on the 1st of January, 1859, was 1854. London, the true empire city, stands, as might be expected, at the head of the list, having a fleet of 510 steamers, of 282,403 collective tonnage, and 68,951 horse power. But many of the steam vessels registered here scarcely belong to the navigation of London, as they sail from other ports.

In 1858, 2,254 seagoing steamers entered the Thames, registering 736,365 tons. Of these, 2,200 vessels and 700,761 tons were engaged in the home and foreign trade, and 54, of 35,604 tons, in the colonial trade.

On the 1st of January, 1859, there were registered in the port of London,—

154 steam-vessels under 50 tons measuring	4,677	Tons.
591 " " " " " "	199,588	" "
545 " " " " " "	195,265	" "

Comparing other ports with London, from the last return of steamers, we find they own respectively the following numbers:—Liverpool, 210 vessels, 91,411 tons, and 21,000 horse-power; Glasgow, 161 vessels, 95,116 tons, and 25,632 horse-power; Shields, 115 vessels; Newcastle, 107; Sunderland, 74; Hull, 67; Dublin, 48; Leith, 41; Bristol, 37; Stockton, 34; Greenock, 30; Cork, 29; Southampton, 27; Aberdeen, 14; and Dundee, 11.

Of the entire number of British steamers, 992 (or more than half) are of iron, 861 of wood, and one the *Rainbow*, of steel. 1,263 are propelled by paddles, 559 by screws, and one, the *Great Eastern*, by combined paddles and screw.

The largest and the smallest steamer belong to this port, the *Great Eastern*, of 18,915 tons, and the *Disowned*, of 4 tons.

The importance of steam transport to the metropolis may be estimated by the fact that, exclusive of the larger imports, the declared net value of the exports of the produce of the United Kingdom, from the port of London, in 1858, was close upon 29 millions. Rather more than one-half of the whole of the customs duties received in the United Kingdom is collected in London; for out of the 24,155,852l. gross duty received in 1858, 12,332,061l. was paid in London, and 3,622,503l. in Liverpool.

We own in the United Kingdom and Colonies, at the present time, 2,239 steamers, of 488,415 gross tonnage.

The introduction of steel for building vessels is a novelty, which dates in London from 1857, when a vessel was built by Messrs. Samuda, Brothers, for the *Russians*, to be employed in carrying troops on the Caspian rivers, and she answered admirably. The largest seagoing steel vessel yet built has also been constructed by the same firm, the *Jason*, of 450 tons and 120 horse-power, for the *Russian Steam Navigation Company*. This vessel, though built much lighter than an ordinary iron vessel, was found to be thoroughly seaworthy in every respect, and, though a very light draught vessel, she was found to agree perfectly in this respect with the original intention. Some small steel gun-boats have lately been constructed for the *Spanish Government* by Messrs. Remie and by Messrs. Samuda, and have the peculiarity of being driven by two screws, one at each quarter, the shafts being supported by two wrought-iron brackets, bolted through the skin plates. [As for ourselves, we modestly appropriate a solitary one, as already seen.]

It is scarcely possible to give a very accurate

estimate of the number of persons employed in the various steamship building yards on the river, but the following may be regarded as a pretty close approximation to the number employed, varying, of course, with the amount of work on hand:—

The Thames Iron Works	2,000 men
Samuda, Brothers	1,000 "
Westwood and Ballie	1,000 "
J. Scott Russell	600 "
C. J. Mare and Co.	600 "
Langley and Co.	200 "
Joyce and Co.	200 "
G. Rennie & Co. in the ship department	200 "
	6,000

The largest steam traffic from London is with France, 634 vessels, and 150,134 tons; the next, with Holland, 553 vessels, and 185,490 tons. After these follow Belgium, 332 steamers, and 105,760 tons; and the Hanse Towns, 296 steamers, and 100,896 tons.

It may be interesting to compare the steam navigation of the other principal ports of the Kingdom for the same year. In Hull the foreign entries were 1,187 vessels, and 357,002 tons; the coasting entries 577 vessels, and 105,305 tons. Liverpool, foreign entries, 500 vessels, of 354,217 tons; coastwise, 3,810 vessels, 1,556,073 tons. Southampton, foreign entries, 621 vessels, and 268,506 tons; coastwise, 92 vessels, 33,221 tons.

The immense importance of the steam shipping interest to this port and to the country needs no self-evident, from the statistical details I have laid before you. The improvements that have already been made within a few years are many and great, and I see no limit to the progress which experimental science and practical experience may bring about. The introduction of iron, the adoption of the screw, of superheated steam, and the economy of fuel and working, are evidences of the advance which steam navigation is gradually making; and the enterprise of our builders and engineers will, I am sure, always command for us the supremacy in this important branch of the mercantile marine.

#### THE GRAVE OF LADY MORGAN.

A MEMORIAL has been placed over the remains of this gifted lady in the Brompton cemetery. It consists of a flat slab, supported by six pillars: below is a block of polished white marble, on which is inscribed "Sydney Lady Morgan," and the date of her death in April last. The time of her birth is not mentioned. Above the inscription is an Irish harp of ancient form resting on two volumes, on one of which is written "Irish Girl" and on the other "France." The tomb is backed by trees, which add much to the effect. The Polish firs which line the main avenue of this cemetery are growing rapidly, and promise, in the course of a few years, to be a beautiful feature. In laying out grounds of a gravelly soil, this species of tree should not be overlooked in burial-grounds: the dark foliage both harmonizes with the spirit of the place, and aids the effect of the monuments.

#### THE PICTURES AT BROMPTON.

THE Vernon, Sheepshanks, and Turner galleries of pictures, now afford an intellectual treat. Here, well lighted, are some of the best works of Landseer, Mulready, Leslie, and other famed artists. The student of art may trace the progress of various painters, the variety of their styles, the advance of some towards perfection in the truthful imitation of nature, and the expression of poetic fancies, and the decline of others in the truthfulness of nature. Now, the public have an opportunity of forming a true estimate of the value of Turner's gift to the nation, and can see how much reason they have to be proud in having belonging to our school so great a painter. Two large rooms are filled with Turner's works. Here are the purely painted pictures, somewhat feeble, but yet remarkable, in consequence of their unaffected and matter-of-fact imitation of nature. These pictures, such as the "Bay of Bains," the production of the prime of life, are executed with such care, that they will be as lasting as some of the most remarkable works of the Flemish school. How remarkable are the cool, clear, grey tints of some of these works. How wonderfully the daylight and freshness of nature are shown; how exquisite are the forms. Then there are pictures of a grander kind, such as "Haemihal crossing the Alps," "A Snow Storm amongst Mountains," that wonderful representation of "A Shipwreck." Look where you may, how harmonious is the colouring, and how remarkable are the composition and arrangement of light and shade. The pictures of the latter

part of Turner's career contrast strongly with those to which we have referred: more luminous, more imaginative, these are less truthful in natural colouring, and less careful in detail. How poetical, however, are the fancies, and how wonderfully, in a peculiar way, they are expressed. None can dwell on these pictures without both pleasure and instruction.

It is satisfactory to notice, while passing through this and other galleries, that in most instances the mechanical execution promises that they will for long remain in a perfect condition. The cracking of the pigments which so much disfigures the works of Reynolds, and some other masters, is little seen. In this respect, the "Choosing of the Wedding Gown," the "Crossing the Brook," and others of the best pictures by Mulready, are useful examples for the art student. Carefully glazed and protected from varieties of temperature, and the dampness and smoke of the atmosphere, the colouring, in all probability, will some centuries hence be as bright as at the present time. The pictures by Webster, Lance, and several others are remarkable in this respect.\*

#### RAILWAYS AND CITY THOROUGHFARES.

THE applications to Parliament for powers to construct railways in the City, or affixing the people inquire how the thoroughfares will be affected? Mr. Heywood, the City surveyor, states that "the total area, within the City, scheduled for these various projects, is about fifty-three acres; the number of public ways of all classes to be spanned by arches is about seventy; and the number to be entirely absorbed and stopped up, about forty-two,—a larger area affected by new schemes than in any previous year since 1846."

It is quite evident that, unless great care be taken, the "blocks" of the City will be enormously increased, and railways, instead of being a convenience, will, in many respects, become a source of nuisance. The subject should be thoroughly ventilated, and the various applications examined as a whole. The street accommodation of London is seriously threatened.

#### HOW COINS ARE MILLED.

THERE are few things on a small scale in the mechanical way which more puzzle the popular mind than what is called the "milling" on the edges of the gold and silver coins of Great Britain. Everybody is familiar with milled money; but few know how the milling is produced. The very term, indeed, is likely to mislead, and the uninitiated would naturally imagine that each particular coin, with its circumference serrated, had been put into a lathe and impressed by a revolving "milling tool" as are the screw heads of mathematical and other instruments. This, however, is far from being the fact. The process is much more simple. We saw it the other day at the Mint, where they are now coining sovereigns by wholesale, as it seemed to us, and will attempt briefly to describe it.

Our readers will perhaps be good enough to picture to themselves a number of shankless brass buttons, which have been double gilt and burnished on both sides. They will thus have a tolerably correct idea of what, at the Royal mintage, are known as "blanks" for sovereigns. These blanks are slightly smaller in diameter than finished sovereigns, and when self-acting machinery has carried forward one of them to the surface of a die fixed in the stamping press, and intended to imprint one side of it, a steel collar, which has been bored out to the precise size of a coined piece, and interiorly milled in the lathe, rises, by force of a spring upon which it rests, and encompasses, loosely, the embryonic coin. Next, another die, affixed to the moveable screw or pin of the press, descends with much rapidity upon the blank, which being as soft as fire can make it, inevitably takes two impressions—head and tail—from the dies between which it is pressed, and expands until it thus also takes its own milling, from which it thus also takes its own milling. The collar becomes, therefore, an edge mould, into which the plastic metal is squeezed by the self-same power, which makes it copy, like sealing-wax, a stamp, the engraved devices of the stamped steel dies. When one blank has been thus stamped and milled, the collar is made to descend, and permit the mechanical finger and thumb, which is

It is a practice of the last-named artists to thinly varnish their pictures soon after they are finished, and after three or four years have passed, to rub the varnish carefully off by the friction of the hand, and then delicately apply more varnish.

advancing with another blank, to push the coin from its seat into a pan placed to catch the precious deposit. At the rate of seventy per minute, at each of eight presses, are the blanks converted into what may be called *pieces*, by the coiners of the Mint; and a collar such as we have endeavoured to describe will mill many millions of sovereigns before becoming unfit for use. Such is the mystery of milling money. As the art of money-making is highly interesting, it is possible that some day we may relate some more of our impressions of the Mint.

#### THE SOUTHERN OUTFALL SEWER CONTRACT.

At a recent meeting of the Board, Mr. Tite, in answer to comments which have been made on the difference between the tenders for the Southern Outfall Main Sewer, £22,550*l.*, and 431,715*l.*, showed that such differences were not uncommon, and said he considered that it was no part of the duty of the Board to investigate the differences between contractors, or to inquire why one contractor required 431,000*l.* to do works which another firm, equally respectable, was willing to execute for 290,000*l.* He conceived that all the Board had to do was to see that the work was properly executed according to the contract; and, if they were to ask those gentlemen why they charged so much more than other contractors, of course they would refuse to assign their reasons for doing so.

The amount of security required for the performance of the contract was reduced from 20,000*l.* to 10,000*l.*; but Mr. Brotherhood, it is stated, has not succeeded in obtaining parties willing to be bound in that amount. A private meeting of the Drainage Committee has been held to consider what should be done under the circumstances, and the committee will report to the Board this day, Friday.

#### COMPETITION.

Croydon New Cemetery Buildings. — At a meeting of the Local Board of Health, held last week, the following architects were named to prepare designs for the projected chapels, lodges, &c., to be built on the new burial-ground, in addition to those mentioned in our last impression, viz. Mr. Dawson, Mr. Henman, and Mr. Fuller.

#### SOCIETY OF FEMALE ARTISTS.

THIS Lady-painters hold their fourth exhibition in the gallery of the New Water Colour Society, in Pall-mall, and have brought together 317 drawings and two busts. Without being strikingly better than the last year, it is at any rate not worse. Fifty-six of the works are copies; the remainder original works. Mrs. Elizabeth Murray has several pictures of more or less excellence: the principal, "Adoration and Admiration" (185) shows a female devotee on her knees before a crucifix, which is being exhibited to her. The female head and other parts are exceedingly well painted, but the position of her lower limbs is doubtful. Mrs. E. M. Ward sends two good works (274) "Howard's Farewell to England," and (281) "Sunny Hours," which includes some sunny faces. On the same scene, "Five original drawings," by the Misses Taylor, in one frame (288), deserve mention. Miss Gillies has two pictures, "Waiting for the return of the Herring Boats" (130), and "Rebekah at the Well" (196), both works of great merit, the latter especially. Mrs. Valentine Bartholomew, who is always charming, has several drawings. Mrs. Rayner, in architectural drawings, stands alone; witness (90) "The old Conduit in the Market-place, Wells," "Canterbury Cathedral," and several others.

Mrs. Swift and her daughters, Miss Kate Swift and Miss G. Swift, are considerable exhibitors. (48) "Expectation," by Mrs. Swift, is a very charming head; and Miss Kate Swift's "Divided Interests" (70) is one of the best pictures in the collection. Mrs. E. Dundas Murray, who acts as secretary, has two pictures, "Dysart, Fifeshire" (120), and "Entrance to the Kyle Sku" (192), both noticeable. Mrs. Oliver has become more solid and precise in her painting. Mrs. Withers' flowers are admirable, and not less so are those by Miss Emma Walter. If the faces were as good in their way as the lace-collar in (68) "Olivia and Sophia in their Sunday finery," by Mrs. Margaret Robinson, it would be a capital picture. "Gladstons and Ceramiums" (75), by Miss Florence Peel; "Road between Capel Curig and Llan-

beris" (109), by Miss Gastineau; Miss Baines's enamel, after Herbert (111); "Still Life," by Miss James (166); the grapes in 318 by Miss C. James; Miss Bridman's "Blind Beggar" after Dyckman (239); all aid in making it true in two senses, that an hour may be spent pleasantly in the society of Female Artists.

#### THE WORKS AT WALTHAM ABBEY CHURCH.

THERE is no place for a day's excursion, in the neighbourhood of London, more interesting to the architect and antiquary than the town of Waltham Abbey, with its church attributed to one who was the last of the Saxon kings, and other remains of minor interest. Within a moderate distance, on the opposite side of the railway, is the town of Waltham Cross, which is even better known for its principal relic of old architectural work, now presenting little of its original condition,—though, in "restoration" and different materials, sufficient of its original beautiful character and details, to make it deserving of a visit.

At Waltham Abbey Church works of reparation have been in progress during the past year, under the direction of Mr. Burges; and others still necessary are proposed. During the last year also, a discussion has been going on, and which is still continued, in the pages of the *Gentleman's Magazine*, on the question of the actual date of the earliest portion of the church, which controversy originated in a paper by Mr. E. A. Freeman, that we find printed in the second volume of "Transactions of the Essex Archaeological Society," where also there are some "Notes" by Mr. E. Littler, accompanied by plans and other illustrations of the antiquities of the Abbey and the town, and a note by Mr. W. Stubbs, on the date of the dedication of the church, not altogether conclusive.

The discussion has proved interesting, and is important with reference to the question of date of the earliest work, commonly called Norman by architects, the same question to which Mr. Scott contributed some elucidatory matter from his examination of the remains of the Confessor's church at Westminster in the paper read at the Institute of British Architects, and recently printed by us. As regards Waltham Abbey Church, it being undoubted that there was a church by Harold, substituted by him during the Confessor's reign, for an earlier one, or between 1059 and 1060; and Mr. Freeman having shown the probability of truth in the tradition that Harold's body was conveyed there after the battle of Hastings, and interred; the question is whether any of the existing work is of the Pre-Norman period, or whether it does not belong to the time of Henry I., or Stephen, when it is known that considerable works were undertaken. The points of the controversy have been summed up by Mr. Burges, in a succinct report just about being issued, in which also we find matter relative to the dates of different portions of the later work, and to what might have been the original arrangement of the plan. Mr. Burges's details, as in reference to the triforium and vaulting to the aisles; and his suggestions regarding the form of Harold's church, are more satisfactory to us than his restoration of the eastern arm of the cross of the church of the time of Henry I.; but we gladly avail ourselves of the opportunity to lay before our readers the illustrations which accompany his report, and to furnish some further particulars of the question which is at issue. The external elevation of the east end, together with one of the two sectional views, show the church as it is at present, or the nave which remains, of the original structure; and the plan will explain also what have been the additions of fourteenth century and later date. The other sectional view (with the addition of the lady-chapel) shows the original arrangement of the triforium and its decorative character, as well as the vaulting of the aisles, as established by discoveries made in the progress of the recent works.

Premising that the church by Earl Harold was undoubtedly a building of much importance, having a leaded roof, and decorations to the capitals of the columns of gilt brass-work, it is to be mentioned that, according to the author of the account "*De Inventione Sancte Crucis Walthamensis*," of which parts have been published in the "*Chroniques Anglo-Normandes*" of M. Francisque-Michel, some work of considerable importance was going on in the reign of Henry I. or Stephen, which rendered necessary the removal of the body of Harold. Without deeming it safe to come to any conclusion on the subject whilst evidence is being brought to light in the course of the present works, Mr.

Burges thinks that the repairs or rebuilding in Henry the First's time, and the removal of the body, may be perfectly consistent with the fact of the present building, that is the ancient nave, being of Harold's time. He says:—

"In all probability the same thing happened as at Canterbury, where the contemporary of Harold, built a church consisting of a nave, transepts, and a shallow apsidal chancel, the which latter a few years afterwards was taken down, and a long choir added. Thus at Waltham, Harold's church might have ended with an apse immediately eastward of the present church, or it might have had transepts and been continued, as shown in the dotted line on the accompanying plan. Somewhere at the beginning of the twelfth century, i.e. when the author of the *De Inventione* was writing, the old apse was probably taken down and a long choir with aisles, chapels, &c., added, the transepts (if any) being likewise enlarged. I have ventured to mark on the plan an imaginary idea of this new choir, availing myself as much as possible of the foundations shown in Mr. Littler's plan, published in the Transactions of the Essex Archaeological Society."

The main point in doubt as to plan, would be the reasonableness of this conjecture of an apsidal form of the east end with chapels; since Mr. Burges's discoveries, partly indicated on the plan engraved (near the apse), would seem to favour the view of a different arrangement.

The subsequent works of the church and abbey date from 1177, when Henry II. remodelled the foundation, substituting monks for secular priests. The north clerestory of the present church, with the exception of the two eastern bays, and a vaulted building called "the potato-house," which is almost the only relic of the conventual buildings may be referred to this time. In the reign of Henry III. it appears that work of some importance was completed. Mr. Burges says:—

"The long Norman choir was not destined to last long, for Matthew Paris tells us that in 1242 the church of the canons at Waltham was solemnly dedicated. This dedication, which implies that some important part of the church had been rebuilt, could not apply to the nave, for we know that it remains nearly in the same state as it was left in the eleventh or twelfth century; it must therefore have been the choir, which had been either reconstructed or so altered that a new consecration had become necessary."

This, as we understand it, is the ground for believing that the foundations discovered by Mr. Littler, which would seem to be those of a square-ended choir, were, at the eastern extremity at least, those entirely of work of the time of Henry III.; the principal Norman choirs having apsidal termination.

In the reign of Edward II. a fine western end was added; and in the two westernmost bays, the nave arches and triforium were thrown into one composition, and pointed arches substituted for original circular arches—the vaulting of the aisles, which had pushed out the side walls, being destroyed. A strong-framed strut, which it was necessary to put up at that time, to prevent accident, still remains. The Lady Chapel on the south side, is of the time of Edward III. Its west window had a double plane of tracery. Below the chapel is a crypt. Later in the reign, a window of four lights was inserted in the north aisle of the nave; and something was done to the Abbey buildings—portions of the work having afterwards been inserted in the west tower. Of the fifteenth century, there is a window in the north aisle. In the next century, at the dissolution of the monasteries, the choir and transepts were destroyed, the nave, as belonging to the parishioners, being left. The present western tower was built in the time of Queen Mary, out of materials procured from the remains of the central tower, and others.

At the beginning of last year, the area of the church was found filled with pews, and furnished with two western galleries, and with another gallery on the south; the majority of the original windows on the north side had been cut away, and large square ones had been inserted; the columns were cracked and split, and also injured by the beams of the galleries; and there was a low-witched roof above a plaster ceiling. A porch had been added on the south; and the tracery of the windows of the chapel had been destroyed, its walls covered with plaster in imitation of rustic work, and the interior converted into a school-room. The western doorway and western end of the south aisle had been restored, however, under Mr. Poynter's direction.

The whitewash and plaster have been, or are being, removed internally and externally, throughout the church; and the pillars and clerestory repaired. All the pews and galleries have been removed; oak seats of appropriate character are being constructed by Mr. Burrell, of Norwich; and a contract is entered into for lowering the pavement of the church, to show the bases of the pillars. Before the church can be fit for the religious service, it is considered necessary that

the whole north wall and windows, and parts of the south aisle, should be repaired, besides what is necessary for the lighting and heating.

Other works, however, of great importance, are advised. But "Restoration" is deprecated: no old work would be destroyed; new work would be added only when necessary, and then only in such manner as to be distinguishable from the old work. For the whole, it is estimated that 4,000l. will be required. It is not contemplated to restore the vaulting or filling-in of the triforium; but the plaster-ceilings would probably be removed, and the ceiling-joists covered with boarding—decorated, perhaps, in manner similar to the work which there is at Peterborough. New doors; the removal of the south porch, and substitution of a penthouse, as shown in the view; plastering to the rubble-work; a new east end and window, in the style of the thirteenth century, as preferable to an attempt at restoration of the Norman; a vestry formed of the materials of the so-called "potato-house" removed; extensive repairs to the exterior of the southern clerestory; reinstatement of the original flint and stone work to the upper part of the tower, as shown in old prints; considerable works, structural and decorative, at the Lady Chapel; and a drain round the church and water-pipes, are considered as needed.

It is impossible for us now to enter further into the interesting question of the date of the early Norman work unless by quoting Mr. Burges's summary of the points of the controversy. Mr. Freeman, however, it may be well to say, holds that there was an Anglo-Saxon style, and an Anglo-Norman style, the one contemporary with the other; that there are Saxon buildings later than 1066, and Norman buildings earlier; and that Waltham Church is a Norman, though an early building. Much of the question, as in other cases, has been supposed to turn upon the manner of execution of masonry, whether with chisel or axe; though, in such cases, taking the nature of the tool as settled, does not make clear the fact that work done with the axe was necessarily rude, and, therefore, early; and it is maintained in favour of the early date, at Waltham, that there is nothing that could not have been executed with the axe. Mr. Burges says:—

"The following are among the principal arguments used against the presumption that the nave of the church is the work of Harold:—

1. That the architecture is far more ornamented than any building contemporaneous with Harold,—such as the remains of Edward the Confessor's Abbey at Westminster; the lower part of the west front of the *Abbaye aux Hommes*, Caen, built by William the Conqueror; and the chapel in the Tower of London.

2. That the common practice of those times was to build a choir, and to consecrate that, leaving the nave, &c., to be built by the piety of succeeding generations.

3. That an obscure passage in the *De Inventione Sancte Crucis* would imply that the church (*ecclesia*) was rebuilt somewhere in Henry I. or Stephen's time, when there was occasion to move Harold's holy.

4. That there are sundry joinings of masonry and differences in detail, which would imply that the two easternmost bays are of a different date from the rest of the work.

To this it has been replied:—

1. That the richness of a building is no certain criterion of its date, and that there is no portion of the ornament that could not be done with an axe; whereas at St. Bartholomew's, Smithfield, time of Henry I., there are mouldings which must have been done with the chisel.

2. That the practice of building and consecrating a choir first of all, was generally confined to the monastic churches, but would not equally apply to secular ones, more especially to those built by one wealthy person; and there is every reason to believe that Edward the Confessor completed his church at Westminster; why not Harold at Waltham?

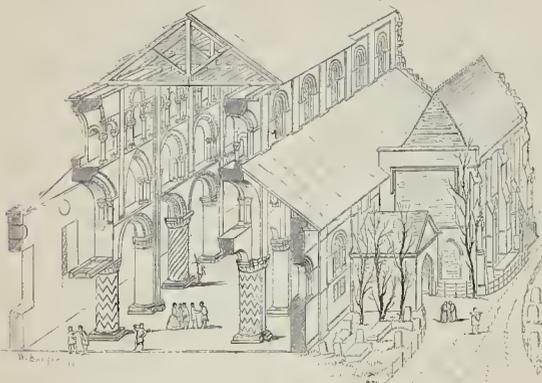
3. That the obscure passage from the *De Inventione* proves nothing beyond the fact that some rebuilding took place in the time of Henry I.; but it by no means implies that the nave was the part reconstructed; on the contrary, it would rather point to the choir, where the body of Harold was no doubt interred.

4. That it is very true that there are sundry breaks in the work at the second pillar from the east end, but it is very doubtful whether the two bays in question are earlier than the rest of the work; on the contrary, there is some reason to believe them later.

To sum up, although it can scarcely be denied that the architecture of the nave of Waltham more resembles the work of the time of Henry I. than that of those very few remains of buildings contemporary with Harold, still it is quite within the range of possibility that Harold might have built it, and there is no distinct proof to the contrary."

Many curious features in the masonry have been lately discovered. With the reference to these we must be content, and will merely add, as we are requested, that subscriptions towards the work are received by Messrs. Fuller, Banbury, & Co., of Lombard-street, the Rev. James Francis, incumbent, and members of the committee; and add the expression of our wish that so interesting a relic as the church of Waltham Abbey, may be preserved as an illustration of passages most interesting in our history, and a link of which the exact place will no doubt be shortly fixed, in the chain of progress of our architecture.

## WALTHAM ABBEY CHURCH.



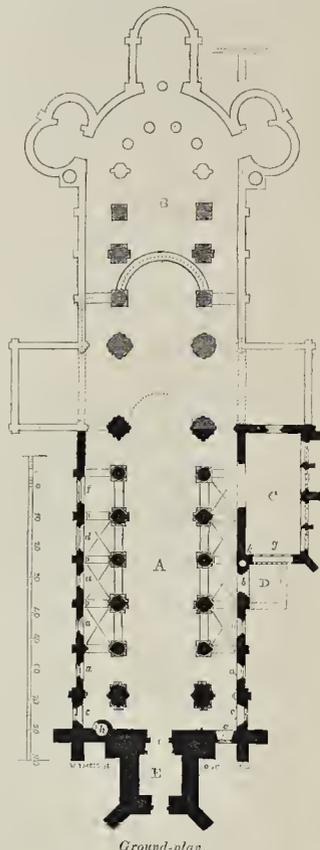
Section and View of the Church: 1859.



External Elevation of the East End: 1859.



Section and View, showing the probable appearance before the alterations in the Fourteenth Century, but with addition of the Lady-Chapel.



Ground-plan.

## REFERENCES TO THE GROUND-PLAN.

The dotted lines show the presumed extent of Harold's Church.

- A. Nave.
- B. Presumed Choir, temp. Henry I. or Stephen.
- C. Lady Chapel.
- D. Modern Porch.
- E. Tower, temp. Philip and Mary.

- a a a. Norman Windows.
- b. Norman South Door.
- c c c. Decorated Windows, early fourteenth century.
- d. Ditch, late fourteenth century.
- e. West Doorway, early fourteenth century.

- f. Perpendicular Window.
- g. West Window of Lady Chapel, with two planes of Tracery.
- h. Staircase to Tower.
- k. Staircase to Room over Porch, now destroyed.

## KIOSK FOR THE VICEROY OF EGYPT.

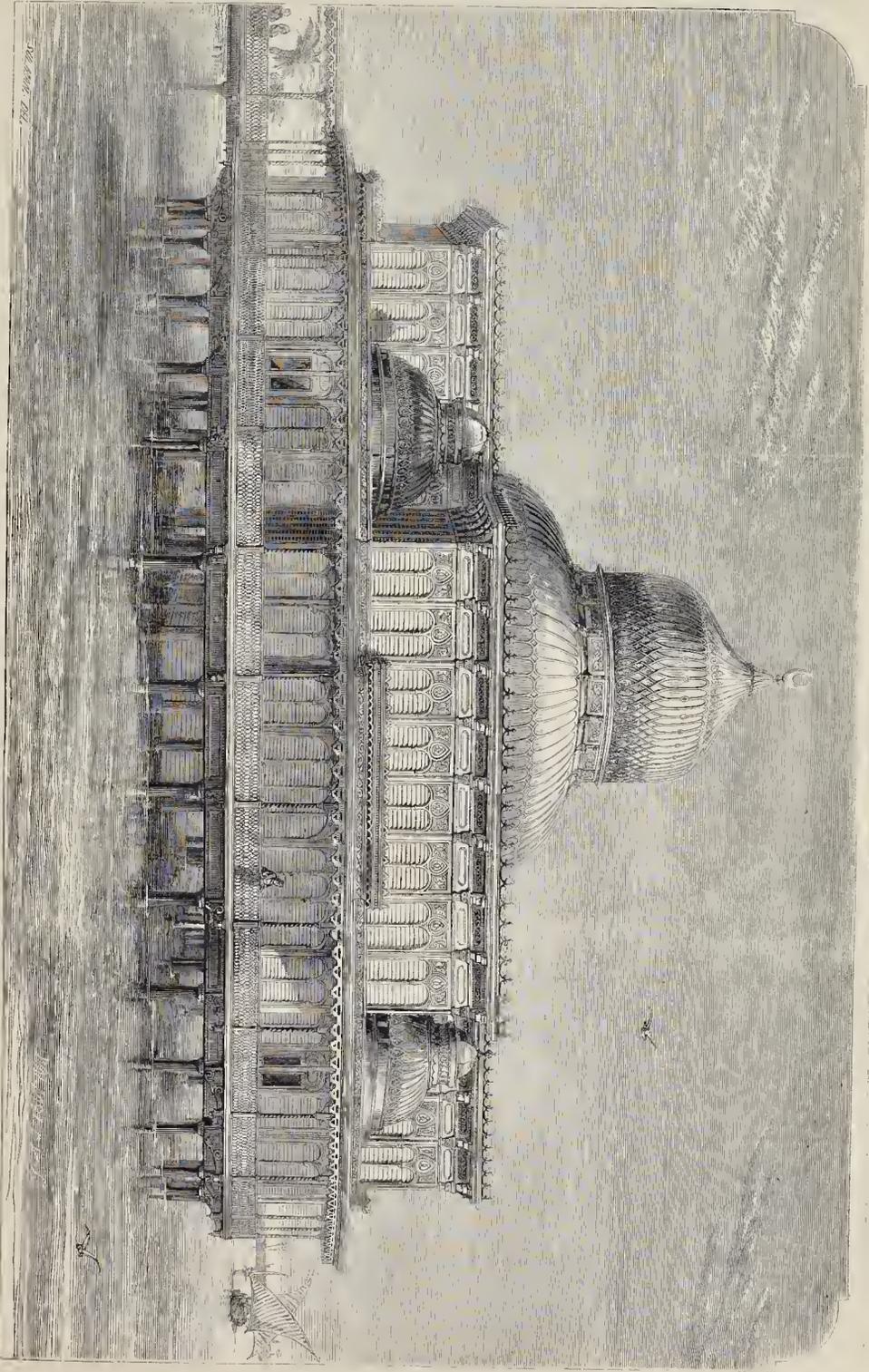
The kiosk for the Viceroy of Egypt, of which we give a view, has been constructed in London, and is still in the Isle of Dogs. It is intended for erection, as we understand, at Kâfrellais. It will stand at some distance in the water, the depth of which is 60 feet at its highest rise, and 30 feet at the fall. The foundations are of cast-iron cylinders, which will be deeply imbedded in the sand, and will be raised about 8 feet above the highest water-mark. On the top of these are to be laid girders, for supporting the platform, which is of a circular form, and measures 120 feet in diameter. Projecting from the outer ring of cylinders are

brackets, on which the balcony rests. The form of the upper part of the building is that of a cross. It has five domes: the largest, which is in the centre, is surmounted by a crescent.

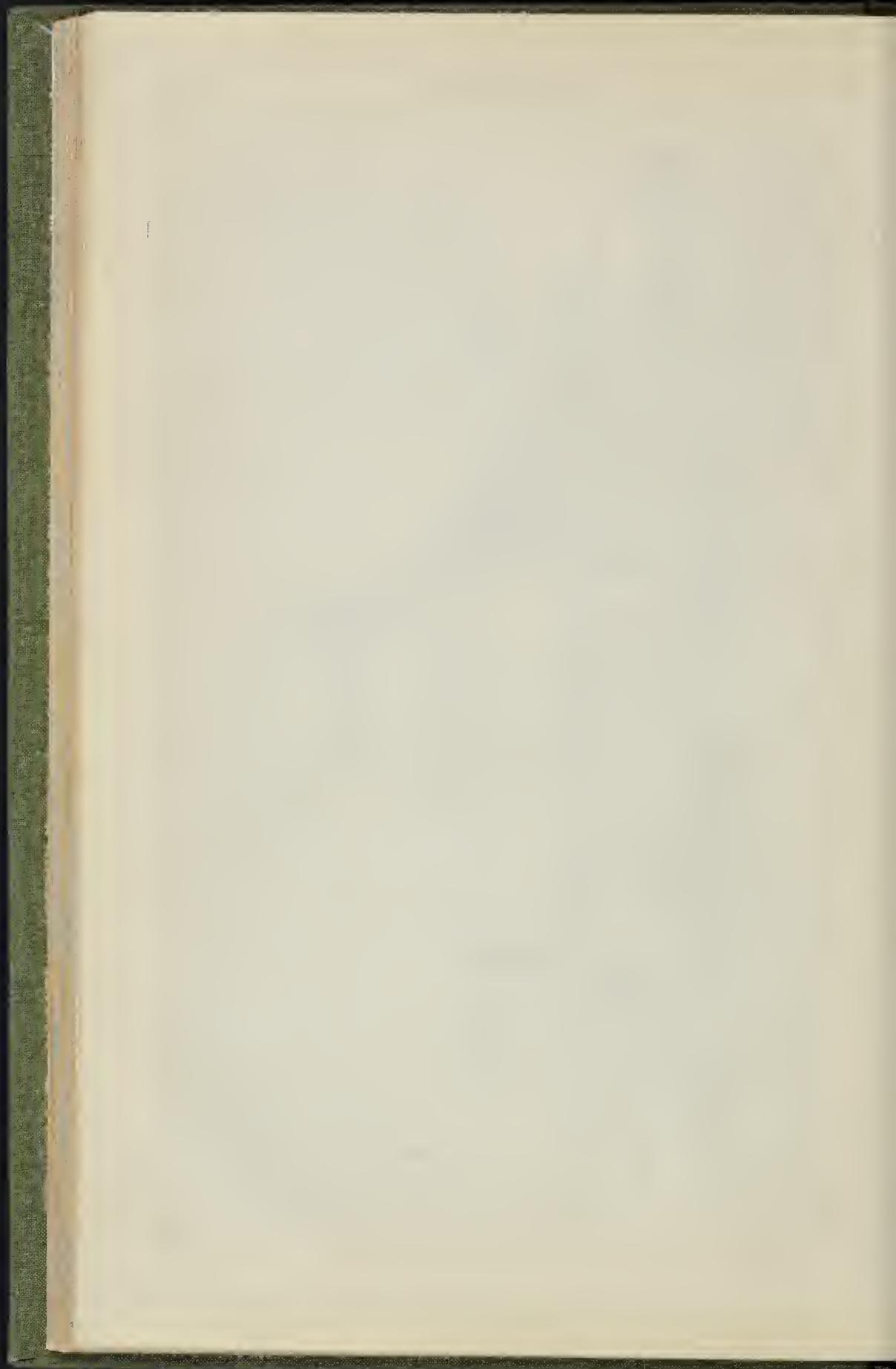
The bath is to be suspended from the centre of the dome by an ornamented chain, which will pass along the top over concealed pulleys, and then be attached to winding machinery—the object being to suit the level of the bath to that of the water of the Nile; and, in order to enter the bath at any level, there will be a square well staircase surrounding the bath space, which space will be inclosed below the building, and under the water, by rough plate glass jalousies. The various rooms

will be lighted in the daytime by windows with glass casements, provided with louvres, to shade off the sun; but at night they will be illuminated by chandeliers suspended from the ceiling. The four small projecting portions of the building are to be fitted up as divans. The main part of the building is of iron and glass, but the interior will be lined with plastering, and have decorations of appropriate character.

From the shore to the kiosk there will be a platform, supported by columns similar in character to the building itself. There will also be a landing-stage, with stairs for the accommodation of parties entering from the Nile.



IRON KIOSK FOR THE VICEROY OF EGYPT.



## AN ESCAPE FOR WORKHOUSE GIRLS.

A PROPER and sufficiently extensive means of disposing of the children reared as paupers in the workhouses of the metropolis and large cities would undoubtedly cause a great decrease of pauperism and crime. The training of the workhouses does not well fit the young, particularly of the female sex, for study and useful employment in after life.

As regards the girls who have been brought up in these places, but a small portion continue steadily in domestic service; and they return, to the great cost, in several ways, of the parishes. On summer evenings groups of young females, of the ages of from 15 to 20 years, may be seen in the workhouses exhibiting the most abandoned language and conduct. Many of these young women are driven into the streets, become inmates of the prisons, and spread to a wide extent a large amount of contamination. A better class of persons—those who have not been accustomed to pauperism,—should be appointed to superintend and manage the training of both boys and girls than are now usually employed.

The additional charge would in the end prove a saving. At present, however, it is certain that affairs in this respect are far from being satisfactory. We have before directed attention to this subject, and are glad to notice that the ladies of the Workhouse Visiting Society, of which Miss Burdett Coutts and Miss Louisa Twining are members, have endeavoured to form a Female Home for workhouse girls above the age of 16, where they could be properly trained for service, either at home or in the colonies, as an intermediate step between the workhouse and a domestic home. It appears that the ladies above mentioned having suggested the great need of such an institution to several of the metropolitan parish authorities, found that the Poor Law Board consider that such a plan is illegal. It is impracticable therefore, except fresh power be given by Parliament to open such Homes. It will surprise and grieve many, who have considered this subject, that such should be the case. We trust, however, that measures will be long before taken to enable those who are anxious to do so, to try this important experiment.

## INSTITUTION OF CIVIL ENGINEERS.

On January 24, Mr. Bidder, president, in the chair, the paper read was a "Description of the Works and Mode of Execution adopted in the Construction and Enlargement of the Lindal Tunnel, on the Furness Railway," by Mr. F. C. Stileman.

It was stated, that the Furness Railway, of which Messrs. McClean and Stileman were the engineers, had been principally projected for the conveyance of minerals. In August 1854, it was decided to widen the line, and to enlarge, or open out, the Lindal Tunnel. The latter alternative was entertained, in case it should be considered necessary to resort to that plan, in order to ensure the regular passage of the trains during the progress of the works. But as it was found that the cost would be doubled, it was determined to enlarge the tunnel; the tender of Mr. William Tredwell being accepted for that purpose.

The original tunnel was 563 yards in length; of which 176 yards were in solid rock, and 387 yards in loose material, lined with sandstone, rubble masonry. The contract price for the portion in solid rock was 64. per lineal yard, giving about 6s. 2d. per cubic yard, and for the part that was lined 157. 10s. per lineal yard. The length of the enlarged tunnel was reduced to 460 lineal yards; of which 123 yards were in solid limestone rock, and 337 yards in loose material, lined with fitted limestone rubble, 2 feet to 3 feet in thickness, set in Atherhall lime mortar, the stone being obtained from the adjacent cuttings. The additional cost of that part of the tunnel which was in rock amounted to 214. 4s. per lineal yard, and of the portion which was lined to 387. per lineal yard.

The tunnel was increased in width equally on each side of the existing single-line tunnel, the level of the rails remaining the same. The works of enlargement were commenced in June, 1855, at No. 3 old shaft. This was widened, and divided down the centre, so that it could be worked as two separate shafts,—one in connection with each side of the old tunnel. Top headings were driven for short distances, at the proper levels, above the existing tunnel, when the material was found to consist of dry, hard clay, and gravel. It was observed, however, that the ground had become set

and broken up, from previous mining operations, to a much greater extent than could have been anticipated. The crown was kept sufficiently high to allow of the ground being excavated without interfering with the original tunnel. The cills, for the support of the bars, were placed 3 feet above the crown of the small tunnel, and rested upon it and the material forming the sides. A portion of the masonry between the cills was then removed, and the excavation for the side walls was proceeded with. The working by shafts being afterwards dispensed with, it was necessary, in order to obtain another "face" to work at, to break through the original tunnel. A man-hole, sufficiently large to admit a miner, was made through the soffit of the arch, and this was carried up until the heading was reached; the ordinary method of tunnelling being then adopted. The cills were supported by two upright props, passed through the haunches of the old tunnel, and by raking struts, or stays. After the excavation had been completed to the level of the cill, and the materials had been removed, the arch and side walls were taken down, and the excavation at the sides proceeded with. Small cills were placed about halfway down the side walls, to carry the props supporting the ends of the first cill, and these again were propped from below, as the material was removed. A hack cill, to assist in carrying the crown bars, and a framing, called by the miners a "Horse-head," to relieve the pressure on the cills, were also frequently used.

From the commencement of the works in June, 1855, to their completion in November, 1856, nearly seven thousand five hundred passenger trains passed through the tunnel, without the slightest casualty to either description of train, or accident of the most trivial character to any individual.

## NEWPORT BOROUGH SURVEYOR.

At a recent meeting of the Town Council, there were in attendance the following candidates selected from between forty and fifty:—Mr. W. A. Dixon, Newport; Mr. Gordon, Stratford; Mr. Barry, Liverpool; Mr. Fox, Bristol; Mr. Conyers Kirby, Gloucester. These gentlemen were severally introduced to the Board, and questioned as to their qualifications. In the discussion which ensued, a question arose as to pupils being allowed the surveyor, and it was debated at some length. Mr. Lyne moved, and Mr. E. J. Phillips seconded, "That the surveyor be allowed one pupil at a time." An amendment was moved by Mr. Shepherd, and Mr. Morgan seconded it, "That the surveyor be permitted to take no pupils." The amendment was lost, only six bands being held up in its favour. The resolution was then declared to be carried. It was agreed to submit the whole five names to the Council at once, then to strike off the lowest, and so on until one candidate should obtain a majority of the votes of the members present. Ultimately Mr. Conyers Kirby was declared elected.

## FOREIGN ENGINEERING WORKS.

THE concession of the railway from Quitanilla de los Torres to the mines of Orho has been adjudged without any subvention to Don Santos Guindarillas.

The contract for the works of the fortifications of Antwerp has been adjudicated to the firm of J. Powell & Co., called, "La Compagnie Générale des Matériaux de Chemins de Fer."

The works of the line from Maestricht to Liège are to commence at once, inasmuch as the plans have been approved of by the Government. The contract has been let to a general contractor, and the land is being settled for.

The Spanish journals announce that M. Salamanca, to whom the concession of the Portuguese lines has been granted, has formed a company to carry them on. Among stranger capitalists figure the names of the Count de Morny, M. Chatelet, Delalande, and other founders of the ancient Grand Central of France, which has been merged into other lines.

M. Lalanne, engineer-in-chief and director of the works of the Northern Spanish Railway, is at this moment visiting the whole line to give fresh impulse to the works. The transport of the immense quantity of rails now lying at the port of Santander can only proceed slowly by the Isabella II. Railway, on account of the gap which yet exists on that line between Moranca and Barcelona. Consequently, the permanent way of the Northern line will experience some delay. The rails are laid between Valladolid and Palazuelos; the section from Valladolid to Alar is to be open

at the end of February. In the course of this spring the line from Madrid to the Escorial will have its earthworks completed. Contracts have been let to parties at Agen to construct the four tunnels between Tolosa and Legorreta.

An experiment has been just made on the Barcelona and Saragossa Railway of a new railway break, the invention of Don Agostin Castellvi de Molins de Rey. A train at full speed was stopped in twenty yards without any shock.

The following are some details as to the state of the works at the tunnel under the Alps on the Victor Emmanuel Railway:—The necessary buildings for the Bardonecche end of the tunnel are nearly completed. They are of very large proportions. The same works have been erected at the Modane, or Savoy end, but of a totally different design. Within the last two months, at Bardonecche, 2,000,000 of bricks have been made. The leading is being driven, as we have before stated, from each end, by the ordinary means: 820 metres have thus been carried on with arch sheeting to about two-thirds of that length.

A French review, "La Libre Recherche," published at Brussels, gives us the following details on the Italian railways:—"Up to the present time 1,757 kilomètres are completed; 2,339 are in construction; 634 kilomètres have been conceded to companies, and 329 kilomètres have been decreed. In ten years hence, 5,000 kilomètres will have been completed, which will give at the rate of one kilomètre for every 53 square kilomètres of territory, about the same proportion as exists in France, and more than in Austria, where there is only one kilomètre of railway, for every 80 kilomètres of imperial territory. The Italian state possessing the greatest length of railway communication is Piedmont; whereas in 1848 it had no railways. Those least gifted with railways are the Roman and Neapolitan states. In the course of 1860, the Piedmontese group will be, on the one hand, united to Stradella by the Central Italian railway, which will itself rejoin, at Pistoja, the Tuscan railway group, and will unite Plaisance with Bologna; on the other hand, the Piedmontese lines already nearly in complete communication with the Lombardo-Venetian railways will be placed in communication with the Austro-Germanic group at Ralresina, when the section which traverses the valley of the Tagliamento and the Isouzo will be terminated. When the tunnels of the Col de Frejus and of Luemmanier will have been completed, Genoa will be nearer Geneva and Constantinople than are Marseilles, Trieste, or Venice." The Orleans railway company has just opened for public traffic the section of Montluçon to Moulins. M. Didon, chief director of the company, presided at the inauguration, and was accompanied by two other directors.

## WORKMEN'S INSTITUTE AND BENEFIT CLUB, EUSTON-ROAD.

THE opening meeting of this club was held in the recently finished room of the institute, 239, Euston-road. The meeting was presided over by the Hon. George Byng, member for Middlesex, and the following gentlemen, connected with the management of the institute, were on the platform, viz.:—H. E. Gurney, Esq.; W. A. Wilkinson, Esq.; Jervoise Smith, Esq.; St. Leger Glyn, Esq.; John Lulloock, Esq.; and G. J. Bowyer, Esq.; also the Rev. Canon Dale, the vicar of the parish; and the body of the room was filled with workmen. After the Rev. Canon Dale and the chairman had spoken,

Mr. W. A. Wilkinson addressed the meeting on the importance of life assurance, which, he said, necessitated savings; adverted to the benefits offered by this club, the payments for which were as low as possible compatible with soundness. To ensure this, he added, the best authorities had been consulted in forming this club, which would secure a certain provision for those belonging to it.

Mr. Jervoise Smith followed the last speaker at some length, explanatory of the objects and the origin of the institute, the principal features of which, he said, were the benefit club, affording relief in sickness and old age; reading-rooms, libraries, rooms for lodgings, and houses of call for those out of work; a guarantee fund, applicable for additional relief in case of accident; no entrance fees; and, moreover, the rules and tables were compiled from the statistics of five leading assurance offices, and certified respectively by Mr. Tidd Pratt, the registrar, and Mr. Tucker, the actuary.

Mr. H. E. Gurney, in the course of some observations, offered, with a view to afford a little relaxation to the members of the club, to afford

them in the summer (month of June) a trip to the Crystal Palace, and refreshment there.

Mr. Bowyer, in acknowledging a vote of thanks to him as organizer of the club, wished to correct a report as to the origin of the club. It had been said that it was a masters' movement; but this he distinctly refuted, as it sprang directly from a deputa- tion to him of workmen, who having convinced him of the want of such a club, he made it known to Mr. Gurney, who magnificently promised fifty guineas and his further support in aid thereof.

#### SOCIAL BRIDGES.

##### LIBRARIES.

We are glad to see that the "social bridges" in the building of which we have helped, are duly fulfilling the task that devolves on them. Not only in the by-lanes of this great metropolis is a desire manifested for improvement, but the working classes generally are making advances in the social status, which claim the respect of all who have the progress and well-being of this example-setting nation at heart. In our present number we record the opening meeting of a Workmen's Institute and Benefit Club, attended by members of Parliament, dignitaries of the Church, bankers, and others of the higher classes, with a large number of workmen kept them company, and paid the utmost attention to what was said. Social science meetings are being held in all parts of the country with equal success; and though in many instances the initiative is taken by gentlemen of influence, we see that the working population are exerting themselves in the right direction, and self-improvement is eagerly sought. We noticed some time since the means afforded in the establishment of Messrs. Cox and Wyman, the printers, of Great Queen-street, where an excellent library is established. At a meeting of the members, lately, in the course of an address, the committee prided themselves on the fact that they had seen so early the desirability of such institutions, and that other establishments had made inquiries of them, and were taking steps to follow in their path; and quoted from our Christmas number a remark that "everywhere now—in printing-offices, in great libraries, and even in the homes of the humblest laborer, the ghost of our old friend Caxton flits pleasantly about, suggesting wholesome thought and material for the diffusion of knowledge."

The chairman then proceeded to show, that wherever libraries had been founded, the most favorable anticipations had been realized. Operatives had consecrated their spare moments, and jotted down the experiences of their practical lives, printers being always to be found among the competitors. Such were some of the results of libraries and rightly-directed leisure, foretold by Cowper, who said,—

"Behold in these what leisure hours demand,—  
Amusement and true knowledge hand in hand."

In the course of an interesting address, describing and giving selections from this library, which has been most liberally supported by the firm, he informed the meeting, that Mr. E. W. Cox, on attaining his majority, in December last, had marked the event by a present of books to the value of 20*l.*; and thus this "Office Library," originally consisting of only a dozen or two books, had in the course of a few years increased to no less than 800 volumes, including works on almost every subject, whether for instruction, reference, or amusement, besides some of the most popular serials. They were also now in a condition to reduce the subscription to the trifling sum of a halfpenny per week.

#### GAS.

THE gas at Clatham, according to the *Chatham News*, has been examined by Dr. Lettley, who says it is the worst he ever tested, being no less, on one occasion, than seventy per cent. below the average of London gas. And no wonder, since the gas company are said to admit that they have at times to send it to their customers from the retort direct, without any purification at all! A movement is in progress for the provision of better gas at a fair price; but it has not yet assumed any definite shape.

A new light company, called "The Universal Lime Light Company," has been started in London for the purchase and working of the new lime light patent, recently exhibited. A single jet of it is said to be equal to forty argand or eighty fish-tail gas-burners. For places and purposes where a powerful light is desirable, it is promising, if price and trouble in management prove no obstacle to its extension; but for par-

lour and kitchen, or, in short, for ordinary dwelling houses, there are other new lights coming into use which seem likely, in one form or another, to shut out the ordinary gas, as well as other lights from oil and candle. These are the liquid gas lights, to one of which (a very inferior kind to others now before the public) we some time since drew attention. Having purchased one of what appears to be among the best of the latter, the writer shall give it a fair trial and report progress.

In the Court of Queen's Bench, "*Hipkins v. the Birmingham and Stafford Gas Company*," it has been found that a gas company is responsible for injury to a well, rendered noxious by reason of washings produced in the making of gas, thereby subjecting themselves to a penalty of 200*l.* The Court gave judgment for the plaintiff, holding that the incorporation of the defendants for their own benefit amounted to a contract with the public to prevent any ill arising from their works.

A meeting of gas consumers at Manchester have resolved to memorialize the corporation for a reduction of gas to 3*s.* 9*d.* per 1,000 cubic feet.

A movement has taken place at Stow-on-the-Wold for the introduction of gas to the town. The estimated cost of works is 1,200*l.* of which 800*l.* have already been subscribed.

A correspondent of the *Cornish Telegraph* says:—"I notice a report of the Plymouth and Stonehouse Gas Company, and find that for the past year they have been supplying gas at 4*s.* per 1,000, paying a dividend of 10 per cent. to the shareholders, and giving notices to the consumers that only 3*s.* 9*d.* per 1,000 will be charged for the present year. I contrast this with the price of gas in Falmouth, for which 6*s.* 3*d.* per 1,000 is charged, and that for an inferior article. If the Plymouth company can pay such a handsome dividend, I would ask if it is just that in a rising town like Falmouth the present price should be maintained, where coals for the manufacture of gas can be bought at a much cheaper rate than at Plymouth? Why, sir, if the proprietor of the works here would reduce the price to 4*s.* 6*d.* per 1,000, I firmly believe—taking into consideration how much more would be consumed—that at the end of the year he would find it a better paying concern than now. Of one thing I am quite certain—that if the present high price be continued, we must either have another company, or get our gas from Penryn."

#### CHURCH-BUILDING NEWS.

*Canterbury*.—It is proposed to erect an appropriate mural brass to the memory of Archbishop Laud, in the cathedral church of Canterbury. A design for this memorial has been given by Messrs. Waller, which has been approved of by the Dean and Chapter, and the brass will be erected as soon as a sufficient sum can be raised for the purpose.

*Worcester*.—The Ecclesiastical Commissioners have granted 15,300*l.* for the reparation of Worcester Cathedral, and 800*l.* a-year to be henceforth set apart for the same purpose. The work of restoration will therefore be actively commenced in the course of a few weeks, and meanwhile supplies of stone are being procured, of sandstone from Hadley, and weather stone from Bath. The south side of the cathedral, with its upper transept, which is in a very dilapidated state, will be the first portion of the building opened upon, and the cloisters and chapter-room will be included in these repairs. Then the work of restoration will be carried round to the north front, which is not in so decayed a state as the other portions of the edifice. It is hoped that the plans include the reopening of the west door of the nave and removal of the organ. The new work now to be effected, says the local *Herald*, will be a rigid and legitimate restoration of the fabric in accordance with its original style, the commissioners not sanctioning any ornamentation beyond the absolute requirements of that style. They have approved of the repairs so far as they have hitherto been carried out, and the further prosecution of the work will also be under the superintendence of Mr. Perkins, the architect to the Dean and Chapter.

*Bristol*.—It is expected that, soon after Easter, the cathedral will be closed for the prosecution of the alterations, enlargements, &c. in the interior. The plaster, yellow wash, &c. have been scraped from some of the ornamental carving in the Lady Chapel and south aisle, and it is found to be sharp, and clear, and well preserved. Some of the disengaged shafts on the north side of the nave, that have been covered over with yellow wash, turn out, says the local *Journal*, to be Parbeck marble, while the foliage of the bosses, apparently so blunt

and indistinct, is discovered, by the cleaning of one or two, to be executed with great delicacy and freedom.

*Market Harborough (Leicestershire)*.—The church here has received an embellishment in the shape of an alabaster pulpit. The Rev. F. O. Johnson, the incumbent, says the *Leicester Advertiser*, has eight brothers, all in the army, and six of these were in active service throughout the whole of the Indian rebellion. This worthy band of brothers have presented this pulpit as a thank-offering for having, by God's Providence, passed unscathed through the ordeal. The general design is by Mr. Slater, and the masonry by Messrs. Poole, of London.

*Levenshulme (Lancashire)*.—The new church of St. Peter, at Levenshulme, has been consecrated by the Bishop of Manchester. The church is of stone, in the Transition style. It consists of a nave, two aisles, chancel, and tower, and is almost a perfect square, being 60 feet in length and 58 feet in breadth. At present, building operations have not been carried beyond the tower; but, when completed, the church will have a spire 135 feet high. No decoration has been attempted in the interior, which is without gallery, and the seats, which have open ends, will accommodate 600 persons; 400 of the seats to be appropriated, and 200 free. The entire cost is about 3,000*l.*, which have been raised by private subscription, with the exception of 200*l.* contributed by the Church Building Society. The architect is Mr. Alfred G. Fisher, of Manchester, and the contractors are Messrs. Longson, of Heaton Norris.

*Keswick*.—The new Congregational Chapel, Keswick, the foundation-stone of which was laid on the 28th of July, 1858, has been opened for divine service. It is placed on a slight eminence in the Lake road, and is a prominent addition to the edifices of Keswick. Erected from designs prepared by Mr. John Hogg, of Ilulifax, it is in the Geometrical style, and simple in its details. The plan consists of a parallelogram, 54 feet by 26 feet, with a projecting vestry on the north side, 17 feet by 9 feet, over which is placed a gallery for children, provided with a separate entrance. The chapel is entered from the west end by a coupled doorway, opening into an inner porch communicating with two sides 3 feet wide, running the entire length of the building, having pews on a raised platform on each side. The total accommodation provided is for 300 persons. Externally the chapel is divided by buttresses into four bays in length, having two-light windows between them with cusped heads and pierced trefoils. The west or principal entrance-front has a slightly projecting gabled porch and coupled doorway, with a two-light window on each side and a circular tracery window over it. The walls are formed of a kind of porphyry, with freestone dressings to buttresses, &c., and the woodwork throughout is of deal, stained and varnished.

*Dundee*.—The foundation-stone of John-street United Presbyterian Church was laid on the 7th October, 1858, and it has now been opened for public worship. The architectural design of the church, according to the *Dundee Warbler*, is of the ornate Roman. Lofty Ionic columns, with intercolumniated plate-glass, support an architrave, frieze, and parapet of corresponding proportions. The basement is of composite rusticated masonry, and the principal entrance, which is towards John-street and Cochrane-street, as well as the arched windows, are in keeping with the appearance of the building. There are five windows towards the north, of stained glass, the ornamentation being also Roman, to harmonize with the design of the edifice. The church measures 94 feet by 66 feet, and its height from floor to ceiling is 40 feet. The ceiling is copiously adorned with a variety of designs in plaster-work, and it is to be further enriched by several designs, already approved of, in polychromatic colouring. The seating of the church can accommodate about 1,400 sitters, and many of the seats are of the width of 3 feet. The heating and ventilation have been attended to. Beneath the floor of the church provision has been made for a vestry, a school-room, a meeting hall, a library, and manager's and ladies' rooms, &c. The designs were prepared by Mr. J. T. Roched.

*Map of Morocco*.—Mr. James Wyld has, of course, published a map of Morocco, or, as he terms it, Marocco; and those who would follow the graphic account of the doings of the Spaniards there in the columns of the *Times* should obtain it. At the Great Globe, in Leicester-square, there is an affluence of instructive entertainment.

## STAINED GLASS.

*Mickleover Church, near Derby.*—A memorial window has lately been erected in the east end of the above church. The window is composed of three openings, with spandrels in the head of the window. The three openings have six subjects from the Beatitudes, inserted into geometrical shapes on mosaic backgrounds of deep red and blue, with bosses of various designs. At the foot of the window is placed the following inscription: "To the memory of Augusta Marian Curzon, wife of the Rev. F. E. Curzon, and daughter of E. M. Mundy, Esq. Died August 10th, 1827, aged 21 years." The artist employed was Mr. Charles Gibbs.

*New Church at West Derby.*—The same artist has put up a stained glass window here for J. P. Heywood, Esq. of West Derby, to the memory of his niece. The window consists of three openings and several spandrels. The whole of the openings are occupied by the subject of the "Resurrection." In the centre opening, Christ is represented, clothed in white, coming out from the rock, holding a banner, on which is inscribed the words, "O grave, where is thy victory?" Beneath, on the foreground, lies one of the soldiers. Above the figure of the Saviour is seen an angel, holding a scroll with the words, "Blessed are the dead which die in the Lord." The left-hand compartment has the "Angel sitting on the stone." The right-hand compartment shows the "Three Marys coming to the tomb."

## THE FALL OF MILL IN AMERICA.

It is to be regretted that little precise information as to the construction of the Pemberton Mills, at Lawrence, in the United States, which recently fell, has reached this country. The building is said to have been originally of bad construction; the foundations were imperfect, the walls were weak, and pierced by numerous apertures, which detracted still further from the strength of the fabric. As the weight of the machinery was added to that of the numerous workpeople engaged in the business, it will not be thought surprising that the mill should have fallen. The five stories of the building fell in, one after another, upon the heads of 600 or 700 workpeople, who were assembled at their trade, and then, to make the disaster more horrible, fire broke out and consumed the living and the dead. This dreadful disaster should not be without its effects on this side of the Atlantic.

## VENTILATION VENTILATED.

THERE is hardly anything more necessary to be attended to in the arranging of buildings, both small and great, than ventilation. It is a subject to which some attention has been given, and many extravagant theories have been advanced in support of schemes which seem to have been failures in proportion to their intricacy; those based upon simple data having the greater chance of being successful.

Let us inquire,—What is Ventilation? Is it the displacement of hot air by cold air, or *vice versa*? or is it the expulsion of foul air in favour of fresh air? It may be answered, that ventilation is a combination of these. It is the giving a supply of pure air at a proper temperature with as little palpable displacement as possible, the foul air being afforded means of escape so that the oxygenated or "fresh" air may take its place almost imperceptibly, and currents and draughts so be entirely avoided.

True ventilation is based upon certain natural laws, having as a starting point an elastic fluid—common atmospheric air. This has to be manipulated in such a manner for the comfort and health of human beings in their dwellings and halls of assembly as to comprise what is commonly called ventilation.

It is well known that common air consists of two gases, one giving life and the other destroying, and called oxygen and nitrogen respectively: when these two gases are received into the lungs in combination (as they are at every inspiration) the cells effect a division of them; the oxygen being retained to mix with the blood, and the nitrogen (with a small proportion of carbonic acid gas) being returned back again into the atmosphere. It thus follows, that persons breathing in an air-tight room would soon consume all the oxygen or life-giving air and leave only that which is foul, the breathing of which induces stupor, and ultimately death.

There is the familiar example of the bird in a cage hung over a bed having curtains closing it in

all round: the mere contamination of the air caused by a person sleeping in the bed would kill the bird before morning.

Again, there is the doxy congregation in a high-pewed, non-ventilated church,—the very construction of which renders it almost physically impossible to prevent—not a natural sleep or repose, but—a suffocating stupor, caused by the stagnation of the noxious air in the boxes in which the erring mortal is deposited.

Carbonic acid gas is specifically heavier than common admixed air, but they combine. When pure, however, it is so heavy, that a jar filled with it may be emptied into another jar from which it will displace the common air, and so entirely supplant it, that a taper will be extinguished when inserted therein. A deep well is a familiar example of this, at the lower parts of which it congregates, and many deaths have taken place in consequence of men incautiously descending without previously testing the air by lowering a lighted candle. They are first attacked with stupor, and if not speedily drawn up, death quickly ensues. It is this gas which is so freely emitted from charcoal fires, and which has proved fatal in so many instances. All ordinary fires, lamps, gas-lights, &c., consume an enormous proportion of oxygen, leaving the azote mixed with carbonic acid gas. And it should be remembered that this oxygen, which gives life and animal heat, forms only 22 per cent. of the ordinary atmospheric air; which, therefore, cannot afford to be much deteriorated by artificial means.

The effect of foul air is shown in its most violent and deadly form in the choke-damp of mines.

Air expands by being heated—that is, it occupies more space when hot than when cold. It also becomes lighter in proportion to the increase of its temperature—that is, it has a tendency to rise above a colder stratum.

A heated room upon a cold day may be likened to a heavy vessel of air being kept down in a cistern of water. The water, by its greater density, will endeavour to rush into the vessel at the most minute pore. So with the heated room, which is surrounded by a disproportionate bulk of denser fluid, and which makes every effort to rush in at all chinks and crannies.

What more familiar instance of this can be urged than an ordinary room with a good "old English" fire? All the doors and windows closed as rigidly as the state of the joinery will permit, with sometimes the addition of corded string and sand-bags. Now, first, the fire, to be kept burning, must have air. Oxygen again. The inmates must have air—oxygen also. Every known source of supply being cut off, what is the consequence? Great pressure is exerted by the cold air outside, and draughts, thin little corkcrewy, gimletty currents of concentrated cold air find their way in, in spite of the elaborate attempts made to keep them out, and strike us, and wind themselves about us, making the shrillest music the while, asserting their prerogative in the most unmistakable manner, as is the case in any instance where it is sought to subvert the working of a natural law, by barricades, or any other popular description of impediment.

It will thus be readily seen that ventilation of buildings is of the utmost importance, as tending not only to the comfort of the inmates, but as an imperative sanitary duty,—indeed, as much a necessity as good drainage or abundance of light.

The ordinary method of constructing dwellings gives plenty of opportunity to supply and circulate fresh air, as may be known by the facility with which they burn when once they take fire. The great difficulty is to supply it in such a way, and at such a temperature, as shall not be felt an inconvenience, or, indeed, a nuisance. A house should be taken as a whole, and legislated for accordingly. A basis of operations should be established, by which the general object of ventilation should be encompassed. *Warm*, fresh air must be introduced into the apartments in cold weather, if we wish to have a feeling of comfort, not only in the rooms, but in going from one part of the house to another.

It has been shown that heated air ascends. Following out this simple natural law, a heating-chamber should be formed in the basement, to which a supply of pure air should be brought from the exterior. It will here be warmed, rarefied, and will rise by its own impulse and fill the upper portions of the house. Now, this heating-chamber need be nothing more than a cellar with a flue to it, containing a good self-feeding stove, over which should be a grating, to allow of the heated air ascending and filling the large spaces, the hall, passages, staircase, area, &c.

In most instances the staircase forms a natural ventilating shaft, an open window or skylight at the top affording ample means of egress for the used air which will find its way up. This opening should be capable of easy regulation, as, under some circumstances, and in very cold weather, scarcely any egress at all will be required; and here a commonly accepted theory must be combated. It is supposed by many that if a window be opened at the top, the heated air will go out; but in most cases it is not so. The cold air rushes in, and *condenses* and *contracts* the heated air, the which, if it could be cooled in an air-tight chamber, would cause a partial vacuum, and, if the sides of the chamber were sufficiently attenuated, they would be collapsed by the pressure of the cooler air upon their external superficies.

By heating the hall and passages equal to the temperature of the apartments, perceptible draughts will be prevented to a considerable extent, as there will be no cold air to find its way in. The matter next to be attended to is the supply of fresh air to the open fires in the rooms; and this is easily effected by having an air-brick inserted in the external wall between the floors, and a small register grating let into the floor next the hearth, and under the fender. This will again further reduce the cause of draughts; and almost any room, no matter what the position of the doors and fireplace, may be made generally comfortable thereby, and in many cases smoky chimneys, and puffs of smoke at every shutting of the door, will be entirely obviated. The fire is thus rendered independent for its supply of air of the opened door or other casual vacancy.

The ordinary construction of the register-stoves (those most commonly in use) is such that heat is given forth by radiation only. The fire is bemmed in on three sides by heat-absorbing material, all of which has to be warmed by conduction before any considerable benefit is felt in the apartment. This defect has been remedied in many instances by establishing a current of air round the back of the stove constructed on purpose, communicating from the outside, and which is warmed in its passage, and admitted into the room in the front of the stove over the fire-box, and in this way assists the ventilation. But when sitting near, you have a stream of hot air playing upon your features; so this method is but partially applicable and suitable only for large public rooms, where the congregation is confined to certain seats and positions. Individual stoves are, however, of secondary importance when the whole house is heated.

Where gas is used there should be an external ventilator near the ceiling, to keep the air cool and divert the sooty particles from it, thus keeping it cleaner for a much longer period, and a supply of oxygen is introduced for the combustion of the gas, the use of which is thus rendered entirely unobjectionable. The ordinary chimney valve will be found sufficient to draw off the upper stratum of used air.

Ventilators in the windows themselves are of little use when most needed, *i.e.*, when the blinds are down and curtains drawn.

A house need not be ill-ventilated on the score of expense. It merely requires forethought in the first arrangement to render it doubly comfortable in all weathers. THOS. GOODCHILD.

## CHAPEL AT GREENWICH HOSPITAL.

In your last number (page 49) it is stated, at the end of the article entitled "An Erumed Architect," that "We remember that the old Greenwich pensioner who used to show the chapel of the hospital always recounted, with something like martial pride, the narrow escape of the painter's life in the execution of the allegorical decorations of the ceiling."

I had considered this piece of traditional information as forgotten long since, not having heard or read it for some time. The last time I remember hearing it mentioned was some years since by my father, who related it in the following manner:—That his brother Thomas, many years before, being with some friends at Greenwich, whilst inspecting the chapel, was assured that the principal artist employed had fallen from the scaffold, and was killed; on which he turned to the pensioner and said "he was very glad to hear it." On the man's expressing his astonishment, Thomas observed that he was the person referred to, and, being alive, could doubt the fact asserted.

If I remember aright, there are not any paintings on the ceiling; but as it is at least fifteen years since I was in the chapel, I may be wrong. The ceiling, however, is richly ornamented; and

when there I was assured by the then showman (who did not relate the accident) that the enriched guilchee-work was *carved* on the beams. On mentioning this to my father, he stated that the whole of the ornamentation was in stucco-work, as it had been executed by his father and brother, under Athenian Stuart, the architect. The chapel appears to have been finished about 1789. My father, then a lad, often took down the money for the weekly wages of the men. This chapel is a very fine example of plasterers' work done by hand, a trade now superseded by cast-work, and which I fear is quite extinct. The chapel is also a good example of the proper introduction of a gallery.

WYATT PAPWORTH.

#### ARCHITECTS AND AMATEURS. THE WORKS AT BLODWEL.

SIR,—A correspondent of the *Builder*, in a letter headed "Architects and Amateurs," dated Dec. 3, 1859, p. 797, has almost avowed that he writes with a strong feeling of professional jealousy against amateurs in general, and although, as one of the latter class, I avoid controversial writing, yet as my name has been brought forward in an offensive manner by him, I shall on this occasion defend myself, with your permission, from the attack of my anonymous opponent, whom I suppose, although unacquainted with him, to be resident in this neighbourhood, and, apparently, my personal enemy.

He declares himself to be "a legitimate practitioner, and judge of these matters;" I am surprised, therefore, he is not aware that the Blodwel spire is not by any means the first example of a convex outline, for Caythorpe, in Lincs, and Fribrigg minister, in Germany, show the same construction, and I believe I could name several others; but when they are slightly convex in outline, the artist or engraver may not always have represented them correctly. The domical curvature of the Fribrigg spire I ascertained myself by personal examination. When I limit the Blodwel spire, I think its rather unusual form would be likely to promote a fair discussion of the question as to whether the *dome* or the *spike* should be preferred for our highest architectural outlines. But small indeed must the experience of any one be, who does not recognize in my spire the essential form of the German Fribrigg, and in the window treatment of my octagonal tower an evident imitation of the well-known example at Sedgeberrow. Never until now, that I am aware of, has it been made a matter of reproach to a clergyman, that he has turned his attention to architecture, as a branch of knowledge connected with his profession.

If the school and master's house at Blodwel, which I have built and paid for, are unlike the ordinary type of national schools in other places, they are intentionally so; and I can still appeal to them as true specimens of English Gothic feeling; nor have I ever permitted the features of any other style to neutralize my treatment of the pure Gothic.

I consider if our own appropriate, living style, dwindle beyond all others; and in adopting it I lay myself under stricter obligations than those who offer, with perfect indifference, to build in any style that may suit the caprice of their employer.

But how could I act otherwise than I have done? The professional architect, after supplying ground plan, elevation, and working drawings, &c., will hardly visit the spot more frequently than twice in the twelvemonth. I, as an amateur, think it my business to be present there almost every day, and no stone of any size is put into its place without my personal superintendence.

If after works of this kind have been carried out at my own cost I am to be reproached with violence for daring to act in such a manner, and my professional assaunt is abetted by his brethren, it lowers the standard of practice throughout all departments of the profession.

My opponent refers to a hundred others, out of whom he has done me the honour to select me for his first victim.

A course of a hundred letters duly printed in the *Builder* will no doubt annihilate the volunteer corps, and we shall be forbidden ever after to express our practical opinions otherwise than on paper, unless we are willing to have all the bitterness of reproach and calumny.

However, before I am utterly destroyed, I have one appeal to make. I appeal, not to the architectural world—at present so hopelessly divided

\* Damaged by lightning, Dec. 30, 1859, and somewhat incorrectly represented in the *Illustrated London News*, January 14, 1860.

between the contending styles—but I do appeal to the Gothic world, which is at unity with itself; and the living, native, growing style, now passing under that name, is the only one I care to practise, or am anxious to see employed by others.

In conclusion, Mr. Editor, I cannot avoid observing that I consider your correspondent's "threatening letter" as a very dangerous precedent. Perhaps even his professional exclusiveness might allow the deans of our cathedrals a legitimate voice in the disposal of their "fabric funds," and he will perceive, by my signature to this letter, that I also have some official excuse for meddling with matters of architectural and parochial expenditure.

JOHN PARKER,  
Vicar of Blodwel, and Rural Dean  
of Llangollen.

January 7th,

#### SCHOOL VENTILATION.

SIR,—Your paper being open to any improvements in construction, some time since you introduced an interesting notice on the important system of ventilation and warming, of Dr. Van Hecke. A number of the *Montleur Belge* has just come under my notice, containing an account of its application to the commercial (parish) schools at Nivelles. If you consider the extract worthy your observation, you will oblige me by inserting it.

"An official commission, composed of the committee of Public Hygiene of Nivelles, to which were associated M. Froment, professor of mathematics and physics, assembled on Tuesday last, to examine the effects produced by the apparatus of Dr. Van Hecke, placed in the commercial schools in that town. This school accommodates four large classes of 100 each, and the cubical contents are about 79,000 cubic feet.

The administration required a renewal of the air at the rate of 140,000 cubic feet per hour; heated air in winter, cooled air in summer. The experiments made by the commission gave the most satisfactory results. The apparatus is capable of supplying, and this without perceptible draught, 420,000 cubic feet, winter or summer, or three times more than the quantity contracted for.

From this datum, it is calculated that the daily expense will not exceed two francs.

To arrive at the same results by ordinary or natural means, the expense of combustible oil would be eight francs per day."

#### A RAFT FOR THE WRECKED.

Of the best mode of rescuing lives, in the event of shipwreck and disaster at sea, we know but little, as each successive shipwreck painfully proves. Would not the organization of a general system of raft-constructing materially aid our advances in this direction, a system by which every spare yard, plank, and spar, not in actual service, might be made available in a few moments, so as to form a large and commodious raft, the framework of which should be so strong as not to be easily stove, and too broad to be easily capsized. To accomplish this object, every yard and spar in the ship should be numbered, and the ends of each so prepared that the one should fit in and receive the other. Many plans might be suggested by your scientific readers, which might result in a satisfactory solution of this difficult and important question. Is not this a fit subject for the Admiralty?

NEMO.

#### DECISION UNDER THE METROPOLITAN BUILDING ACT. PUBLIC BUILDING.

SIR,—In your last publication you gave a report of the case relating to the Pavilion in Tichborne-street, Haymarket, lately decided by Mr. Bingham at the Marlborough-street Police Court, and you attach to the end of the report a note that "it is difficult to reconcile the statements of the district surveyor and the magistrate as to the extent of the works done," and I do not wonder at it, because the report of what I said is incorrect. I did not state that the premises, "by previous pulling down and re-erections, to make the place what it is, had, within the meaning of the statute, become a new building;" nor did I quote the 10th section; nor did I state, "that in the present case it could be proved that considerably more than half the old fabric had been taken down." The counsel for the defendants quoted the 10th section, amongst others, and stated in effect what I am reported to have said, and that it must be so proved before the building could be brought under or made such as to the requirements of the Act; and as such was not the case, the 10th section did not apply; and that it was not such a building as could be called a public building within the meaning of the Act, so as to bring it under the 30th section. And as the worthy magistrate has so

decided, the remainder of your remark is quite correct, namely, that the real question upon which I proceeded against the builder, as to "whether a building existing before the Act, and used as a public building afterwards, must be altered, when works are being done on it, to make its construction such as the district surveyor approves," is avoided, and upon it no decision is given.

CHARLES MATTHEW,

Surveyor of the District of St. James Westminster.

#### CRYPT OF GERRARD'S HALL.

SIR,—I should like to remind the public that, when the crypt of Gerrard's Hall was taken down, the stones were made over to the Crystal Palace Company to be re-erected on their grounds. Such, certainly, was the talk of the day. The crypt is not to be found at Sydenham. Would it not be possible to urge on the directors the necessity of carrying out their promise? You may remember that, a century ago, Holbein's Whitehall gate was made over to a royal duke, who professed an intention of rebuilding it at Windsor; and the gate has disappeared. It would be a pity to lose this crypt entirely.

W. H.

#### THE ARCHITECTURAL MUSEUM PRIZES.

SIR,—The number and quality of the works submitted, in competition, for the recently-awarded wood-carving prize, are, I think, sufficient proof that the interest of our class, so long apparently dormant, is to a certain extent awakened.

May I be allowed, through your columns, to express a hope that the subject for the prize for the ensuing year may be of a character that will include a wider range of competitors. I do not of course know what may be in contemplation by the gentlemen of the committee, but I have good reason for the conviction that a prize for *models* of figure studies for architectural purposes, and for stone carving, would bring a large number of competitors into the field.

I am not sure that it is not rather an ungracious thing for one of the competing class to offer any suggestion on the matter, but I trust it will be received in the spirit in which it is made, and, after all, the chief good of a prize is the development and stimulation of many and various talents; and whatever extends the circle of such emulation must help the object of the donors.

A STONE-CARVER.

#### HOLLOW WALLS.

SIR,—Your last paper contained an extract from *The Engineer* on the subject of "hollow walls." Will you allow me to state the following facts on the same subject, which, unless I have misunderstood the extract referred to, seems somewhat irreconcilable with it?

Having to erect several houses in a situation much exposed to severe south-west storms from the sea, and the bricks procurable being *exceedingly porous*, the hollow-wall expedient was resorted to—(half-brick outer wall, a 2-inch hollow, and a 9-inch inner wall,—the two tied together with wrought-iron cramps.) At the line of the chamber window-cills, however, two through-courses were improperly introduced. The work advanced, and was completed during the fine part of the season. Just previously to the return of the wet season the plaster seemed quite dry; but immediately afterwards a hand of damp appeared on the inside of all the chamber-walls having a south-west aspect. As the season advanced the damp increased, so that the whole of the south-west walls became literally *drenched* with wet, from the line of the upper cills down to the ground-floor: even the floors half-way across the rooms were quite wet.

On visiting the work, a question or two disclosed how the specification had been departed from in building the walls: the through-courses at the upper cills were the cause of the whole mischief. They were immediately cut out; the separation between the outer and inner walls rendered complete; frequent openings, the thickness of a joint, made in the outer walls at the bottom where the hollow work commenced, and since then (now twelve months ago) "the storms have not ceased to beat upon the houses," but damp has certainly ceased to penetrate to the inner walls in the very slightest degree.

If the rain penetrated the 16-inch solid work, must it not also penetrate the 4½-inch outer wall? and would it have ceased to penetrate the inner wall if no openings had been left at the bottom?

W. B.

ACCIDENTS.

On the London and Chatham Railway works, at Bealesbourne, an extensive fall of earth has taken place, burying three or four of the navvies employed. Directly the fall had taken place, operations were commenced for their rescue, but without success. The enormous mass of earth to be removed was not the only difficulty. The sides of the cutting are, it is said, in a most dangerous state, and threaten destruction to those who are working beneath. It was found necessary to erect boarding, and pursue the work in a more systematic manner. Had the fall taken place a quarter of an hour earlier, there must have been five times the number killed.—At Cleveland-square market, Liverpool, some old premises had been condemned by the building surveyor as insecure: workmen were consequently employed in pulling them down; and whilst so engaged a wall that had been left standing fell inwards. The upper work had been stripped to the second floor, and on this the mass of bricks fell, and forced it down to the floor of the shop below. This, in turn, gave way, and the whole crashed down into the cellar. Three of the workmen were carried down with the debris, and buried in the ruins; but they were speedily rescued, one with his thigh fractured. The premises are being taken down with the view of erecting in their stead a concert-room.—At the Raglan Hall, in Theobalds-road, London, a few days ago, a poor fellow was killed by the fall of a piece of old brickwork. Mr. John Wretton, the builder, is engaged here in the execution of some works which necessitated the removal of two brick vanits. In cutting away the brickwork at one part another portion was shaken down, and fell on a labourer and killed him. It was purely an accident.

ARCHITECTS' ACTIONS.

BOTH AND ANOTHER R. HALL.

THIS was an action (in Court of Exchequer, before Mr. Baron Bramwell), brought to recover 2½ per cent. upon the sum of 2,000*l.* The defendant paid 25*l.* into court in satisfaction of the plaintiffs' demand.

Mr. Hawkins and Mr. Day appeared for the plaintiffs, and Mr. Serjeant Parry and Mr. J. Brown represented the defendant.

It appeared that the plaintiffs were engineers and surveyors, and the defendant was a gentleman of property. The plaintiffs, by his order, prepared plans for a music-hall, which was to be erected by the defendant's tenant, occupying the Beehive and Canterbury Music-hall, at Aldershot. For some reason the building was not erected, and the plaintiffs now sought to recover a usual percentage upon 2,000*l.*, the total cost.

The defence was, that the building proposed to be erected by the plaintiffs would have cost 2,500*l.*, and that the defendant, not being prepared to lay out so much money, had declined to let them have anything to do with it.

His Lordship having summed up, The jury returned a verdict for the defendant.

Books Received.

LAW BOOKS.

*Personal Wrongs, and Legal Remedies.* By W. C. SLEIGH, Esq., Barrister-at-Law. London: Longman & Co., 1860.

*A Handy Book on the Law of Master and Servant, Employer and Employed, as regards their Civil Rights.* By J. W. SMITH, Esq., LL.D., Barrister-at-Law. London: E. Wilson, Royal Exchange, 1860.

THESE are, both of them, very useful books for all and sundry to know something about. Those prone to libel and slander others (and there are too many such in the world) would do well to study the former as a check on them, although it might scarcely be of sufficient avail in itself to those seeking a remedy for wrong done them. Mr. Sleigh is an able barrister, and doubtless such a book as this by him is a reliable authority. No less useful is Dr. Smith's Handy Book of the Law as regards Master and Servant: there are few beyond its pale, either in the one capacity or the other, or indeed in both.

VARIORUM.

THE articles, in the current *Quarterly*, which will more immediately interest the special readers of the *Builder*, are an essay on the "Australian Colonies and the Gold Supply," and a paper on

"The Roman Wall through Northumberland and Cumberland." Of "this ghost of a fallen empire," as the writer calls it, adopting an idea of our own, a graphic account is given by one who knows the locality, and has well studied Mr. Maclauchlan's recent survey and Dr. Bruce's well-known works.

—In "Leisure Evenings; or, Records of the Past: a Collection of Prose and Poetical Miscellanies," by Mrs. Alfred Miles (late S. E. Hatfield), authoress of "The Wanderer of Scandinavia," "Moments of Loneliness," &c. (Phipps, 25, Upper Ranelagh-street, Eaton-square, &c., publishers), our readers who peruse her pages will doubtless recognize the pleasant and lady-like effusions of one familiar to them in our own, as "S. E. M." The thoughts which appear in a poetical garb, in this little volume, are interspersed, here and there, with descriptive and suggestive sketches from her pen, in prose. Mrs. Miles has an artistical leaning, as will appear from the following brief extract from a longish poem on "Gothic Architecture":—

"Why should the home where warm affections meet  
Appear so rude, so bald, so incomplete,  
So graceless in exterior, so debased,  
Now by vulgarity, now fraud disgraced;  
Possessing nought to win the admiring eye,  
Or breathe one thought of human sympathy?  
Which roof less seem save for the unsightly stack,  
Which indicates that roof it dares not lack,  
Less England's winter snows and frequent rain,  
Unfriendly entrance to the inmates gain,  
Here too may Gothic Art (so much reviled)  
Defend its claims, before the man or child;  
For intellect matured, or youthful mind,  
Its dignity and use will quickly find."

—A pamphlet on "American Securities," containing "Practical Hints on the Tests of Stability and Profit, for the Guidance and Warning of British Investors;" by an Anglo-American (Nephew, 33, Cornhill, &c.), shows very ably how to discriminate between those worthless securities for which Brother Jonathan has become somewhat notorious, and those of a more substantial character,—whether in consequence of their comprising land within railway or other reach of markets, or otherwise,—of which there seems to be no lack either, in the United States, if one could only get safely and securely at them. As it is, and somewhat on the principle of burnt fingers avoiding the fire, "with what might almost be designated a species of reckless overcaution, we indiscriminately reject the good, lest we should involve ourselves with the bad, instead of exercising that judicious discrimination, that careful investigation, which would be quite sufficient to guide to a safe choice, and which, in so important a proceeding, ought surely not to be considered too troublesome."—The *Gentleman's Magazine* illustrates Mr. Scott's recent lectures on Westminster Abbey, with a plan of the Abbey and adjoining buildings, and a variety of details.—The first article in the new number of the *Universal Review* is a sensible comparative view of the works of Brunel and Stephenson, with the initials T. H. The writer does not differ from our own estimate of the merits of the two men. A paper called *Verbal Landscape-Painting* goes to prove the growth of an admiration for the wilder and more beautiful scenes of nature in the books which are every day issuing from our national press.—The *Ecclesiologist* contains a large view of Kilmore Cathedral.

—"The Welcome Guest" is a good ninepenny-worth of amusing reading, illustrated. It is edited by Mr. Robert Brough, and published by Houlston & Wright.

Miscellaneous.

THE SPARROWS AND LONDON ARCHITECTURE.—At the British Museum, the Marble Arch in Hyde-park, and other public buildings, the sparrows at this season of the year take possession of the ornamental part of the architecture. In the foliage of the capitals, and other portions elaborately wrought, thousands of them may be seen fighting for space, and busily employed in nest building. In some instances the details are completely filled with grass, straw, and mud, which is a great disfigurement. So in the country, in halls and churches, the same thing is to be noticed, and the removal of the nests is often a great trouble and expense. The nests of swallows, are also a cause of annoyance in many buildings. Could any of the readers of the *Builder* suggest a remedy for the matter complained of, besides netting up the exposed parts?

\* "Let any person of ordinary observation," remarks the authoress in a note, "make his choice between the appearance of a roof and the non-appearance of a roof, by taking a walk along the King's-road, Chelsea, and noticing the effect on his own perceptions of the flat roofs, and the intensely ugly chimneys which emerge from them in every conceivable variety of uncouthness and multifariousness which can be perpetrated in a chimney."

THE ROYAL ACADEMY.—On Tuesday last Mr. O'Neill and Mr. Dobson were elected associates of the Royal Academy.

ST. MATTHEW'S, BETHNAL GREEN.—The restoration of St. Matthew's, Bethnal Green, is placed in the hands of Mr. T. E. Knightley, architect.

A CRISIS IN A CLOSE DWELLING.—In the house situated at High Blantyre, occupied by John Robertson, gaffer on the Hamilton and Strathaven Railway, says a Glasgow paper, a painful scene has occurred. Robertson's wife awoke about five o'clock in the morning, in a very exhausted state, and found her infant child, aged nine months, lying dead in her arms. She immediately aroused her husband, who also felt in a weakly condition, but had strength enough to get out of bed. They then discovered that their next eldest child—a boy named Allan, aged about three years—was also dead, and the third, a girl nine years old, seemingly approaching dissolution. The father removed the little girl into an adjoining apartment, and she thus, fortunately, in a short time recovered. The wife was likewise conveyed thither, and is progressing favourably. The deaths of the two youngest children were occasioned by suffocation: the family all slept in one bed—five human beings huddled together—in a small, dingy, smoky dwelling, consisting of one apartment, without sufficient ventilation. Here is a startling result of want of ventilation; but, to a minor extent, the same sort of evil is going on, unobservedly, in probably three-fourths of all the dwellings in the country, bringing about death by slow and imperceptible degrees, in a way that comparatively few believe.

STEAM TRAFFIC ON CANALS.—At a meeting of the Royal Scottish Society of Arts, a communication "On Steam Traffic on Canals," by Mr. Thomas Lampry, F.R.S., and S.A., London, was read by the secretary. After premising that it will be believed, he readily conceded that the future success of canals, and the value consequently of canal property, are dependent entirely upon the possibility or impossibility of the substitution of steam power for the haulage of boats, the author compares the relative advantages of canal and railway conveyance as regards the transmission of merchandise, and expresses an opinion that if steam haulage could be successfully applied to canal navigation, canals would, in a pecuniary sense, become as valuable as they have ever been. The author proposes to remove the difficulty hitherto existing to the introduction of steam-boats on canals, viz., the washing away of the banks by the swell, by lining the upper part of each side with coarse rubble stone; and states that this may be effected by a simple apparatus, without stoppage of the traffic. Presuming the canals to have been prepared for their reception, the author proposes to use steam tugs of a horse power determined by the traffic, and of light draught of water, each of which would haul a flotilla of canal boats dependent in number on the traffic and the power of the engines.

THE DRINKING-FOUNTAIN MOVEMENT.—A drinking-fountain has been put up on the south side of Blackfriars-bridge. The Lambeth Water Works Company supply the water.—Another fountain has been opened at the Triangle, Southwark-bridge. This fountain is the gift of Mr. Alderman Hale, in connection with the London Drinking-fountains Association. It was designed and executed by Wills, Brothers, sculptors, of the Euston-road.—The first drinking-fountain in Taunton has just been erected in the centre of the open space between East-street, East-reach, and Silver-street. The fountain was provided and erected at the expense of Mr. W. Rawlinson.—At the recent holiday assemblages in the Crystal Palace, it was really painful to observe whole flocks of little ones surrounding some fortunate individual possessed of a drinking-utensil, and charitably dealing out water from amongst the aquatic plants and fishes, from want of anything like drinking-fountains or even taps. Two or three small affairs, which seem to have been put up for behoof of those connected with the palace, had the water actually slat off from them altogether, on, at least, one of these occasions. If the object were to increase the demand for stronger liquors, we should think that object was effected: at least, we saw little boys tossing off their tumblers of ale at the counters, who, doubtless, would have been quite well satisfied with "the pure and sparkling water," could they have got at it. The managers should have heard, as the writer of this note did, the mutterings and grumblings to which this want of a free supply of water to families and youngsters "out for the day" gave rise.

**EYIL DRAUGHTS.**—Alcohol, says Liebig, is a bill drawn on the workman's health, which he is incessantly compelled to renew, as he has not the funds to meet it. The bankruptcy of the body is, accordingly, the inevitable result.

**ARCHITECTURAL INSTITUTE OF SCOTLAND.**—A special meeting of the Architectural Institute of Scotland was held in George-street Hall, Edinburgh, on Tuesday, the 31st ult., for the purpose of taking into consideration the propriety of memorializing Government to proceed with the erection of the General Post-office for Scotland, at Edinburgh, upon the site acquired for this purpose. At an ordinary meeting of the Institute, to be held on Monday, the 6th inst., a Notice of the Life and Works of the late Mr. William H. Playfair, architect, by Mr. John Murray Graham, will be read.

**CONSECRATION OF ST. PAUL'S CHURCH, HAGGERSTONE.**—Last week the Bishop of London consecrated the new church of St. Paul, Haggerstone, in the parish of Shoreditch. The parochial district of St. Mary, Haggerstone, of which St. Paul's forms a part, originally part of Shoreditch, has long held a prominent place among the parishes of the metropolis, on account of its dense population. A site sufficient for a new church, school, and parsonage was obtained nine years ago by the Diocesan Society, who paid 750*l.* for the leasehold interest, Sir W. F. F. Middleton, Bart., giving his reversionary interest. Mr. Arthur Blomfield is the architect: Messrs. Holland and Haumen are the builders.

**FIRE IN SANDBACH CHURCH.**—During a recent Saturday night's storm, the parish church of Sandbach, restored within the last few years at a large expense, was found to be in flames. In the interior the flames had reached the gallery at the western end, and were rapidly approaching the organ and roof, when an entrance was gained. The engines were worked with vigour, and after a time the power of the fire began to slacken. An amount of damage was incurred of 500*l.* The chancel, and the stained glass throughout the building have escaped; and the carved roof, being of oak, has met with but little damage. At a meeting of the most influential inhabitants, resolutions have been unanimously come to for an immediate restoration by voluntary contributions. The origin of the fire is (as usual) traceable to a defective flue, and to the Saturday night's beating for Sunday morning.

**THE SMALL POX IN SCOTLAND.**—It will surprise many, that up to the present time there is no regular system of vaccination in Scotland; and in a great measure it is owing to this cause that this epidemic in this part of the kingdom is the means of destroying many lives. At a meeting of the Medico-Chirurgical Society at Edinburgh, the subject was taken into consideration. All the speakers agreed in expressing unabated confidence in vaccination, if properly performed; and proposed an interview with the Scottish members of parliament resident in Edinburgh, with a view of having a vaccination bill for Scotland introduced into Parliament. Considering how intimately the interests of England, Scotland, and Ireland have, by the facilities of communication, become assimilated, it seems singular that separate enactments are required. The result is very incon- venient.

**NORFOLK AND NORWICH ARCHÆOLOGICAL SOCIETY.**—The annual meeting of the members of this society was held in the Guildhall, Norwich; Sir J. P. Hoileau, the president, in the chair. The attendance was numerous. The president, in his address on this fifteenth anniversary of the society, stated that their funds were in the most healthy condition—very much better than he had ever known them to be before, while the number of subscribers had augmented from 80—the number at their first meeting in 1816—to upwards of 300. The publications of the society had now amounted to five thick Svols. volumes. The meet- ing was also addressed by Lord Arthur Hervey, vice-president; and after the usual elections of office bearers and other business, the Rev. J. Bulwer proposed that 50*l.* be appropriated to the engraving of the late Mr. Musket's series of camera drawings of the Norwich gateways. The meeting referred the matter to a committee, as it was doubtful whether they were thirteen in number or twenty-three. The Rev. C. R. Manning then read a paper on "A Brass in Methwold Church," and Mr. Harrod one on "The Earth- works at Castlereac." The Rev. J. Gunn gave an account of his recent excavations at Hoxne, the result of which had been "to bring the bones of extinct animals to a much higher stratum than ever supposed, and to bring the flint implements to a much lower one."

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The usual fortnightly meeting of this society was held at the Royal Institution, Colquitt-street, on Wednesday evening, the 25th, Mr. H. P. Horner, the president, occupying the chair. The papers for the evening were the following:—"The Principles of Ventilation, with Experiments," by Mr. G. Reid, and "Some Remarks upon the Metropolitan Drainage, with Illustrations," by Mr. Barry.

**FALL OF A HOUSE.**—On the night of Monday an accident occurred, by the sudden falling of a two-story house, in the occupation of Mr. John Smith, at Troy Town, Rochester. According to the newspapers, the utmost excitement prevailed in the vicinity, and large numbers quickly set to work to remove the ruins, when, after a delay of some two hours, the sufferers were extricated, provisionally without loss of life.

**RESTORATION OF THE STRAUBERRIES IN HYDE-PARK.**—At the weekly meeting of the Marylebone representative council, on Saturday, letters were read from the members for the borough, Mr. Edwin James and Lord Fernoy, on the subject of the destruction of the shrubberies in Hyde-park. It appears that Lord Fernoy has had the assurance from Lord Palmerston that the shrubs will be replaced and the grounds immediately laid out. Thus this much-agitated question is to be satisfactorily set at rest.

**COLOURS BY REVOLUTION.**—A correspondent writes to say that a mechanical contrivance has been invented by Mr. T. Goodchild, architect, for exhibiting coloured patterns by means of a rotating coloured radial disc, over which is fitted a fixed perforated pattern, merely cut in black paper: the perforations with the disc beneath fully tinged the revolution has been forestalled by the "Colour Top," described in our pages some months ago.

**ARSENIC IN PAPERHANGINGS.**—Three children, living near Tipton, have been all but poisoned. On removing to a new house, according to a Manchester paper, they became strangely and unaccountably ill. At nights they were worse than in the daytime, and always very restless, the muscles of the face being marked by a kind of twitching. Medical assistance was procured, but without effect, until the medical attendant discovered that they were suffering from poison. He subsequently examined the bed-room, and finding the walls covered with a green-coloured paper, tore off a small piece, in which he discovered an extraordinary quantity of arsenic. The children were removed into another room, and are now fast regaining their usual health.

**THE COUNTY SURVEYORS OF IRELAND.**—A memorial to the Lord Lieutenant has been circulated by the county surveyors of Ireland, and approved by some of the principal members of the two branches of the Legislature, the prayer of the memorial being, that his Excellency would cause such measures to be taken as will bring their grievances, as to amount of salary and want of provision for superannuation, or retiring allowance, before the Legislature during the present session, and so give effect to the recommendations of the elect committee. The salary, after deduction of travelling expenses, is said to amount at present only to 200*l.* in the smaller counties, and much less in the larger.

**SOUTH WALES INSTITUTE OF ENGINEERS.**—The General Meeting of the members of this institute was held at Cardiff on the 26th ult. when a discussion took place on a paper by Mr. Wilson on steel, which the *Cardiff Guardian*, of 25th ult. reports at some length. At the close of the discussion, Mr. Byott said he hoped it would not go forth that all their best iron was brought from Russia and Sweden, as a great deal was imported from the East Indies, the importation of which he hoped to see extended. Mr. Wilson said such was the fact; they also imported from Newfoundland and other British provinces, but the bulk came from Sweden and Russia. Some of the papers were discussed, and one by Mr. Maynard, on the Crumlin Viaduct, was read, but the discussion upon it was postponed.

**CAMBRIDGE GUILDHALL.**—The Cambridge Independent Press says:—"The committee, after much labour, have decided upon a plan, which is indeed an amalgamation of the two plans 'Utility' and 'Ten and Fest,' but it is found that to carry it out, and obtain the necessary amount of light, some part of Mr. Livermore's premises must be purchased, at a cost of 400*l.*; and for this purpose application will be made to the Town Council on Thursday next. It is then expected that the plan will be completed, and in a fit state to present to the Council for its approval at the following meeting. The greatest care has been taken not to exceed the stipulated expense."

**DILAPIDATIONS IN GLEBE HOUSES.**—Viscount Dunsannon, according to notice, inquired on Tuesday whether any Bill was proposed to be introduced during the present session under the sanction of the episcopal bench to alter and amend the law relative to dilapidations in glebe houses. The Archbishop of Canterbury, in reply, announced that a measure was in preparation, which he hoped soon to lay before the House. The Bishop of Oxford said that, as the Bill alluded to was in some respects a taxing Bill, it would be introduced into the House of Commons with the understanding that it was supported by the heads of the Church and the great body of the established clergy.

TENDERS

For new Church at Cowley, Oxford, Mr. George Edmond Street, architect. Quantities by Balcan & Lee:—	
Jackson & Slaw .....	£7,970 0 0
Norris .....	7,925 0 0
Wheeler .....	7,739 0 0
Byatt .....	7,500 0 0
Holland and Hannen .....	7,370 0 0
Myers .....	7,220 0 0
Symonds .....	6,989 0 0
Wyatt .....	6,850 0 0
John Castle .....	6,725 0 0
John Castle (accepted) .....	6,472 0 0

For alterations and additions, Commercial-street, Whitechapel, for Messrs. Venables and Sons, Mr. Isaac Clarke, architect. Quantities by Mr. Masland:—	
Reed .....	£3,530 0 0
King .....	3,464 0 0
Ring & Sanger .....	3,274 0 0
Thomson .....	3,240 0 0
Downs .....	3,239 0 0
Coleman .....	3,169 0 0
Wheeler .....	3,069 0 0
Carter .....	2,979 0 0

For Clarendon Hotel, Watford, for Mr. J. Simpson, Mr. J. Liveck, architect. Quantities supplied:—	
Parker .....	£3,980 0 0
Mathews .....	3,492 0 0
Nelson .....	3,479 0 0
Noble .....	3,265 0 0

For house and offices at Emmetts, Kent, for Mr. Richard Gibbs. Quantities not furnished. Mr. John Jenkins, architect:—	
Gannon .....	£3,915 0 0
Bowens .....	3,549 0 0
Tongue .....	3,207 0 0

For the new Police Station, Ladywood-lane, Mr. Edward Holmes, architect. Quantities supplied:—	
Nelson .....	£2,050 0 0
Nowell .....	1,999 0 0
Hardwick .....	1,935 0 0
Jones .....	1,919 0 0
Creswell .....	1,890 0 0
Webb & Son .....	1,877 10 0
Stall .....	1,859 0 0
Matthews .....	1,847 15 0
Barnes & Sons .....	1,845 0 0
Goilrey .....	1,840 0 0
Stokes .....	1,798 0 0
Smith, Brothers .....	1,795 0 0
Chambers & Hilton .....	1,750 0 0
Geary .....	1,747 0 0
Stockett & Field .....	1,737 0 0
Burkit (accepted) .....	1,733 0 0
Cole & Son (sent in error) ..	1,681 0 0

For St. Jude's Parsonage, Commercial-street, Whitechapel:—	
Woods .....	£1,415 0 0
Ashby & Horner .....	1,370 0 0
Reed .....	1,368 0 0
Piper .....	1,360 0 0
Kelley .....	1,350 0 0
Maldett .....	1,349 0 0
Oathwaite .....	1,338 0 0
Little .....	1,320 0 0
Jacobs .....	1,299 0 0
J. Pritchard & Sons .....	1,279 0 0
Heath .....	1,090 0 0

For building additional fever wards for the Torrey Infirmary, Mr. E. Appleton, architect. Quantities not supplied:—	
Thomas Goss .....	£230 0 0
W. A. Goss .....	90 0 0
J. Harvey (accepted) .....	898 4 0

For work to be done at premises, Jermy-street, St. James's, for Messrs. Isaacs, Campbell, & Co. Messrs. Elliot & Chamberlain, architects. Quantities not supplied:—	
Couder .....	£81 0 0
Wills .....	867 0 0
Fish .....	860 0 0
Cannon .....	835 0 0

For finishing nine houses in Bowater terrace, Blackheath, for Messrs. Nickoll. Mr. C. Bradley, architect:—	
Liddiard (accepted) .....	£715 0 0

For alterations and refronting the Custom-house Hotel Chapel street, Salford, Mr. James Evans, Borough Surveyor, architect. Quantities supplied by Mr. F. Taylor, Manchester:—	
W. Dallas .....	£419 0 0
H. Southern & Co. .....	411 0 0
J. Marshall .....	410 0 0
J. Jones .....	405 0 0
R. Pary .....	350 0 0
Statham & Sons .....	337 0 0

For works to be done at Coal Office, Holloway-road, for Messrs. Rickard, Smith, & Co. Messrs. Tiltot & Chamberlain, architects. Quantities not supplied:—	
Couder .....	£370 0 0
Jennings .....	354 0 0
Wills .....	343 0 0

# The Builder.

VOL. XVIII.—No. 888.

Blue Books made Useful.

THE recent sessions of Parliament have not been, by any means, wanting in subjects having particular interest for those who are the ordinary readers of the *Builder*; the like state of things will, and ought to, constantly recur; and the session just commenced will probably not pass by without discussion of numerous questions relating to new buildings and metropolitan street improvements, the sewerage of towns and other sanitary works, to harbours and docks, the conservation of shores and rivers, and railway communication, and to works of many other kinds, in which both the

art and the structural and scientific part of architecture will be concerned. We can at once specify some of these subjects, to show the importance for us which the proceedings of Parliament now ordinarily possess; and we need not allude to increasing attention paid to education, and amounts voted for the advancement of science and art, or generally to the growth of the pursuit of "social science" in the very widest sense, not merely amongst the leaders of political parties, but as manifested in the proceedings themselves of the House of Commons and by the inquiries from time to time instituted there. We may instance the question of a new building for the National Gallery; that of the provision of quarters for the natural history collections, which, it is now decided, shall be removed from the British Museum; the question of the Government offices; that of the metropolitan street communications with reference to the present exigencies, and those further which will accrue from projected railway stations; the embankment of the Thames; the cleansing of the Serpentine; the harbour-works in progress and to be undertaken, and the fortifications, and many more that could be named. We might also refer to views that were expressed by some authorities during the progress of the strike, as to the need of further legislation, to protect the interests respectively of employers and employed. Every week, in Parliament, one or other division of the wide field, where art and practical architecture, engineering and sanitary science, are working for the national progress and the benefit of the people, is cultivated to some extent. Mistakes are made in legislation, as well as by expressions of individual opinion; but each session leaves an addition of some value to the crop of statistics and information, embodied or imbedded, in the accumulating mass of Parliamentary literature. It is our present object to inquire whether this body of matter, which has little effect in proportion to the labour and the cost with which it is got together and printed, might not be made more accessible to the class numbered amongst our readers, and of greater productiveness in results for the world at large.

The question indeed,—"What shall we do

with our Blue Books?" has been often put, and not long since by Lord Stanley,—the point of whose reply in his pamphlet, however we have lost; whilst the particular suggestion we shall offer, has before appeared in print,—though little noticed and not supported by the reasons which we think may now be brought to bear in favour of it. It may be well to show what are the principal facts as to the issue of "blue books" interesting to ourselves and our readers, so far as regards the publications in recent sessions. The Parliamentary papers to which chiefly our remarks are intended to apply, or excluding the journals of the House of Commons, the Daily Votes (to which, however, are appended railway reports), the papers of the Lords, now obtainable, and the Statutes or Acts, are divided into "Reports and Papers," "Bills," and "Papers presented by command." In the first of these three divisions are comprised the returns which are made to the motions of members of the House of Commons; and the reports of Select Committees, with or without the evidence. The bills we need not further mention. The papers presented by command of her Majesty comprise copies of treaties, or correspondence, and reports of commissions, with evidence and appendices. The rule, up to within the last two years, as regards the reports and papers printed by order of the House of Commons, was to print a moderate number of copies beyond those required for the members, say in all 1,000 copies; but of the reports of commissions, often very costly, as many as 5,000 copies were sometimes ordered by those who assumed the duty of ordering, or those to whom it was left. On the occasion of the vote in 1858 by the House of Commons, of the amount, 401,357*l.*, for printing and stationery for various purposes, the case was mentioned of one report where an order for 2,500 copies had been reduced to 1,000 on the chairman's attention being called to the matter. This reminds us of an anecdote that has been told by one of the firm of Longman & Co. of a country clergyman who, receiving a request from some members of his flock that he would print a particular sermon, went into an estimate of the number of clergy in the United Kingdom, assumed (to be on the safe side) that one-half or a third would be purchasers, gave the order for printing accordingly, and was alarmed on hearing that the sale had been about twenty copies; though he was fortunate enough in having publishers who had not adhered literally to his instructions. The waste, more especially in the case of the Reports of Commissions, has been enormous; and much of the same sort of thing still must be said to exist as regards Parliamentary publications of all kinds, so long as they do not become disseminated largely, except through the agency of the hatterman, and do not serve, relatively to the value of what they contain, the work of public education. It has been stated that the sum realized by the sale of waste paper has been 5,000*l.* per annum, as shown by the public accounts. Recently, restrictions have been placed upon the number of the copies printed of the "papers presented by command;" and disposition is shown in Parliament to limit the expense in other directions; but, before the alteration—not in all respects to be approved of—which limited the number to fifty, of copies of a departmental paper printed for gratuitous distribution, it was common for a considerable expenditure to have been incurred for some set of bulky volumes which not more than five or six persons read. The Report of the Commission on Endowed Schools (Ireland) cost 5,201*l.* 2*s.* 2*d.* for printing and paper only. There were four folio volumes, each of 600 pages, as stated, the paper weighing thirty-four tons. The copies printed were 4,250 of each volume; but no English or Scotch member sought to obtain a copy, and the chief application of the outlay seems to have been the supply of 104 copies to Irish members. We have now before us returns of the cost of paper, printing, and binding, each paper "presented by command," during the sessions of 1856, 1857, and 1858. They are defective so far as they do not state the number of pages in each report, so as to allow a full examination of the items named, but it appears that in the last of the years the

amount, 29,331*l.* 8*s.* 5*d.*, was spent in those items, on such papers, by the authority of nine Government departments. In February, 1859, it was stated in the House of Commons that the expenses of printing amounted to 150,000*l.* or 160,000*l.* a-year. It must be recollected that neither of these statements covers the office expenses, as of the commissions, which must amount to the largest sum. The Report on Metropolitan Main Drainage, by Captain Galton and Messrs. Simpson and Blackwell, wanting the usual index, thus cost the country 8,836*l.*; and, apparently, printing and paper not included. The Report, subsequently, of Messrs. Bidder, Hawksley, & Bazalgette to the Metropolitan Board of Works cost between 2,000*l.* and 3,000*l.* Is it likely that any multiple of 1*l.*, or the price at which each copy of the Government Blue Book was sold, realized by such sale, would deserve a moment's consideration? The matter of the Blue Book, at least what was appended to the Report, was matter calculated to be of the utmost service in the settlement of the sewerage question, if perused by all who were giving thought to that subject, and were capable of making suggestions, whilst avoiding such loose and ill-considered ones as were substituted by correspondents of the newspapers. Yet, an outlay having been incurred, enormous in amount, but which we assume and believe to have been an outlay necessary and judiciously incurred; just so much of a tax is imposed as will defeat the object and render impossible the benefit, and not return a single hundred pounds of that expenditure. It is not surprising that the real value of such Blue Books is little known, and that the very matter which they contain has to be again and again got together by committees and commissions,—to increase unnecessarily expenditure, and swell the mass of printed matter obstructively to future investigation.

The figures we have given, and the known facts that the vast majority of the papers, from mere mass, are not and cannot be read by members of Parliament, and only go to form a heap to be cleared away and become the perquisite of a footman, who gets at most 2*s.* per cwt. for them as waste paper; and that, notwithstanding, some of those of permanent interest are quickly not to be procured; show that some change of system is needed to render justifiable the expenditure. Rightly, the course is not to stint the expenditure in the first instance; but to take means to insure that the particular object of the publication is attained. Such means are not to be found in the purchase of copies by the public, albeit the nominal price may be fixed low; because, first, there is not and cannot be sufficient information given by advertisement, of the nature of the matter, or even of the publication, of these papers; and, secondly, because, taking into consideration the number of the papers on a single subject, and the actual cost of some of them, or such as have plans, the expense does stand in the way of the dissemination and proper utilization. It frequently happens that just when the value of the paper becomes known to the public, the price has risen from causes to which we have alluded. Thus it has been stated that a report on stone (perhaps that on the stone for the Houses of Parliament) which was published at 6*d.*, would now fetch a guinea. There are several such cases: the report of the commission on iron applied to railroad structures, is hardly procurable at any price; and the money value of particular papers, or the costliness of a set on any subject, is, from the nature of the circumstances, rapidly increasing. To obtain all the reports on harbours, or on workhouses, or prisons, would require a small fortune; yet no architect or engineer can feel that he has possessed himself of his subject till he has either himself gone through such documents, or is assured that he has the result of a similar operation of research and analysis performed by others. It is obvious, therefore, that there must be some contrivance better calculated for the educational object, than such a one as the refusal to medical men who have contributed matter to the Registrar-Generals reports, of copies of those reports. The fact that the object for the nation is not primarily the reduction of cost of

the printing and paper, was pointed out by Mr. D'Israeli, some time ago, and must be admitted. We have shown that the representation, as contained in the Treasury minute of November, 1858, in answer to Dr. Pickford, of Brighton, that the weekly reports of the Registrar-General could be bought for 1½d., and the quarterly reports for 4d., is by no means an accurate one of the point at issue, as it concerns ourselves, and the profession we represent. The Main-Drainage Report alone, as we have said, was issued at 17s.: and we repeat that, whoever has sufficient interest in such papers to read them, is generally one who can give some return to the nation, far greater in amount than the price which legislative or departmental narrow-mindedness so much fears to lose. The object for Government and Parliament should be, not to impose any tax whatever on the use of the publications, though it is necessary to check abuse and waste: but the object should be to get the books read. People usually do not buy books, even at the cost of mere pence, unless with some view, to be furthered by matter which the books are supposed to contain; and they want preliminary information. Such information of what is to be found in parliamentary publications, given on their appearance in the newspapers, is much confined to subjects which happen to have been prominent; and the omission is not supplied by the lists of the printer to the House of Commons, which are little known, and, for the publications of past sessions, have to be very much improved, as well as cheapened, to make them of the proper use for purposes of general reference. One new and comprehensive catalogue is required; but arranged with divisions, as alphabetical and classified; and better models for these could not be found than Mr. Woodcroft's catalogue of patents. A list which is regularly announced as comprising the titles of papers of several sessions, was not purchasable at our last application; and, to show that improvement in other respects is required, it may be sufficient to state that on another occasion, when papers were wanted by us for immediate reference, our messenger was put off to the following day, either for the convenience of those in charge of the papers on sale, or from defects in the system of arrangement and cataloguing. The daily journals, when they mention publication of a parliamentary paper that would be interesting to ourselves, confine themselves to a paragraph which often omits much that may be technical, but is at the same time of great value to particular inquirers. Our remarks as to the defects of the catalogues are not intended to apply to those indexes which are appended to reports themselves: these are prepared with great labour and skill—it is unnecessary to say to those who have occasion to use the class of papers; and without them, usually, the evidence and other data, often more deserving of attention than the mere compromise of opinion which forms the report, could be turned to slight account.

The importance of the dissemination of the matter of parliamentary papers has been so far seen by many persons, as to have led to suggestions for the gratuitous supply of these publications to popular institutions, in the same manner as the specifications of patents are now supplied, through the exertions of Mr. Woodcroft. But few of those institutions, and as a rule not those which exist in rural districts, have the space for even a moderate proportion or selection of the papers, or would appreciate them or any similar class of literature. Certain individuals would be interested in particular subjects; and the populations in some localities would feel interest in what concerned their means of livelihood, or their own condition. In such cases, however, the object would be better obtained by sale of the papers, than by the other opportunities given; but towards this there must be some better devised means of advertising the matter of the publications than is now comprised in advertising some of them. Again, it has been thought that certain learned societies, or persons requiring such papers really for a scientific or literary object, should be allowed to prefer a claim to have them gratis; but to this it is replied,

that the money payment (here considered as small in amount) affords the only security that the papers will be valued and turned to their intended use, and likewise that the time of public officers would be taken up in determining what individuals or societies were entitled to the papers, or in answering applications; and that it is impossible to draw any line between the different classes of persons. To this it may be observed, that the point we now advance, one apparently somewhat at variance with views held by those who are disposed, praiseworthy enough, to check the waste, is that it would be better that no amount whatever should be realized towards cost of paper and printing, and which return yet we apprehend is insignificant, than that the objects, educational and otherwise, justifying the publication, should be in a great degree limited or impaired. We do not profess to know whether the fifty copies before alluded to as still printed "for gratuitous distribution," are absorbed by the requirements of the Government offices, or departments themselves: we only know that none of these, however important the subject-matter to architects and engineers, ever reach ourselves without purchase or sending for them; and we think that the Institute of British Architects, and the Institution of Civil Engineers, are in a similar position. Surely this, which at least occasions delay, and also operates as an impediment to the diffusion of information and opinion, if not by ourselves, by many who would be contributors of information to the general fund through the medium of our pages, might be corrected; for, we need only instance the daily papers, to show how necessary it is that contributions and correspondence, resulting in this supposed case from the "blue books," should be added to the exertions of those whose difficult duty it is to get to know, first, what has been published, and then what the publication contains. Only five persons having read a particular "blue book," no result may have been obtained to compensate for the cost; but a method might easily be suggested by which the publications could be made accessible to a much greater number of persons not members of Parliament, with the probability that amongst the number would be found five who would have time and ability to digest the matter of the reports, and to produce work of some description that would contribute to progress, and alone justify the national expense.

Our suggestion, therefore, is, that, whatever be the course maintained in reference to the gratuitous distribution, there should be established a public library devoted specially to Parliamentary publications. This institution might be most conveniently located in the neighbourhood of the Houses of Parliament: it should be open throughout the year, might be a lending library, and should be at least as accessible as the reading-room of the British Museum: it should contain perfect sets of all the past publications, several copies of each of recent issues, well-compiled catalogues, and every convenience for writing and reference. We would include in the collection, or the reading-room, some maps, and statistical charts, and books of reference, such as commercial and geographical dictionaries, without, however, losing sight of the main and definite object. There might also be arrangements for the display of maps, showing lines of railway, and other works before Parliament. We would further include in the collection all documents and reports of importance, relating to the metropolis, not presented to Parliament, such as the reports presented to the Common Council of the City, to the City Commission of Sewers, to the Metropolitan Board of Works (with all streets), to the District Boards, and of those Metropolitan Water and Gas Companies who might be disposed to contribute. It is obvious that then the expense which is involved in printing, might be reduced without detriment, and might be avoided altogether, in some instances, by the substitution of an attested manuscript copy of the return which a member now often moves for, more for his own information than for an object which would immediately require the expense of printing. It has several

times happened of late, that a member of Government has had to appeal to the forbearance of a member of Parliament, against what seemed a waste of public money, though the object of the motion for the return was admitted to be a proper one, and important to the public. We believe also that with the public eye constantly upon the matter of "blue books," a more efficient check upon the printing of returns previously printed, would exist than is to be expected from the Librarian of the House of Commons, if he be now charged with any duty in the matter.

It may be remarked that the objects of such a library as we propose, are attained at the British Museum, where there are preserved copies of all Parliamentary publications. The fact, however, that there the papers are not obtainable immediately on publication, or at the time at which much of their chief interest exists, is an answer to such an argument; besides, the extent of a large general library, excellent as is the management of the Museum reading-room, causes much delay to students and inquirers, and has been the reason for our arguing on several occasions in favour of other libraries devoted to special subjects, such as those already existing at South Kensington for books on art; at Jernyn-street, on general science; and at the Great Seal Patent Office for its class of subjects. No change should be made in the system of supply of the papers to the British Museum, unless for diminishing loss of time there; but special libraries, that we now recommend, as well as others of a different sort, should be multiplied: they would result in great progress as regards the subjects themselves, and they would lessen the inconvenience at the British Museum. It is true that access may be obtained to the libraries of the two Houses, by persons engaged in business before Parliament; but this involves difficulty, and obviously would not suffice for the public object in the matter above dwelt upon.

We had thought of giving a list of titles of recent papers on subjects in which our readers are interested; but some of them have been mentioned by us on publication, and we have no further space at present. We have, however, we hope, succeeded in showing the importance to our readers which there is in this matter of our present article, and that the interests of the tax-paying, whilst enlightened, public, are all in favour of the dissemination of parliamentary publications, rather than in the concealment of their light, which we apprehend would be involved in the narrow view of the money expenditure. We have shown, however, further, that there is one simple mode by which the light may be further disseminated, whilst the expense is even reduced; and we hope that our observations may attract the notice of Mr. Wm. Ewart, or some member of the committee of the House of Commons, appointed the other day to assist the Speaker in matters relating to printing.

#### ON THE RATIONALE OF GOTHIC ARCHITECTURE.

MR. SCOTT'S FIRST LECTURE AT THE ROYAL ACADEMY.

IN my former lectures I have endeavoured to trace out the history of that course of transition by which the rude arcuated architecture which prevailed in western Christendom during the Dark Ages, between the fall of the Roman empire and the rise of modern civilization, commonly known as the "Romanesque" style, first emancipated itself from its semi-barbaric character, and became a consistent round-arched style, and subsequently, by a perfectly logical series of changes resulting from the suggestions partly of scientific construction, and partly of artistic refinement, developed itself into that new, original, and beautiful style which has in more modern times received the very absurd, but now unavoidable, name of Gothic architecture.

Having traced this development up to what I consider to be its culminating point,—the form which it arrived at towards the end of the thirteenth century,—it had been my intention, before I proceeded further with the historical view of the subject, to have given a series of short practical treatises on several of the more important ele-

ments of the style whose history I have traced out; as, for instance, on the principles of Gothic vaulting, on tracery, on the system of mouldings belonging to the style; on roofing, on architectural carving and sculpture, &c., &c. Circumstances, however, having rendered it impracticable for me just now to devote to it the time which would be necessary to do justice to these subjects, I purpose on the present occasion to content myself, at the risk (I may say with the *certainly*), of repeating what I have already stated, with an inquiry into the *rationale* of the style of architecture of which I have been treating.

Such an inquiry is the more necessary from the extraordinary contrariety of opinion which we find to exist as to the real character of the style, as well as the external and internal causes of its development. Such opinions assume the most contradictory forms. One class of them may be denominated the *religious* view of the question. Under this head one party describes it as Christian, and another as Roman Catholic architecture. One attributes to its various parts a deep symbolization of Christian truth; another discovers in them nothing but the mystic arcana of Romanism; while another enters the knot by protesting that it is Mahomedan architecture. A second class of opinions assumes an *ethnological* form. Under this head some have thought the style especially English; some pre-eminently German; some, again, in the most exclusive and straightened sense of the term French, and others in the widest sense, Teutonic; while the entanglement is again cut through by the champions of the *Saracenic* claim.

Then comes a *political* class of disputants. One declares the style to be nothing more or less than the visible exponent of feudalism. If the system of Durandus were applied to this view we should perhaps have the orders of the arch shown to represent the divisions of feudal aristocracy. The point of the arch to be the king; the outer voussours the great, and the inner the lesser vassals; the clustered pillars to be the bishops surrounded by their clergy; the ashlar stones the freemen, the rubble stones the villains and serfs, and the mortar to be the bond of union or of slavery by which the whole system was cemented together; and the painted glass to be that clerical monopoly of learning by which the pure light of knowledge was imparted through an artificially coloured medium. Others have, however, shown that the style developed itself just when feudalism was giving way, and just among those very communities who were most resolutely exerting themselves for its overthrow; and that, in England especially, it synchronizes with the foundation of those institutions to which we owe our liberties and our greatness; while our knot-cutting friends would contemptuously pool-pool the whole question by saying that it had nothing to do either with feudalism or Magna Charta, but was simply the natural result of the Crusades.

Again, as to its more practical characteristics; one party claims for it the most unbounded liberty, another denounces it as curling the free following of practical and artistic requirements. The very same party sometimes describes it as excluding the light of day, and sometimes as offering no protection against the glare of sunshine. In fact, without going further into these contrarieties, it may be sufficient to say that among those who have not gone much into the subject, no opinions are too inconsistent either with one another or with facts to find ready advocates.

My object in this and the succeeding lecture will be to show that the style originated in no occult influences; that if it can be called either Christian, Teutonic, French, English, German, or Western European, it is so only in a plain, straightforward, and historical, and not in any hidden, exclusive, or mysterious sense; but that it, in fact, arose from the application of plain common sense to plain practical requirements; that many of these requirements were not peculiar to the period, but belong to all time; that many were not limited to a race or climate, but are common, with certain modifications, to different races and countries; and that the application of the same class of common sense to altered requirements would produce results by no means militating against those thus arrived at, but, on the contrary, tending to enrich, to amplify, and to add new life, variety, and harmony to the art which it had first suggested.

To judge of the practical reasonableness of a style of building, it is not enough to prove that it answers its purpose: we may presuppose that all civilized people would effect as much as that,—indeed, that all people would do so who can construct at all; for if uncivilized, their aim would be more simple and more readily attained.

The question is, whether the purpose is provided for by means consistent with common sense, with the laws of nature, with the properties of the materials at hand, and without an expenditure of labour and material disproportioned to the result. In this I do not restrict the question to merely utilitarian results, but admit the artistic element in a degree proportioned to the rank and purpose of the edifice. I would also wish to guard myself against being understood to imply that the superior reasonableness of a style of architecture proves a higher state of civilization among the people who use it. Inventions are often accidental, and independent of high civilization. Thus, though an arch is a more rational means of spanning a wide opening than a single block of marble, the early Romans who used the arch were probably much less civilized than the early Greeks, who were ignorant of it.

The Egyptians and the Greeks used most nobly the means of spanning openings with which they were best acquainted, and for which their numerous quarries of granite and marble supplied them so liberally with the materials, but such a mode of construction is manifestly costly,—dependent upon natural facilities of the most exceptional kind, and extremely limited in its application. The use of the arch obviates all these difficulties, and consequently a mode of construction which admits the arch is more rational than one which does not.—Roman architecture, in short, than Greek.

The Romans were, in fact, eminently a practical race, and their architecture is in its construction in a high degree practical and rational: they by no means limited themselves to the use of costly and bulky materials, but united in their structures the use of all the materials of which their world-wide dominion gave them command, and were equally successful in employing in them the most stupendous masses of marble, as at Balbec, the granite of Egypt, or the flint-nodules of Kent; and never hesitated at spanning the widest structures with vaults or domes of such solidity as almost to defy the ravages of the elements and of time.

The two great defects in the *rationale* of their architecture were—first, that, as the conquerors of the world, the resources at their command were so unlimited that economy of material seems to have been almost dismissed from their consideration, and their principle of statics seems to have been rather that of passive and inert resistance than of equilibrium of forces; and, secondly, that having adopted the artistic features of Greek architecture, they attempted to unite them with their own totally different system of construction, in a manner which cannot always be said to be consistent with reason.

When the nations of modern Europe began to emerge from the chaos of centuries, and to generate for themselves a new civilization, their aim, as regards architecture, seems rather to have been the recovery of ancient Rome, which they may all along be considered to have continued a dormant state of existence, than to generate a new style for themselves; but their limited resources, and unfamiliarity with what is now denominated "classic" art, freed them from the tendency to follow their great masters in the two defects which I have mentioned. True, they often built with needless massiveness; but this was not the result of profuseness, but of want of experience; and when they imitated or re-used the details of Roman architecture, they applied them with more regard to practical utility than to classic precedent.

At first the Romanesque builders were at a low level, both as to constructive and artistic skill; but all their efforts being directed to practical improvement, they, in course of time, succeeded in generating a very consistent round-arched style in which every feature may be said to have resulted, in a greater or less degree, from practical reasoning on immediate requirements and on their experience of preceding details.

The observations I have to offer on the developments thus reasoned out are intended to apply mainly to those of the countries north of the Alps, but may in many points be found to be of general application.

One of the first practical principles aimed at throughout the whole range of Medieval architecture was so to arrange their designs as to facilitate the use of small materials, and to render themselves independent of the accident of having quarries at command which would supply vast blocks of stone. It happened that in the great seats of early art this was of less consequence, for both Egypt, Syria, Greece, and Italy contain such quarries in tolerable abundance, though even the Romans resorted to concealed arches for the security of their architraves; but in northern

Europe, though building stone in most parts abounds, it is quite exceptional to find it at once in blocks of great dimensions and of strength which would render it a trustworthy covering to openings of any considerable bearing. With all our increased facilities at the present day, we never find the trabeated system carried out in its integrity when on a large scale: either the middle stones of architraves are suspended by concealed arched joints, as is the custom here, or are visibly arch-jointed, as in France, or the entire architraves consist of brick arches plastered over to mimic the construction they affect, but cannot follow. Even in our Gothic buildings, where every facility exists for the use of moderate-sized stone, it is often with much difficulty that blocks of a size suited to all purposes can be obtained. Thus with the Houses of Parliament, after the whole kingdom had been ransacked by a geological commission, not only was the quarry they recommended summarily rejected as "ineffectual of furnishing stone of any reasonable size," but the second quarry, which was adopted in its place, and which produced an admirable material, was, after a time, abandoned and a third selected, the productions of which have, in other respects than size, proved so lamentably inferior. The fact is that it is only here and there that we find quarries uniting *quality* and *size* which suit even our moderate requirements; and if such is the case now with all our mechanical advantages and facilities of transit, how much more must it have been felt in days when the mechanical appliances of the ancients had been in a great measure lost, and the Roman roads broken up, while the means, which were to supply these deficiencies, were yet in their infancy.

While, then, at all times and everywhere, it is a desideratum to a rational system of construction, that it should offer every facility for the use of ordinary and easily-obtained material, such was the case in a more than usual degree in these early ages of modern art.

Though the universal use of the arch by the Romanesque builders obviously promoted this object, it would not of necessity lead to its fullest attainment. Arches may be, and often are, constructed of enormous blocks of stone, and it had to be studied how to make good construction with small materials.

The most obvious means of doing this, was by building the arches in *rims* as we do our brick arches,—a deep arch, consisting of several distinct arches laid one over the other, each forming the centre on which the next is built. By this mode of building, an arch of any degree of strength may be built of stones of the most moderate dimensions. This system consequently became general in the Romanesque buildings.

Now, a deep arch so constructed, and built square through the wall, has a heavy, clumsy appearance, and forms a dark and cavern-like recess. You may ornament the voussours, and vary their colour as you please, but still it is heavy, wanting in play of light and shade, and obstructive to the free passage of the rays of light. This was early felt and early obviated.

In an arch built in several rims, it is not necessary that any but the outer rim should be of the full width of the wall. This suggested the system of *subordinating* the rims, or recessing them one behind the other, so as to divide the arch into what are called orders.

This gives us at once a new and beautiful mode of arching, economical, and adapted to all varieties of material, giving great play of light and shade, offering the greatest freedom for the admission of light, and suggesting (as we shall see), a perfectly new system of decoration.

This division of the arch into receding orders necessitated a corresponding form in the piers which supported it.

The first means of relieving the plainness of this block-form, was the introduction of an impost at the springing, defining the line which separates the pier from the arch. Afterwards the orders of the jamb would receive pilaster-capitals, and finally, decorative columns would be inserted in their place;—thus completing the general idea of the pier and arch as made use of during the Romanesque period.

The arch itself was at the same time subjected to various systems of decoration suited to its *normal* construction.

It is clear that the extreme angles of the orders contribute but slightly to their strength. These might, therefore, be rounded, chamfered, or moulded at pleasure. It became common to form them into large rolls between two hollows, and also to cut the order into various mechanical or other forms, as zigzag, &c., &c., according to the

fancy of the architect, from which arose the whole system of Romanesque arch decoration, and as the junction of the arch with the wall above was but slightly marked by the change in the direction of the joints, a small projecting moulding was introduced between them, which we call the drip-stone or label, which not only drew the line more emphatically, but also served to prevent the water which ran down the face of the walls from discolouring the arch mouldings.

It will readily be seen that this logical and reasonable mode of constructing arched openings, would, when applied to arches carried on pillars, lead to the clustered column.

If the wall was not thick, the arch might certainly continue to be of one order, and the most natural mode of supporting it would then, as heretofore, be a single column. Where, however, the wall was so thick as to give it a clumsy look if the arch ran square through it, it would be divided into two orders, and would assume at its springing a cruciform plan. The impost must break round this figure, and though the column might still remain (and often did remain) round the abacus, only assuming the cross-form, the most natural thing would be to form a complex pillar, composed of four shafts united in one, each apparently supporting its own order of the arch.

If the arch were divided into three orders, a more complex form suggested itself, containing eight shafts; and as the system was carried out many other combinations arose not necessary to enumerate.

Thus we see that the adoption of the arched system of construction, unbiassed by any pre-existing laws of art, but aided only by the very rational desire to utilize the materials most abundantly provided by nature, led to two of the most important characteristics common to Romanesque and Gothic architecture, viz. the subordinated arch and the clustered column, with the whole system of decoration derived from them; than which no two features can be pointed out which have been more richly fruitful of architectural forms, the most original and beautiful.

Again, in the mode of bringing down the arch upon columns the Romanesque builders exercised a sound discretion. The Greeks and Romans in their trabeated construction, reasonably enough, made their architraves only as wide as the upper diameter of their columns, so that whatever projection the capitals had from beyond the shaft they had the same beyond the architrave also. When, however, you substitute two arches for two architraves, you bring down the weight by two opposite forces; its footing, therefore, on the capital requires as much steadiness as possible.

The Romans, as many of their modern followers, were for a time so inconsistent as not only to limit the arch, like the architrave, to the thickness of the upper diameter of the column, but actually interposed, without a shadow of use, a bit of entablature between the column and the arch; thus, instead of doing all they could to give steadiness to the spring of the arch, they made it as tottering in its construction as possible. This was corrected by the Romans of the Lower Empire, and the arch was placed by them, as reason would dictate, directly upon the capital, or (still more sensibly) on a strong flat impost laid on the capital, and for this most reasonable step they have in after ages been pronounced barbarous. The Romanesque architects, taught by common sense rather than by precedent, followed their example. If they imitated or re-used the Corinthian capital, they laid upon its fragile abacus a more trustworthy impost, and to give greater steadiness to the foot of the arch they made it somewhat wider than the diameter of the column,—a practice which pervades Medieval architecture, and contributes greatly both to its good construction and its beauty.

The system of constructing doorways is directly derived from what I have already described; as many recesses being given to the jambs as the arch has ribs,—and these decorated with columns if thought good. The head is often filled in with a tympanum supported by corbels in the jambs, both as a foil for sculptured decoration, and to make the door itself square instead of arch-formed. If this is not done, the inner arches are made to spring from a higher level, to allow the doors to open without catching against them.

The windows show the same regard to reason. The inside is nearly always widely splayed, to spread the light evenly in the room. The external recess depended partly on the degree of architectural character aimed at, and partly on the depth required for the arch. Where the openings were but narrow and the resources small, one arch-rim

would suffice, and this would often be chamfered at the edges to prevent obstruction to light.

If the opening were wider, and so required a deeper arch, or if the architectural effect aimed at were greater, we find two or more such orders as the above, with, perhaps, columns supporting the outer ones, the receding orders, in either case, doing away with undue obstruction of light or view: the eill always well sloped, to throw off the water, and having usually a string course below, to prevent it from running down and discolouring the walls. In all this, a strict regard to practical reason and utility is manifest: every step is argued out on the basis of construction and requirement, and every decoration is founded on, and results from, the conclusions come to on these practical grounds.

In domestic architecture, if a window were beyond the width of a single casement, a small pillar was often interposed, and the inner order of the window was divided into two arches, while the impost, if there were any, was in one, the casements or shutters falling into rebates in the back of the column, by which a window of double width which would otherwise have been inadvisable was produced. In window-like openings in which glazing was not needed—as in triforiums, cloisters, and manders for the same reason, and in which no divisions were often increased to three or four under our comprising arch.

In other instances of the same kind, where light arching was needed, as in cloisters, and the wall was too thick to rest upon a single capital, two small columns were placed one behind another, or a sort of bar or double corbel placed on the piers, to support the spring of the arch, for the sake of avoiding the use of thick piers, which were not needed for strength, and would obstruct view and light, and all these practical contrivances were made elements of beauty and varied effect.

Another legitimate exercise of reason, on the part of the Romanesque builders, was the retention of the fixed rules of proportion observed by the ancients between the diameter and height of their columns. These rules were good in their place, but they had been worked out for a totally different system, and we know that the ancients themselves were anything but so slavish in their adherence to them as their modern imitators. In a purely practical sense, however, it became clear that such rules were out of place and inconsistent with reason. In some instances, in a majority of cases, prescribed the height of a column, from reasons wholly irrespective of the question as to its fitness. It followed then, that the height was regulated rather by the load than the height, so that every variety of proportion became admissible. Take, as an example, the crypt under the choir of York Minster. Its height being prescribed by the ancient canon, and the height it required for the vaulting being fixed by the width of the arches vault, it followed that the height of the columns was also rigorously defined; but some of these columns had to carry through the vaulting, and with them the whole superstructure, while others had only to lead to the vaulting of the crypt and the floor of the church. Surely, then, the simplest exercise of reason dictated that their diameters should vary with their load, irrespective of their height. The system of clustering columns both helped to meet the extremes of such variation in proportion, and, at the same time, introduced still wider liberty; for, though a pier destined to carry a great load might be subdivided, and its apparent proportions thus lightened, the individual shafts which composed it not having each its own proper load, might be viewed as decorative only, and be made exceedingly thin for their height. The use of such thin shafts did not, however, originate in the Middle Ages. The painter shows in his work on Domestic Architecture decorated with "Ornaments of a Light Form," that it was frequent among the ancients, though not often adopted by modern classical architects. Even for really constructive pillars, as in the case of metal columns, and in a less degree with those of marble or granite, where the load is very great, and it is especially so where the columns are of a decorative rather than a functional character, in which case it is not only lawful, but correct to show this by making them of slender proportions. The liberty, however, which I here defend, must, as all other liberty, be kept within reasonable bounds, and must be regulated by a correct eye and sound judgment.

Another sound exercise, as I think, of reason and liberty, which was universal among the Romanesque and Byzantine architects, was the departure from the rule of the ancients that all capitals and other recurring objects of a like nature should be worked to one and the same pattern. It may be that the unity of a colonnade, united by a single and unbroken entablature, demanded this. I do not find fault with it in Grecian or Roman architecture, but where the capitals are separated by arches, or did not form a continued range at all, the effect would be most painfully monotonous if the sculptural heads were all alike, as if cast in a mould by the universal law that accordingly it established as a general law that, though moulded or other mechanically formed capitals were imposed upon the sculptor; but that he should have the widest scope, within the reasonable limits suggested by the requirements of the general balance, and harmony of mass and outline, for the freest exercise of his own imagination.

Now, though these and other developments of the Romanesque period were to be founded on a thoroughly practical and logical course of reasoning, it by no means followed that a perfected form of arched architecture and system had been arrived at any more, than that the decorative system had been brought into a thoroughly refined or artistic form.

Towards the middle of the twelfth century the efforts of the architects were resolutely directed towards the attainment of these two objects, and the advances made, both in correcting defects in construction and refining the decorative system, were most strenuously followed up, and all improvements made were conducted strictly on reason. The great constructive difficulty met with on reason, was the outward pressure of the round arch when of great span, or carrying any great load, and especially so when used in situations where it was difficult to give it any very massive abutment.

The cases of failure from this cause were most frequent, so much so, that, besides the numerous instances recorded in the history, wholly, or in part falling from the failure of the arches, we have in the buildings still remaining abundant evidences of the insufficiency of the round arches for their load, and of the abutments to resist their outward pressure. In the case of the towers of bridges, viaducts, &c., give our arches, in an abutment proportioned to the pressure whatever it may be, are limited in our means of doing this by immovable cases: thus, in a central tower, the arms of the cross have aisles, the natural abutments of the tower arches are reduced to the frail aid of a continuous arcades upon detached pillars, and even if there are no aisles, the abutting walls are perforated with windows. The abutments, again, of a chancel arch, are perforated either by arches or windows, while the cable over the arch loads it heavily at its weakest point. The abutment of an arch, again, has often to infringe upon a pier at half its height, as in the case of a nave arcade abutting upon the detached piers of a central tower. In all such situations the undue pressure of the round arch was found to be most prejudicial. Still more strongly was it felt where the nave was spanned by stone vaulting. The Romans had got over this, as in the baths of Diocletian, by breaking the continuity of the arches by the aisles, and by crossing them. But in a church this was impracticable. Its uses demanded continuity of aisle, and moderation in the height of the vaulting. The same occurred from these adverse causes, and the ingenuity of the architects was naturally directed to obviating the defect.

I have, in a previous lecture, described the series of tentative experiments, and the course dictated by constructive and practical requirements, by which we succeeded in avoiding these difficulties, I will not weary you by recapitulating them. The two obvious desiderata were an increase of resistance, and a reduction of pressure, and these were the two objects aimed at in most of the succeeding developments. The first demand was met at the pointed arch, the second by the systematized use of the buttress, and the third by the use of a wide winged pier. It was perfectly well known that the outward thrust of an arch diminished as its height increased; that the resistive power of a clustered pier depended mainly on its extension in the direction of the pressure, and that where sufficient extension of abutment could not be obtained without inconvenience or disight, the deficiency might be compensated for by a buttress, or a pier, or by arguing on these three facts, the constructive characteristics which distinguish Gothic from Romanesque, or the modifications of the round arch into Gothic, were logically worked out.

The strictly mathematical mode of increasing the height of an arch, would, I suppose, be by using a semi-ellipse. Its major axis, however, being fixed, the minor axis, by impressing to the eye, and troublesome execution from its constant variations of curvature, so that by far the most natural and practical means of effecting the object, is the adoption of an arch of two centres, or what is commonly called the "pointed arch." We accordingly find, as I have shown by ample evidence in a former lecture, that this form was in the instance used just in those situations in which a reduction of pressure, and an increased power of bearing weight were of the greatest importance. I have shown that this form was not adopted at first as a matter of taste, or of fancy; nor even as a means of meeting the difficulties arising from the mechanical necessity, but simply from structural and constructive considerations. It was, however, as we saw, new or old, whether it occurred to them without external suggestion, or whether they saw it in the East, in the form of the semicircular arches, or in the first proposition of the pointed arches, or in the first proposition in any manner which caused its introduction, but the simple fact, that they had arrived in the course of their constructive progress, to a form which was demanded for practical reasons, that it began to be used as a matter of taste in other positions.

Had the second object—an arch of reduced pressure—the second, viz. the abatement of increased resistance was attained by the systematic development of the buttress, a feature very much neglected by the Romanesque builders; and, as the vaulting of a lofty nave could not be directly supported by the ordinary buttress, the arches or flying buttress was introduced, the spanning the aisles and conveying the pressure to the buttress beyond. That this was introduced for utility only, and not from taste, is proved by the attempts in early instances to conceal it, so that we may with certainty conclude that all these beautiful features of Gothic architecture originated, not from taste or caprice, but from reason upon practical and urgently pressing constructive requirement, and that the beauties to which they gave rise proceeded from the application to them of the great principle of Gothic architecture, the decoration of constructive or useful features.

Let us, however, suppose for a moment that our building is not vaulted, but has a flat roof. The flat roof remains an advantage in the use of the pointed arch. If it has, for instance, a central tower, the demand for an arch of reduced thrust is greater than if the tower arch had been vaulted, for the arms of the cross from their reduced weight are less effective as abutments. The chancel arch, again, demands height, and the more the height is increased, the more necessary it becomes that the nave arches are better pointed than round, as are any others carrying any considerable weight. Buttresses remain the necessity of the arches, and are, of course, desirable as a steadiness to the structure, and in any case where roofs without a direct tie are made use of, and are further useful as permitting the introduction of larger windows, and in all cases, where roofs or floors are so constructed as to concentrate pressure upon points, it is clear that buttresses are desirable; and when the efficient use cannot be given them, the defect is not without remedy. It is equally clear that the deficiency may be readily compensated by leading them with lofty pinnacles. It is wrong to use buttresses without any object, but appearance, but there are numbers of cases where they are clearly demanded besides those in which we know them to be indispensable. If so many of our ancient and vaulted buildings in these days were not mere specimens in lath and plaster

we should have more practical experience of the need of the buttress and of the pointed arch. I was once told by the English commissioner in Seinde that the European engineers had used in an early period frequently divided ribs believe that any but a pointed arch will stand.

Let us now inquire as briefly as may be into the rationale of *ribbed vaulting*, as distinguished from the arching of the Roman and earlier Romanesque builders.

A groined vault does not of necessity demand the use of ribs any more than the plain wagon-head vault. The latter was from an early period frequently divided into compartments or bays by transverse ribs, which were useful as a means of giving it rigidity, but in groined vaulting they were of nearly constant use both for the same reason, and because the vault, being reduced at its springing to so narrow a footing required this additional strength. The arches, however, or diagonal lines of intersection were always left without ribs.

Why, then, was the custom changed? For two important reasons. The first was this: that the intersection forms naturally a feeble line both from the difficulty, particularly with the rough materials usually employed, of making its construction sound, from its forming an arch of greatly increased width without corresponding increase of height, and from its reduction at the springing level to a plain's point.

The second was of a more intricate nature, and requires to be explained more in detail. When the two intersecting vaults of a groin are similar and equal in their section, the line of intersection falls in a plane. When vaulting, however, the members are unequal in height, and in which spaces would have to be so covered, and would present problems of considerable difficulty, in which it would be impossible in all cases that the vaulting surfaces should be equal in vaulting, but in which the vaulting surfaces of the intersecting lines could not, without much twisting of the surfaces, be brought to fall into planes.

The introduction of the diagonal rib met both of these difficulties. It gave the angle and gave a substantial footing; and it at the same time gave to the lines of intersection a certain degree of independence of the vaulting surfaces, so that instead of the surfaces being in all instances of equal height, the vaulting was by the ribs, and the latter could be made to fall into planes and to avoid unsightly forms even in vaulting spaces of the most irregular and abnormal forms.

The second way in which the rib was worked as great a revolution in the principles of vaulted construction as did the pointed arch itself. Nothing in the way of vaulting was now impracticable or unsightly; the architect was able to do anything he might desire to do, with the vaulting. The facilities it offers are quite marvelous in the eyes of the modern practical man when once they are opened to them. I have myself found one of the most practical men I ever met, who had for years taken the leading management of the business of the greatest builder of our day, though hitherto uninitiated in Gothic construction, almost in ecstasies at finding a difficult problem in vaulting he had been puzzling over for days and making models of in vain, solved in an instant by seeing the absolute liberty of action exercised in a similar case in Westminster Abbey. The old builders themselves were perfectly satisfied that they had discovered liberty; not only could they vault spaces of any conceivable plan, every dimension and angle of it varying, and the difficulties increased by the necessity of pushing up windows in their places, but they could do anything they could make the result so pleasing and apparently so straightforward and natural, that not one observer out of a thousand ever finds out that there was any difficulty to be got over at all. Sometimes, indeed, we find them rejoicing so much in their freedom as to set themselves needless puzzles for the very luxury of solving them. There is a most remarkable instance of this in the crypt under Glasgow Cathedral, where the pillars which support the floor have been placed in a variety of intricate positions for no reason but to produce curious perplexities in the vaulting, and creating strange problems for the mere pleasure of their solution and the beauty of the puzzle when solved.

It has been argued that the Gothic vault is less refined than some of the previous forms, because less strictly mathematical; that a relative degree of construction should in all cases possess an exact mathematical solution, though the builder may, when once master of the true theory, depart from it in execution; that the work, in its original form, should be perfect and should be perfect and mathematically accurate in its theoretical type.

I agree with this doctrine in the main; but I hold that the Gothic vault complies with its conditions.

The square groined vault, with semi-circular arches, is perfect in its theory, and gives elliptical arches for its arched lines. The same, if vaulted with the pointed arch, is equally true in theory, for the diagonal ribs may be pointed arches, formed each of portions of two ellipses. The oblong vault, again, is perfect if the wide arch is a semi-circle, the narrow one a vertical semi-ellipse, and the arched horizontal semi-ellipses of the same height; but the ancient generally chose to set the narrow arch instead of using the vertical ellipse, and by doing so threw the diagonal arched out of the plane and out of shape; but the theoretical form remained, nevertheless, perfect. In like manner, if the same figure be vaulted across its widest span by a pointed vault, and if the narrow vault have a pointed arch composed of two portions of ellipses, and the intersections be of the same figure as resulting geometrically from the intersection of the two vaults, the theoretical form is perfect. Now, if in either case the architect thinks the elliptical pointed arches inferior in beauty to those composed of parts of circles, and by using ribs divides the vaults so as to throw the error resulting from the substitution of the latter form into the vaulted surfaces where it will be invisible, surely he is only using his discretionary power in producing irregularities from a perfect theory which he claimed as his right; and this is exactly what the Gothic architects introduced.

The fact is that, besides its unpleasing form, especially when of the pointed arch, the use of the ellipse entails such an annoying series of difficulties as greatly to increase the trouble and consequent cost of execution. The constant change of curvature, the troublesome nature of striving to find the true lines of the arch-joints, not to mention the mathematical fact that the same joint line is never true both for the extrados and intrados, and that, if the rib mould remains unaltered, the extrados and intrados cannot be both true ellipses at all; all these furnish quite sufficient practical reasons for its rejection in cases where, not only is there no necessity but an abstract mathematical necessity for its use, but the beauty of the work is greatly improved by dispensing with it.

Though the pointed arch was introduced from purely constructive reasons, there was another of a more æsthetic nature which rendered its adoption more general when once introduced. It was a double one: not only did the general tendency towards lofty proportions render it necessary to make use of an arch more in harmony with the general feeling of the architecture, but the rejection of a fixed code of proportions for pillars and other parts demanded for the arch an equal power of varying its own proportions. The semi-arch is absolute and invariable, and though the use of smaller segments would meet the case in one direction, there were no means of proportioning it to features of increasing height. This was attempted both in Romanesque and Byzantine works by the expedient of *stilling*; but this is, after all, more a semblance than a reality. As in cases already cited the mathematical solution of the problem is the ellipse; but only imagine any thing so unpleasing as a series of elliptical arches placed the length-way upwards! Good taste would not suffer it; but the pointed arch at once met the difficulty. To illustrate my meaning I will beg you to take an internal bay of a Norman Cathedral—and to suppose yourselves to have to increase its height throughout in the ratio of one-third.

You, first, after setting out your widths as in the original, increase the whole height and that of each story by one-third; you then increase the piers and the jambs of the triforium and clerestory windows in the same proportion: this brings you to a stand, for the arches being semicircles are invariable. Either you must leave them unaltered and throw all the extra height into the wall above them, or you must increase each to the extent of one-third of their height; unless you can make use of an elastic arch which will change its proportion at pleasure. The ellipse occurs and meets the case, but it offends your eyes. At length, however, a device is hit upon by which itself and gets rid of the whole difficulty. So similar are a Romanesque and an Early Pointed bay in all other respects, that the change of proportion which I have described seems at once to effect the whole change in style.

Had the constructional motive alone existed, the pointed form would have been confined to arches of considerable span, and the desire for a variable arch, adding æsthetic to the constructional claim, caused its speedy adoption in positions where strength alone would not have demanded it, though the semicircle, the plain segment, and the segmental pointed arch, were, at all subsequent periods, of the style used side by side with the true pointed form.

I have been the more particular in showing the true reasons for the demand for the form of the arch, because the great majority of writers treat it purely as a matter of taste, and of altered fashion; indeed, two generally excellent writers on the history of Medieval architecture have strangely imagined that the elevation of the piers, and a greater outward thrust than the round, and that the increased projection of the buttresses was necessitated by its use: instead of the two being simultaneously introduced as a double means of avoiding the evils experienced from the great thrust of the round arch and the small buttresses by which it had during the Romanesque period been accompanied.

I will now close my present lecture, but hope in the next to carry on the same inquiry into a number of other details, as well as into the general spirit and principles of the architecture of which I am treating; and to add some practical remarks on the application of the rationale thus traced out to our present revival of the style, and such developments as it may give rise to.

ON THE CONSTRUCTION AND REBUILDING OF THE ITALIAN OPERA HOUSE, COVENT GARDEN.\*

It having been represented to me that some description of the recent rebuilding of Covent-garden Theatre might prove interesting to members of the Institute, I have readily consented to place them in possession, as far as it lies in my power to do so, of all the means adopted to that end; and, although I could certainly have wished that the task might have fallen to some one less directly interested in the matter than myself, I am the more disposed to address myself to the question from a feeling that our transactions ought to contain not only those interesting essays of an archaeological character which are so extremely valuable to all of us as artists, but should also have a claim to be considered as in some measure a record of contemporary works, more particularly with reference to the peculiarities of modern building operations. Acting upon this principle, I propose to confine my observations to-night almost exclusively to the constructive features of the new theatre, merely glancing at its architectural character in those cases where its form and appearance have been directly influenced by means of a peculiar or utilitarian character. And before I enter upon my description, I must, to prevent misapprehension, state distinctly that I claim no novelty or peculiar merit for any of the methods of construction adopted; and if, as must be the case, many present may find much to criticise and probably to condemn, I can only plead that, owing to the limited time allowed for the work, the imperious necessity of action has often interfered with that calm reflection and discriminating thought which are necessary for the production of any noble and enduring work. My object, therefore, is, not in any way to forestall criticism, but simply to lay before the members of our profession some more authentic accounts of the progress of the works of the new theatre than they have been able to

obtain from the newspapers, some of which have even informed a curious public that the building was erected with hot bricks and boiling water, while others have contained descriptions more credible to the imaginative than the scientific element in the minds of their writers.

Covent-garden may almost claim to be considered by Londoners a household word, as far as theatrical associations are concerned,—a theatre having existed on the site for nearly a century and a half. The first playhouse of which we have any records was commenced in 1730, and opened in 1733,—the distance from the stage to the back wall of the boxes being 54 feet or 55 feet, which dimension was then considered large. The theatre was erected to rival Drury-lane, and from that day to the present a constant competition has been carried on between the two great dramatic houses. After extensive alterations and a partial rebuilding, in 1792, the theatre was burnt to the ground,—the cause of the fire remaining, as is not uncommon in such cases, an unsolved mystery. The last representation was a "Pizarro," in which many guns were used; and it was thought that ignited fragments of the wadding might have settled upon inflammable portions of the scenery or decorations, and thus have caused the catastrophe. Be this, however, as it may, the destruction of the building was complete, and nothing remained to be done but rebuild. The proprietors decided on the latter course, and were fortunate enough to secure the services of Sir Robert, then Mr. Smirke, from whose designs and under whose guidance was erected, in less than one year, the admirable theatre so lately destroyed by the same element which had proved so fatal to its predecessor. Sir Robert Smirke's design is so well known to you that I need not describe it further than to say, that whatever may be our opinion of the applicability of such forms of architecture to the purposes of a theatre, we must all feel that Sir Robert Smirke, while adopting the style fashionable at the time, brought to its execution a thorough knowledge of its capabilities and details, combined with most eminent constructional skill. I mention this the rather, because I saw, with regret, some time since, allusions made to bad construction, as evidenced by the use of wood bond in the walls by Sir Robert. Doubtless, this is a mode of building very faulty, and now very properly discarded; but, as regards the bonds at Covent-garden, they were only in the insides of the walls, and used, apparently, for convenience in fixing flusings; and as they were only half a brick wide, the strength of the thick walls of four or five bricks was but slightly diminished. In all other respects, the construction of Sir Robert Smirke's theatre appeared to me excellent; and the arrangements of arches and voids, piers, and footings, were such as might be most advantageously studied by the architectural student, while the great thickness and solidity of the walls were such, that in removing them, the contractor for the excavations often found many reasons to wish their construction had been of a less permanent character. The first stone of the new theatre was laid on the 31st December, 1858, by his Royal Highness the Prince of Wales; and a brass box containing a bronze medal, with the Prince's portrait upon it, and a selection of the current coins of the day, was placed under the foundation-stone at the north-east corner of the building, where it was found by the workmen engaged in removing the ruins. The theatre was opened on the 18th September, 1859, having occupied only eight and a half months since the laying of the foundation-stone. The cost of the building was, I believe, 180,000*l.*; and on the occasion of opening an attempt was made by the management to raise the prices of admission about 30 per cent. This was resisted by the public in a manner to which we are happily unaccustomed, and the famous O. P., or old price, riots ensued, and continued about two months. During their occurrence the performances were impossible. Picnards of the most ludicrous and offensive descriptions were hung out from all parts of the theatre; the performers were interrupted by continual noise and missiles; and a kind of combined movement among the rioters, termed the "O. P. Dance," rendered all restoration of order impracticable. It might have been hoped that such a mode of evidencing dissatisfaction by the public had become obsolete, but it may be questioned whether we have much to congratulate ourselves upon as an improvement, if we have only banished it from our theatres to permit it in our churches. So long continued and so determined were the riots at Covent-garden, that the proprietors were at length obliged to make a compromise, after which the performances were per-

\* Read at the Royal Institute of British Architects, by Mr. E. M. Barry, as elsewhere referred to.

mitted to go on without interruption, and the theatre was used for English dramatic representations until a few years ago, when it was determined to convert it into an Italian Opera-house. To carry out this resolution, extensive alterations were required, both as to the form and size of the auditory, and they were placed under the professional guidance of Mr. Albano, who gutted the audience portion of the theatre, and rebuilt it according to his own designs. I have had prepared plans showing the old theatre, the re-arrangement by Mr. Albano, and the new Opera-house to the same scale, in order to facilitate comparison of their respective sizes. Mr. Albano's alterations consisted, as may be seen, of an enlargement of the auditory, both longitudinally and transversely, and of some modifications of the entrances and staircases rendered necessary thereby. The theatre, as altered, was opened with the opera of "Semiramide,"—in which Grisi and Mario filled the principal parts, and when Albani was first introduced to a London audience,—and it continued from that date till the time of its destruction to be devoted to the purposes of the Italian opera, with occasional performances of other kinds during the recess of the opera season. The fate of so many theatres, however, soon overtook Covent-garden; and, in March, 1856, it was burned to the ground, during the absence of Mr. Gye, in Paris, and while it was temporarily occupied by Anderson, the so-called "Wizard of the North." The fire was supposed to have first arisen in the carpenter's shop, in the roof, but the uncertainty attending its origin has never been satisfactorily cleared up. In noticing the catastrophe, it must be felt that the subject of fire-proof theatres is one well deserving the attention of members of our profession. At present, so regular a fate appears to hang over these buildings, that it is almost considered a matter of course that they should be burnt down. The fires at Covent-garden have been already alluded to. Drury-lane was burnt down in February, 1809,—not more than five months from the destruction of its rival. The King's Theatre (as her Majesty's Theatre was then called) was burnt some years before, and Astley's, the Strand, the Olympic, and, I think, some others, have been burnt down in our own times. The peaceful pulling down of the Old Adelphi, to make room for its present graceful and commodious successor, is an event not often paralleled in theatrical annals. Those who have had opportunities of inspecting the working of theatres can be at no loss to account for their danger; but though much peril might probably be removed, there are few places where innovation is less welcome than within the walls of a theatre; and many prejudices will have to be removed, and many novelties introduced, before the public can possess a place of entertainment absolutely fire-proof, although much may be done, and, in fact, has been done, both at the New Adelphi and Covent-garden, to reduce the danger and to protect life. The spectacle presented by the gigantic ruins of Sir Robert Smirke's theatre, after the fire, was very striking. The massive walls and beams of rubbish, with here and there huge fragments overturned by the fire, reminded the spectator of some of the ruins (such as the baths) of ancient Rome, while the picture of destruction and desolation was enough to cause despair to most men who looked at it with a view to rebuilding an opera-house upon the same site. Mr. Gye, however, with characteristic energy and decision, soon entered upon the arduous task, and, to his great ability and untiring exertions, the public are indebted for the existence of the present structure. The ground landlord, the Duke of Bedford, gave every facility for proceeding with the enterprise, and has taken much interest in its accomplishment. By the conditions of the lease, his Grace is entitled to a private box and ante-room, with a separate entrance from the street. These are obtained adjoining her Majesty's box and entrance; and, owing to the limited space available at this part of the house, their provision was attended with some difficulties. The ante-room is in the portion of the house behind the curtain, and is approached from the ductal box by a sort of covered bridge thrown over a corner of the stage. The design of the building had also to be submitted to his Grace's approval, and it was made a condition of the latter that the exterior should be covered with Portland cement. It will be readily understood that many difficulties had to be encountered before so large a work could be commenced under private management, but all was at length arranged; and, in the autumn of 1857, Messrs. Lucas, general contractors for the building, and Mr. H. Grissell, contractor for the iron-work, were enabled to begin their operations.

Before describing in detail the construction of the several parts of the new building, it may be useful to glance at the general principles which determined its design. After so dire a calamity as that which had just befallen its predecessor, it was but natural that it should be sought to render such a catastrophe less likely to recur. It was consequently determined to carry out a system of fireproof construction wherever practicable; and though perhaps it is hardly possible at present to render a theatre actually fireproof, the new building was intended to be an advance in that direction. The Building Act most properly requires all corridors and staircases in such structures to be of incombustible materials, and these requirements had of course to be observed. In addition, as it had been noticed in previous cases of fire that the roof served as an easy means of connection between the stage and the auditory, it was sought to avoid this source of danger by making the roof decided to use wood as little as possible in the construction of the interior. Regarding the danger of staircases with open well-holes in public places (which has since received a lamentable illustration in the case of the Polytechnic), all staircases used by the public were arranged to consist of solid stone steps, built into a wall at each end. There were to be no windows, and the well-holes were to be filled up with walls carried up from the bottom, after the custom so common in Italy, and which, from its advantages to the stability of the edifice, as well as to the safety of its occupants, appears to be well deserving the attention of architects who have to provide for the reception of large crowds of persons liable to sudden panics. The shape of the auditory was a matter of much consideration, the faults of a horseshoe shape being obvious as regards the position of the side-boxes. Plans, more or less approaching to a circle or ellipse, were tried and laid aside, and different schemes of arrangement canvassed. The result was, that the horseshoe form was at length resolved on, notwithstanding the disadvantages above alluded to. The requirements of a London theatre for the Italian opera are very peculiar, and differ in many ways from those of ordinary play-houses. As regards the latter, the great desideratum is of course that all the visitors may see and hear to the greatest possible advantage; and so that this be achieved, the relative position of the audience to each other is of comparatively small consequence. In an opera-house, though similar objects are sought to be attained, there are other circumstances to be considered, which in some measure counterbalance them. The royal box being on the grand tier, the latter is the great resort of fashion; and insubstantial about the boxes on the grand tier that a drawing-room floor does to a second floor, it is obviously a great desideratum to obtain as many boxes as possible in this level, where it is found that even the side boxes (in spite of drawbacks of position), are always eagerly sought for. The system of separate boxes likewise presents the possibility of gaining accommodation by opening the dress-circle, so as to get several rows of seats. For these and other reasons it was considered that assuming the dimensions of the Proscenium to be fixed at 50 feet as the maximum admitting of convenient working, a horseshoe, more or less elongated, was the fittest form in this particular case, although it might possibly be modified with advantage in other structures with less peculiar requirements. The alleged acoustical advantages of a horseshoe plan were likewise supposed to have some weight, and certainly her Majesty's Theatre is an encouragement to any architect to adopt it in this respect. In order to illustrate the differences of shape, I have had prepared a plan of her Majesty's Theatre to the same scale as the other places before alluded to. It will be perceived that in the old theatre the Royal box was on the left-hand side of the auditory, and that in the new house it is placed on the opposite side. It will readily be seen that as regards Covent-garden, facility of access from Hart-street governed this arrangement, which, as it involved a departure from time-honoured precedent, was submitted to her Majesty for approval, before the building was commenced. Another peculiarity of plan in the new theatre may here be noticed as regards the crush-room or saloon. This is situated at the top of the grand staircase, and forms an anteroom, through which all must pass on their way to the boxes. The refreshments are placed at the farther end of the room instead of being in a separate saloon, inaccessible to ladies. The ob-

ject sought by this arrangement was by rendering a passage through the crush-room imperative to all, to cause it to be forbidden to none, and the result has fully answered the expectation, inasmuch as all classes of spectators may now be seen to resort to this apartment for refreshment between the acts, or during the performances.

It may be observed, on examining the plan, that, owing to the shape of the site, the building was not rectangular, the corners in Bow-street being respectively obtuse and acute. By constructing the principal entrance from the crush-room not in accordance with the centre line of the auditory, facilities are obtained for the formation of a grand state box in the centre of the house, on special and extraordinary occasions, by taking in the boxes on either side and the corridor in the rear. The iron beams over the centre boxes are fixed with bolts and nuts, instead of rivets, to allow of their removal on such occasions, so as to give to the state box the additional height which its importance would demand. Entrance to the state-box would probably be obtained by the grand entrance for the royal party and suite, and the public could be admitted from the Floral Hall, from Hart-street, and through her Majesty's ordinary private entrance. It will not escape observation, on comparing the plan of the new theatre with that of its predecessor, that although the dimensions both of stage and auditory are larger in the former case than in the latter, the size of the whole building is less at present than was the case formerly. This reduction of size was caused by the determination to devote the southern portion of the site to the erection of a building of iron and glass, to be called the Floral Hall. Inasmuch, however, as the large stage and auditory necessarily require adjuncts of appropriate capacity, it became obvious that the only way to make up for deficiency of area was to increase the height. There are eight stories of rooms on either side of the main building, and in these are placed the green-room, the dressing-rooms, the lavatories, wardrobes, armories, music-rooms, private sitting-rooms, and the numerous other apartments necessary for the working of a large lyrical establishment. In addition to the space obtained by the above arrangement, it was considered that important structural advantages were gained by carrying up the side-buildings to the same level as the principal walls, instead of having the latter isolated for their upper portion, as is the more common arrangement. regard being had to the well-known strength of hollow columns, it was thought that the arrangement adopted of two longitudinal walls, 11 feet from each other, and connected together by frequent cross walls, would possess all the advantages of a series of rectangular columns or piers, if the tenacity and cohesion of their parts could be effectually secured. In good brickwork, when perfectly set, this would necessarily result; but as, in the case under notice, the building required to be occupied before the mortar was dry, and the roof and other great weights would come upon the green walls almost before the bricklayers' scaffold could be removed, it was determined, as a temporary measure, to assist their cohesion by iron ties passing through the cross walls and connecting together the two main longitudinal walls. These were inserted about every 12 feet in height, and were each composed of 2-inch square rods, placed 9 inches from each other, so as to avoid the flues, and secured at the ends, by screws and nuts, to strong iron plates. These ties have now served their purpose, and, the walls being thoroughly dry and the mortar set, are independent of extraneous assistance. The arrangement and design of the roof called for some consideration. It is customary to place the carpenter's and other shops in this portion of the building, and the ordinary plan is to construct the roof with queen-truss principals, so as to get as much accommodation as possible between the queen-posts. The truss used by Sir Robert Smirke was of this description, and deserves the most attentive study as a piece of careful and excellent carpentry. From what has been said as to the comparatively small area covered by the new theatre, the importance will easily be seen of gaining as much accommodation as possible in the roof, and it soon appeared that a system of beams passing from wall to wall, with small roofs between, offered peculiar advantages as regards space, when compared with the limited area allowed by the queen-truss arrangement. The iron beams supporting the roof are 96 feet long and 9 feet deep, and the credit of their design is due to Mr. Henry Grissell, who undertook to make, fix, and guarantee them. He successfully accomplished in an extremely short time; and it is to me a pleasure as well as a duty

to acknowledge the obligations I am under to him, as well as to Messrs. Lucas and the other contractors, for the ready help and co-operation they have at all times been willing to afford.

As may be perceived from the drawing, the beams are of the description known as trellis, in eleven compartments. The flanges are composed of a combination of angle iron, wrought-iron plates, and a section which may be called double L iron. The diagonals in compression are composed of double flat bars, each 6 inches by 3 inches, and the diagonals in tension are formed of double flat bars, varying from 7 inches by  $\frac{1}{2}$  inch to 7 inches by  $\frac{1}{4}$  inch. It was considered that the open-box form of the upper and lower flanges would give a considerable amount of lateral stiffness to the girders, and that by the adoption of the trellis form, a lighter and more convenient girder could be obtained than by using one with a solid web-plate. The necessity before alluded to of using the roof as workshops determined the depth of the girders, which it was found could not be less than 9 feet, without causing inconvenience to the workmen; and the facilities of passing through the girders, wherever necessary, was also thought a desideratum. The accessibility of the various parts of the girder to the painter's brush was also obtained—a great point where wrought iron is used, and the importance of which, considering the great tendency of this material to rust, is, perhaps, hardly always sufficiently recognized by iron practice.

There are eight main-roof girders, 21 feet apart, and on the top of each is a cast-iron gutter 16 inches wide: wrought-iron principals of the usual character, and 21 feet span, connect the girders together and support longitudinal purlins of T-iron, and the whole is covered with slab slate half an inch thick, with laps and fillets constructed in the ordinary manner. The workshops are lighted by skylights in the apex of the roofs, all of which, with the exception of the necessary woodwork of the skylights, are thus of an incombustible character. The girders occupying the whole side of the workshops, it became necessary to consider how large pieces of framing made in the shops could be lowered to the stage, as the interstices between the vertical struts and diagonals of the girder could only allow pieces of small size to pass through them. The object was sought to be attained by fixing the girder immediately over the proscenium, its own depth lower than the others. Advantage was taken of the necessity for a sound-reflector at this portion of the ceiling to effect this, and the top of the girder over the proscenium is level with the workshop floor. On the top of this girder two cast-iron stanchions are fixed carrying intermediate girders and the roof, and three spaces 25 feet, 40 feet, and 25 feet wide, are thus left open to allow of the passage of bulky articles. The girder at the stage end of the building is 30 feet from the wall, and the space between is covered by a lean-to roof, also of cast-iron, with a large skylight over the painting-room. A lean-to roof was here adopted from its giving the maximum of height to the wall on which the painting-frame hung, and from its readily allowing abundance of light to fall at the proper angle on the same. There are no floors between those girders which are over the stage, and the scene can therefore be raised as high as the tie-beams of the 21-foot span roofs. The weight upon the girders is, as may be supposed, very large; and the mode in which it is calculated may be seen by the table exhibited, which shows a weight of 150 tons to be provided for as regards each girder. Before any were fixed, the completion of two was hurried on at Mr. Grissell's works, and when finished they were placed side by side on his wharf and loaded with 300 tons. Special foundations were formed of concrete, and the girders placed about 9 feet apart on balks of timber resting upon brickwork and concrete. Cross pieces of iron were introduced between the girders to act as stays or braces, and to serve the office rendered in execution by the transverse roof principals and floor beams. The preparations being completed, pig-iron to the amount of 300 tons was beaped upon the girders, an occupation which consumed several days. The girders were constructed with a camber of  $2\frac{1}{2}$  inches, and, when the weight was on, a deflection of  $1\frac{1}{2}$  inch was observed. On the removal of the weight a permanent set was found of  $\frac{3}{4}$  inch in one girder and  $\frac{1}{4}$  inch in the other; a result probably attributable to all the parts having been brought to their bearings. It had been my intention to have allowed the weight to remain upon the girders for ten days, but after it had been on for twenty-four hours signs of weakness

appeared in the wharf wall immediately adjoining; and it was found that unless this was quickly relieved, girders, foundations, and wall bid fair to find a resting-place in the Regent's canal. The pig-iron was therefore removed in all haste, but the result of the proof was considered so satisfactory, that the whole of the other girders were constructed like the two first, without any alteration. During the week before last I again tested one of the roof girders, to ascertain whether two years of work had produced any effect. I found the camber reduced to  $1\frac{1}{2}$ , showing a set, consequently, of  $\frac{1}{2}$  of an inch.

Having now described the construction of the roof, and leaving the mode of fixing it to be explained presently, it may be as well to point out some peculiarities of construction resulting from the determination to render the theatre available for other purposes than those of the Italian opera.

The arrangement of the theatre for the latter is so peculiar, owing to the special requirements before alluded to, that it is not suitable for other performances without considerable modifications. In rebuilding the Opera-house, however, Mr. Gye resolved that it should not be erected with a view to one destination only, and it therefore became necessary to consider how his wishes could best be carried out. The boxes being entirely supported by iron beams, cantilevers, and columns, the divisions between them are formed of 13-inch wood framing, and are all moveable. The backs of the boxes are likewise capable of being removed, so that a portion or the whole of the corridor may be taken into the boxes, if required, to form an extended dress-circle. On the pit tier, the boxes, with the floors, fronts, sides, and backs, can be entirely taken away, giving facilities thereby for forming a very capacious pit, extending under the dress-circle to the semicircular wall at the back of the corridors. The entrances to the theatre are so arranged that they are suitable for this arrangement of the auditory without modification; and the whole of the pit floor is so constructed that it can be raised or lowered at pleasure in a few hours. I hope I have not trespassed unduly in thus detailing the various considerations which to so great an extent have determined the design of the work, but I have felt that to render intelligible the reasons for such arrangements as are obviously peculiar, rather more than a mere description of them was required.\*

#### PROVINCIAL NEWS.

*Hoddesdon (Herts).*—It is proposed to erect here, by shares, a new Town-hall, on the site of the present clock-tower. Increased population, and improvements in the town, render a public building of the kind necessary.

*Chewenig.*—The new National School lately erected at Chipstead, in the parish of Chewenig, has been opened. The school is in the Gothic style, and is 51 feet in length, 20 feet in breadth, and 39 feet to the ridge of the roof, which is of stained deal. The school has been erected by private subscriptions from landowners and others in the parish, the principal subscribers being the Earl Stanhope, F. Perkins, esq., Earl Anlierst, and the rector.

*Bristol.*—The probable expense of the proposed new workhouse for Bristol, varying from 16,000*l.* to 24,000*l.*, has somewhat alarmed the ratepayers; and a discussion is going on in the local papers as to it.

*Newcastle-upon-Tyne.*—Workmen, says the local *Courant*, have commenced to level the ground for the foundations of the approaches to the High-level Bridge, and the open space at the head of the Side has already been boarded off.

*Jedburgh.*—The movement for the erection of a corn exchange at Jedburgh progresses favourably, upwards of 2,100*l.* having been already subscribed towards the object in view.

#### ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

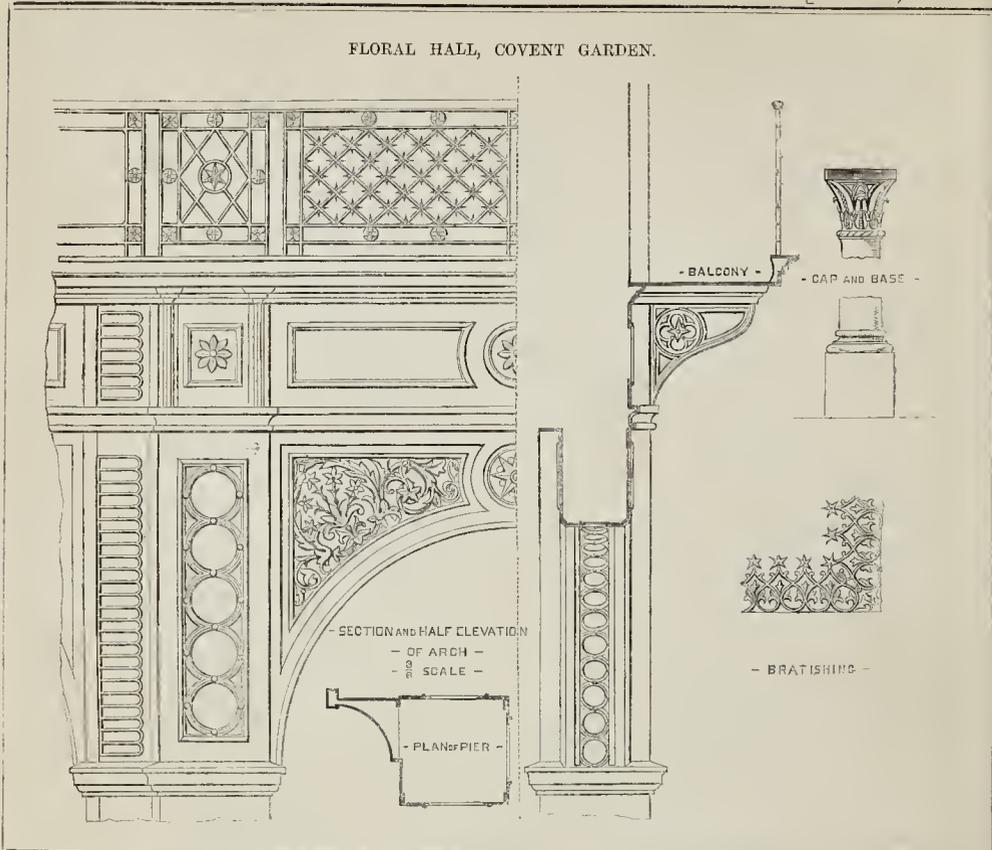
The third annual exhibition of this Association was inaugurated on Wednesday evening last, at 9, Conduit-street, by a meeting of the subscribers and their friends. The photographs, of which there are 510 in all, are thus classified:—France (by Balduz Bissot, Cundall & Downes), 77; the Netherlands, Germany, and Switzerland, 8; Constantinople (Robertson & Beato), 11; Jerusalem and the neighbourhood (Robertson & Beato), 24;

\* To be continued. Numerous illustrations of the theatre will be found in our previous volumes.

Roman States (Macpherson), 30; Northern Italy (Ponti), 110; Spain (Clifford), 26; England (Fenton, Cade, Melhuish, Greenish, Cocke, Cundall & Downes, Dolomere, Bullock, Bedford, Robinson, and Piper), 224.

Shortly after eight o'clock the chair was taken by Professor Cockerell, who said that he was sure all present could not but feel gratified at the result of the exhibition, which was the best that had yet been inaugurated by the Association. The photographs were all excellent, and reflected the light and shadow in a manner which he had never seen surpassed. Although a member of the committee, he regretted to say he had not exerted himself as much as he ought to have done, but looking at the exhibition with the eye of a stranger, he thought he would be justified in asking for the approbation of the meeting on behalf of the committee who had worked so zealously to make the exhibition a success. It might perhaps he thought that in a commercial country like this, an enterprise which was in itself self-supporting must also have some commercial object in view. Such, however, was not the case. The association had been promoted purely in the interests of art, and it was extremely creditable to the younger branches of the profession to find that its success was to be attributed to their zeal and perseverance in the pursuit of the beautiful. He was therefore sure that their motives would be understood, and that the public, in appreciating them, would perceive that the undertaking was purely a work of love. He was induced to make these observations because it had pained him exceedingly to find that some of his colleagues on the committee had been treated more like tradesmen than as persons who were anxious to develop an instructive and fascinating art, with a view to obtain a better knowledge and wider experience in the profession of which they were members. In looking round the room he had recognized with much pleasure objects of art and antiquity which he had not seen for forty years. In early life he had visited Constantinople, and he now beheld the photographs of monuments which he had then witnessed with the enthusiasm and admiration of a student. He would not trespass further on the attention of the meeting, but would call upon Professor Donaldson, who had kindly promised to illustrate by some remarks a portion of the interesting sun pictures with which the walls were covered.

Professor Donaldson, who was very warmly received, then proceeded to make some observations upon the progress of the photographic art, and its application to many of the most interesting monuments of Rome, Venice, Spain, and other continental States. The learned gentleman commenced by observing, that in the year 1840, when happening to be in Paris, he had the privilege of making the acquaintance of M. Daguerre, the discoverer of the process subsequently known as the daguerrotype. He repaired, by invitation, at six in the morning, in company with a friend, to the modest dwelling of the artist, who received him with the courtesy and attention for which he was so much distinguished. M. Daguerre described the whole of his process, and expatiated on the development which his discovery would have upon future art productions. He was then in the enjoyment of a pension of 240*l.* per annum; but had he survived to see the results to which his discovery had been carried, he might, indeed, have regarded them with feelings of no ordinary exultation. Although our own countryman, Mr. Talbot, arrived about the same time at results similar to those achieved by M. Daguerre, it should be remembered that the latter was the first person to seize, as it were, the passing image, to stamp it with the fidelity of nature, and to give to the world an invention, the utility of which was so widely recognized that there was not now a single village in the empire which did not contain the means of photographing portraits, objects, and places. The value of photography to the architect was incalculable, and he (Professor Donaldson), when travelling in Asia-Minor, had often turned some miles out of his route to inspect some ancient monument, the image of which he had neither time nor opportunity to sketch. A photographing apparatus under such circumstances would have been a treasure which an architect and a lover of the picturesque could alone sufficiently appreciate. Professor Donaldson then proceeded to refer to the photographs of Rome by Messrs. Macpherson & Anderson, which included views of the Coliseum, the Theatre of Marcellus from the Piazza Montanara, the Forum of Trajan, the Temple of Clitumnus, the Arch of Constantine, the Julian Basilica and Tabularium, the column of Phocas,



and other famous monuments of what was once the mistress of the world, and the metropolis of the proudest and most powerful nation of the earth. The ruins of these structures still bore testimony to the mind and taste of the Roman people, who had endeavoured to impress on their architecture the religion, state, laws, commerce, nationality, and common purposes of life. Having pointed out the principal features of interest in the architecture of ancient Rome, and glanced at the historical associations connected with them, Professor Donaldson directed attention to the series of photographs representing Venice, including the Church of St. Mark, the Church of Santo Stefano, the Grimani Palace, and many other public and private buildings, in which the architect had laboured to produce grand and striking effects. He remarked that the unbounded expenditure of the three centuries, known in history as the Medieval Period, furnished many striking illustrations of the piety and munificence of our forefathers. At that time there were no compulsory enactments for the building or repair of churches. The voluntary principle was the only one acknowledged, and many were the cases in which the poor Franciscan or Dominican friar had devoted many years of his unostentatious life to collecting, at the castle of the noble and the cottage of the peasant, those free-will offerings by the aid of which so many of the magnificent cathedrals of the twelfth and thirteenth centuries were erected to the glory of God and the service of His Church. It would be idle to dilate upon the advantages which photography would have given in past ages, but to the student of art in the present day, it was an unending source of interest and instruction. Among the collection now exhibited were some magnificent views in Spain from the camera of Mr. Clifford, one of the most accomplished masters of this delightful art. They included the ruins of the celebrated Roman aqueduct at Merida, the ruins of the Roman theatre, the Roman bridge at Alcantara, the monastery at Placentia, and all that remained of

that fantastic and captivating building, which the Moors constructed on the retirement of their Roman conquerors, and which had been so wonderfully reproduced at the Crystal Palace,—the Alhambra. Professor Donaldson concluded a very interesting lecture, which repeatedly evoked the plaudits of a numerous auditory (including many ladies), by announcing that, on a future evening, other speakers would direct attention to the views in France, Constantinople, and Jerusalem, reference to which would exceed the limits of a single paper.

At the conclusion, the Chairman observed, that he was sure he but spoke the sentiments of all present, when he begged, in their names, to thank Professor Donaldson for the able, erudite, and instructive paper which he had just read.

A vote of thanks having been accorded unanimously,

Mr. Mair moved a similar compliment to the chairman, which having been acknowledged by Professor Cockerell, the proceedings terminated.

The exhibition will remain open daily from the 9th of February to the 10th of March (inclusive), from nine o'clock till six; and on Tuesday evenings from seven till ten. We shall speak of it again next week.

#### THE FLORAL HALL, COVENT GARDEN.

This building, which is now nearly completed, was described by us at length on a former occasion: we now give a view of one of the principal entrances, that in the "Market," with some details of the iron front, and a block plan to explain the position and shape of the edifice, which is 220 feet long and 75 feet wide. Our readers will remember that the Floral Hall adjoins the new opera-house, and communicates with it. It resembles on plan the letter L, and is covered with a semicircular roof of iron and glass. A dome of 50 feet span, with pendentives, rises above the two roofs at their intersection, and

forms a prominent object in the view. The public footway of the Piazza is continued under the end of the short arm of the building; and a gallery, with a separate staircase, has been constructed over the footway. The whole of the fronts towards Bow-street and the Piazza are of iron and glass; and, indeed, the entire building may be said to be constructed of these materials, brick-work forming a very small portion of the superstructure. The dome and roofs are principally of wrought iron, and the columns, arches, and piers, are of cast iron. There is a basement story extending under the whole of the buildings, 17 feet 6 inches high, available for vaults or stores. The works are now being rapidly pushed forward, and the building will be ready for opening in a few weeks. Mr. E. M. Barry is the architect. The contractors are the same who carried out the new Opera-house, namely, Messrs. Lucas, Brothers, for general matters; and Mr. H. Grissell, for the iron and glass works.

Stalls will be let to various tenants for the sale of plants, shrubs, flowers, seeds, &c.; others will be dedicated to the sale of ornamental glass, flower-vases, terra-cotta flower-pots, flower-baskets, syringes and watering apparatus, garden tools, and, in fact, all articles appertaining to the garden.

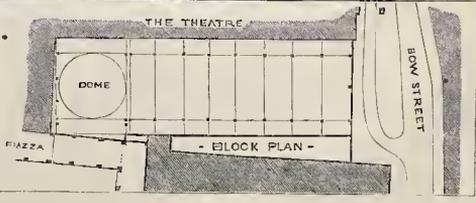
In the *Builder* of December 15, 1855,\* it will be seen that Mr. Gye proposed the erection of a glass flower-market as long as eighteen years since, in connection with his gigantic glass arcade scheme. As far as the flower-market is concerned, he has now realized his project, and adorned the neighbourhood.

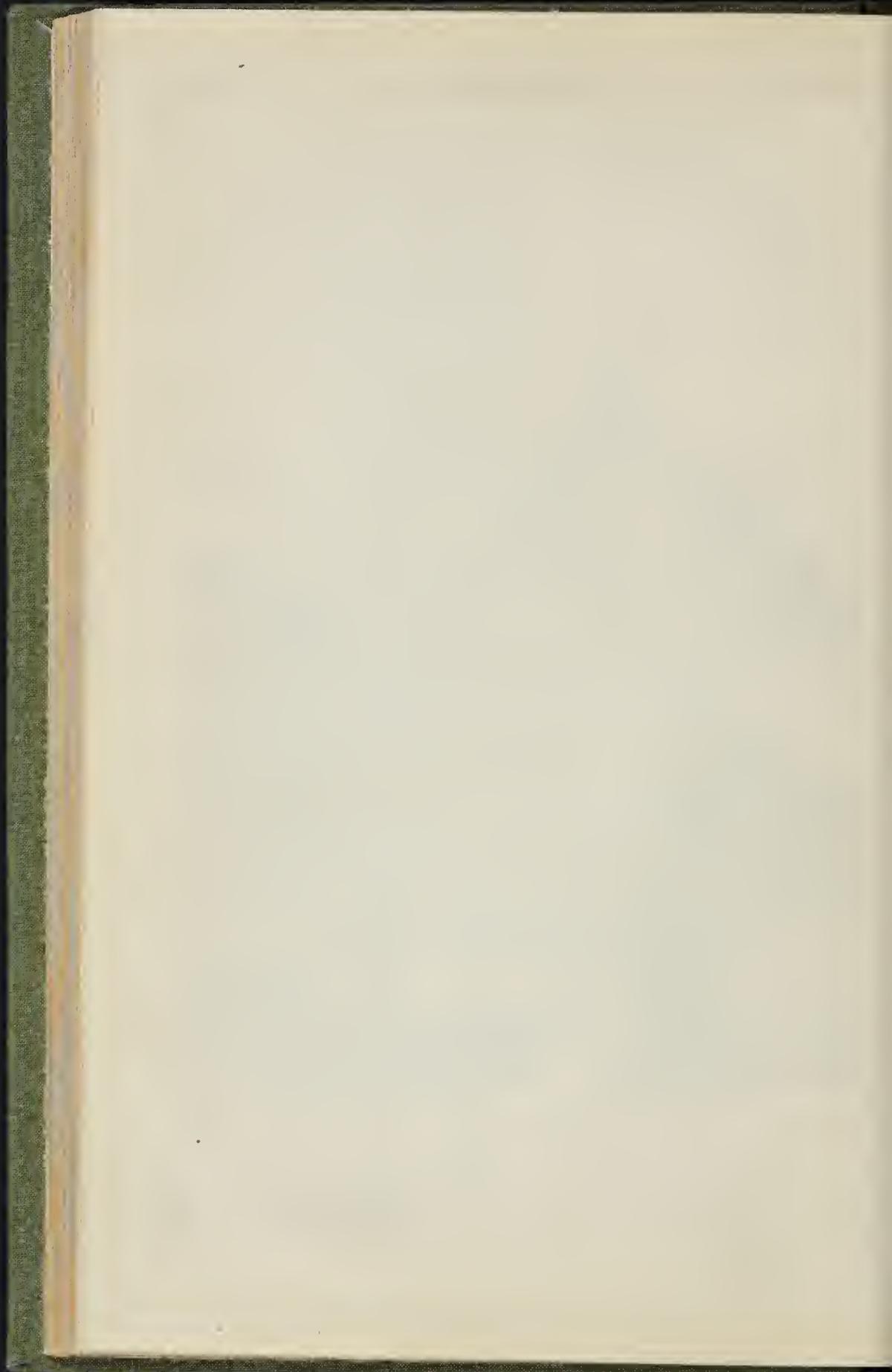
INDUSTRIAL AND FINE-ART EXHIBITION AT PORTSMOUTH.—The Portsmouth and Portsea Athenæum Exhibition of Industrial and Fine Art has been opened with a good display of valuable and useful objects of science and art, in the lecture-hall and other apartments of the Athenæum, in Bishop-street, Portsea.

\* See page 603, vol. xiii.



• FLORAL HALL COVENT GARDEN •  
 • ENTRANCE IN PIAZZA COVENT •  
 • GARDEN MARKET •  
 EDWARD M. BARRY  
 ARCHT





## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary general meeting was held on Monday evening last, at the house in Conduit-street, Hanover-square, Mr. Hussey, V.P., in the chair.

Certain donations were announced, amongst them some portraits of eminent architects, including that of Sir Christopher Wren, and others of ancient date.

Thanks were voted to the several donors, and it was proposed that special thanks should be voted to Mr. C. C. Nelson (hon. secretary) for framing these portraits, which the Institute had possessed some time.

The Chairman said Mr. Nelson was deserving of the thanks of the Institute not only for what he had done on that occasion, but for the services he had performed ever since he had been connected with the Institute.

Professor Donaldson then rose to explain a piece of mosaic work which he had brought from Venice, and which he had caused to be placed in the room for the inspection of the members. This piece of mosaic came from an old church, where the mosaics were in a most dilapidated condition. Some time ago a person was employed to repair the mosaics, but it appeared that his mode of operation was to take away the old mosaics in order to be paid for replacing them by new ones. The present piece, which was a head of St. Peter, and was of the eleventh century, he (Professor Donaldson) purchased in a shop near the Basilica San Marco, where it had been lying some time. The church was on one of the outlying islands of the Lagoon, and was almost deserted. Indeed, the churches in Venice itself were becoming very dilapidated.

Mr. E. M. Barry then read a paper on the building of the Royal Italian Opera House, Covent-garden, which we give elsewhere (see page 85).

Professor Donaldson said it was with very great pleasure that he rose to express the great satisfaction with which he had heard the lucid statement of Mr. Barry upon this very difficult and complex subject. Mr. Barry had proved himself entirely master of it, and he thought that, although doubtless most of those present on entering the room believed that it was a most difficult thing to construct a theatre, yet they would all leave it with the impression that it was a very easy matter. The remarkable modesty of Mr. Barry, and the generous tribute he had paid to the talent of those who were associated with him in this work, did not at all diminish his merits. This was no common work. There were so many contingencies to provide for, and so many contradictory elements to reconcile, that it must be a matter of great congratulation to Mr. Barry that he had succeeded in erecting such a work with such distinguished ability and success. He (Professor Donaldson) had visited the works, and he was struck with the skillful arrangement of what he would call the skeleton of the building. All the parts were admirably arranged to meet the pressure that might be brought upon them. Every precaution was taken not only to provide against any settlement on the columns, but for any settlement of the columns themselves. The arrangement of the staircases was also very satisfactory, and was admirably adapted to meet any sudden panic arising from fire or other causes. In fact, the whole arrangements were carried out with very considerable skill; and when he was upon the roof he saw in the vast combinations forming it a very imposing mass of construction, which carried with it a sense of solidity extremely satisfactory. Mr. Barry had in all parts explained himself so thoroughly and clearly that there was hardly an observation to make upon it or question to suggest. He had anticipated everything upon which any observation might have been made. It was therefore with great pleasure that he proposed a vote of thanks to Mr. Barry.

In reply to an inquiry, Mr. Barry said the cost of the theatre was something under 80,000*l.*; and relative to the porous slab and the material made by Deschery, he said, as far as he knew, they had answered very well indeed. The fibrous slab had shrunk a little since it was fixed, as almost anything would placed over the chandelier. As to the matter, of course, he added, I cannot say as yet, but as regards its lightness and convenience for hanging, I think it can hardly be surpassed.

Professor Donaldson said he was going to make some observations upon that. He had visited the theatre of San Carlo, at Naples, and a very ugly thing it was. It was short as compared with the width, and the audience could hardly hear the

music in it. It seemed as though it had been constructed haphazard as to whether the audience could hear well or ill. La Scala, at Milan, was of a very different character. It was as pretty a theatre as any in all Europe, and the hearing was perfect. The width of the proscenium was 43 feet, and the width between the boxes was 66 feet. The length from the curtain to the centre of the boxes was 88 feet; and the theatre was a very graceful one indeed. Mr. Barry had followed that plan. He had given 50 feet to the proscenium, and 80 feet as the depth—about the same proportion as La Scala. The theatre at Bologna was by a master-mind—Viviano was his name: he had built many theatres in Italy. He (Professor Donaldson) recollected being struck by the painting. It was white and gold, and the manner in which the two were arranged was very pleasing, the quantity of white and gold being proportioned in the most elegant manner. In other theatres they found an immense quantity of colouring introduced without harmony, but those at Bologna were blended in a simple way, and with elegant effect.

Mr. Jennings said,—In the description of this building, it appeared that there were cast-iron girders used of greater length than in any other building, I believe, in London. Are they one continuous gutter the whole length, to allow at each end for contraction or expansion; or is it not found necessary to make allowance under such circumstances?

Mr. Barry.—They are in one length, 96 feet, bolted together.

Mr. Jennings wished to know if any portion of the under side of the ceilings was painted—the ceiling of the corridor. Why he mentioned the subject was that it very frequently happened that after the architect left the work the painter came in and painted these places, the absorption was done away with, and the architect suffered.

Mr. Panson said that Mr. Barry had read a highly practical paper. It was common for them to hear papers of an æsthetic character, but that evening they had had their attention drawn to the solid and more useful part of the profession. It was not often that they had the opportunity of hearing a description of this importance by the construction of a building of this magnitude. He heartily concurred in, and he begged leave to second, the vote of thanks to Mr. Barry.

Mr. Kerr wished to be allowed to ask Mr. Barry to explain the table of strain in the wrought-iron girders. It was a very interesting thing, and they might seek to understand a little more in detail of what was represented, no doubt, perfectly well upon that table. At the same time he would be glad to ask Mr. Barry to explain the precise principle involved in the connection of these great girders in two pieces; that was to say, in the middle. He must say that, during Mr. Barry's description of these marvellous works, his attention was particularly directed to these girders, and it struck him that perhaps some scientific principle might be involved in the arrangement adopted of hoisting these two, and joining them in the middle. It had struck him that there would be weakness in joining them in the middle, as the middle was the weakest point, and it was desirable to avoid any additional weakness. At the same time it must be seen, that to have joined them in three would have made a double chance of weakness at those points. Perhaps the occurrence of any weakness was effectually provided against in the mode in which the beams were connected. He would add his humble testimony to the very great pleasure the Institute had received from the paper read by Mr. Barry, and he hoped that it would be the first of a long series.

Mr. Barry said he was afraid he could only give a somewhat general answer. The amount of strain was six tons to an inch, and as far as regarded the details of the different parts, Mr. Grissell, if he had been there, would have explained them better than he could.

Mr. Baker said there was one other point of interest, and that was with regard to the brickwork. The brickwork was carried up remarkably quickly, and to a great height. Mr. Barry had had now some experience of it, and perhaps he could tell them what had been the effect on the brickwork. About five years ago, he (Mr. Baker) carried up a wall about 30 feet high, and at the same season of the year, about November. The brickwork had been taken down this season, and it proved to be perfectly sound, and the mortar was as hard or harder than the bricks, and in many cases there was very great difficulty in taking down the wall. He would be glad to hear what had been the effect on the brickwork in this case.

Mr. Barry said he was not aware that any effect had taken place since the house was opened, but, no doubt, while it was going on, a settlement was of course to be looked for. In order to observe how that went on, he had small rods made of an inch and a half square, and fastened end to end in the wall, as the wall went up; and as it settled, he could observe whether there was any undue settlement. After the roof was on, he had all these rods taken out and shortened, and from that time he had found no further result, and so he had them all taken away. He was not aware of any settlement of any kind since the building was opened.

The vote of thanks was then unanimously passed, and the meeting adjourned.\*

## GLASGOW ARCHEOLOGICAL SOCIETY.

The usual monthly meeting of this society was held on the 6th inst., Mr. Sheriff Strathern, presiding. Dr. Scoullar read a paper on the "Remains of certain circular Buildings at St. Blane's, in Butte." From the character of these ruins, and various notices of St. Chattan and St. Blane, or Blain, gathered from Colgan and other sources, he had arrived at the conclusion that these were the remains of ecclesiastical buildings erected some years before Columba settled on Iona. Mr. Honeyman, hon. sec., read "A Description of the Church of Killochland, near Campbelltown." He was of opinion that the original building, measuring 32 feet by 15 feet 6 inches inside, was erected towards the commencement of the tenth century; that the chancel, measuring 16 feet 6 inches square, had been added during the thirteenth century; and that a great part of the east and south walls had been re-erected during the sixteenth century, or probably even at a later period.

## BRITISH INSTITUTION.

ALTHOUGH the walls, on entering, have a pleasant-enough aspect, and present some pretty pictures, there are wonderfully few works of mark and likelihood in the present exhibition. It consists of 632 paintings and 17 pieces of sculpture. No. 3, "Joy," by T. F. Dicksee, is a well-painted young head, to pair with "Sorrow" (25). The same artist, who is strong this year, exhibits a more elaborate work, entitled "A Labour of Love" (385). No. 33, "The King's Artillery at Marston Moor," by John Gilbert, though full of movement, and not without interest, is so carelessly painted, as scarcely to come under the denomination of a picture. Two other works testify to Mr. Gilbert's industry and fecundity. Mr. Jutsum is less successful than useful in (53) "Norbury,"—a bit of Mr. Thomas Grissell's beautiful place; the reflections are disagreeably green. No. 62, "Nottingham," by H. Dawson, is the most satisfactory landscape in the room: the sky is a study; the more noticeable because some of our *photographic* painters ignore the feature. Ansell's "Spanish Flower-seller" sadly wants life. (81), "The Nile," by F. Dillon; (141), "A Quiet Evening on the Thames," by W. W. Gosling; (180), "The Decline of a Summer-day," C. Leslie; (376), "Westminster Palace, from the Thames," J. Danby; and (603), "Under the Pine-trees at Castel Lussano," F. Lee Bridell, are amongst the best landscapes, and have, each, good qualities. Miss Stannard is admirable in "Fruit painted from Nature" (39), and Lance as good as ever, which is saying a great deal, in (115), "Black Grapes," and (193), "Before the Masquerade," the title of the latter, however, is a puzzle. In "The Dawning of Genius" (119), Joseph Clark,—a quietly-painted picture, with much expression,—an incipient artist is sketching a dog held by a mischievous girl. "Fondly Gazing" (135), G. Smith, a mother watching the cradle of her little one—

"With anxious thoughts of future years,"—is an admirable and beautiful work. No one quite disregards the opinion of any living being, and so the poor artist behind the door in Mr. T. P. Hall's picture, "Criticism" (243), is by no means indifferent to the comments of the servants of the house gathered before his easel. If Mr. Hall wants our opinion of his picture he shall have it: it is very nearly very good. "Antwerp in the Seventeenth Century" (293),

\* A special general meeting of the members will be held on Monday evening, the 13th of February, to take into consideration the recommendation of the council with respect to the award of the Royal Medal, the Medals, and other prizes of the Institute for the year 1859; and their recommendation with reference to the Medals for the year 1859.

Hendrick Schaeffels, is a richly-coloured and well-grouped picture, wanting mainly in the faces. If all these were as good as those of the old inn-keeper and his wife, there would be no occasion to qualify the praise. H. Weigall has some well-painted heads. L. Haghe's light shines less brilliantly in oil than water, though "The Interior of the Church of St. Miniato, Florence," (177), a candle-light effect, will have many admirers. "Fishing Boats, Venice," by V. de Fleury (90); "The Petitioner" (157), W. J. Montaigne; "Shadows" (195), E. C. Barnes; "Pycneth's Nest" (278), W. H. Ward; "Scene from Auld Robin Gray" (340), J. Craig; "A Welsh Drinking-Fountain" (362), W. S. P. Henderson; "The Fairy's Barque" (431), J. A. Fitzgerald; "Flowers" (502), St. Jean (price only 420*l.*); and a dozen other agreeable works may be pointed to.

#### AGAR FIELDS, ST. PANCRAS.

IN years gone by we placed fully in the light the miserable condition of the huts and dens in Agar-town,—huts undrained, ill ventilated, unwholesome, and demoralizing. Changes and removals have taken place since then, and some improvements have been made. The place still, however, calls for supervision. The condition of the Agar Fields, or Finneras Fields, is terrible. The whole space is covered with large and small pools of water; in fact, forming an extensive bog, very dangerous to the public health. The roads across the fields are impassable from deep mud, although there is considerable traffic to and from Camden New Town. Dead dogs and cats are thrown into the pools; and, with the refuse from the houses in Durham-street, in summer the stench is terrible. On the opposite side of the King's-road to Cook's-terrace, close by the turnpike, is a very old and dangerously rotten piece of footway, very dark at night, and impassable from water-pools in wet weather. The arrangement of the King's-road and the gullies is such, that in a heavy fall of rain stones and mud choke up the gullies, and often half the road is covered with water. We shall certainly have a return of the ague unless something be done by way of prevention. In fact, cases of ague have been by no means uncommon during the last few years in the metropolis, for which it has been difficult to account. Add to all that we have said, the stench derived from cat's-meat boilers and those factories of Belle Isle of which we have often spoken, and it may be imagined what a salubrious neighbourhood that of Camden New Town is.

#### LIVERPOOL BY-LAWS AND THE LIVERPOOL ARCHITECTURAL SOCIETY.

A SPECIAL meeting of the society was held on the 30th ult., to take into consideration the by-laws regulating the erection of buildings in the borough, proposed to the town council by the Health Committee. Mr. H. P. Horner occupied the chair.

Mr. John Hay, as one of the gentlemen signing the requisition for the holding of the meeting, said the matter was of interest to the whole profession, and he was really at a loss to conceive that any one could be indifferent to such additional power being granted to the officers of the borough as were proposed to be conferred upon them by the new by-laws. There was no doubt but that there was at present a staff of very able men in the capacity of surveyors; but at the same time there were many professional architects not one whit behind them in a knowledge of building operations, and he thought it would be a very hard case that the profession was to be disturbed by the borough engineer or his subordinates, in erecting a building upon any foundation which they, as professional architects, thought sufficient for the purpose. The responsibility of the architect was quite sufficient to make him careful to guard against any recklessness, because his professional character would be at stake. It was unfortunate that there was no proper recognition of the architectural profession, for at present there was no legal distinction between Sir Charles Barry and the lowest "jerry" builder. The powers which were proposed to be conferred by the by-laws were of such an extensive kind that they would be a very great grievance to every member of the profession. Mr. Hay referred more especially to the laws as to concrete foundations, and as to the restrictions in the use of iron for the support of superstructures. He urged that the latter clause had been framed in utter ignorance of the use of iron in substructures; and he had not the slightest hesitation in saying that he would undertake to put St. George's Hall upon a

substructure of iron, and make it in every way as safe as it was at present.

Mr. Weightman objected to the laws *in toto*, on the ground that they were indefinite. There was no definition as to the meaning of "solid ground"—and who was to decide what was solid ground? There was likewise no definition of what was "sufficient concrete." He thought a schedule should be given referring to these standards, which in the present state of scientific knowledge could be easily fixed.

After a two hours' discussion, in which the chairman, Messrs. Barry, Alderman Bennett, and others expressed their dissatisfaction at the proposed reforms, and the great vagueness with which the laws had been drawn up, it was at last agreed, on the motion of Mr. Wylie, "That a respectful memorial be presented to the town council, at a meeting on Wednesday, asking them to postpone the passing of these by-laws for one month, in order to give architects and others sufficient time to consider them in their general bearing." There appeared to be only one dissentient from the resolution.

#### THE HARTLEY INSTITUTION COM-PETITION, SOUTHAMPTON.

FORTY-FOUR designs for the proposed Hartley Institution were sent in by forty-two persons. According to the report upon them, made by Professor Donaldson, none of those which give the required accommodation and display sufficient artistic skill could be executed for the stipulated sum, 8,000*l.* The two which, in his opinion, meet most nearly the requirements are those marked respectively "Stella" and "Argonaut," and he recommended, we believe, that the authors of these two designs should be communicated with, and invited to submit modified designs. A certain small number the referee put aside as so defective or inappropriate as to be beyond consideration, and he named twelve as the best in an artistic point of view.

The committee, if we are rightly informed, were to recommend to the council that a suggestion should be made to the designers, whose plans have been so far approved by Professor Donaldson, that they shall be at liberty to send in a guarantee in each case from competent practical persons who will undertake to carry out their designs for an amount not exceeding 8,000*l.*, according to approved specifications; and that no such guarantee shall be entertained unless it be accompanied by the names of two responsible persons, willing to be sureties for the performance of such contract. What course was actually taken by the council we do not yet know.

The great hall is required to accommodate 2,000 persons; the 8,000*l.* is not to include the expense of lighting and heating the institution.

#### BURNING OF FIREPROOF MILLS AT MANCHESTER.

IT is much to be desired, as we have often said, that fireproof premises were made fireproof in reality, or in some more complete and thorough way than they often are. A serious fire has just occurred at Manchester, in the Hanover Mills, which consisted of two adjoining portions, one new, and with fireproof floors and other arrangements against fire, but with a wooden roof; the other portion was old and not fireproof. The fire originated in the old part of the premises, which it soon converted into a ruin, and the fire caught the roof of the new premises, which it rapidly destroyed, together with everything in the upper floor. This, however, was by no means the whole of the mischief done to the new and fireproof premises. Great difficulty was experienced in preventing the fire from penetrating the partition wall. Although the iron doors intervening between the old premises and the new were very thick, the intense heat cracked them, the flames found their way through the shaft-holes in the masonry, the continuous shafting became red hot, and it was only by incessant vigilance that the new mill was saved from being on fire in every story. But all danger to the new mill was not even yet at an end. The wooden binders in the partition wall were all burnt away, leaving it full of holes and fissures, and the intense heat had warped it to such an extent that it became detached from the side walls of the new mill, and left the buttresses of the brick arches sustaining the floors at that end of the building without support. They consequently hulged outward, and it was found that two bays of arches were cracked. In the fourth story the cracks were slight, but they increased in width as they ascended to the top; and

a few courses of brickwork had actually fallen from the seventh story into the sixth when the rent was discovered. The hopes that had been entertained that the new mill might soon be placed in a working condition again were soon dispelled by the unexpected fall of the two bays already mentioned. The side wall, towards Buxton-street, to the length of two windows from the old mill, came down with a fearful crash. The men who had been employed in the new mill had been ordered to withdraw about an hour before; but Mr. David Bellhouse, who, with two other gentlemen, had been examining the building, had withdrawn from it only a short time. The machinery in the part where the fall took place was totally destroyed. The damage from this cause alone will amount to several thousand pounds. It was feared that the whole of the new mill would fall. It is hoped, however, that the remaining arches will stand until supports can be placed against them; and, in that case, it is believed, there will be no necessity for pulling down the portion of the new mill at present standing.

Of the damage only a rough estimate can at present be made. It is probable, however, that it will amount to from 30,000*l.* to 40,000*l.* Insurances had been effected on the old mill and its contents to the extent of 24,000*l.*

#### GENERAL MEETING OF THE CENTRAL ASSOCIATION OF MASTER BUILDERS.

##### WITHDRAWAL OF THE "DECLARATION."

A GENERAL meeting of the Association was held at the Freemasons' Tavern, Great Queen-street, on Tuesday, the 7th, and was very numerously attended. On the motion of Mr. Lucas,

Mr. Thomas Piper took the chair, and stated the business of the day. He regretted that Mr. Lee, who had presided at the first meeting, was not there to take the chair again; but he, the chairman, might yet congratulate himself, that while, when Mr. Lee presided, the struggle was beginning, now he hoped it was brought to a close. I am sure, he continued, I speak the feelings of all present when I say the circumstances preceding our meeting in August were of such a character as to compel us to assume a position which was not only adverse to our best feelings, but to all our interests. At that time everything was against us. We were not only embarrassed by the nine-hours question, but by a whole host of smaller but most important questions, which were hampering us to an extent that rendered it impossible for us to conduct our business. It was painful and injurious to us to be placed in a position of antagonism to those associated with us in our common daily pursuits, whose faces we were accustomed to see from day to day, and with whom we had common interests. As the committee said in their report, we draw our resources from a common fund, and we are all embarked—the lowest working man and the highest employer—in the same enterprise and for the same objects. Had the movement which compelled us to form our central association confined itself to legitimate aims—to the quiet discussion of matters in difference—we should never have been placed in circumstances of apparent hostility to our workmen. But when they, who originated the movement, called out the men at work for a certain firm—when they took an illegal position and compelled working men to leave their employment—the duty before us was clear; namely, to devise means by which, without resorting to any offensive movement, such as a "lock-out," we could make a bridge, as it were, by which those who were willing to join with us might come, and leave those who were leading them into error. That overture was not received with much affection, and it became eventually a subject of great obloquy and violent vituperation. But we are met here to-day under circumstances which, I think, entitle us to say, that our association has been efficient for the purpose for which it was established, and that we are now able to conduct our business in spite of all opposition to the now famous "Declaration." I am exceedingly anxious—and I am sure I speak the sentiments of all present—that nothing should be said here to-day calculated to rekindle for one moment any of those feelings of exasperation which have been cultivated—I must say cultivated—by those who have been active agents in the nine-hours movement, and fostered by persons in a position to have known better. The Executive Committee of the Association have had most anxious duties to discharge in watching the phases of this protracted strike. A report emanating from them will be read, setting forth in detail all that has taken

place from first to last. But there is this striking feature to which I would advert—namely, that during the whole of the strike, notwithstanding gentlemen in various positions—one a member of a profession with which we are most connected, and others who occupy seats in the Lower House of Parliament—have been busying themselves, with the view apparently and ostensibly to make up and accommodate the differences which have arisen,—not one single suggestion, nor anything approaching to conciliation or concession, has been made to your committee, which enabled them to say that they could fairly rest upon it, or adopt it as a mode of amicably settling the matters then in dispute between us and our workmen. Nevertheless, we have worked steadily on in the course you prescribed to us, and are enabled now to feel that we have sufficiently accomplished the objects we all had in view; and we now come forward with such a recommendation as will place us on the footing in which we were before the strike happened,—not regretting the position which we assumed at the commencement of the struggle.

Mr. Wales then read the report, which gave an account of the strike from the commencement, and quoted the various documents which have been issued including the "suggestions for settling the strike," made by Lord St. Leonards, and the digest prepared by him of the several Acts of Parliament bearing on the subject, to which we first gave publicity. With all the stages of the struggle, indeed, our readers are acquainted, and we need therefore print only the conclusion of the report, which is as follows:—

"An opinion by Mr. Edwin James and Mr. Gordon Allen on an essay submitted has been published by the Conference, which pronounces the laws of the trades' unions, with one exception, to be legal. On this the committee have to remark, that the police magistrate, the Court of Queen's Bench, and the Court of Exchequer, have pronounced and confirmed a sentence of imprisonment on the London secretary of one of these trades' unions for acting under and in accordance with the laws referred to. In other cases where individual members of the Association have sought the protection of the law against the proceedings of trades' unionists, your committee have the satisfaction to report that the views entertained by the Association have been amply vindicated by the tribunals of the country.

Your committee deemed it expedient to print the rates of certain of the trade societies, for the use of members; and the present edition has been published with extracts containing details of some of the more objectionable laws and practices.

On a calm review of the painful events of the last few months, your committee are fully of opinion that the time had arrived when it was imperatively necessary to grapple with the whole question of the rights of master and workmen, the legitimate control of their business, and that the demand of nine hours' pay and nine hours' work was only another illustration and further development of the arbitrary and extravagant demands which the building trades of London had been forcing on their employers during recent years.

The hostile attitude still assumed by the leaders of the Conference, and the threats they still issue in the columns of their organ, render it necessary that you should continue to be on the alert; and your committee therefore recommend that the Central Association of Master Builders should not be dissolved, but that further experience shall show that it may be no longer needed.

Your committee have satisfaction in congratulating the Association on the success of the measures they were intrusted to adopt. The nine hours movement has been suspended, the strike is entirely revoked by the Conference, and the members of the Association have been enabled to resume their work.

Your committee are of opinion that the opportunity of expressing the opinions and feelings of the public on the grave questions of capital, labour, and trades' unions, and of scrutinizing the acts and reasonings of the mistaken leaders of this movement, afforded by this struggle, will have diffused a large amount of valuable information which cannot but result in a better understanding of the great and important questions involved; and they trust that, in the end, the workmen will themselves see that, by separating them from their societies (as at present constituted), the masters have proved themselves their best friends. By order of the committee.

12 February 6, 1860. G. PLUCKNETT, Chairman."

Mr. Plucknett rose to move the adoption of the resolution which has been passed. He said that your committee from first to last have given their earnest consideration to the various important subjects brought under their notice during this protracted struggle. On the subject of the nine hours' pay and nine hours' work, it is a course that might have imperilled the success of the objects for which the association was established, and, in the other, to avoid anything that might be considered as one of them in the least, even should it have been necessary to resist, and are now at an end; and I hope and trust that the measures which have been adopted, and the proceedings here to-day, will be forwarded tend to settle the nine hours' pay and nine hours' work, and that the men will see that all legitimate objects can be attained by the simple force of public opinion, without having recourse to the calamitous alternative of a strike. I am sorry to see that the report of the proceedings of the Association, Mr. Lucas, in seconding the motion, said the report is so fully related the proceedings of the committee,

that it would be a waste of time in him to do more than formally second the resolution for its adoption. He would only say to the committee, while engaged in going to justice to themselves, never forget what was due to the men.

The Chairman asked if any gentleman wished to speak on the subject, and if any gentleman desired to put it to the meeting, when it was carried with acclamation. Sir Samuel Martin Peto, M.P., who was greeted with cheers, said,—The result to which I have to move is as follows:—That the objects contemplated by the declaration having now been accomplished, its further formal administration is unnecessary; that the suggestions of Lord St. Leonards be adopted in substitution for the declaration, and that it be remitted to the executive committee to take the steps necessary for giving effect to this resolution." Gentlemen, after an association of upwards of thirty years with the master builders of the metropolis, I felt when this great question was agitated, that I could not, as I was one with you in sentiment and feeling, for one moment hesitate to be one with you in action. I was aware the course I then took as a public man would render me open to great misapprehension and much misrepresentation. Both of these I have experienced to the amplest possible extent; but I do not for one instant regret the course I then took. On the contrary, were I not to-day to be permitted to put to me as to my conduct in connection with this matter, I should say I am prepared to intore all that the committee has done, and I rejoice that your kind friendship has permitted me to be associated with you in this affair. The course I took was not so much from old friendships which have subsisted, and I am proud to say, still continue with so many in this room, but from an anxious regard for the welfare of the metropolis. I have seen the course here experienced, in the conduct of trades' unions in this country, a course of proceeding adopted which is more injurious, if possible, to working men than to any other class of the community. I have seen the course here, that a system which strikes at the root of all independent action and feeling, which impedes the working man in the free exercise of his labour, and the master in the free exercise of his capital, is being introduced, and prejudicial to the interests of the whole community. When I have seen artisans in this metropolis repeatedly "blacked" because they could not conscientiously see their own interests advanced, and their own rights invaded, I have seen a strike recognized and adopted as a legal strike because one man, working at a building and, not being a member of a trades-union, had refused to enter one, had refused to work for one. I have seen a man who felt that I should be identified with you on this question, not so much, as I said before, from old friendship with you as from the interest I take in the working man himself. I am not ashamed to say that I have in connection with a great number of my friends in this room, worked at almost every handicraft in the building trade, and that much of my success in life is simply attributable to that fact. But my association with working men has caused me to feel a deep debt of gratitude to them, and I felt that I could not do better than join with you in offering the most determined resistance in my power to the course which you are now proposing. I have seen the despotism of the many opposed to the rights of the few. I propose now the adoption of a course which gives me unmixed satisfaction in recommending as I hope it will afford you in accepting it, following the suggestion of Lord St. Leonards, no injustice will be done to those who have come in under the "declaration." This is neither more nor less than a simple recognition, expressed in clear language, of the law as it now stands, though it has been misrepresented in a great variety of ways, and I do not think you can do better than adopt it in your various works. I recommend it as much to those who are out of employment at the present moment, as to those who are not, and who are not under any new conditions. It simply states in lucid terms what the law is; and we, in a spirit of good feeling towards our workmen, only desire that they will all acquiesce with it. I think that is a just and a grateful thing for us to do at the present moment. The "declaration," I know, is a most unpopular thing. I do not regret your adopting it; I believe it has answered the purpose intended; but I think the time has come when you may substitute for it the advice of Lord St. Leonards, with a most perfect feeling that you are doing justice to all parties. I am sure now can be more anxious than you all are to do the greatest act of justice to the workmen in your employ. We cannot do them a greater act of justice than to inoculate on them the necessity of saving, and of pinning their savings in a position where they would be available in the time of their need. The report refers to a benefit club about to be opened in connection with the Workmen's Institute recently established. This club has been set on foot by among other gentlemen, Mr. St. Leger Glyn and Mr. Jervoise Smith, capitalists and bankers in the City, most of them young men, anxious to discharge the responsibilities attaching to their position, and to promote the interests of working men in general; and the committee commend it to your consideration to-day, in order that you may, in your turn, if you see fit, move in future, as in times past, take every possible care to slow the men in our service that we are not simply using them as so many machines, but that, in the relative positions in which we are now placed, we have an anxious desire to see them and their families living in comfort while in our employ, and in a better position when leaving than on entering it. This benefit society seems an admirable mode in which the objects may be carried out practical effect, and I commend it to your notice. Let me say a word on another point. You have inaugurated a new era. You have now determined that you will pay no more labour than is worth. If a man is a good workman, and able to show by his ability and talent that he is worthy of promotion to a better position, I am sure you will all feel with me that you are obliged to the best man for his services. It is a struggle to do such a man, and every man in like circumstances in your employment, the largest amount of justice in proportion to his deserts. We all know that underlying this protracted struggle, there has been a battle of spirit of Socialism, which simply aims at dragging all men down, regardless of their individual merits and abilities, to one common level of mediocrity. We say that every man should be promoted to his labour, and skill; and that is the great point at issue. Among the men in our employment, let us endeavor to discover talent, and while we take care to pay the inferior workman what he is worth, let us endeavor to pay the better man of this Association required the skilled artisan with less than his due. During the strike an attempt has been

made to vilify the firm with which I have the honour to be connected. We are engaged in works in almost every part of the world, and we feel bound to take care of the men in our employ should not suffer from any want of provident regard on our part, or their own, for their welfare. Notwithstanding, I could scarcely ever walk the streets of London during this strike without its being said in my hearing—"Who is it that robs his workmen every Saturday night?" We have a sick fund for the men in our employment, and on looking through the accounts, I find that during the existence of our firm, the total amount of subscriptions to that fund, by workmen, has been 31,000*l.*, while the aggregate disbursements have been actually 50 per cent. in advance of that sum. Let me just say here that I hold in my hand a letter from the Bishop of Montreal, addressed to Mr. Hodges,—a person in my own employ, and who, sixteen years ago, was only a journeyman carpenter. To him the superintendance of the works at the Victoria-bridge in Canada, constructed by my firm, was entrusted, involving the discharge of most important duties; and the late Mr. Robert Stephenson said of him that he was one of the ablest mathematicians of our age, and the first practical engineer of the day. The Bishop writes thus to Mr. Hodges, under the date of the 14th of November last:—"My dear Sir,—As the great work of the Victoria-bridge, which you are now engaged in, with such ability and zeal for the contractors, is now so nearly approaching completion, I wish, before your connection with Montreal altogether ceases, to express to you, on behalf of the church, my warmest thanks, and to place, my grateful thanks for the readiness with which, as the agent of the contractors, you have at all times assisted us in making provision for the spiritual oversight of the numerous persons in your charge. I have no doubt you felt that in the circumstances in which you were placed, you were simply discharging your positive duty; but it is by no means the role that such duties are always to be performed cheerfully and ungrudgingly, and I trust that the very liberal example thus set by you and your principals, in providing salaries for the clergy and schoolmasters who were to have the care of your people at Saint Anne's and at Point St. Charles, and your own large contributions recently given, will influence those who shall succeed you, and that it will lead to the permanent establishment of the church and schools in connection with the railway and depot works at the latter place." My object in adverting to this circumstance is to show that we do not stand in a position of anything like exclusion which has been so blindly and malignantly imputed to us. But you are not to be deterred by this, and I trust that no one shall ever point to the master-builders as a body who desire to raise themselves in prosperity and comfort at the expense of those below them, who do desire rather that every man shall have opportunities of rising in the world, in proportion to his abilities and good conduct.

Mr. George Smith in seconding the resolution, said the committee, which he was a member of, had been accused out of doors of tyranny and all sorts of harsh conduct. He had attended every committee meeting, and he could honestly say that he had never heard an observation drop from any member of the Unionary way likely to injure the workmen. Their anxious wish, all through, had been to carry out what he believed to be imperative on them, but with as little harshness as possible. Adverting to the remarks of Sir Morton Peto, as to opportunities being afforded to workmen to better their position, Mr. Smith said he knew of no trade that offered so many facilities for that as the building trade, although the capital required for large works was undoubtedly great. He had been struck with the unceasing objections which deputations of workmen who had come before the committee made to pieces-work, while in almost the same breath they urged the apparent impossibility of an artisan raising his position. Mr. Smith proceeded in factious terms, which caused some merriment, to describe the various attempts made at conciliation by persons not concerned in the dispute; especially mentioning on the manner in which Mr. Marsh Nelson and Mr. Ayrton had put themselves forward with that view. He denied in indignant terms that when the committee had an interview with Sir George Lewis, the Home Secretary, their object was to ask for Legislative interference. Mr. Piper, on the contrary, told Sir George Lewis that they were there for no such purpose, and yet Mr. Ayrton, who thrust himself into the room during the interview, had heard it asserted over and over again, that their object in going there was to ask for Legislative interference, and had never had the malice to contradict it. He (Mr. Smith) thought it was to be believed that of all the metropolitans members Sir Morton Peto was the only one who had had the malice to come forward and state what must have been their conduct on this question. If they were men of sense they ought to have come forward months ago, and told the people what must have been the inevitable result of this struggle. But what did they do? Why, they wrote meaningless letters bounding on the men to destruction; when a little more malice, a little more of what he called English spirit, on their part, might have shortened the duration of this unhappy dispute by months, and saved the lives, probably, of many individuals.

The resolution was then put, and carried unanimously. Mr. W. F. Palmer, with much feeling and sympathy for the workmen at large, commended the benefit club to the support of the meeting as a means of ameliorating their condition, and he moved. "That this meeting cordially welcomes the efforts of those gentlemen who have originated the Workmen's Institute, and pledges itself to its support."

The motion was seconded by Mr. W. Norris, and carried *unanimously*.

On the motion of Mr. W. Horner, seconded by Mr. J. Abbott, the thanks of the Association were unanimously voted to the executive committee for the efficient manner in which they had transacted the business of the Association.

The cordial acknowledgments of the Association were also passed by acclamation to Mr. Thomas Piper for his conduct in the chair, on the motion of Mr. J. C. Lawrence, seconded by Mr. R. Haunton.

The chairman briefly acknowledged the compliment, and with that the proceedings terminated.

**THE CHIEF STONE OF VICTORIA BRIDGE, MONTREAL.**—The builders have left a stone unlaidd—a corner stone—of the great railway bridge at Montreal, in hopes that one of our royal princes may pay them a visit in the spring, and inaugurate the completion of this great work,

## THE WAR OFFICE AND "CONTAGION."

Sir,—In the last *Builder* there is a good letter signed "Cwm," on Camp Hospitals, containing a curious piece of information to me, although I am pretty well *à couvert* in sanitary matters. He says that the Secretary of State for War has issued a regulation for carrying out the old witch incantations over dirty linen, including fumigation and other absurdities, with the view of exorcising the evil spirit known in modern times, under the esoteric name of "Contagion." I at first thought your correspondent had got hold of an order of the time of the hundred-year-old book he discusses, but on making diligent search I have actually obtained the circular dated from the War Office, on Waterloo day, 1859. The better day the better deed. In this paper, Secretary Major-General Peel actually issues special directions, under the hand and seal of Sir Benjamin Hawes, giving the most minute details of how the devil is to be got rid of!

It is clear that sanitary reform had not reached Pall-mall even at that date.

I have also looked through the new army medical regulations to see how the contagion affair is disposed of by them; and I find that within less than four months, namely, on the 7th of October last, Mr. Herbert undoes all this, and not having any faith in the evil one in question, simply prescribes that "hedding which has been used by patients affected with epidemic diseases should be steeped in water, dried, and exposed to the air, and afterwards washed with soap and water." This is a good, healthy rule, and it shows that in the War Office it is possible to pass over a century of superstitious observances in a quarter of a year. Would that all other equally antiquated War Office observances were passed over as speedily.

X.

## FRENCH AND ENGLISH INVESTIGATORS.

READING the interesting article in the *Builder* on M. Benli's papers on Greek art, translated from the *Revue Générale de l'Architecture*, I was sorry to find that M. Benli has been guilty of a plagiarism. In 1851, I published, in my "Museum of Classical Antiquities," a proto-Doric column (one of three), which I discovered at Thebes, and I gave a plan, in which I pointed out their position. To my great surprise and concern, I discover that M. Benli has copied this cap in the *Revue Générale de l'Architecture*, and calls it "from Elephantina," in order to conceal his theft and make his own discovery the more important.

Another Frenchman, M. Ernest Breton, was equally dishonest in his wretched compilation on Pompeii. He copied the plates I published of the house which I excavated at Pompeii, without referring to me either as the excavator or author, and altered the names, pretending that I was mistaken in my appellation, although, had he been able to read English, he could not have made such a mistake as not to know a trichium from any other room. EDWARD PALMER.

## THE PROPOSED GARRISON HOSPITAL AT WOOLWICH.

In the *Builder* of 3rd September last it was stated that it had been determined to build a garrison hospital at Woolwich, for 650 beds, and the several suitable sites which present themselves in the immediate neighbourhood of the barracks,—close neighbourhood being an essential point of advantage,—were very briefly enumerated. On the 5th of November, the newspapers having announced that a particular site had been fixed on, it was pointed out that there is an insuperable sanitary objection to that site, it being the one side of a narrow, closed valley. It now appears that that has been abandoned; and we quote a very well-accredited local rumour when we say that Kidbrook-common has been purchased by the War Department, and that on it the hospital is to be erected. Mystery and reserve are the shields with which un-official feebleness naturally endeavours to protect itself from criticism; and perhaps we shall not know the exact truth until the Army Estimates are laid on the table of the House of Commons; but it is certain, at any rate, that, if not actually purchased, the ground mentioned is that to which official eyes are now turned.

Kidbrook-common is the strip of furze-covered clay land which is immediately on your right hand as you turn from the Dover-road towards Eltham. It is just below Sevendroog Castle, on Shooter's-hill, well known to all Cockneys. It is a gentle slope, just in front of which is a conical hill, presenting, on its nearest face, the Greenwich and Deptford burial-ground.

If the ground has been purchased, and if there is no chance of a withdrawal from the decision to build there, perhaps all that need be said is that the future building will be, as far as mere situation goes, and provided the eyes and nose can be kept free from the near graveyard, one of the most agreeable residences in the neighbourhood of London, replete with "residential amenities," as George Robins used to say, quite sheltered from the bitter north wind, and from the Kent Cray country on one hand, and, as to the other, that when the whole system of waterworks at the Crystal Palace is in full play, with the great volume of water gilded by the setting sun of an autumn evening, there will be so charming a prospect that the sick must become well, and the whole must strive to become sick to enjoy it. So much may be safely said; but if there is still time for a little friendly criticism, there are two or three questions that may not seem to be irrelevant. For instance, why should a hospital be built on a piece of ground where, bore as deeply as you please, you find nothing but clay and water? Why divert the Common from the purpose for which nature intended it,—that of a brick-field; a purpose properly and profitably carried out within a few hundred yards? When the line of separation between the barracks and the proposed site, why should you select that side of the line on which the clay lies, and which is most remote from the barracks? How is the water supply to be obtained? If, by the had method of sinking wells, it can be safely said that there is every prospect of an abundance being found: if, on the other hand, the water is to be procured at high-pressure, is Shooter's-hill, the only higher ground within a large circle, relatively high enough? Above all, and before all, why is a Woolwich Hospital to be built at Shooter's-hill? And this objection is a quite insurmountable one. The fact that it can be urged sufficiently shows that this new site can have been sanctioned by no one who knows anything whatever of the requirements of a regimental hospital, or of the interior economy of a regiment, in the routine of which the hospital is so important a feature.

One would almost suppose that the gentlemen charged with the duty of selection had caught the echo of a recent discussion, and were determined to carry out the mere words of it, quite irrespective of the meaning, and altogether ignoring the very substantial grounds on which it has been raised. Some persons have proposed, on strictly sanitary grounds, to remove the large civil hospitals of densely populated towns towards the country. Others, again, among them Mr. Kingsley, prominently and, it need not be said, very eloquently, have carried the idea further, and have proposed to remove the town population of labourers and hand workers in the same direction. Excepting in the interest of details of convenience and expense, there can be nothing but sympathy with the proposal. One can quite understand that if St. Thomas's Hospital, for instance, were moved along the South-Eastern line to some breezy upland down in Kent or Sussex, it would be a very great sanitary advantage. But the case of a regimental hospital is in all respects and altogether different. Any one who knows the constant,—more than hourly,—communication that must be carried on between the regiment and the hospital, how much more is transacted between them than what affects merely the sick men in hospital, must know that if the hospital is at all remote, the routine of duty becomes, of necessity, injured and stagnant. It is a primary and essential necessity that the barrack and the hospital must be in close contiguity one to the other. If the one is moved, the other must be moved. In this particular instance, if it appeared that it was impossible to find a suitable place for the hospital in the neighbourhood of the barrack, so absolute is the rule that has just been laid down that very serious questions would arise; but that is not necessary, because, as has been pointed out before, there are admirable sites in the immediate neighbourhood.

And, assuming that Kidbrook-common has not yet been purchased, one would like to say a word or two in favour of the piece of ground which was called site D, in the *Builder* of September 3, viz., the field on the right of the road to Charlton, as you go from Woolwich, and between Maryon-road and the Charlton Park-wall.

Every one who has travelled lately up or down the river must know that a Marine Hospital has just been built, immediately on the proper right of the Marine Barracks. It is so high that it dominates over the town and neighbourhood.

When one stood on the paddle-box of the *Great Eastern*, off Deptford, last summer, the two proudest looking buildings that the eye could see were St. Paul's and this new hospital! Now wishing to advocate site D, what we would as any one who is interested in the matter to do this,—to place himself at one of the windows of the architectural front of the Marine Hospital, and then to look to his front. He will thus have a capital view of the extensive field suggested; and will see, at a glance, its many capabilities; and will proceed to discover, it may be safely asserted, that there cannot be a single sanitary objection raised to it. He will see, too, that this field is on much the same level, and that the building at which he is standing, and that he can allow his imagination to picture the effect of two such buildings, facing each other; the one representing the most recent efforts of one great public department, the other of the other. In the Marine Hospital there is too little interval between the pavilions. The space was very limited, and a certain amount of sanitary advantage has been sacrificed for the sake of close neighbourhood to the barracks and dockyard. Site D would admit of any amount of space. If, however, Kidbrook-common is to be the site, every consideration that ought to be taken into account will have been sacrificed, and—for what?

CWM.

## BUILDERS' ACTIONS.

HERONBOTS QUANTITIES.

*Sherren v. Harrison*.—This action was tried in the Court of Queen's Bench (Seymour Court), before Mr. Justice Blackburn, and a special jury. Mr. M. Chambers, Mr. Day, and Mr. Martin were counsel for the plaintiff; Mr. Hawkins and Mr. Archibald for the defendant.

The plaintiff, a builder, sued the defendant, a clergyman, to recover a balance of 1,488. 17s. 9d. for extra work done beyond that specified in the contract and specification. The defendant paid into court 292s. 18s., and said that that sum was sufficient to satisfy the plaintiff's claim.

It appeared that the defendant was a clergyman of the Church of England, and was desirous of building a small church at Northumberland-park, Tottenham, Middlesex, and in January, 1857, inserted an advertisement accordingly for plans, &c., in the *Builder*, for a small church, to cost 2,000l. Mr. Mumford became the architect, and, as the plaintiff stated, induced him to become the builder and sign the building contract. The working drawings and estimated quantities were supplied by Mr. Mumford to the plaintiff, and there was sufficient evidence given to establish that he was acting as agent on behalf of the defendant. But the plaintiff's case was, that the estimates and quantities so supplied to him by Mr. Mumford were so incorrect and false that they amounted to a species of fraud done by means such as were very likely to induce him to sign the contract to do the work for 1,600l., whereas, when the work was subsequently done and quantities calculated, the cost was found to amount to 2,000l. The misstatements had been shown by Mr. Mumford to be such as were very likely to mislead, corroborated by Mr. Lewis and Mr. Lee, of the Adelphi. Mr. Mumford's estimates were said by the plaintiff's witnesses to be such as were very likely to mislead the plaintiff, who had been chiefly engaged in building public-houses, and had never previously built a church, and were, therefore, in their quantities were quite incorrect. The written contract contained a stipulation that no extras were to be done or charged for without a written order from the defendant, and signed by Mr. Mumford. For extra work done in this case there were no such written orders.

Mr. Hawkins, at the close of the plaintiff's evidence, submitted that there was no case, and that the plaintiff was bound by the written contract, however improvident the bargain he had made might be; and that as there was no written order for the extras by the defendant, and no certificate by the architect, the plaintiff was not entitled to recover.

Mr. Chambers contended that the plaintiff was entitled to recover on this ground,—that Mr. Mumford's drawings and estimates amounted to a fraud practised on the plaintiff, and that the defendant, having employed Mr. Mumford as his agent, was bound by his acts, and that, in fact, the case was the same as if the defendant himself had prepared and submitted the drawings and estimates to the plaintiff, and, further, that the contract, not being one under seal of the parties, it was competent to them to waive it by parole, and that there was evidence that the plaintiff had so required a written order for extras had been waived.

The learned Judge ruled that there was no evidence to go to the jury on the question of fraud, and that, as to the extras, the written contract was binding, and that there was no evidence of waiver. He then directed the plaintiff to be nonsuited, reserving leave to the plaintiff to move the court above to set aside the nonsuit on the ground taken as above by Mr. Chambers.

Some will think that the action was brought on the wrong person.

CO-OPERATIVE ASSOCIATIONS.—A co-operative association has been formed amongst certain of the artisans of Wolverhampton. Their numbers are not larger than thirty, and their capital about a many pounds; but the society is yet in its infancy. A store has been established for the sale of groceries. The brickmakers and colliers of parts of South Staffordshire and East Worcestershire are discussing the feasibility of forming similar associations in connection with their respective trades.

Books Received.

*Recent Practice in the Locomotive Engine (Being a Supplement to "Railway Machinery"), comprising the latest English Improvements, and a Treatise on the Locomotive Engines of the United States: illustrated by Plates, and Engravings on Wood.* By DANIEL K. CLARK, C.E., and ZERAH COLBURN, C.E., New York. Blackie & Son, Warwick-square, London, 1860.

THIS able and useful supplement to Mr. Clark's treatise on "Railway Machinery" is now completed with the tenth part of the series. The work is designed to illustrate and investigate the practice of English locomotive engine-makers at the present day, and to present the most recent attainments in American practice. One important object, treated of at length, is that of the use of coal in locomotives, which, Mr. Clark thinks, will in a few years be general: the opinion is now in rapid progress of fulfilment.

The American division of the work, by an American engineer of good repute, may be studied with advantage by the English engineer. It is interesting for the research and originality it displays, and valuable, as Mr. Clark's own share of the work is, for the really practical information it affords.

*The Year-Book of Facts in Science and Art.* By JOHN TIMBS, F.S.A. London: Kent & Co., 86, Fleet-street, 1860.

MR. TIMBS'S Year-Book is as fresh and full of interest as ever, and affords us some of the pleasantest reading and reminiscence of the whole year round. But really we have now so often had occasion to speak in similar terms of this valuable compendium of the year's labours in scientific and art discovery, that the simple announcement of a new issue we are sure is all that our readers require, as to induce them to make it their own, or the investment of the small sum demanded for it at the hands of its publishers. The present volume is illustrated with a fine engraving of Captain McClintock, R.N., the Arctic voyager, and a wood-cut of the new naval "bruiser," called "The Warrior."

*Manual of Domestic Economy; with Hints on Domestic Medicine and Surgery.* By W. B. TEGGEMEIER. Fifth edition. London: Groombridge & Sons, Paternoster-row, 1860.

OUR large editions of this little work, it seems, have now been sold, and a fifth is called for, and now issued after revision and enlargement; thus justifying the good word we have now spoken for it. As our readers may recollect, it was prepared at the request of the Committee of the Home and Colonial School Society, by the author, who is the lecturer on Domestic Economy at the training Institution in Gray's-inn-road; and the book is published, indeed, for the School Society's name.

Miscellaneous.

**WHOLESALE COMMEMORATION.**—It is stated at a society has been formed at Antwerp which intends erecting a colossal monument to all the celebrated men of that town, in the shape of a pyramidal structure, bearing forty-four statues, with an allegorical figure at the top, representing the city of Antwerp crowning her sons. The monument is to be 200 feet high: the expense is calculated at 300,000 francs. It is to be erected on the crossing of the principal avenues on the boulevard Leopold. M. Cuyper is the sculptor. The architect, M. Redig, has undertaken the architectural part of the monument.

**MONUMENTAL.**—A monument, of Peterhead granite, from a design by Mr. Scott, of Aberdeen, executed by Wright, of Aberdeen, has just been erected in Broughty Ferry, near Dundee, in memory of the late Dr. Dick. The design consists of an obelisk, 14 feet high, upon a pedestal of corresponding character. The ground is laid out with plants, and enclosed with chains, hung upon tall obelisk pillars, in harmony with the monument. — A raised altar-tomb has been placed in Friary churchyard, Brecon, to the memory of the late Major Linnley. The tomb, which is from a sketch of Mr. W. Jennings, sculptor, Hereford, is in the Medieval style. It is formed of red sandstone from Springfield, in Yorkshire, and is ornamented by a plain white marble cross, in keeping with the style of the tomb, as is also the railing which surrounds it. The panel bears the inscription.

**THE MONSTER ANVIL BLOCK AT NEWCASTLE-ON-TYNE.**—The enormous casting, by Morrison & Co., on the Tyne, weighing upwards of twenty-one tons, intended for the new ordnance works, Woolwich, under the control of Sir William Armstrong, was removed from the casting-house, on Tuesday last, on a wagon weighing above seven tons, well constructed, and drawn by a magnificent team of twenty-eight horses, some of them 17 hands high, belonging to Carver & Co., carriers, in Newcastle, to the Trafalgar station.

**ASSOCIATION OF FOREMEN ENGINEERS.**—At the meeting of this Society, held on Saturday, the 4th inst., at their rooms in the city, Mr. Newton was re-elected chairman for the ensuing year. Several new members, honorary and ordinary, were afterwards elected. A "rate in aid" of the library fund of the society, which it seemed, was at a low ebb, was put and carried, and a Library and Printing Committee nominated. The announcement of a paper, to be read by Mr. Robertson, on the History of the Iron Trade, at the meeting on the 3rd proximo, closed the proceedings.

**LONDON SHOE-BLACK SOCIETIES.**—At the annual treat of the boys of the various shoe-black societies of the metropolis, held on Monday evening, Mr. G. Oliphant said, that the boys of the shoe-black brigade had earned such a sum of money during the past year as would astonish the public. The Ragged School Shoe-black Society, consisting of 60 boys, in red uniform, had earned 1,746l.; the East London Shoe-black Society (blue), 104,—1,094l.; South London Shoe-black Society (yellow), 40,—669l.; North-West London Shoe-black Society (white), 16,—140l.; West Kent Shoe-black Society (green), 13,—120l.; West London Shoe-black Society (purple), 15,—216l.; Islington Shoe-black Society (brown, red facings), 26,—210l.; Notting-hill Shoe-black Society (blue, red facings), 26,—200l.; Union Jack (Linehouse) Shoe-black Society (red, blue facings), 18,—133l.; making a total of 318 boys, and the earnings 4,548l.

**THE STRIKE AND COUNCILS OF CONCILIATION.**—A public meeting, numerously attended by operatives of various trades, has been held in the Town-hall, Macclesfield, the object being "to devise means of raising subscriptions in aid of the London lock-outs, and to adopt Mr. McKinnon's Bill on Boards of Conciliation, so as to prevent such calamitous lock-outs in future." Mr. John Baneroff, weaver, occupied the chair, and besides the Rev. E. A. Verity, "Honorary Advocate of the London Lock-outs," there were on the platform several working men representing different trades. Mr. J. H. Patching, Advocate from the Builders' Conference, London, gave an outline of the history of the builders' strike in London; and resolutions were unanimously agreed to in support of the operatives out of employment on account of the strike, and also in favour of Councils of Conciliation, as desired to be established under Mr. McKinnon's parliamentary bill.

**DRAINAGE AND DRYING OF WELLS.**—The new River-Water Company, in making a drain at Hertford, happened to withdraw the water from some wells there, and the local magistrate found them liable in damages to one person to the extent of 27. 16s. Against this decision the Company appealed to the Court of Queen's Bench, who have quashed the magistrate's order, but without costs, holding that no action would lie, as "the company must be considered, under their Act of Parliament, in the light of owners of the adjoining soil," whether as regards the interception of water before it reached the respondents' well, or its abstraction after it was collected there. The decision, according to the *Herts Mercury*, imposes the necessity of sinking their wells deeper at their own cost, upon a large proportion, of the townspeople of Hertford.

**PURIFICATION OF THE THAMES.**—A proposal for the purification of the Thames has been communicated to the French Academy of Sciences by M. Grimaud, of Caux. M. Grimaud's proposal is to make two sewers parallel to the river's course, down to the point where the water is perfectly salt. A bar constructed across the Thames above London would bring the sewers in communication with the river, and enable them to be flushed at low water every day. M. Grimaud thinks that a frightful pestilence will one day be the consequence of sanitary neglect in London, as the city is built exactly where the stream becomes stagnant by its meeting with the water from the sea. He takes his project from the method practised at Venice, which, he asserts, has kept the canal wholesome, although the whole sewage of the city is emptied into them.

**ROYAL LYCEUM THEATRE.**—We have been waiting an opportunity to mention the transformation-scene at the Lyceum, now under the management of Madame Celeste, one of the few managers who has the art of improving actors. It involves a looking-glass lake amid a grove of ferns, and is singularly artistic and beautiful. Mr. William Calcott is the artist who produced it. "The Tale of Two Cities," whatever it may have been on the first night, is now an effective and interesting piece, exceedingly well acted by Madame Celeste, Mr. James Vining, Mr. Villiers (a promising artist), Mr. Walter Lacy, Mr. Rouse, and Miss Saville.

**WIDENING THE HOLBORN END OF CHANCEY-LANE.**—A new opportunity, occasioned by a fire, it seems, has occurred for the widening of this thoroughfare, which has long been a desideratum; and Mr. J. R. Taylor is again endeavouring to effect the object in view, by presentation of a petition, through Lord Brougham, to the House of Lords. Considering the great improvement such a widening as is required would confer on the locality, owners of property in the lane, including the Society of Lincoln's-inn, Lord Radnor, and others, ought to do something in the matter in the first place, and the Metropolitan Board of Works might then be called upon to assist; but we suspect that an application to the House of Lords is beginning at the wrong end. There is great need of the improvement in question, as Chancery-lane is a constant omnibus and cab route, and vehicles and their drivers are continually coming into conflict and obstructing each other at the Holborn end of the lane.

**ARCHITECTURAL CONVERSAZIONE AT WORCESTER.**—A gathering of the members of the Worcester Diocesan Architectural Society and their friends took place last week at Sansome Lodge, where a suite of convenient rooms has been placed at the use of the society for similar meetings, by Mr. A. J. Hopkins and Mr. J. S. Walker. This was the first of a series. About forty persons were present. Mr. Walker, one of the honorary secretaries of the society, explained that the intention of these meetings was, to bring the members of the society and their friends together for the discussion of architectural and antiquarian subjects, not so much by formal papers as by conversation. The Rev. J. D. Collis, however, read a paper "On the Styles of Gothic Architecture," and afterwards Mr. Walker pointed out the principal examples of the various styles to be found in the district. The company then devoted their attention to the various objects of interest, such as architectural drawings, photographs, &c. Next they took tea and coffee, and the chairman read a paper "On Block-printing." Some conversation followed; and the meeting broke up.

**BITUMENIZED "PAPER" PIPES.**—The ingenious idea of hardening paper by means of an admixture of bitumen under the influence of hydraulic pressure, so as to convert it into a substitute for iron, is due, it appears, to M. Jaloureau, of Paris. The world has already become familiar with the utility and value of *papier maché* as a substitute for stone or marble in moulding, architectural castings, busts, and statues: it has also heard recently that the Chinese constructed their cannon of prepared paper lined with copper, and that they even make paper pipes,—that an eccentric character at Norwood has built himself a house of paper,—and that our American friends have invented a veritable paper brick;—but nothing, it is believed, has lately come before the British public, in the way of paper, so curious, and yet practicable, as these bituminous paper pipes. Testing experiments, conducted under the great clock-tower at the Houses of Parliament, are reported to have "proved that the material, while it possessed all the tenacity of iron, with one half its specific gravity, had double the strength of stoneware tubes, without, moreover, being liable to breakage, as in the case of other material, and which frequently causes a loss to the contractor of some 20 or 25 per cent. on the supply." In order to test their strength, two of these bituminous paper pipes of 5-inch bore and half-an-inch thick were subjected to hydraulic power, and they are said to have sustained, without breaking or bursting, a pressure of 220lbs. to the square inch, or equivalent to 506 feet head of water. The cost of the pipes is understood to be about one-half the cost of iron. Specimens of pipes employed in the transmission of gas at the Palace des Invalides during the last eighteen months were exhibited by Messrs. Joske & Young, the proprietors.

**PUBLIC IMPROVEMENTS.**—A bill has been brought into Parliament by Mr. Slaney, and read a first time, the object being to enable a majority of two-thirds of the ratepayers of any parish or district, duly assembled, to rate their general district in aid of public improvements for general benefit within their district, a certain proportion being before raised by donations and inscriptions. The bill would be permissive and enabling, and only where two-thirds of the inhabitants thought a particular object desirable, and half the calculated expense was subscribed.

**DANGERS OF ARTISTS.**—It may be as well to say, with reference to Mr. Papworth's observations, that the narrow escape of an artist alluded to in the paper, headed "An Eminent Architect," referred to Sir James Thornhill, some time Sergeant Painter to the King, and father-in-law to Hogarth. The same escape has been attributed to the same painter while employed in decorating the dome of St. Paul's Cathedral: it would equally illustrate the position taken in the article. The statement of the frequent loss of life from false steps on a scaffold is corroborated in the paper read by Mr. Barry, on Monday evening, at the Royal Institute of British Architects, and which we print elsewhere.

**THE NORWICH SURVEYORSHIP.**—Mr. E. E. Benest having tendered his resignation, which has been accepted, the town council have resolved to advertise for a new surveyor and architect, according to a recommendation of their city committee, "that the person to be appointed to such office should be required to perform the entire work of the corporation, including that connected with the Board of Health and Burials Board, and he alone responsible for the due performance of all such work. That the salary should be 350*l.* per annum, and that the person receiving the appointment should not be restricted from taking private practice, provided the same does not interfere with the duties of his office under the corporation, or prevent such duties from being efficiently performed."

**THE CHELMSFORD TOWN SEWAGE.**—The surveyor to the Local Board of Health reported recently, that the Messrs. Marriage had expressed their willingness to take the sewage, the board laying down all the pipes, sluices, &c., and pumping the sewage to any spot required, to a height of not less than 55 feet or 60 feet; Messrs Marriage to pay 5 per cent. on the outlay, and such annual rent as should be agreed upon; the lessees to take up the pipes in the event of their quitting their occupation, in which case the rent was to cease. The sanitary committee had decided that this proposition could not be entertained, but directed the surveyor to intimate to Messrs. Marriage that they would be willing to entertain any reasonable proposition which did not require them to pump to a greater height than at present. Messrs. Marriage had declined to treat with the Board under that limitation, but the surveyor had since had another proposal from these gentlemen, who were willing to pay 11 per cent. on the outlay, and 5*l.* per annum towards the expense of pumping, in addition to a rent of 30*l.* The surveyor added, that for this arrangement they would require a second engine, but not a second establishment. He suggested that the matter be referred to the sanitary committee, which was agreed to.

**PROVISION FORCING.**—In the "good old days," which some like to talk about, and compare with the present, there was but a very limited supply of vegetables, and even fruits. In those times, in some measure in consequence of the scarcity of those supplies, leprosy, and some other diseases, prevailed. Each year improved skill caused the early and late production of these edibles. To these accustomed to the old fashion of gardening, a visit to some of the nursery-grounds which skirt London surprises. Here, in the midst of the winter snow, rhubarb and other plants may be seen struggling towards perfection by the aid of varietal glass-frames and the extensive use of various kinds of manure. In the same scientific manner, geese, turkeys, and chickens, are raised for the markets. In such establishments these feathered tribes are not permitted to roam in the stubble-fields and meadows, but are lodged together in crowds, and supplied by a regular system with food. By this means, in a short space of time, the birds grow to a large size. Poultry, in fact, is manufactured, so much corn or other food being allowed to produce so many pounds of goose or turkey, and allow profit. Large as is the increase of the quantity of provisions and vegetables by this system of forcing, it is a question if the flavour and quality are improved by the process.

**ROMAN ANTIQUITIES DISCOVERED IN FRANCE.**—At Vienne (Isère), a fine Roman mosaic has just been found. It is in a dining-saloon or triclinium, about 20 feet wide by nearly 35 feet long, forming part of a Roman habitation recently discovered. The whole is divided into compartments, some octagon and some square, separated by coloured bands. The whole mosaic, which is surrounded by a white and black border, is decorated with figures representing Orpheus charming animals with his lyre; a design of which there are several examples in this country.

**METROPOLITAN BOARD OF WORKS: TENDERS FOR SOUTHERN SEWER.**—At a meeting of the Board, on the 3rd instant, it was ordered that, in consequence of Mr. Rowland Brotherhood having declined to proceed with his tender for the southern outfall sewer, fresh tenders for the work should be invited, to be received in a month. Mr. Leslie gave notice of his intention, on an early day, to call attention to the section of the Metropolis Local Management Act which related to members of the Board interested in any contract executed for the Board, or who should act as a member of the Board after ceasing to be such member. A notice respecting the widening of the upper end of Chancery-lane was given.

**NEW SCHOOLS AT HASLINGTON, NEAR CREWE, CHESHIRE.**—On Wednesday, February 1st, St. Matthew's Schools, Haslington, near Crewe, were opened after Divine service in the church. Three hundred and fifty persons, chiefly parishioners, took tea in the new schools, and the meeting was addressed by the Rev. J. Bardsley and other clergymen. The Rev. Charles White is the incumbent of Haslington, to whom the greatest thanks are due for his strenuous exertions in founding and establishing the schools, which are so greatly needed. Mr. James K. Colling, of London, was the architect, and Mr. John Buckley, of Davenham, Cheshire, the builder. The amount of the contract was 1,080*l.*

**THE HOLME RESERVOIRS AT HOLMFIRTH.**—In his yearly report, Mr. Bateman, the engineer employed by the directors of these reservoirs, says,—"At the Holme Styes Reservoir I am sorry to say that the repairs which were alluded to in my last report have not been as effective as was anticipated. There is evidently still some defect in the puddle lining, and the water must be again drawn down for repairs. It was expected for examination in June. The puddle lining was found to have failed in several places. It was made good as was supposed, and the reservoir filled, being full and overflowing by November. It is not yet, however, perfect. The Bilberry reservoir remains in the same state, gradually getting better, but occasionally failing and requiring repair."

**THE DRINKING-FOUNTAIN MOVEMENT.**—At Pontypool, a fountain has been erected, near the Town-hill, and thrown open for the use of the public. The design was by Mr. R. G. Thomas, architect, Newport, and executed by Messrs. A. & J. James, of that town. The base is composed of Forest of Dean stone, decorated with rusticated work; the buttresses of serpentine marble, forming pillars, the caps carved, and the termination of the buttresses consist of Bath stone, carved on angles. The basin of light marble into which the water flows is carved as a shell, and supported by an ornamental corbel. The water runs from a bunch of flowers, and passes through a water lily of statuary marble. This is surrounded by a niche of birds and foliage, geranium leaves and blossoms, the termination of the label over the niche representing maple and oak, a dog being entwined in the former, and a stag in the latter. The urns, crest, and motto of C. H. Leigh, esq., are also carved in statuary marble, surmounted by a hand with the inscription,—"Presented by Mrs. C. H. Leigh, 1850." The hood mould is made of Bath stone, the top forming a *fleur-de-lis*. The drinking cups are of iron, enamelled, and chained. The water passes into a stone trough, accessible to canine and other quadrupeds.—"There has risen up in Newcastle, says the *Gateshead Observer*, in the square of St. Nicholas, a drinking-fountain, summit of that a monster lamp, crested by a Grecian temple! As a work of art, it is a most absurd production, and may well justify a stranger in asking, "Is there no School of Design in Newcastle?" Surely, if a site between the old church of St. Nicholas and the new town-hall was to be occupied by a lamp and fountain, care should have been taken to secure, from some architect or artist, a suitable design. The present "composite candlestick" excites the amazement of passers-by. Cannot the water of the fountain be made to play over the temple, and veil the incongruous superstructure?"

**VALUE OF LAND: CROYDON.**—When arrangements were being made last year between the London, Brighton, and South Coast Railway Company and the Mid Kent Railway Company, and the former agreed to erect a junction station at Norwood for the reception of the Kent traffic, the Brighton Company, through their surveyor, Mr. F. Fuller, purchased the land for the purpose, and having no Act of Parliament to compel the landowners to sell, were in a great measure at their mercy, and as a consequence had to purchase seven acres more land than the Company required, at the rate of 500*l.* per acre. These seven acres were sold by auction, by Messrs Fuller, on the 26th of January last, at the Mart and realised no less a price than 830*l.* 10*s.* per acre.

**NEWSPAPER ADDRESSING MACHINE.**—An American invention, patented by the Rev. James Spencer, editor of the Toronto *Christian Guardian*, for the facilitation of the tedious process of addressing newspapers at the publishing offices, is described in the Cincinnati *Scientific Artisan*. It is called a "mailing machine." By means of this invention, it is said, a youth of fourteen or fifteen can address 5,000 papers in two hours and a half whereas, to address so many by hand, it is said one clerk would take forty hours, or four clerks ten hours. By the machine, the addresses are printed directly on the newspaper, or on the wrapper.

**GLASS, Newport (Isle of Wight).**—Two sections, forming part of the great window proposed to be placed in St. Thomas's Church have been forwarded to the churchwardens for inspection, and have been placed in one of the chambers of the Town-hall. They consist of two designs, completed in stained glass, from the original plans of the artist, Mr. Holland, of Warwick. The first, having an arched top, represents the angel appearing to the Virgin Mary, with the Holy Ghost descending on her in the shape of a dove. Underneath the design are the words, "Blessed art thou among women." The subject of the other section, a square one, is "Christ's Entry into Jerusalem on an Ass."

**BUILDING PROGRESS IN LIVERPOOL.**—The annual report of Mr. Rishton, the building surveyor, states that the number of dwellings erected, or in course of erection, during the past year, was 1,758, or 41 more than in the previous year,—considerably more than in any other similar period for the last twelve years, and about four times as many as were erected in 1849 and 1850 respectively. Many of these houses do not exceed the means of the working classes, and are constructed so as to accommodate lodgers without interfering with domestic privacy. In some instances houses have been built with two street-doors to each, on the level of the ground; one door leading to the apartments on the ground-floor, the other by a flight of steps to the apartments above; each having its own separate yard, privy, or water-closet. The tenants who occupy such houses have good accommodation at less cost than those who occupy the old, badly-built houses, destitute of every sanitary requirement. The evils arising from reckless and incompetent persons building houses on refuse deposited on excavated land still continues. The probable cost of the building operations within the borough during the year amounts to a sum exceeding 528,000*l.*, irrespective of the value of the land. Taking the new houses for the year 1858 in all, as accommodating six persons each, and taking the separate cellar dwellings, 110 in all, as accommodating four persons each, they would represent an additional population of nearly 11,000, whilst the houses pulled down in the same period are less than 120.

TENDERS

For two houses at the corner of the Minorities and Aldgate, for Mr. Isaac Moses. Mr. D. A. Cobbett, architect.

Jay	£2,859 0 0
Rivett	2,823 0 0
Lawley	2,749 0 0
King	2,740 0 0
Hill & Son	2,590 0 0
Wilson	2,655 0 0
Ashby & Sons	2,640 0 0
Newman & Mann	2,598 0 0
Ashby & Horner	2,480 0 0
Hedges	2,574 0 0

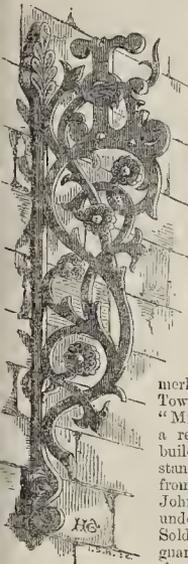
For alterations and additions at Nos. 6, 7, and 8, Addestreet, City, for Mr. Jay. Messrs. Waring & Blake, architects.

Ramsay	£1,245 0 0
Ganmon	1,270 0 0
Woodward	1,250 0 0
West	1,247 0 0
Keys & Head	1,215 0 0
Briss (accepted)	1,17 0 0

# The Builder.

VOL. XVIII.—No. 589.

The Royal Mint, Tower Hill.



ATELY we gave a few particulars of the mode adopted in "milling" money, and, as these seem to have interested some of our readers, we are led to enlarge a little on the arrangements of the national money-making establishment generally.

A squalid part of London must be threaded to reach the Mint. It is but a short distance from the Tower, and formerly was within the Tower walls, where "Mint-street" serves as a record. The present building, plain and substantial, was commenced from the designs of Mr. Johnson, and completed under Sir Robert Smirke. Soldiers and policemen guard the entrance to the court-yard in front,

and these defences are readily passed on the production of an order of admission from the "master."

After crossing the court-yard, the visitor is introduced into a large unadorned hall, and hence passes to an open quadrangle of considerable area, paved and laid with several lines of railway, which are used to convey the precious metals to and from the various offices. In the buildings which surround this square are the various apartments wherein the processes of coining are carried forward. The noise and whirl of steam machinery and a heavy, rapid, thumping noise attract attention, and the visitor is taken under intelligent guidance to the melting-room, where a range of furnaces glow with a clear, bright light. Into some of these stalwart workmen are placing crucibles, charged, some with bars of gold, others with scraps of thin plates, perforated with circular holes: other furnaces are already charged, and the gold-melting is going actively forward. With great accuracy the metal has been made of the proper standard, so that a portion of a certain size and thickness may, when coined, have its right value and exact gauge and weight. Attached to the furnaces are lifts, which enable the casters to convey the molten gold from the glowing and roaring furnaces to the iron mould in which the precious material is cast into bars of about 2 feet in length, about 1 inch in thickness, and 2 inches broad. The mould, as it stands ready for the operation of casting, consists of several upright frames, which have somewhat the appearance of the smaller barrels of church organs: these are so constructed that when the metal has been poured into the proper space and cooled, the mould can be made to fall to pieces, and the bars be readily taken out. The mould can then be fixed together again for further use.

By long experience the casters judge when the gold has become of a proper heat and consistency. And by means of a peculiar instrument a moulded ueek is then taken from the crucible. This has been placed there for the purpose of allowing the fire to be piled to a certain height above the crucibles, which are made with very great care, of plumbago and clay. With great nicety the crucible, which is not bigger than a man's head, is brought and

emptied into the moulds. The gold sparkles and hisses, and with rapidity aperture after aperture is filled. One of these crucibles, when properly charged, although not full, and small as it is in size, contains 5,000 pounds worth of the metal.

The gold bar, when released from the mould, is of a dull dead yellow colour, and each bar of the size above mentioned is worth, say 2,000*l.* each; for there is a little variation in weight. In order to make it certain that the quality of the gold is of the standard value, each bar is marked and numbered; and then four or five portions are cut from various parts of the bar, each of which is sent to a different assayer, who, after testing the purity of the gold in the usual way, reports upon the matter. If all the reports agree, and provided the metal is up to the standard, the bar is passed for use.

It is then conveyed to the rolling-room, in which are a number of machines: with these the gold bars are gradually thinned and lengthened. This process has also the effect of making the metal more solid, and preventing cracks or flaws. With the greatest precision, very slowly but surely, the bars are brought to the exact thickness of a sovereign or half-sovereign, and of such a width as will allow of the diameter of two sovereigns being struck out. These long bars of gold are trimmed and adjusted by steam machinery. One instrument, which works slowly but with a terribly strong mouth, trims and shears: another cuts out the unstamped sovereigns in rapid succession, as the bar is passed along.

It is now seen that the shavings of gold which we had noticed in the melting-room for the purpose of fresh melting, are the remains of the bars after the circles for coining have been stamped out. After the "blanks" are cut out, by means of a machine of rare quality and power, the edge of each is raised. Before this the sovereigns are singularly like the bright brass buttons formerly worn on men's coats. The golden circles are, as regards form, ready now for the finishing process of milling and stamping. There is, however, much to be attended to before this is done. The future sovereigns have to be put into the annealing furnace; and, in order to effect this, they are placed in rows on their edge between thick metal plates, which are fastened together, and then all openings are fastened with clay. These cases, which contain gold to the value of 12,000*l.* or 13,000*l.*, are then placed in furnaces, which are highly heated. After remaining here from thirty to forty minutes, according to the heat of the furnace, the hot gold is dashed into cold water; thence it is removed to a vessel containing diluted sulphuric acid; then it is dashed into hot water; then it is dried in a large heated iron trough, partly filled with dry hot sawdust; next they are put into a perforated cylinder, which is caused to revolve in a heated oven: and by these various processes the gold is properly tempered, and all impurity is removed from the surface.

Now the gold is taken to an apartment in which each piece is weighed and sounded for the purpose of detecting any cracked or imperfect specimens. In this room, and in some of the others here, there is an unceasing ring of falling gold. In one place the workmen are throwing with great rapidity the metal upon small steel anvils; the least defect is readily heard, and those displaying it are sent again to the melting-pot. All the golden circles which pass this last examination are weighed by eight machines, so delicate and beautiful that it is difficult without the aid of illustrations to give an idea of their construction. It must therefore suffice to mention that long rows of sovereigns are placed edgeways in a groove, which is arranged at such a gradient that it allows one piece at a time to fall on a balance. Here it remains an instant, as if to give the machine time to consider of its quality. Then the piece of gold is dropped into one of three drawers placed below, one marked *heavy*, another *medium*, and a third *light*. With the most certain exactness each of these instruments weighs and disposes of the intended coins, at the rate of about twenty a minute. The *medium* and *heavy* gold is next

passed to the coining-room, and the light is sent back to the furnace. One hundred and fifty thousand sovereigns can be prepared and coined in one day at the Royal Mint. Before going to the coining-room, it is worth while to see the department in which the dies are prepared.

All the dies for gold, silver, or copper are cut within the walls of the Mint, and these are required not only for Great Britain, but also for India, Australia, and other colonies. It may be necessary to mention that the original die for each description of money is cut in steel, which for the convenience of the artist is tempered to a certain degree of softness. When the work is done, it is hardened, and is used to transfer the impression by means of great pressure on to softened steel, and thus to obtain the requisite number of dies. For this purpose there is a press of tremendous power. In front of this a circular piece of steel, of about the size and something of the shape of a little boy's whipping-top, is fixed. The original hardened die is brought into use, and after five or six heavy blows, the required impression is made. Several of these are needed, for sometimes this important part of the coining process gets unfit for use in a very short time. After leaving the press just referred to, the impressions are cleaned and touched where necessary; then the die-turner polishes them off, and cuts away all superfluity; and after hardening, the die is fit for its position in the coining apparatus. Here we saw dies for gold, and silver, and copper money; dies for Calcutta and other distant places, to be used at the mints established there; \* little dies for marking the Queen's "Maundy money," which consists of 1, 2, 3, and 4 penny pieces. Wonderful order reigns in every part, as it need do, remembering the vast quantities of bullion which are passed through the various departments and courses of manufacture, in order that no loss may take place nor mistakes be made. We proceed through carefully-locked doors towards the coining-presses. At each step onward the sound becomes more deafening. In the coining-room are eight presses, which, by the force of a blow of 40 tons weight, impress the well-loved face of the Queen, the reverse of the coin, and, at the same time, mill the edge of the coin in the way previously described. From each press, the perfect sovereigns are thrown off at the rate of sixty-four in the minute. At this rate, supposing that all the presses could be kept working, a stream of 30,720 sovereigns would run out in an hour. Each batch of coins is assayed by the Queen's assayer. One coin of each kind is then placed in a pix or basket, secured with three locks and three seals, and this is given to a jury to compare with the trial-plates, preserved in the Chamber of the Pix at Westminster, of which our readers have heard.

Returning by some of the streets behind the Minories, the wretched abodes of half-starved inmates come into contrast with the running stream of gold we have left behind, and suggest matter for reflection.

## THE METROPOLITAN MAIN-DRAINAGE: THE DEPTFORD PUMPING STATION AND MACHINERY.

THE progress of the metropolitan sewerage has been met by obstacles of a character almost impossible to be provided against: it is, however, much greater than is commonly supposed. Certain opinions at one time, as to the effects of the strike in the building trades on the progress of the Northern High-level Sewer, obtained credence; but the issue at present is not what was apprehended; and, although difficulties have occurred in letting works on the south side of the Thames, which in the case of the Outfall Sewer have been thought to render necessary a fresh call for tenders, there is every prospect that within a period much earlier than was predicted by some persons, the system devised as a whole, for London, will be undergoing partially the best of use. Let us hope that whatever fears may have been expressed, whether as to results of the subtraction of water from the volume of the Thames above bridge, the substitution merely of other channels and vomitories

\* The chief part of the copper coin is made at Birmingham, but the dies are supplied from Tower-hill.

of misance for the present outfalls and the river, or other imputed errors in the scheme, may be discovered to have been without reason. We have already spoken of the intention which there is, of trying the efficacy of the furnace system of ventilation at the pumping stations. We have not yet the means of judging how far this method, which is said to have succeeded in the provinces, and has, on the other hand, been considered inapplicable where there are numerous inlets, will answer for sewers several miles in length; but we may shortly have it in our power to give particulars of arrangements intended to be subservient to the object, in addition to some which will fall within the scope of the machinery and contrivances of which we are now about to offer information.

Whatever the progress of the sewerage, assiduity and care on the part of the engineering staff, in the preparation of the drawings and specifications, and in superintendence of the works, are not wanting, and we have, therefore, been able to give our readers the detailed particulars of the intended course and construction of the principal sewers, north and south of the Thames, including some which have not yet been tendered for. In these particulars, as well as in the general account of the whole scheme at the beginning of our last volume, it will have been made sufficiently clear how much of the success of the general undertaking must be dependent upon the design and execution of the pumping machinery needed for the elevation of the sewage of the extensive low-lying districts, each side of the Thames,—and for that indeed of the whole sewage of the south side, at least at the point of outfall below Woolwich. With the exception of the ease last alluded to, the pumping machinery at the station on the Lea, north side, and by Deptford Creek, south side, is simply for the elevation of the low-level sewage to the high-level, or that of the outfall sewers. In these cases, however, the volume of liquid to be raised is enormous, even considering that the high-level lines will intercept the great body of water now finding its way to the Thames across these low-levels, or which has been, on occasion of storms concurrent with the time of high-water, stored up for some hours in the sewers, to the inconvenience and injury of the residents in those districts. The construction of the high-level sewers, prior to that of the low-level sewers, was necessary or desirable in an engineering point of view; and, being itself calculated to afford great relief to the residents in the low-levels, the clamour at one time against the postponement of the low-level sewers, raised on the ground that these last were most wanted, was not justified.

The liquid to be raised from these low levels, is not merely to be considered as large in quantity; but it may be, from the character of those districts, sewage in the most concentrated form,—and of course more so after the upland waters have been intercepted, than at present. The existing sewers and outlets, however, will be available, it is expected, in most cases, for dilution or flushing with water from the river. Even anticipating that there will be such dilution, before deciding upon the description of contrivance at the pumping stations, it is not altogether unnecessary to take into account the habits of the people who reside in many parts of the districts, the indescribable "rotton and jetsam" which have to float or be deposited, and the liability which ensues, of obstructions to the working of pumps. Considerations of this latter nature, drawn from the known condition, as at present, of sewers which appear to be not unfavourably situated, have, as we shall see in the sequel, led to predictions of the failure of all machinery in which there are valves. We can scarcely suppose that these risks have not been very carefully estimated by Mr. Bazalgette, and disposed of, in his mind, in favour of the ordinary principle of the "lift-and-force" pump which he intends adopting; indeed, he has, by designing the foot or base of each of his pump-cylinders, as a fender-plate, provided the means of stopping access to the valves of such obstructive matters in the sewage, as could not pass through an orifice of about 2 feet 10 inches by 9 inches,—an area, however, which is larger than that of each of his valves: but considering the immense importance of the question, we shall do right to allude to views which have been held by others. First of all, we will describe the arrangements as they appear from drawings and a specification which have been prepared for the Deptford pumping machinery, and from information which we have been able to gather in various ways.

The drawings are not, to ourselves, quite so ex-

planatory as those which we have had previously to examine,—partly because we here anticipate the completion of the specification for one portion of the work,—that which is structural, or not belonging to the department of mechanical engineering, and consisting of the engine-houses themselves, and the boiler-house, the chimney, and the sewers in their course joining to the machinery,—and partly, perhaps, because in the details of the machinery there is much alluded to only, for which the contractors are to submit drawings. The drawings now before us, show the buildings as well as the machinery in them; but the specification refers to the machinery only. Besides the omissions last alluded to in details of the machinery, there are others which might not have been noticeable had the specifications for the whole of the work been before us, or written explanation upon the drawings been less sparingly given than it is. We can gather enough, however, from the various sources of information, to afford matter which may interest our readers. The machinery is to be completed to the satisfaction of the engineer of the Metropolitan Board; and the drawings have doubtless been prepared in great measure under his supervision; but it would not be fair, should defects occur, to impute all those of the steam-engines, or even pumping machinery, should such there be, to a civil engineer, especially as Mr. Bazalgette informed the Board, some time since, that the designing of such machinery was not his "specialty."

The contract for mechanical engineering work of the Deptford pumping station, is to include four steam-engines and ten boilers, eight single-acting force-pumps for the sewage, and two large wrought-iron delivery troughs, four vacuum vessels for the cold pumps, two air-vessels for the feed-pumps, and other articles described. The arrangement of the engines and pumps may be best understood by the aid of a description of the buildings in which the machinery is contained.

The pumping station is intended to be fixed in ground by Deptford-creek, and on the eastern bank, immediately adjoining the Greenwich line of railway. The spot is nearer to the Thames, by perhaps a furlong, than that where, on the opposite side of the Creek, is the temporary outfall, or storm-water outfall, now in course of construction, of the High-level Sewer. It will be recollected that there is a length of the intended Outfall Sewer, amounting to about a quarter of a mile, and extending from the commencement of Church-street, Deptford, to North Pole-lane, which has not yet been made the subject of any contract, or advertisement for tenders; though this length will eventually be required as part of the line of the Outfall Sewer, which last is one with the line of the "high-level," from which, at Church-street, the temporary outfall, as before named, branches off. The pumping station will be close to North Pole-lane, or near to the point of commencement of the length which was the subject of the last tenders, and those last advertised for. At this point, the invert of the Outfall Sewer is shown on the drawings, which we described in our last volume,\* as 13 feet 6 inches below Trinity high-water mark. To that level the low-level sewage has to be raised, or a height of 17 feet from the other. The sewage actually will be raised from two channels divergent from the Low-level Sewer, into sewer-troughs, spoken of as part of the present required contract; and thence the lines will converge into the one line of the Outfall Sewer. The troughs are at the distance of 136 feet 3 inches from centre to centre, apart, as shown on the drawings; each trough being in length 51 feet, somewhat less than the length of the engine-house in which it is placed, and just below the ground-level, in a central position, between sewage pumps, which are two on one side of it and two on the other. Each pair of pumps is worked by an engine above. The low-level sewage having passed under the Creek, will be received into a large space, which may be called the basement story of the engine-house, in which the four pumps are fixed on supports of two iron girders built into the brickwork of the flooring. Each pump will be cast in three pieces, and be single-acting, cast-iron plunger of 7 feet diameter and 4 feet 6 inches stroke; also a short wrought-iron plunger into a socket formed at the lower end of the plunger, and shall be attached at the top to a strong wrought or cast iron (and if the latter, feathered) pump-rod, which pump-rod shall be attached at the head to the cross-gudgeon of the

back-link of the outer and inner end parallel motions respectively,—that is to say, the pump rods will be worked by the beam of the engine, the sewage-pumps occupying the positions of the air-pump, cold-pump, and feed-pump, in most steam-engines; whilst for those latter parts of each engine, space is provided beyond the cylinder and a counter-beam for their working will be provided, tailed to a vibrating pillar fixed in the end wall of the engine-house, and connected at the other end to the cap-gudgeon of the piston-rod, proper parallel motion being attached for the air-pump, guided by radius rods connected to the lower gudgeon of the vibratory pillar.

The machinery is designed to elevate the sewage-water to a total height of 20 feet. The quantity to be raised in twenty-four hours, dry weather, is estimated at 3,400,000 cubic feet; but for six or eight hours of the time, the estimate is that 4,720 cubic feet per minute must be raised, the quantity decreasing gradually to 1,000 cubic feet per minute. The machinery, however, is provided with the view of meeting all emergencies, such as those of excessive rain-fall, when all direct outlets to the river might happen to be closed by the tide; and in these cases the amount calculated to be raised is 10,900 cubic feet per minute. The nominal horse-power of the engines will be that, for each, of 125 horses, or for all, that of 500 horses; and these engines are to be of not less strength than equivalent to at least ten times the maximum pressure (estimated at 35 tons), of the steam on the piston, being intended to work expansively with a pressure on the boilers of about 25 lbs. per square inch above the pressure of the atmosphere. They will be of the kind known as Watt's double-powered rotative expansive horse-engines,\* and will have cylinders of 48 inches diameter, and 9 feet stroke, and beams of not less than 60 inches deep in the centre (where they are supported by an cast-iron column and six iron columns and arches, across the engine-house), the distance from the centre of the beam to the line of the cylinders, and to the centre line of the cranks for the motion of the fly-wheel, being in each case 15 feet 9 inches; whilst the distance to the centre line of each sewage pump is one half, or 7 feet 10½ inches. The fly-wheels of the four engines will be each 27 feet in diameter, and will be of unusual weight, having rims 13 inches deep and 9 inches wide, to provide for the passage of the dead-points with facility when the engines are working at a slow speed. There is a parallel-motion, it will be understood, at each end of the beam, in order to work the sewage pumps. Many details of the engines are specified,—though necessarily, so as to confine much to the contract; but into these we will not enter much further. The air-pumps and condensers are to be respectively, of 32 inches diameter, or thereabout, placed in iron cisterns, and fitted with hot wells and other requisites; the cold pumps are to be each of 18 inches diameter and 27 inches stroke, drawing from a vacuum vessel of 18-inch diameter, and 9½ feet high, to which an 18-inch suction-pipe, of 200 yards long, with hinging valves and wind-bore piece, is to be attached; and the feed-pumps are to have each a solid cast-iron plunger of 6 inches diameter, and 27 inches stroke, each pair of pumps to be united to an air vessel 2 feet diameter, and 5 feet 6 inches high, to which will be attached a 7-inch feed-pipe leading to the boilers, with 3-inch branches entering below the bottoms thereof. In lieu of the feed-pumps, or in addition thereto, the engineer may require for each boiler, one of Giffard's self-acting water-injections.

Each engine-house will measure in the clear of the walls 59 feet 3 inches by 38 feet 9 inches, and will be about 35 feet in height of the walls, from the main floor line. The walls will be 3 feet thick, strengthened at intervals by pillars of half-brick projection. Below the floor line, to the bottom of the footings, which will be a mass of brickwork from 5 to 8 feet in vertical thickness, will be a depth of 43 feet 6 inches; in which the external walls will be 4 feet 11 inch, and there will be cross walls or piers, of 5 or 7 feet thick, where needed for the support of the several parts of the machinery, the cross walls having arched openings in them where required for the flow of the sewage from one part of the basement to another, and for the passage of the iron sewer-trough of the upper level. The two engine-houses will be distant from one another 91 feet 6 inches; the interval being occupied by the boiler-house, appearing as one story in height, with the chimney rising from the ground, a height of 150 feet, at the back of it. The decorative character of the buildings, which are to be brick, with Italian dressings in stone, might certainly be improved.

The chimney, as shown, is an elongated Roman Doric column on a pedestal. A capping which would be more effective at the height, and would not give the resemblance to the column, which is now objectionable, might be designed, so that the result would be something having a distinctive character as a chimney, and one every way agreeable to the eye. The buildings will be covered with light iron roofs, which will be surmounted externally with ventilators; the stone cills and ornices will tail through the full thickness of the wall; and the work in all respects is intended to be of the most durable description. The conductor for the machinery is to fix wrought-iron strengthening beams for raising the machinery. The chimney, 18 feet square at the base in the external dimensions, will be 8 feet 6 inches in the clear at the base of the circular shaft, and 6 feet at the top, the brickwork in the shaft being 1 foot 3 inches, 1 foot 6 inches, and 1 foot 13 inch. The boiler-house will measure in the clear, 1 foot 6 inches by 51 feet; and the internal height from the floor line to the top of the walls which last, or the front and back walls, will be 6 feet 6 inches in thickness, exclusive of the cast-iron plates. The boilers, ten in number, will be cylindrical single-flued boilers, 9 feet in length and 6 feet in diameter—the diameter in diameter. The plates of the shell, the best Staffordshire or other esteemed iron, are to be  $\frac{3}{8}$  inch thick; and the tube and furnace plates, of guaranteed Low Moor iron, are to be, the former,  $\frac{3}{8}$  inch thick, and the latter,  $\frac{1}{2}$  inch thick. Not fewer than seven  $\frac{3}{8}$ -inch rivets are to be placed in a foot of the seams, which are to be soundly caulked. Extending, together, across the whole range of boilers, there are to be two beam chests 3 feet diameter, made of plates  $\frac{3}{8}$  inch thick; and these are to communicate with the boilers by lateral pipes connected to the stop-valve boxes or steam jugs; whilst upon the chests will be fixed two steam-pipes of 18 inches diameter, each dividing into two branches leading to the furnaces. Many details of the boiler-apparatus and fireplaces are merely named in the specification. Attention has, we believe, been given to economizing of fuel; and it is to be hoped that the same attention will be paid to the prevention of smoke nuisance. The double-flued arrangement, sometimes considered advantageous for the object last mentioned, possibly has been considered from recent experience to involve greater chance of accident, than that of single flues which is to be adopted.

To complete the description of the machinery, it is necessary to examine into the arrangement of the valves of the sewage pumps, upon which we have said so much depends. In each pump, the valves of suction and delivery are divided, in each case, into a considerable number of valves, which will work at the same time, but independently of one another. Thus the suction-valves may be between thirty and forty in number, distributed over the area of the cylinder or plunger-case, at the height of 11 feet from the base, where the diameter increases to 9 feet,—the seats of these valves being set in one piece, or as a sort of grating in the appearance on a small scale. Each ordinary opening covered by a valve, will measure 1 foot 6 inches by 9 inches; and the valves will be formed of leather  $\frac{3}{8}$  inch thick (which is to be laid in the tan-pit for two years), screwed between two "valve-irons" or plates; the small portion of the valve which serves as the hinge, however, is necessarily, the leather only. The delivery-valve box, of which the lower part of the circular opening is 9 feet 10 inches above the suction-valves, and measures 9 feet 2 inches in the whole inner width, by 3 feet 10 inches in height, is to be fitted on the plunger-case, and fitted with a face-plate for twenty hanging valves to openings which measure 1 foot 7 inches by 8 inches. Care is to be taken in making the valve seats, to have the centres of bolts and size of the openings to correspond with one another, so that they may take up other's places if required. The sewage will be delivered through these valves of the four pumps, directly into the iron trough which is above the floor of the engine-house; each pair of pumps as before described, being worked by an engine; and each engine-house (distant from the other 91 feet 6 inches) containing on different levels, four pumps, one iron trough, and two engines.

The trough placed in the centre of the engine-house, will be 51 feet long as already mentioned, and headed in the cross-section, and with a dividing down the centre; and will be 8 feet in the width, and 11 feet 6 inches in the whole height. It will be formed of  $\frac{3}{8}$ -inch boiler-plate, with angle and strengthening pieces, and cross-ties. There

will be proper man-boles, and removeable plates, to give access to the pump-valves and to the interior of the iron trough. Whether similarly efficient means will be provided for the prevention of obstruction, beyond what we have named in describing the formation of the feet of the pumps, we cannot be fully aware until the drawings for the sewers themselves of the low level are before us. It will, however, have been noticed, that each opening of the valves is, as we said, less in area than the opening at the feet of the pumps through which the sewage will find admission.\*

ON THE RATIONALE OF GOTHIC ARCHITECTURE.

MR. SCOTT'S SECOND LECTURE AT THE ROYAL ACADEMY.

In my last lecture I traced out the rationale of a number of the leading features, both of Romanesque, as distinguished from Roman architecture, and subsequently of Gothic as distinguished from Romanesque. I will endeavour to avoid wearying you by carrying the inquiry into too great a multiplicity of details, but I must, nevertheless, ask your indulgence while I pursue them somewhat further than I have yet done.

Nothing would, perhaps, do more to show the reasonableness of the various developments in question than to trace out the details of the vaulting system; to show the varieties it exhibited in different countries and provinces and at different periods; the various modes adopted for effecting a given purpose, and the many mechanical and other difficulties to be contended with, and the methods adopted of meeting them. This is, however, so extensive and so intricate a subject, that, if I had devoted these two lectures exclusively to it, I could barely have done it justice. I will therefore at present content myself with referring those of you who are anxious to make themselves acquainted with it, to an admirable and elaborate essay on the subject by Professor Willis, in the Transactions of the Institute of British Architects, and to the article "Construction," in the fourth volume of Viollet le Duc's Dictionary. No one who has not gone carefully and practically into the subject can have any idea of the amount of forethought which it demands; so much so that, as Viollet le Duc says, the design for a vaulted building has to be commenced at the top, and worked downwards; and we may often form a pretty correct idea, from the bases of a thirteenth-century church, of what was the plan and construction of its vaulting.

This principle of designing each part from the first with reference to its ultimate intention, is very strongly marked in French work of the twelfth and thirteenth centuries, and in those of the transitional period in England. The form, not only of the capital but even of the base of each shaft, usually indicates the direction of the arch or rib, or other which it is destined to carry.

This was, however, lost in English works on the introduction of the circular abacus, and I must say that much expression and emphasis was lost with it. Not only, indeed, did the abacus in French work face or point in the direction of the arched rib, but its plan was often made to fit to it in the most direct manner, and even the direction of the principal stalks of the foliage had reference to the supported rib.

The system of moulding again follows out the same laws of reason. An arch-moulding, for instance, is founded on what is supposed to be the original section of the order or rib. Thus, if the normal section of the rib be square, the section of the mouldings is made to fit to that figure; if chamfered or a part of an octagon, the mouldings, again, fit to it; the abacus in each case taking the normal plan of the ribs.

As to æsthetical forms, the mouldings were studiously arranged so as to produce in some parts the greatest contrasts, in others the most elegant gradations of light and shade. The heaviness of large roll mouldings was often relieved by fillets or by raised edges or "keels," by which diversity was gained without loss of mass.

Hollows, again, were relieved by the insertion of sparkling ornaments, such as the toothed ornament, the rosette, the ball-flower, the four-leaved flower, and many others; and in other instances by the introduction of hands of foliage. The sections of moulding differed entirely from those of Roman architecture, being far more free and less mechanical, and at once more delicate in feeling, more carefully studied with reference to light and shade. They resembled Greek mouldings, in fact, far more than Roman.

Enriched mouldings differed from the usual practice in antique work in this respect, that the enrichments were added to instead of being cut out of the original moulding; its practical use being to strengthen the hollows rather than to enrich the rounds. In this respect the practice of the Romanesque builder had been different, and perhaps a union of the two systems would be better than a close adherence to either.

Mouldings which receive much rain, as copings, cills, tops of cornices, &c., were very much more sloped than in Classic work, so as to throw off the wet more rapidly. The custom in modern Classic buildings, where the stone is not very hard, of putting lead on the upper surface, as well as the damage often sustained when this is neglected, show the reasonableness of this increased slope. They had to do with a more rainy climate, and generally with softer stone than the ancients, and they designed their work accordingly. The undersides, again, of projecting mouldings, as string-courses, dripstones, water-tables, cills, &c., were carefully designed so as to prevent the wet from running round them. Base moulding round buildings was designed in such a manner as both really and apparently to give it a substantial footing, and at the same time to add greatly to its beauty; many of them are as noble combinations as could easily be conceived.

In short, it may be asserted, without fear of contradiction, that in no style of architecture has a system of moulding been generated so full of variety and so capable of suiting itself to every position, and not only to provide for the practical demands of each position, but to give to each just that kind of effect which it most demanded.

Let us now proceed to consider the window. In the days of ancient Greece, and in the earlier days of Rome, windows were necessarily kept in a very undeveloped form, through the non-existence of window glass; so much so, that in Classic architecture the window seems a thing shunned as an unhappy necessity; and the imperfect manufacture and dearth of this material, no doubt, influenced, in a considerable degree, the architecture of the later Roman and the immediately succeeding periods. In churches, and other vaulted buildings, another cause would lead to the use, during the last-named (*i.e.*, the Romanesque) period, of as small windows as would just answer the purpose. The unaided thickness and the whole length of the wall being relied on for the shutment of the vaulting, it naturally followed that perforations were as much avoided as possible, as tending to reduce the abutting mass. Accordingly, as buttresses increased in projection, greater and greater openings in the curtain wall were ventured on, simply because there was strength sufficient to admit of them; till, when Pointed architecture received its full development, and the pressure of the vaults was entirely concentrated upon the buttresses, the whole intervening space might, if needful, be converted into windows.

Simultaneously with this change, the increasing use of stained glass necessitated a corresponding increase in the area of window opening, so that we have one development facilitating, and the other rendering necessary, the constant enlargement and multiplication of the windows.

The *primæ facie* mode of obtaining increased window-light would be to widen the openings; but as this, if carried too far, would at once injure the beauty of the window, and cause inconvenience in glazing it, the more usual course adopted was to increase their number. Hence the couplets, triplets, and more numerous groups of the early English windows. These groups, when placed in a side-wall and under a level roof-plate, would naturally assume the form of arcades of equal height; but when under a gable, an arched roof, or a vaulted bay, they increased in height towards the centre,—thus giving us the two most familiar forms of grouping. The sections of the jambs were arranged (as in the earlier period) in the manner best suited to the admission of light,—care being taken externally, to avoid deep shadows upon the glass, and internally, to disperse the light, as readily as possible, through the building.

In domestic buildings, where windows have to serve the double purpose of admitting the light and facilitating external view, they were not usually grouped as above described, but were made wider in their openings, the unpleasant effect which might otherwise arise from it being obviated, and the glazing and opening of the window rendered more easy, by the use of thin mullions or pillars dividing the window into two or more lights. This system offered advantages so obvious that it was very soon adopted for churches also; so that,

\* To be continued.

instead of obtaining increased light, as heretofore, by the indefinite multiplication of comparatively small windows, it became customary now, for the first time in the history of architecture, to make windows of any size which their position or utility might dictate; the whole end of a church and the entire bays of its flanks being occupied, if need be, by single windows.

Now nothing could be more rational than this development. The mode of glazing in use was most conveniently applicable to spaces of moderate width. It is true that the more extended use of iron it was then, as it has often been in modern times, applied to openings of 6, 8, or even 10 feet in width; but narrower spaces were much more convenient. The lights, however, at Westminster Abbey, which is one of the earliest buildings in which this kind of window is systematically used in this country, are  $4\frac{1}{2}$  feet wide, and in France they are generally much more. The prevailing practice of placing a massive pier between each of such lights was obviously imperfect. The concentration of pressure upon the buttresses now allowed of openings of almost any size: what, then, was more reasonable than to make extensive openings, and then to subdivide them by light mullions into compartments at once slightly and convenient? That this practice has sometimes, from caprice, been carried to a vicious excess in no degree militates against its rationale; indeed, with all our modern facilities for glazing and opening our windows, we continually find the same expedient resorted to for convenience, and invariably so when any extraordinary amount of light, and consequent width of window, are needed.

The next question which would arise is, how is the arch to be filled in? This we find done at first by a plate or tympanum of stone as thick as the depth of the mullions, each light being arched, and the tympanum pierced at pleasure with such openings as suited the builder's taste; and, later on, we find these piercings connected together into these systematic groups which we call tracery; thus converting the window into a perfectly novel and most beautiful architectural feature.

As I shall have more to say on the subject of windows when we come to secular architecture, I will limit myself to two remarks. One is this; that in positions in which there is not much height, where there is no great load to be sustained, and where the termination of the wall internally and externally is horizontal, the mediæval architects by no means held themselves bound to the arched form, but reserved perfect liberty to put square heads to their windows: the other is a passing remark on the rationale of stained glass. I do not conceive it to be simply a decoration, or a means of adding rich colouring; but that it also arose from an unconscious feeling that it was necessary to the perfect effect of an architectural interior that it should be self-enclosed. In a living room one wishes not only for admission of light, but for facility of looking out at the windows; and this necessity prevents us from seeing the windows well as architectural features, because the focus of the eye has constantly to be changed in passing from the window itself to the view beyond. In a church, on the contrary, you do wish to look out at the window, and it is better that it should be filled with a medium only semi-transparent, and which, being at about the same distance from the eye with the surrounding architecture, at once does away with the necessity of a change of focus, and supplies a beautiful decoration to the medium by which that object is effected.

I have not yet noticed one of the leading features of the style, and one in which it assumes a character most peculiarly its own: I mean the roof.

All previous styles of architecture with which we are acquainted, having originated in southern countries, had roofs of a low pitch. I have no doubt that in many of these countries there were occasions in which a higher pitch would have answered better; but, as the lower line harmonized better with the generally horizontal lines of their architecture, and was found to answer, they naturally adopted it. The Romanesque architecture of southern Europe had also somewhat low roofs, and when first imported into Germany the roofs were by no means high. Gradually, however, as men forgot its connection with Italy, and viewed it as belonging to themselves, they would naturally use with it the form of roof they had found most serviceable, and were most accustomed to in their ordinary buildings; and thus the high roof of the north became engrafted upon the Romanesque style, and the roof became a conspicuous feature in external architecture. Happily

ply this change harmonized well with its general character. The arch seemed to suggest a higher pitch of roof than did trabeated construction; and, when greater height was generally introduced, and the pointed arch took the place of the round, the pitch of the roof would be increased to harmonize with it.

I view, then, the high roof as partly the result of climate and partly of the æsthetic tendency of the style. But is it to be considered as an essential characteristic of Gothic architecture? By no means. The true characteristic of the style is liberty; and in the roof, as in every other feature, perfect freedom is reserved, so that we find roofs varying from almost perfect flatness to a very high pitch, a preference being given, *cæteris paribus*, to the high roof, where there was not some decided objection to its use.

In internal construction also the roof was founded on rational principles,—good construction being always considered before beauty, but the latter made very generally to result from it.

Gothic timber roofs would form a subject which could hardly be done justice to under one or two lectures, so I will not go further into them now. Modern carpentry has shown us how to construct roofs with less timber than was used in those structures (there was then less necessity for the economy of timber), but we have never done anything to compete with the noble pieces of ornamental carpentering bequeathed to us by our Mediæval forefathers. As to covering of roofs, I may just mention, in passing, that though the Mediæval builders made use of every material which it is customary to use for this purpose, there are several which cannot be made use of with any but a high pitch, and are therefore unuseful with low roofs such as are used in other styles. As for instance, plain tiles, ordinary stone, slate, shingle, and thatch.

The next point in the rationale of Gothic architecture is one which I by no means claim as its peculiar property, inasmuch as it is common to all good architecture, though certainly our style is somewhat pre-eminent in its adoption of it. I refer to that general principle of ornamentation which trusts mainly for beauty to the useful and constructive features of the building, rather than to those which are introduced directly for appearance.

Thus, in a noble Gothic building, the ornamental character arises from a greater or less richness in the doorways, in the windows, the buttresses, the cornices, parapets, or other parts useful for the uses or construction of the building. This belongs to all noble architecture, but is more thoroughly, I think, carried out in Gothic than in other styles, and perhaps less in modern Italian, especially in what is commonly called Palladian, than in any other. I do not lay claim to it as an argument in favour of one style above another, for all ought to possess it alike; but the absence of it in a very great deal of modern architecture is at least a proof that much reformation is needed among ourselves; and the strong degree in which it was adopted as a maxim by the Gothic architects is a great proof of the reasonableness of the principles on which they acted.

There are, of course, in all styles of architecture, decorations of a merely gratuitous kind; and, when largeness of means leads to profusion, they are likely to be carried to excess; but, in Gothic architecture of the best periods, the beauty of a building (after good proportion, outline, &c. are secured), depends not on this deliberate ornamentation, but on the artistic treatment of the necessary features. Whatever parts were dictated by practical necessity were the chief objects on which decoration was expended, and to which the architect trusted for the beauty of his building.

More especially was it, *par excellence*, a window style. Of all the objects provided for, the admission of light was the first and chiefest: accordingly, the window was made, both within and without, the leading source of beauty. It is by the design of the windows that we define the gradations of style. It is chiefly by the windows that we describe a building, and the first question asked about a Gothic building generally relates to its windows. On them, therefore, was expended a large portion of the architectural decoration. How marvellous, then, is the inconsistency which we meet with;—people with one breath objecting to Gothic architecture—the offspring of Northern climes—as not admitting light enough, and urging the use of Southern architecture, to obviate the imagined defect; and then telling you of the beauties of a modern building, the great characteristic of which is, that its principal façade has no windows at all.

Next to the windows the doorways claim the most careful attention. Indeed, in some respects they had the precedence, in as much as of parts of a building the doorway is that which challenges the closest inspection. The decoration consequently, of doorways were those which contain the greatest amount of actual sculptured art. It is a great privilege to place sculpture where it will be best seen; and as every one who enters a building must of necessity obtain a close view of the doorways, they were naturally made the great vehicles for sculpture. In France especially every part of the doorway frequently is sculpture. Take, for example, the western portals of Amiens; the pedestal or basement of the jambs is decorated with medallions, illustrating Biblical history, by bas-reliefs. The central pillar of a great double doorway contains the chief statue; the tympanum is filled with subjects, and the orders of the arch with angelic figures; so that the entire doorways are alive with sculpture.

The buttresses, again,—those naturally uncounted projections, were inert masses, to resist the pressure from within,—are rendered beautiful by their stately proportions and architectural detail; the niches and statues which adorn their receding stages, and the aspiring pinnacles by which they are crowned.

The stone roof-plate, enriched with moulding and foliage, and, perhaps, supported on sculpture, corbels, becomes the crowning horizontal feature of the parapet—the defence of the workmen engaged on the roofs—is pierced into tracery, or forms a miniature arcade, giving delicacy and lightness of effect to the generally-massive structure; while the bell-tower, raised high, to make its voice heard from afar, becomes the culminating ornament of the whole exterior; so completely was it the recognized principle of the architecture to render the useful and constructive parts sources of decoration, that, where any deliberate decoration was made use of, it was often formed of imitations of constructional features,—such as window tracery, arcades, gables, pinnacles, columns, &c.

I am not prepared to say that this is in itself to be applauded; indeed, I think, it ought, at the least, to be kept within moderate limits; but it nevertheless, owed its origin to the firm hold which the principle of rendering construction, the leading source of decoration, had upon the architects. Being accustomed to decorate construction, they got into the habit of using constructional forms as decorations.\*

#### THE AMERICAN MILL-FALL.

The inquest on the bodies of the unfortunate men who were killed by the fall of the Pemberton Mill, at Lawrence, and the fire which followed had been exciting great interest. The verdict had not been given when our letters left. The immediate cause of the fall appears to have been the breaking of one of the iron pillars supporting the floor. The pillars are said to have been badly cast, of bad metal. *The Boston Journal* writes:—

"The pillars on which the mill depended for almost its entire support were much too light, and there were not enough of them. In fact, there were only two-fifths of the number requisite for security, for it is certainly bad construction to leave an area of 20 feet by 5 feet (1,080 square feet) with all the heavy machinery upon and above it dependent for its entire support upon one small and perhaps carelessly cast iron pillar. Architects generally consider that 12 feet between the supports of floors framed like those in the Pemberton Mills is a large space. But here the pillars were 27 feet apart. The only wonder is that the mill could have stood for so many years before the weight and motion together crushed it to the earth. The theory that the weight and force of the machinery were no more than such pillars were capable of sustaining in an exactly perpendicular state was well enough for a theory but not for practice. Allowance should have been made for accidents, and care taken to have had sufficient supports, so that, if any one got out of plumb or failed from some unforeseen cause, it should not have involved the others in a general ruin.

At the time the Pemberton Mill was erected, there appears to have been no architect employed to make the plans and superintend the building. Singular as it may appear, it is almost always the case, that factory buildings, in the construction of which the greatest care should be taken, are

\* To be continued.

planned and superintended by others than architects; or, if an architect is employed, it is simply for the purpose of making an ornamental design for the exterior of the structure, the sizes, heights, and openings being furnished him by the proprietors or engineer, and no voice being given him in the arrangement of any other part.

HARTLEY INSTITUTE COMPETITION.

At the meeting of the Southampton Town Council, held on Wednesday, the 8th, Professor Donaldson's report was read, the pith of which we gave in our last number. The following is a list of all the designs:—

- No. 1.—Fortuna favet au. 23.—Sigma
2.—A device 24.—Perseverance
3.—Nil sine labore 25.—In memoriam (medieval)
4.—Portier 26.—Triton
5.—Quello same 27.—Silva
6.—The Southern Liverpool 28.—Prodesse quam consipit
7.—A shield, a second design, same device as 31 29.—In memoriam (Italian)
8.—Uhlitas Fermitas 30.—Spe
9.—Scientia 31.—Same device as 7
10.—Literature, science, arts 32.—Architecture for 1859
11.—Fit via vi 33.—Labore et honore
12.—Utinam Ii can 34.—Utility
13.—V.R. 35.—Premonstrator
14.—Success to Southampton 36.—Utility
15.—Argonaut 37.—MDCCCLX
16.—Multum in parvo 38.—Omega
17.—Desideratum 39.—Spes
18.—Voluntar 40.—Res non verba
19.—Columba 41.—Within compass
20.—Amor patrie 42.—Ingenium delictice
21.—Spero 43.—In manus
44.—Stella 45.—Stella

The referee selected the following as prominently deserving of notice, and estimated them at the sums attached:—

- No. 15.—Argonaut ..... £12,300
19.—Comme ça ..... 14,000
20.—Amor patrie ..... 30,000
28.—Prodesse quam consipit ..... 15,700
31.—A shield ..... 22,000
33.—Labore et honore ..... 17,700
34.—Utility—an inferior design ..... 16,000
40.—Res non verba ..... 20,000
44.—Stella ..... 8,000

After suggesting that the authors of "Stella" and "Argonaut" might be communicated with, his report thus concluded:—

"The authors of the following designs were high merit, both in the disposition of plan, and treatment of the decorative parts:—Nos. 7, 15, 16, 19, 24, 25, 31, 32, 33, 40, and 41; those with the asterisk attached being either of the highest class, or approximating nearest to the expenditure of 8,000."

The Committee, in their report, said:—

"That with regard to the unmentioned designs, viz.,—

- No. 2.—Winged Circle 21.—Spero
7 & 8.—A Shield 22.—Omnia Spero
9.—Scientia 23.—Sigma
10.—Literature, Science, Arts 24.—Perseverance
11.—Fit via vi 25.—In memoriam (medieval)
15.—Argonaut 27.—Silva
16.—Multum in parvo 33.—Labore et honore
17.—Desideratum 36.—Utility
18.—Voluntar 37.—MDCCCLX
19.—Comme ça 40.—Res non verba
44.—Stella 43.—In manus
45.—Stella 45.—Stella

The committee suggest to the Town Council that the designers should be at liberty to send in several guarantees from competent practical persons, and who will undertake to execute a contract to carry out their designs for an amount not exceeding the total sum of 8,000, according to approved specifications, and that no such guarantee shall be entertained unless it shall be accompanied with the names of two responsible persons willing to be sureties for the performance of such contract."

After a long discussion it was resolved that the report should be printed and circulated, and the subject deferred till the next meeting of Council.

THE SEWAGE FOR THE SOIL.

MR. MECCHI'S LECTURE.\*

It must be a very strong practical conviction by which Mr. Alderman Mechi is actuated in the persevering—we had almost said the pertinacious—persistence of his views as to the vast and national importance of the sewage of our towns to the soil of adjoining country districts. In this conviction, we need not now inform our readers, we heartily concur: the views we have long entertained on this subject are thoroughly well known. It cannot for an instant be supposed by any one who has well considered the whole subject, that our new

sewage system will settle this great question as regards even the metropolis: it will do no such thing; although it appears to be a step in advance, to which the extension of the metropolitan house drainage has driven the public, in their desperate efforts to get rid of the temporary nuisance thereby occasioned in the river and the sewers.

It was a strange and stupid proposal to get rid of that nuisance by reverting to the cesspool system, the permanent evils of which were precisely what forced the public into the extension of house drainage itself, as the half doing, at least, of a work which was essential to the public health. This half-doing, moreover, has had the further merit, we may truly say, of creating such a nuisance, in the meantime, that it has forced into notice the necessity of getting the other half of it done without delay; and the objections to the status quo are about as rational as those objections to "things half done" for which "fools and children" are so notorious in nursery tactics. True, the most long-headed scarcely see their way, as yet, to the full doing of the remaining half of the work, any better than the "fools and children;" but that there is a way, and that it must and will be found, the best informed have the utmost confidence.

Mr. Alderman Mechi's way, like that of his celebrated chymical friend, Baron Liebig, has been for some years before the public; and, so far as regards the mere abstract question of the propriety and advantage of returning the sewage to the soil, who can doubt that they are essentially right? The only question is how to get them together. In the first place "the stable mind" is not yet fully prepared for the advance from the stable to the sewer. "If the money value of the contents of our sewers," as Mr. Mechi remarks, "could be shown to the British farmer in bright and glittering beaps of sovereigns, he would grasp at the enormous wealth, and make great efforts to obtain it;" but, as it is, we "have not seen any practical desire or effort, on the part of British agriculture, to obtain this treasure"—in the dirty shape of sewage—a shape, after all, not so "dirty" as that in which the glittering gold itself not infrequently reaches the pockets of mere money-grubbers.

Then, again, comes the great and important question of liquid versus solid excreta. Mr. Mechi advocates for the liquid form of sewage, but he has not every one with him on that point. Well authenticated instances have occurred, both of late years in England, and for many years, as at Edinburgh, in which the diluted sewage of towns has been found to fertilize the soil to a luxuriant and almost rank extreme. But the most extensive experience is that of China, in which there are either no sewers, or at all events the excreta are removed from towns in the undiluted form, as is the case, too, at Paris. Mr. Mechi, however, states that the Parisian manure has been found too strong and wasteful in this form.

Another question, which we have not seen started, but which assuredly will come up, and perhaps at an inconvenient time, when it might damage the cause of the disposal of town manure over the soil of the country, and which had better therefore at once be started in a friendly spirit towards that end, is the question of the influence of crops reaped from human excreta upon human life and health themselves. It is well known that sheep will not continue to eat of grass produced from their own manure;—not only so, but that certain diseases arise in cases where they have been compelled to do so. It may fairly be asked, therefore, whether grain or other crops reared from town sewage be wholesome as human food; and, at all events, may not a prejudice arise, at a critical time, against the extensive use of town sewage, on the basis of such a question? In considering and discussing it, however, let it not be forgotten that there are divers ways of obviating evil, even though it be liable to occur, from the direct human consumption of grain crops manured by town sewage. Animal produce could be manufactured chiefly from it, and of course crops (besides grasses), to be consumed by such animals. It must also be remembered that in China, which teems with human life, a large proportion of the soil is manured with human excreta for the production of crops which are directly consumed as human food, and that for 3,000 years the land there has been cropped, but never exhausted, either in its own fertility, or in the human life sustained by it. We certainly know much less on this subject as regards China than we ought to know; and it is very desirable that every opportunity should be embraced, of access to the country, in adding to our knowledge of this interesting and important subject.

Another difficulty in the way of returning the

sewage to the soil is, of course, the question of distance: districts in the vicinity of towns may readily be reached, however; and these districts may be found sufficient to absorb the whole of the sewage of the respective towns. But as regards the huge metropolis, still the question remains one of no little difficulty; and we are all well aware that one attempt to make use of its sewage in the vicinity was a failure, probably chiefly on account of this very vicinity itself. On this subject Mr. Mechi remarks:—

"Some years ago a company was formed to pump sewage from the Counter's Creek Sewer to the market gardens at Fulham. This was like 'carrying coals to Newcastle,' for we all know that the soil, naturally very fertile, receives annually, per acre, from 50 to 100 loads of London stable dung, which is brought back free of cost for carriage by the carts that have taken the vegetables to London. It is on the poor soils, beyond this influence, that the water and sewage will be profitable."

In the very interesting and important lecture from which we have in this and previous instances quoted, Mr. Mechi gives, in support of his view, in favour of sewage as it flows from town sewers, in a diluted form, the following reason:—

"Why the Sewage Form of Application is the most Preferable.—Baron Liebig, in his last work, page 267, lays down this great principle, that 'the action of a manuring agent in a given time must increase in proportion as its surface increases.' Now you have, in town sewage, a perfect practical illustration of this principle. The food has been converted into its original elements by mastication and digestion, and it comes to your field dissolved in water and comminuted or separated by frictional action in the sewers. It sinks into the soil and sub-soil in the only condition in which its elements can be seized upon, and condensed on its surface, and each grain of soil cultivated soil. Compare this with the clumsy dung-heap, where unseparated masses inaccessible to the soil show themselves for years, to the farmer's great loss, thus preventing the quick return so essential to farming profit."

These few desultory remarks, suggested by Mr. Mechi's lecture, we may appropriately conclude with two or three disjointed extracts from the lecture itself, chiefly as regards the difficulties connected with farmers and sewage companies:—

"Farmers, as a body, have no faith in liquid manure, and are not, probably, aware that twelve parts out of their own manure, and that of all their animals, is deposited as urine. The sheep-folding, deprived of its liquid, would be almost worthless. It appears to me that the only way to remove, or overcome, this difficulty will be for any company that may undertake the scheme, to show the effects of the town sewage on small plots of ground, in various parts of the country through which their pipes may pass, or otherwise offer such inducements for trials as may tend by their results gradually to remove this unprofitable prejudice. On sloping grounds below the cesspits it might flow over the surface as in ordinary irrigated meadows, thus saving the farmer the expense of subterranean iron pipes. No one can reasonably doubt that the great want of British agriculture is more manure."

"Provided an abundant supply of town sewage were annually used, it would be impossible to exhaust the soil by any cropping; and our farms-leases might be a great deal shorter than they are at present. The generality of farms are now only manured once in four years. Such a system would suit farmers of limited capital. The only excuse for treading our straw under foot, and consuming our hay, straw, and green crops on the farm, is to produce manure to grow the cereals. It is quite clear that, as sewage manure contains all the elements of every crop that can be grown, we need no longer feed out oaks, cut a loss, or pay away our money for guano, bones, blood, and other manures."

"Until a change is effected in the agricultural mind, sewage companies, formed for its general distribution, must be great experiments. As such, they should, in the first instance, be encouraged, and even, probably, subsidized, by the towns, for the first few years, no charge being made to them for the sewage. In course of time, when the operation shall have resulted in good dividends to the shareholders, the sum to be paid to the towns might bear an equitable relation to the per centage of profit realized by the shareholders. Except by such an arrangement, capital will not be advanced for such companies, for it will take some years to convince agriculture that she will be benefited by using and paying for town sewage. If landholders desire to prevent the exhaustion of their soil by the restoration of the sewage, they must give practical evidence of that desire, by taking shares in, or giving other facilities to, any public companies which will devote their capital to such an object. . . . Towns will derive a large revenue from their sewage; but they can only be when agriculturists have tested its value. In order to induce them to do this every temptation and encouragement must be offered to them, and to those companies who propose to supply them."

Last but not least in importance is what Mr. Mechi tells us of the actual practical and money profits of his system:—

"Influence of Sewage Manure on my Farm Profits.—I am much indebted to the sewage system on my farm in this respect—for the last six years my gain, as landlord and tenant, on my little farm of 170 acres, has been nearly 7000. per annum. Even this last year, with wheat at 45s. per quarter, I have gained 6000. after paying every expense. Of course much of this benefit has arisen from steam power, drainage, deep cultivation, and other improvements; but the liquified manure system has greatly contributed to this result."

ROYAL SCOTTISH ACADEMY.—At a general meeting of the academy, held on Friday, Mr. John Ballantyne, one of the Associates, was elected to the degree of Academician.—Edinburgh Courant.

\* On the Sewage of Towns as it affects British Agriculture: read before the Central Farmers' Club, London, February 6th, 1859. By Mr. Alderman Mechi. With a copious Appendix. London: printed by Jones and Casson, 47, Estreep, and 14, Paddington. 1859.

ON THE CONSTRUCTION AND REBUILDING OF THE ITALIAN OPERA HOUSE, COVENT GARDEN.\*

It has been already stated that the works were commenced in the autumn of 1857. The removal of the old foundations was a work of great tediousness and difficulty, and as the day of opening was even then fixed for the 15th of May in the following year, all were most impatient to see the conclusion of the excavation, which, however, was so long delayed, that portions of the foundations were put in to save time long before the whole site was clear. The first brick was laid on the 23rd of September, 1857, but it was not until the end of October, in the same year, that the whole site was available for the energetic prosecution of the works. Almost all the iron-work, however, was ordered before the footings were completed, and the roof was, in consequence, furnished and ready for fixing before the building was more than three parts up.

Considering the unfavourable period of the year, and the risk of interruption to the bricklayers by rain, it was resolved to try to obviate this kind of delay, if possible. Messrs. Lucas, directly the matter was named to them, agreed to furnish all their men with complete suits of waterproof clothing, consisting of coat, leggings, and hood; and the men, while working on the walls in this black-hooded costume, reminded of nothing so much as the story-book pictures of familiaris of the Inquisition. It was soon found, however, that the walls, being built in mortar, could not be prudently carried up during severe rain, and the waterproof contrivances were, therefore, only used very occasionally. It will be seen that the arrangements for the auditory are quite independent of the external walls, and the boxes and corridors are, in fact, a separate structure of iron, stone, and wood, erected inside the chamber formed by the many walls of the building. For reasons already adverted to, it was resolved to use iron for this portion of the work; and it may be remarked that wrought iron has been adopted for almost all portions of the construction exposed to danger from fire and severe tensile strains, in consequence of its presumed advantages over cast iron in such cases. The boxes are supported by wrought-iron cantilevers, formed of two pieces of T iron  $5 \times 5 \times \frac{1}{2}$ . These are connected together with connecting web-plates, so as to form a double T, one piece serving as the upper flange, and half the web and the other constituting a lower flange and the completion of the web. A specimen beam was made before the works commenced, and carefully tested by actual weights before its application was resolved upon. The floor of the corridor is formed of 3-inch York landings, rubbed on both sides, which thereby form at small expense both floor and ceiling. They are supported on rolled iron joists, connecting together the cantilevers, before described, which are strongly let into the wall of the corridors, and have a point of support distant rather more than half their length on cast-iron columns placed at the backs of the boxes. The columns are eighty in number, in sets of four, resting on each other, being carried up to the basement. In consequence of the necessity for the cantilevers to pass through the columns at the points of support, the top of each column is formed into a species of box, through which the cantilevers pass, and to which they are safely secured. It will be seen that as the columns rest on each other they cannot yield to superincumbent weights unless their foundations give way. It was, therefore, felt to be a difficulty that, while the walls would certainly settle (especially when carried up so rapidly), the columns by remaining rigid and unyielding would probably cause serious inconvenience, and might, by altering the levels of the cantilevers and beams, expose them to aggravated cross strains. To obviate this danger, it was resolved not to fix the iron work until the walls were carried up, so as to give as much time as could be afforded to allow them to settle. It was also determined to make the boxes forming the heads of the columns rather deeper than was necessary. The bearing was then brought up to the right height by their filling in pieces of sheet-iron, any number of which might be easily withdrawn in the event of the walls settling, and requiring a corresponding lowering of the beams and cantilevers. It is satisfactory to add that these precautions have never been called into play since the framework was fixed, nor has any settlement occurred, as far as I know, since the completion of the building. The number of bricklayers for some weeks exceeded a hundred, and

the number of workmen of all classes varied from a small body at the commencement to as many as 1,200 during the last few weeks of the works. The joiner's work was prepared at Messrs. Lucas's works, at Lowestoft; and all the principal portions of it were put in hand at the same time that the brickwork was commenced, and all difficult parts were carefully put together on the premises, then and there carefully taken down, marked, and sent to London. Thus the ceiling over the pit, the combined curves of which needed some care to ensure accuracy, was put together and temporarily supported in Messrs. Lucas's yard many weeks before the building was ready to receive it. Owing to the limited space occupied by the building, the site of the Floral Hall being still encumbered by ruins which there had been no time to clear away, much difficulty was experienced in finding room for the large quantities of materials daily required; and when the time came for delivering the great roof girders, 96 feet long, 9 feet deep, and weighing 17 tons each, it became necessary to hire a wharf on which they might be stored until they could be received and fixed. The girders were divided into halves for convenience of transit, and in that form were eventually brought to the works. Considering that the walls, 85 feet high, had been carried up in thirteen weeks, and during an unfavourable time of year, precautions were thought necessary to ensure, as far as possible, an even distribution of weight upon them, which was rendered the more necessary from the fact that, owing to the peculiar construction of the roof before adverted to, the main girders had not only to carry their own weight and the weight of the roof, but were also required to support the ceiling of the auditory, the scenic arrangements over the stage, and a complete story of workshops. In the old theatre Sir R. Suirke had effectually provided for distribution of weight by placing two wall plates of nearly whole timber dimensions along the walls; but with an iron construction this resource was of course unavailable, while the iron girder was not only heavier than the wooden truss, but was also nearly one-half lighter apart from its neighbour, thus adding in every way to the necessity for precaution from the greater concentration of weight on certain points. The mode adopted was, instead of using wall plates of wood, to carry up twelve courses in cement and hoop iron, forming thereby a wall plate of brick and cement. This 3 feet of wall was connected with the external and cross wall by iron ties similar in character to those before described, and from it six more courses, also in cement, were carried up to the underside of the templates which receive the main beams. These are of stone, 4 feet by 3 feet 9 inches, and upon them are fixed cast-iron plates, 2 inches thick, carefully fitted to the shape of the lower flange of the beams. These iron plates were found very useful in fixing the beams in their places, as will be seen presently. The operation of hoisting and fixing the main roof girders was a matter of some difficulty, and several modes of accomplishing it were considered. It may, perhaps, be interesting to describe shortly the manner in which these great metallic principals, each weighing 17 tons, or more than the unfortunate Big Ben of Westminster, were safely fixed in their places. It was felt that, in the absence of cross walls, a sudden blow, from any accident in hoisting the girders, might be attended with very serious consequences. Moreover, the length of the girders being 96 feet, and the space between the walls only 90 feet, it was obvious that they could only be hoisted in an oblique position if raised whole, and such a course would entail great difficulties in getting them into their permanent places, on the top of the building. It was consequently determined to raise them in two pieces, in which condition they came to the works as before stated, and to rivet them together on the top of the building. In a central position, where the Proscenium now stands, a scaffold, about 30 feet by 20 feet, was raised, and floored over at the same level as the top of the walls. The half girders were then raised and placed temporarily, so that the two ends rested on the walls, and the divided centre portions were supported on the scaffold, which resembled a gigantic table. Small portable forges were then supplied on the scaffold, and the half girders were riveted together in the position described, the whole operation taking about three days to effect. The girder then required to be moved to its place, and room made for the others. Great caution was used in moving the girders, in order to avoid exposing them to any severe cross strains, which by deranging

their parts might materially injure them. It was necessary, therefore, that the girders should be moved, evenly and easily, both for their own sakes, and by reason of the state of the walls. To effect this a whole timber was laid upon the walls, longitudinally, and an iron rail fixed on the top of the same. Carriages, with flanged wheels running on the rails, were placed under each end of the girder, and a very moderate force applied to the carriages, caused the great mass to move along the walls with the ease and smoothness required. As soon as a girder was moved from the scaffold another took its place, and before the latter was riveted, a third was hoisted, ready to occupy the scaffold as soon as vacated. Thus the three operations of fixing, riveting, and hoisting, were all pursued together by different gangs of men. We have now accompanied the girder to its place, but we have not yet seen it placed in its permanent resting-place, to do which without a jar to the walls, and with perfect accuracy, was an operation requiring some delicacy. As the whole roof is so connected together, both with floor beams and roof principals, all of which were made at the same time as the girders, and were fitted taken them of the same. Inaccuracy in fixing the girders would have produced serious difficulties. The iron bed-plates under the ends of the girders were therefore fixed in the stone templates with great care; they were provided with a hole through them, under the centre of the girders tapped for a 2-in. screw, and a corresponding hole was drilled through the stone template. Several courses of the brickwork under the stone template were also temporarily left out. The screw was then introduced from below, and passed through the carriage under the end of the girder, which was carefully adjusted, directly over the screw. The carriages were then removed, and the girders left resting upon the screws, which were then slowly withdrawn from below, and the girder finally lowered to its resting-place. The omitted brickwork was then made good, and the fixing was complete as far as the main girders were concerned. Care was taken not to surround the ends of the girders with brickwork, but to have them free and susceptible of being painted from time to time. The small intermediate roofs, having been all prepared before, were next fixed with great rapidity, and the roofs at the ends of the building were slated and covered in before the girders for the middle portion were even hoisted.—The whole operation of hoisting and fixing the girders having taken only three weeks. The floor-beams between the girders over the auditory were likewise soon in their places: they are made of wrought-iron, and carry the floor of the workshops and the ceiling of the theatre. The chandelier is supported by two iron beams supported at each end by the main trallis girders. It is worked by a crab, and can be raised partially into the workshops, or lowered to the floor of the pit. As soon as the floor was completed, as described, the internal works of the building were pushed forward as much as possible, and the interior of the auditory, which was at present only in carcass, began soon to assume its present shape. It being naturally of the greatest importance to employ as many hands as possible, it was decided not to allow any scaffold to be erected from the ground, but to construct the beams of the roof and the floor in the same. The platform was constructed in the following manner:—Rods of wrought-iron, 1 inch in diameter, were hung down from the beams above, where the aperture, in the centre of the ceiling, would ultimately be formed. From this point, timber beams, or joists, radiated like the spokes of a wheel, each beam or spoke being supported at one end by one of the iron rods above alluded to, and the other end being carried by a rope strongly fixed to the beams of the floor above. These radiating beams, thus constructed, formed the supports of a platform on which the necessary scaffold was erected for the fixing and completion of the ceiling. The latter is covered with Bielefeld's fibrous shib, which has been extensively used at the British Museum. It was fixed in large slabs, about 12 feet by 6 feet, and is  $\frac{1}{4}$  inch thick. Of course, in covering the ceiling, it became necessary to slant the ropes supporting the scaffold to such positions as would not interfere with the decoration, or cause unsightly holes to be made through the slabs. Provision was accordingly made for the existence of some holes in the ceiling, through which the ropes might pass, not only during the progress of the work, but also at any future time when repairs or redecoration might be necessary. The holes, twenty-four in number, are placed at

\* By Mr. E. M. Barry. See page 85.

the joints of the fibrous slabs, and are concealed in the finished ceiling by plugs let down and removable from the floor above, so that ropes may be at any time lowered through them, and a scaffold formed with facility, and at slight expense, whenever required. The form of the ceiling is as follows:—Over the pit is a flat dome, 65 feet 1 inch diameter, and 7 feet 2 inches high: this rests upon four elliptical arches, 63 feet 7 inches span, with pendentives. The ceiling over the main gallery is flat, and the two side galleries or steps are covered with arched ceilings, following the shape of the elliptical arches supporting the dome. The dome is formed of pulvius in two thicknesses, circular in plan, and hung down from the floor above by wrought-iron rods. The pulvius carry ceiling joists in the ordinary manner. The arch nearest to the stage is 10 feet from the curtain, to allow of the formation of a sound reflector over the foot-lights and the projecting piece of the stage from which the principal *artistes* commonly sing. The reflector is curved, and follows the form of a parabola. It displays for its ornamentation a bas-relief, designed by Signor Monti, representing the ancient and modern drama, with a likeness of her Majesty in profile between the two subjects. The box-fronts were also designed by the same artist, and are executed in the new combination of canvas and plaster, which Mr. Owen Jones has largely used, and has lately introduced to the notice of this Institute.

The decorations of the interior were for the most part carried out under the personal directions of Mr. Gye, assisted by Signor Monti, only a small portion of the original designs for this portion of the work having been carried into effect. The whole of the operations connected with the ceiling, such as fixing the carpenters' work, fixing and painting the fibrous slab, and fastening the enrichments in their places, were carried on from the suspended scaffold, and during this time the works below were being pushed on with all despatch. The foundation walls under the pit were built, the iron columns and cantilevers for the boxes were fixed, and carpenters, masons, smiths, painters, decorators, and gilders, jostled each other. Indeed, the interior of the theatre at this time presented an epitome of the building trade, almost every handicraft having its numerous representatives, while the placards in the streets, announcing in large letters the 15th of May as the day of opening, were calculated to cause all concerned the greatest anxiety. In designing the construction of the floor to the pit, a question arose which determined its general character. With a view to render the theatre applicable to all possible purposes, it appeared to be an advantage to possess the power of raising or lowering the floor if required. On such occasions as public dinners, *bals masqués*, &c., it is obvious that such a facility might prove very advantageous. It was accordingly resolved to support the floor on trussed timber beams, 2 feet 3 inches deep, resting on cast-iron columns. These columns have split heads, resembling a musician's tuning-fork. By the adoption of this form, the trussed floor-beams can be lowered into the columns their own depth, whenever required, a number of packing-pieces filling up the cavity in the top of the column if it be desired to retain the beams at any particular height. An instance of the convenience of being able to alter the position of the pit floor was shown soon after the opening of the house. From some misconception, the stage had been fixed 9 inches too high, and the occupants of the front rows of stalls had an impaired view of the performers in consequence. During the recess, the front portion of the pit floor was raised 9 inches, so as to occupy its proper relative position to the stage, and the inconvenience was at once obviated. While the works above described were in progress the stage was in active preparation. Mr. Beverley, the distinguished artist, was consulted as to its general arrangement and mode of working, and the practical realization of his views was confided to the experienced hands of Mr. Sloman, who has been so long connected with the theatre, and whose reputation in such matters is so well established. The procession columns are arranged to slide on wheels, so as to expand or contract the opening when desired. The grooves so commonly used for the support of the scenes are entirely done away with, it being considered that their undoubted convenience is more than counterbalanced by their attendant disadvantages, and more particularly by the obstacles they afford to the formation of a grand open scene embracing the whole extent of the stage. The back scenes are of single sheets of canvas, lowered from the top, and secured to rollers resting ultimately upon the main beams of

the roof. The side scenes and set pieces are fixed to the wing ladders behind which the side gas-lights for lighting the stage are placed. The wing ladders being unattached to anything above, the artist is enabled to place large set-pieces, such as trees, rocks, houses, &c., against them and still preserve the total height of the stage, while they are so constructed that they may be moved completely across the stage. The upper pieces of scenery, known technically as *horders*, are of somewhat novel construction. Owing to the great size of the stage, it was desired to possess the power of using it to its greatest width, especially for out-door scenes, and I may perhaps mention some of the scenery in "Dinorah" as instances of how admirably Mr. Beverley can use his opportunities; but borders to suit such extended scenes would be useless for those of a more limited description, and to avoid the necessity for a double set of scenes, it was resolved to make the borders in three pieces—a centre and two wings; the latter being so arranged as to slide forward and back, so as to form an arch of any required diameter. There are two sets of flies, each 8 feet wide, from which the machinery is worked, and there are recesses on each side of the stage to receive the scenery not in use. One of these recesses is occupied by a powerful organ, often used as an auxiliary in operatic performances.

The painting-room occupies the ordinary position at the back of the stage; but as the floor is carried by a trellis girder of the same description as those supporting the roof, the stage is enabled to extend entirely under the painting-room without interruption from walls or columns. The painting-room is 90 feet long by 30 feet wide, and 50 feet high in its highest part. It contains several painting frames of different sizes, hung in pulleys, fixed to the walls, and furnished with counter-balance weights. The frames are contrived to slide downwards through the floor, so that the artist can readily gain access to any part of the canvas he may desire, without leaving the floor of the painting-room. There is a large skylight in the roof, and the floor is furnished with traps to admit of moving scenery to or from the stage below. The scenes being necessarily often of very large size, owing to the great dimensions of the stage, slits are provided in the stage floor under those already described in the floor of the painting-room, so that the scenes may be lowered even as far as the basement, if required. Under the floor of the painting-room are fixed the contrivances for simulating the noise of thunder, rain, and the like; and the great bell, whose mournful notes have sounded the knell of so many a disconsolate tenor, is fixed in the same position. The new theatre being intended to be used principally in summer, it was not considered necessary to do much in the way of warming, as far as the opera season was concerned; but with a view to its occupation in the winter, as is now, in fact, the case, some artificial means of warmth were, nevertheless, required. A chamber is consequently placed under the pit, sufficiently low to admit of the lowering operation before described, in which hot-water pipes, heated from an apparatus under the grand staircase, are fixed: an air-grating round the pit, allows the heated air to escape into the house. The principal exit for the heated and vitiated air is through the aperture, 10 feet wide, over the chandelier; above which there are openings into the external atmosphere. There are air-valves to the boxes over the doors, and a number of small holes are drilled in the risers of the gallery seats, giving a passage for the air from the halls and corridors to the chandelier, but not in sufficient quantities at any one place to create a draught. There are also air-flues in the corridors and in the crush-room, to carry off the products of combustion from the numerous gas-lights; and there are outlets into the roof from the side galleries. None but these simple expedients for ventilation are adopted, experience having, I think, shown that most elaborate systems of ventilation are liable to failures, more or less complete, in proportion to their greater or less elaboration. A copious supply of water is of course one of the first essentials in a theatre, as a precaution against fire; for it is clear that, if a fire is to be resisted successfully, it must be so within the first quarter of an hour, as after that time the body of flame would be so vast as to defy all control. The precautions sometimes provided of iron curtains, and the like, are of questionable value, as when most wanted they are seldom available, or in order; and the only valid precaution appears to be to provide plenty of cocks, with a high pressure water supply, in all parts of the building. At Covent-garden there are twenty-five of these

cocks, supplied from cisterns in the roof, capable of containing 12,000 gallons. The main cistern is placed over the stage stair, in the north-west corner, towards Hart-street; and, in order to secure a constant supply in case of fire, the cistern is divided into two unequal parts, the smaller of which supplies the closets, sinks, and taps, of the house, while the larger is entirely reserved for the supply of the fire-cocks, at high pressure. The supply to the cistern is so arranged that not a drop of water can find its way into the smaller compartment until the larger is full to overflowing. As long, therefore, as there is any water in the closets, &c., it is certain that the fire-cocks are charged; and if by any chance the supply should run short, the inconveniences would be at once felt and remedied. It may possibly be remembered, that when the theatre was opened to the public on the 15th May, 1858, the tympanum of the portico was not built, and the removal of the scaffold at this part of the building was not completed until the afternoon of the opening day. It had been intended not to have attempted the erection of the portico until the next year, but considering the inconvenience and interruption to the business of the theatre that might be expected by a renewal of the works at the principal entrance, Messrs. Lucas were asked, as late as March, 1858, whether they would then undertake to erect the portico, the columns of which are 36 feet high, and 38 inches diameter, before the 15th May, leaving the tympanum only to be added afterwards. This they consented to do; and on the 27th March the order was given to proceed. On the 22nd April the last capital was set, and the last stone of the architrave was fixed complete on the 8th May, just one week before the opening of the theatre, although the ground at the theatre was now so crowded that every stone had to be worked at the wharf in Lambeth.

The satisfaction, however, of all concerned in the erection of this work was damped by a very sad occurrence. The mason (Mr. Gaiger) in charge of the work under the contractor's principal foreman of masons (Mr. Hatfield) met with his death on the very day of the completion of his work. He had been promised a present contingent upon his exertions being crowned with success, and after setting the last stone with natural satisfaction, when he took one step beyond the scaffold, from which he fell in an instant and met his death on the spot. Looking to the unavoidable dangers of building and other peaceful occupations, I am not sure that we always do justice to the courage and determination so eminently displayed by our artisans, or always sufficiently remember the sacrifices and sufferings by which the battles of science are won.

After the portico was completed, iron beams were fixed over the space between the front wall and the colonnade, a beam being placed across each column. At the close of the season a platform of scaffolding was formed upon the iron beams, and the tympanum carried up entirely from the same; the space thus formed being converted into a practising room, 7 1/2 feet by 14 feet, over the portico, and entered from the back of the theatre gallery.

In fitting up the interior of the auditory it was resolved to allow to each spectator a more liberal share of room than had formerly been the case, and the consequence of course is that the actual number of persons accommodated suffers a corresponding diminution. When the theatre is used for the opera, the number of spectators, comfortably seated, amounts to 2,300; but when otherwise fitted, 3,000 or more visitors can be easily accommodated.

There were many sub-contractors employed by Messrs. Lucas for various parts of the work, and all exhibited the most praiseworthy anxiety to complete their work, and enable faith to be kept with the public by opening the theatre on the day named from the commencement. Where all did well, I feel a selection might seem invidious, and as the names of all concerned were published in the *Builder*, I shall not do more here than allude to the clerks of works, Messrs. Allen and Miller, and the foreman of Messrs. Lucas in charge of the works, Mr. Clemence, whose zeal and ability, evinced under most trying circumstances, deserve special recognition. With this I propose to close my description, and hope the Institute will excuse me, if I have trespassed too long upon their attention.

WEYMOUTH TOWN SURVEYOR.—We have received some animadversions on the town council of Weymouth, in respect of their views as to this appointment, but we cannot deal with men's motives on mere assertion.

## THE BUDGET.

The proposed treaty with France, and alteration in home taxes, if confirmed, will give a great stimulus to many branches of trade. Our iron masters, machine-makers, and makers of pottery, will at once find new markets of the most extensive kind. Many will remember the anxiety that was shown in France on the occasion of the international exhibition to obtain the cheap wares of Minton, Copeland, and others.

The reduction of the timber duties will promote activity. The duties it is proposed shall stand:—

Timber, or wood, not being deals, battens, boards, staves, handspikes, oars, latwood, or other timber, or wood sawn, split, or otherwise dressed, except hewn, and not being timber, or wood otherwise charged with duty, the load of 50 cubic feet	0 1 0
Of and from British possessions	0 1 0
Of and from foreign possessions	0 1 0
Deals, battens, boards, or other timber, or wood sawn, or split, and not otherwise charged with duty, the load of 50 cubic feet	0 2 0
Of and from British possessions	0 2 0
Of and from foreign possessions	0 2 0
Planed, or otherwise dressed, or prepared for use, and not particularly enumerated, or otherwise charged with duty, for every 100ft. value	5 0 0
Of and from British possessions	5 0 0
Of and from foreign possessions	5 0 0

A more important change still, however, will be worked by the proposal made in the following words:—

"That on and after the 1st of July, 1859, all duties of excise on paper, button-board, mill-board, paste-board, and scale-board, made in the United Kingdom, and all drawbacks and allowances in respect thereof, shall cease and be repealed."

This tax has long been a blot on our intelligence. We have taxed ourselves, on one hand, to assist the spread of education, and we imposed a tax, on the other, to cramp these endeavours and limit the extension.

## ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

We have already classified the 505 photographs now in the Couduit-street Gallery as waiting selection on the part of the members of the association, the object of which is, as set forth by the committee:—

1. To procure and supply to subscribers photographs of architectural works of all countries.
2. To form a collection of such photographs for the association.
3. And in any other manner to render the art of photography serviceable to the promotion of the knowledge of architecture and to the requirements of the profession."

The specimens are marked with a numerical value as on previous occasions, and subscribers are able to select any subjects, of which the values, added together, shall not exceed 50; and for every 5 beyond, a small sum is payable in addition. Thus, of Mr. Fenton's English views, and these are amongst the best, the uncial value of each, mounted, being 18, three may be had for each guinea's subscription. The "West Porch of Lichfield Cathedral" (303) is an admirable specimen. Many of the English views are exceedingly good. Mr. Melbush's, for example, "The West End of Tintern Abbey" (319), and "The West Doorway of Rochester Cathedral" (325), in particular. Mr. Bedford, too, has several capital photographs. Amongst these we must point to one which is very remarkable if examined with a strong glass (175), the photograph of the celebrated monumental brass of Bishop Burchardus De Serken" (1817), and "John de Mil" (1350) in the Cathedral at Lubek, made from a rubbing by Mr. John Christopher. The original is 12 ft. long by 6 ft. 1 1/2 in. wide. Amongst Mr. Cooke's specimens (366) should be looked at, "Darham, from the River," for, being by the instantaneous process, the ripple is exhibited in a way we have never before seen.

Going to France, Bissou has an admirable set; notice for example (50) "The Western Portal of Rouen Cathedral."

The views of Jerusalem, by Robertson and Bents, appear to be new, and this cannot be said of all the collection. 115, "Part of Old Walls of the Temple," the "Wailing Place" of the Jews; and (116) "A general view from Mount Scopus," are particularly interesting. Professor Donaldson has already given sufficient praise to the specimens from Rome, indeed so much so that one correspondent "E. R." has addressed a communication to us, accusing the Professor, good-temperedly, of making his lecture on photography a cover to an attack on medieval in favour of classical styles.

The photographs by Ponti, from North Italy, although of very interesting subjects, are neither so good in colour, nor so true in focus, as they might be. We need not tell those who have read

the observations we have made at different times on the subject, that the Architectural Photographic Association is not yet thoroughly carrying out what we believe to be its mission; but we may, nevertheless, safely commend the present exhibition to notice as an interesting collection, offering for selection, at a small cost, some valuable subjects.

Mr. Lightly, who is acting as honorary secretary, or Mr. Moody, the curator, will give any information that may be desired.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

## THE GOLD MEDAL.

A SPECIAL general meeting of the members was held on Monday evening, the 13th instant, Mr. C. R. Cockerell, R.A., president, in the chair, to take into consideration the recommendation of the council with respect to the award of the Royal Medal, the silver medals, and other prizes of the Institute for the year 1859; and their recommendation with reference to the medals for the year 1860.

The council recommended that the Royal Gold Medal be presented (provided the sanction of her Majesty be obtained) to Mr. Sydney Smirke, R.A. The recommendation of the council was unanimously adopted.

The report of the council stated that two essays and one set of drawings had been received in competition for the Medal of the Institute and the Soane Medallion. One of the essays, signed "Hope," was on the genius of Vanbrugh; the second, inscribed, "He that hewed wood afore, out of the thick trees, was known to bring it to an excellent work" (Ps. lxxiv., 6), on woodwork of the Mediaeval period. The latter was accompanied by a remarkable series of pen-and-ink sketches. While admitting the excellence of the sketches, the council expressed regret that the incompleteness of the essay, apparently from want of time, prevented them from recommending the award of the Institute Medal to the author of it, and suggested some honorary acknowledgment. After considerable discussion, and an amendment to the effect that the Institute Medal be awarded to the author of the essay (which was lost), a Medal of Merit was voted.

On opening the letter accompanying the essay it was found to be by Mr. G. E. Street.

For the other essay and the design no award was made.

The subjects for which essays and drawings are to be invited were settled, and will be duly advertised.

Mr. C. Fowler, Mr. Kerr, Mr. Godwin, Mr. Papworth, Mr. Rowe, Mr. John Billings, Mr. Jennings, Mr. Mylne, Mr. Morris, Mr. Williams, Mr. Roumieu, Mr. C. C. Nelson, Mr. Sancton Wood, Mr. Haywood, Mr. Marrable, and others, took part in the discussion.

## CERAMIC WOOD.

Mr. J. C. MARTIN, of Barnes, has patented a plastic material, resembling wood in its finished state. It may readily be moulded by pressure into moulds of any form: it admits of carving or cutting to any extent required; may with facility be glass-papered; and will receive the highest French polish.

The material is in great part composed of fibrous pulp of as long a description as possible (to which it owes its strength), which is worked together with resinous and gelatinous gums, acted upon chemically, and as nearly to imitate the nature of wood as possible.

The inventor says,—"It is unlike all the ordinary descriptions of moulded papier maché or carton pierre, as it contains no earthy or non-fibrous substance in order that it may be made to take a fine impression, and to this it in a great measure owes its strength and the facility with which it may be carved and finished, and renders it suitable for the manufacture of many articles to which other descriptions of plastic materials could not be applied, and, at the same time, from articles made from it being homogeneous throughout, they do not chip with a blow, as is the case with ordinary moulded ornamented papier maché articles, which are faced over with a weak, readily-moulded material, in order to take an impression."

It was while engaged in experimenting with various woods, with a view to their conversion into pulp for the manufacture of paper, that it occurred to Mr. Martin to replace the pulp and the gums of which the wood had been deprived, varying the proportions to meet the circumstances, and upon this the invention is based.

When the duty is taken off paper, as it probably

will be shortly, we shall hope to see some fresh material for its manufacture hit upon, or the consumer will probably benefit less than should be the case.

## ENAMELLED PIPES AND UTENSILS.

The improvement of the sanitary condition of large towns, and the best and most economical means for effecting so desirable an object as the preservation of the public health, are questions for the grave attention of those to whom the interests and social comfort of the rate-paying public are delegated. Various plans for conveying pure water from reservoirs through towns and into dwellings have been tried with more or less success. As bearing on this, we notice an invention, which has been patented by Mr. Paris, for the purpose of avoiding the evils arising from poison in water conducted through lead pipes, and the impurities which are constantly accumulating in iron ones; and also the breakages to which earthenware tubes, otherwise desirable for this purpose, are liable. The invention consists in the preparation of a fused glass, or enamel, applied to the surface (externally and internally) of iron tubes, which are thus encased. The enamel is incorporated with the iron while it is in a nearly white heat. Messrs. Alcock & Sons, the brewers, we are informed, have adopted these enamelled tubes for conveying their water, for brewing, throughout the whole of their new premises at Burton-on-Trent. The invention is also applied as a coating for the surface of vessels used for culinary and other domestic purposes. As a substitute for earthenware for the use of prisons, public asylums, and workhouses, it is urged that it has advantages. The works for the manufacture of this article are carried on by the Patent Enamel Company at Birmingham.

## THE MORNING-ROOM AT ASHRIDGE PARK.

ASHRIDGE PARK, in Buckinghamshire, near Great Berkhamstead, the principal seat of the Right Hon. the Earl Brownlow, has engaged the best talents of three generations of architectural Wyatts. The mansion, originally built by James Wyatt (the Surveyor General), for the Earl of Bridgewater, was probably (after Fonthill) the most imposing, both for extent and elaboration, of all the series of florid Gothic houses on which that active artist was engaged. In common with almost all his other works, the original structure evidences that vivid perception of picturesque effect, both internally and externally, in which James Wyatt was generally regarded as excelling all his contemporaries. Nor, indeed, are the details by any means so poor and frittered as those he introduced in Mr. Barrett's "Priory" at Lee, in Kent,—the building on which the most prosperous change in the current of his fortunes was based.

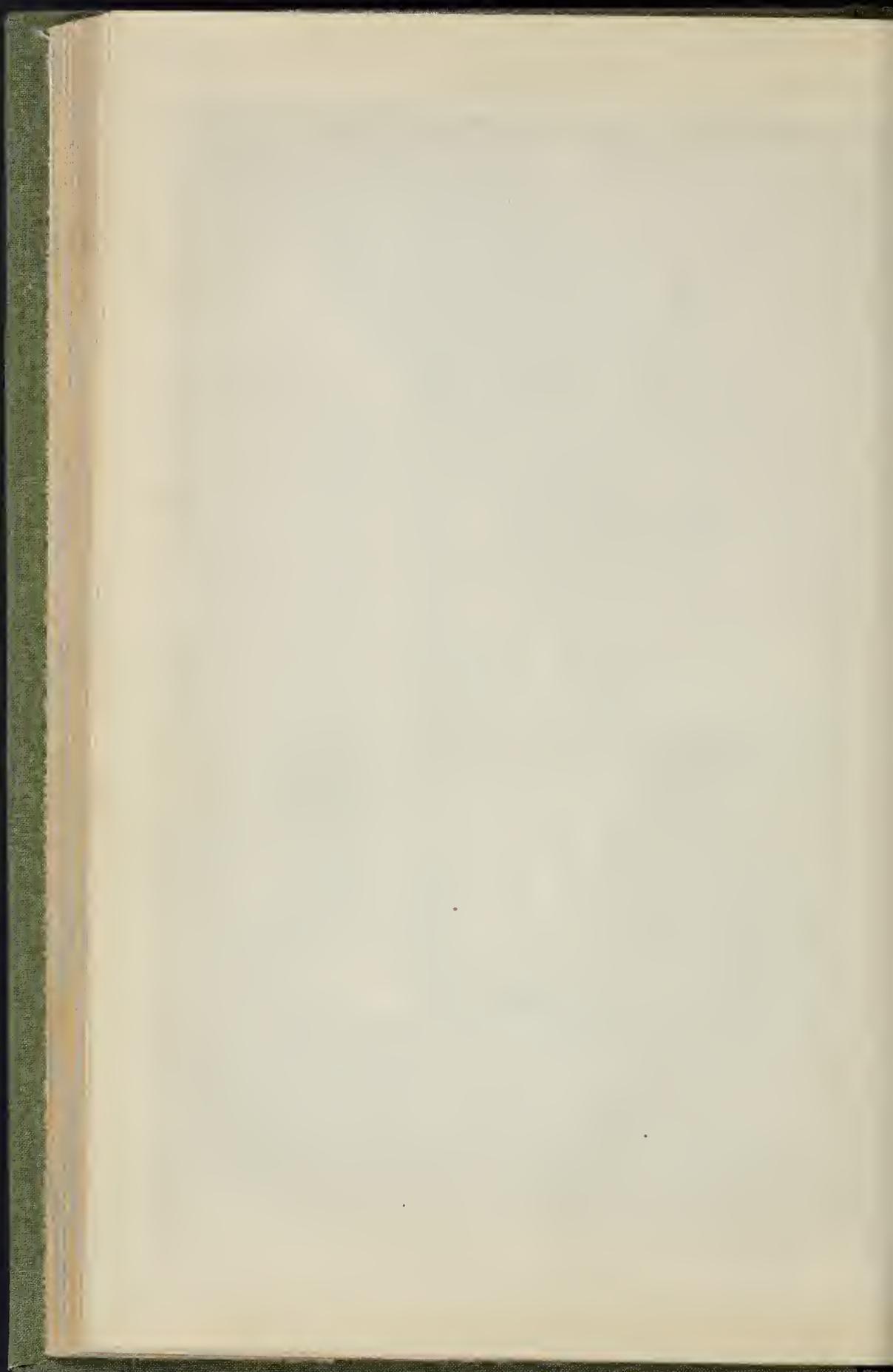
Jeffrey Wyatt, the nephew, was called in to make various additions to his uncle's work, and has not failed to vindicate his superior knowledge, and to exhibit, at the same time, his inferior imagination.

Their descendant, Mr. Digby Wyatt, in the elaborate apartment which forms the subject of our engraving, has proved himself a not unworthy scion of the house. The Renaissance style was no doubt selected, in this instance, in preference to that in which the rest of the house is built, from the circumstance of the apartments being especially destined to receive and display many very beautiful and interesting works of art of the Cinque-cento period, collected in Italy by the Lady Marian Alford—the mother of Lord Brownlow, and the accomplished daughter of one of the most accomplished noblemen (the late Marquis of Northampton) who has ever graced the English peerage. Herself a highly cultivated artist, she has brought the control of a refined and highly critical judgment to the aid of Mr. Digby Wyatt in the successful carrying out of his design, and the result has been the production of the work of art of which we now place a representation before our readers.

The whole of the working and full-size drawings, for the elaborate details which give animation to this composition, were made by the architect himself: the modelling was executed in Paris, by Mr. Deschamps and his assistants; and the reproduction at Ashridge, by Mr. Parsons, of Acton-street, Gray's Inn-road. The work was superintended with great zeal and care, by Mr. Shelbourn, Clerk of the Works to the magnificent estates, which, it may be remembered, formed the great prize in the celebrated law-suit between the Custs and the Egertons, of Totton.



THE MORNING-ROOM AT ASHRIDGE PARK, BUCKINGHAMSHIRE.—MR. DIGBY WYATT, ARCHITECT.





western or lateral towers, equal and similar, and corresponding in position, rising on either side of a noble nave. Two towers, or even minarets, placed in such a position, appear to stand in "supporters" to some other more important, though less conspicuous, member of the fabric. A single tower proclaims, as it were, its own dignity and its own purpose with less direct reference to the relative importance of the rest of the building. I am far from arguing that a single isolated and independent feature may not be so treated as fairly to fulfil the requirement of high art; and it is possible that the same expenditure upon a single tower would often give greater effect than if divided into two. Neither would I pass by the fact, that some of the most imposing and magnificent examples consist in single towers, upon which the architect's whole energy appears to have been concentrated. But commonly, if there are two towers, they ought to be similar in outline and general treatment.

In good work of the best periods we often do find a great dissimilarity between them. This dissimilarity, however, is rarely, if ever, found in the case of two exactly equal towers, or of two side western portals, or other similarly corresponding features, which can be taken in by the sight at the same time. In many, perhaps in the majority, of those towers that are thus counterpoised and otherwise similar, there is a slight difference in the treatment of detail; and this again shows the more forcibly the care taken to assimilate the outlines, subordinating the detail to the general effect. In case of transepts, aisles, or porches, however, which being on opposite sides of the fabric, cannot be seen at the same time, the diversity is allowable, giving scope for a pleasing variety and the display of individuality of treatment. That such diversity is justifiable in the case of two western or otherwise corresponding towers is not an evident, for in a large building each tower may be considered of sufficient importance to be taken almost as a separate whole by itself, thus affording scope for a separate treatment, and, in very many instances of early examples, the diversity cannot be for an instant regretted. Two noble works of art, emanating each other in richness or in grace, standing as sentinels on either side of the same building, of either of which we should perhaps equally deplore the loss,—two such towers add to general effect almost more by their pleasantness of outline than they lose by the lack of uniformity. Our hearts are told us that each one is grand and true, and we do not—ought not to pause and inquire whether two towers alike might not possibly have been, in some respects, better or more imposing. Each tower, perhaps, is sufficient to stand upon its own merits as a separate design, and we must not be too critical as to what would or might have been the effect of a different arrangement. Neither can we accept them as precedents for our modern practice; for, when found in good old work, the diversity arises from their having been built at two different periods—it may be not a few years apart,—by different founders, and by different architects. The case, therefore, does not apply, and still less will it appear applicable as a precedent when we consider that in those days there was a strongly marked uniformity of character, resulting from the development of a systematized and conventional mode of treatment, that gave to the architects of those days a vigour and power upon which individuality, originality and originality might be brought to bear with the certainty of ensuring the greatest success.

We now bring our subject to a close. I have not troubled you with abstractions, and with definitions, but have dwelt upon the practical and self-evident, rather than attempted to force upon you a theory or a special rule. Not because theory is of no interest or of little value, but because theory is a matter for close, earnest, and laborious study, rather than for popular and general discussion. It is with the results, and with the means of producing these results, rather than with the cause of such results, that most men are concerned. Moreover, it is much more to extend the proper appreciation of art than to propound rules and methods of improving or facilitating design, that all efforts raise the condition of art must be primarily directed. Proper appreciation is, indeed, within the reach of most men; but power of design, or to be an artist, can never be taught by rules or methods, and rules and methods are all unavailing, excepting in the hands of the true artist, who gives himself up to his work with life-long labour and devotion. But let us not rest content with the mere external or superficial view which will satisfy many. Let us, each select before us, not passing over apparently trivial minutiae, but reaching them to some tangible shape and position in taking in the subject as a whole; and let us all labour as though we really and truly did appreciate the supremacy of mind over matter, and of the discriminating taste, when refined and educated by cultivation, over mere natural instinct.

#### ELECTRO-TELEGRAPHIC PROGRESS.

A new telegraphic company has been established for the purpose of supplying communications between various parts of the metropolis. Already there have been opened thirty stations, the central one in Thredneedle-street, and nearly 100 other stations, including the various railway termini, are shortly to be opened. The tariff of charges (delivery inclusive) is 4d. for ten words; message and reply, 6d.; message of twenty words, 6d. Messages can be sent from the district stations to and from every telegraph station included in the international telegraphic communion. It is to be hoped the fourpenny telegram is destined to initiate a new system, not restricted within merely metropolitan limits. Why should there not even be a uniform charge of 4d., like the penny postage system, over all the country, if not a rival penny system itself, as the *Western Morning News* has recently urged? As this paper justly remarks,—“No invention offers such great facilities at a small cost as the electric telegraph. The erection of the wires and batteries requires but a small outlay; and, when the communication is complete, messages can be transmitted from one end of the line to the other, at the rate of fifty words per

minute. The cost of working the telegraph in the Grand Trunk Railway of Canada, for the last twelve months, was less than 1,500l., and the number of messages transmitted during that time was over three and a half millions. The expense was, therefore, less than one farthing per message; yet, while messages can be conveyed as cheaply as letters, we are called upon to pay twenty to fifty times as much for the former as for the latter.”

The Liverpool Dock Board have resolved, it appears, to give the marine telegraph system of Mr. Lindsay, of Dundee (without crossing wires), a trial across the Mersey, in consequence of the breakage of the wires of the line already laid. A suggestion made to them by a Mr. T. Craig, of Douglas, Isle of Man, to suspend the wires from lofty poles, instead of sinking them to be dragged and broken by anchors, was laughed at by some of the members present; but, as the *Engineer* points out, there was little to laugh at in such a suggestion, considering that “in Paris five or six wires are suspended, with a very moderate deflection, at a distance of nearly half-a-mile, from the residence of the Minister of Marine to the Tuilleries; at Kowloon, in Russia, the telegraph wires have a clear span of 1,700 feet across the Niemann; in the United States, a telegraph wire is carried, in two spans of 2,400 and 3,750 feet respectively, across the Ohio river, at Paducah; whilst between Turin and Genoa there is one span of three-quarters of a mile (or about that required for crossing the Mersey), between the summits of two ridges of the Hochstaeth chain.”

The Mediterranean Telegraph Company have adopted the report of their directors, which states that the idea of repairing the line from Malta to Cagliari has been abandoned, but that the Malta end of the cable had been taken to Marsala, thus forming a second line to Sicily, in case of any accident happening to the other wires. The report also states that the Government have agreed to divide their guarantee into two parts, so that, should the line between Malta and Corfu, or that between Malta and the Continent, be out of order, one-half of the guarantee will still be received on the half in working order.

#### STREET TRAMWAYS FOR HORSE OMBIBUSES, &c.

For many years, as a very cursory reference to our columns will show, we have advocated the importance and advantages of street tramways, especially in the metropolis, where orderly procedure and smooth progression are so requisite and desirable. We are glad, therefore, to observe that there appears to be a prospect of a fair trial of the system in the City.

The expediency of laying tramways along the principal traffic routes having been frequently brought under the consideration of the Commissioners of Sewers, Mr. Haywood, their engineer and surveyor, was directed to report on the subject generally, but more particularly with reference to a proposal submitted by Mr. John B. Redman. Mr. Haywood has accordingly presented an able report, in the course of which he says that the great towns the advantages of tramways may be thus stated. First, the diminution of friction, the consequent facilitation of the draught of vehicles, and reduction of the strain of horses; secondly, the diminution of noise and vibration, and the increased comfort, both to travellers and inhabitants, consequent thereupon; thirdly, an increased duration of surface, the consequent diminution in the frequency of surface repairs, with the inconveniences attending reparations. In addition to the foregoing, they are very useful in streets having much pedestrian traffic, where the footway space is small; they prevent to a large extent the splashing from the wheels of vehicles; are always cleaner and drier than ordinary pavements; and are more readily kept clean by the scavengers. For many reasons, therefore, the adoption of tramways, where practicable, in large crowded cities is desirable.

Mr. Haywood thus concludes his report:—

“Under all circumstances, I beg to recommend that about from 1,200 to 1,500 feet of Mr. Redman's cast-iron tramway be laid experimentally in Fenchurch-street, or Leutenants-street, in single lines next the kerbs, those being placed where repairment must be made in the approaching spring, and where, from the severe nature of the traffic, the several heads of severity, duration, or cost, can be advantageously tested and studied. This loss, and I believe with positive gain, and information will be obtained which in no other body in the metropolis is so much interested in acquiring as your honourable commission.”

In America street tramways have for some years been in actual use, and their advantages are so highly appreciated that there is not the least

probability of a withdrawal of them. There are five lines in the city of New York. In 1858 they carried upwards of 27,000,000 of passengers, being an increase of 17 per cent. over 1856; and only twelve accidents occurred among 35,000,000 passengers in Brooklyn and New York together. The shares are at 40 premium, and paying dividends from 10 to 14 per cent. “So popular have the roads become,” says a recent letter from New York, “that daily applications are made to our authorities for new grants, in many cases filibustering on those laid down.” The growth of New York has been greatly aided by these facilities of travel. In the United States they are laid in New York, Brooklyn, Philadelphia, Boston, Cincinnati, and other cities, and all pay large dividends. Why should the metropolis, as well as Glasgow, Dublin, Manchester, Liverpool, and other great towns, be without them?

We may refer those of our readers who feel an interest on the subject to a pamphlet by Mr. G. P. Truin, just published, by Low, of 47, Ludgate-hill, in the form of a letter, addressed to the Right Hon. Milner Gibson, M.P., President of the Board of Trade, and titled “Observations on Horse Railways,” in which the American experience in such tramways is fully treated of.

The *Times*, in opposition to Mr. Grantley Berkeley's prejudiced view of this question, advocates the absolute necessity of some such system in London; but says that “the rail should be laid in the middle of the street, with stations at the chief crossings, while the lighter traffic, and all that had to stop in the intervals, would naturally take the side.” For omnibus tramways, however, the sides, next the pavements, would surely be the most fitting, while the common highway would best occupy the middle of the street between the two lines, at least in thoroughfares admitting of three distinct wheel ways, whether trammed or not. One line of tramway only, we may fear, be worse than useless, as meeting vehicles would perpetually obstruct each other, and better have two such lines without any untrammed way between them, than one line with two untrammed side-ways.

#### PROGRESS OF DOCK WALLS AT LIVERPOOL AND BIRKENHEAD.

Dock masonry is progressing at Liverpool and Birkenhead. The dock and river walls are, for the most part, rubble, or irregular masonry set in engine-ground hydraulic mortar. The walls are about one fourth mortar. At the several establishments, not much less than a hundred mortar-pans are at work, grinding with a power of some three hundred horses. If we take ten hours as a working-day, and each pan grinding one cubic yard per hour, this will give 1,000 cubic yards of mortar, or 4,000 cubic yards of masonry, per day; and taking 300 working days per year, gives 300,000 cubic yards of dock masonry per annum. The mortar is made from Alkin mountain lime, and costs, ground, about 10s. per cubic yard. The masonry set in the work costs, with all expenses, staving, &c., about 15s. per cubic yard. Dock and river walls are set to a slope of 3 inches to each foot vertical, or 4 to one on face; 6 feet thick at the coping; 12 feet thick at 30 feet depth and in like proportion for extra depth.

#### THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held at the house in Curditt-street, on Friday evening, the 3rd, Mr. J. W. Penfold, president, in the chair.

The minutes of the last meeting having been read and confirmed, Mr. Arthur Smith, of 15, Great Castle-street, Cavendish-square, was unanimously elected a member.

Mr. Druce then brought forward the resolution of which he had given notice at the meeting of the 6th of last month, that a class be formed for the purpose of learning and practising wood-carving and modelling, to be held at seven o'clock in the evening of the Class of Design. Mr. Druce explained that the only expense attending the matter would be payment of a skilled instructor, to meet which he would propose that a small subscription be raised among the members of the practical class. He should like to hear the opinions of the members on the subject before the proposition was laid before a general meeting. With regard to the actual expense to be entailed by its adoption, he had hoped to be supplied with full information, but was prevented in consequence of the illness of the gentleman from whom he expected to have obtained it.

Mr. Roger Smith seconded the resolution, ob-

serving that a practical knowledge of wood-carving and of modelling was extremely desirable for the proper discharge of their professional duties.

The Chairman, before putting the resolution to the meeting, stated that he was desirous that the studies in connection with the School of Design should be practical, and of a constructive nature. He approved of wood-carving as likely to conduce to that object, but he hoped that drawing and sketching, as now carried on, would not be interfered with.

The resolution was then put, and carried unanimously.

Mr. Blashill then read a paper "On the Application of Iron-work to Architecture."

At the conclusion, On the suggestion of the Chairman, the discussion was adjourned until the next night of meeting (Feb. 17), and the proceedings terminated with a vote of thanks to Mr. Blashill for his communication.

OXFORD ARCHITECTURAL SOCIETY.

The first meeting in Lent Term was held on February 1st; the Rev. the Master of University, in the chair.

The subject proposed for discussion was "The use of coloured materials in the construction of buildings." The President, after calling attention to the existence of alternate courses of stone in the vaulting of the cloisters of Westminster Abbey, proceeded to remark on the good effect produced by a variety of colour in constructional materials, whether brick or stone, provided there was not too great a display attempted. The use of colour in constructional materials had not, he thought, been sufficiently studied, as yet, to justify any very decided statements as to what rules should be observed in its employment; but he considered it important not to make too strong a contrast, nor to attempt too much brilliancy. He also called attention to the fact that great care should be taken that the materials should not be of so porous a nature as to lose their colour easily.

Mr. Parker advocated the use of coloured materials of construction, as being likely to improve greatly the effect of buildings; observing, at the same time, that red stone was much more liable to lose its colour than others, and hence that its effect was much sooner lost.

Mr. Buckridge objected to the restricting of architects in their choice of materials. He observed that coloured materials must be used in courses, and hence that they must frequently be employed to form horizontal lines, which he maintained were not inconsistent with the principles of Gothic architecture.

The President, in conclusion, called the attention of the meeting to a church now building at Highbridge, near Bristol, and stated that, in his opinion, we had yet to feel our way in reference to this subject, and that experience would eventually decide much that was now uncertain as to the most advantageous manner of employing coloured materials.

NORTHERN ARCHITECTURAL ASSOCIATION.

COMPETITION, BISHOP AUCKLAND.

A MEETING of the Committee of this Association was held on the 8th instant, when resolutions were unanimously come to, in reference to an advertisement issued by the directors of the Bishop Auckland Town Hall and Market Company, for the best plan for a Town Hall and Market, to cost 3,500*l.* for which a premium of 20*l.* would be given; the directors, however, not binding themselves to employ the architect of the prize design; and also reserving to themselves the right of purchasing any unsuccessful design for the sum of 5*l.* if not objected to before February the 11th.

It appeared that Bishop Auckland Town Hall and Market Company had returned no reply to the communications addressed to them by the secretary of the Association on the subject.

The following are the resolutions:— "This Association begs to submit that the premium offered of 20*l.* is not a sufficient reimbursement for the services rendered in preparing the required design, unless the architect of the successful design be employed to carry out the work on the usual terms. The Association wishes to draw the attention of the directors to the fact that a commission of 14 per cent. on the estimated outlay is the usually required charge for such drawings as are required by the directors.

The opinion of this Association, moreover, is, that services cannot be done to the building by any architect other than the author of such design. After what has been stated, as to the value of the drawings required, the Association does not consider it

necessary to dwell upon the utter inadequacy of the offer of 5*l.* as a remuneration for the copyright of any unsuccessful design.

The Northern Architectural Association respectfully begs that the directors of the Bishop Auckland Town Hall and Market Company will take these resolutions into their consideration, in justice to their own constituents, and to the architectural profession.

- (Signed) JOHN DONSON, President.  
 " THOMAS ARSTY, Hon. Treasurer.  
 " THOMAS OLIVER, Hon. Secretary.  
 " J. E. WATSON,  
 " M. GREENBER,  
 " F. R. N. HASWELL,  
 " A. M. DUNN, } Committee."

GRAVING DOCK, DUBLIN.

THE new graving dock for some time in progress of construction at the North Wall Point, Dublin, has been opened. It will accommodate the largest vessels that can enter Dublin, and is at the north-east side of Halpin's Pool. The dock is 400 feet in length, 80 feet wide at top, and 35 feet at bottom, with an entrance 70 feet wide. An engine, 40 horse-power, and constructed by Easton & Amos, of London, with an Appold's centrifugal pump, are used for the emptying of the dock when the gates are closed. Mr. Dargan was contractor for the masonry, which is granite, and Messrs. Wilde & Mallet constructed the gates, which are on a cellular principle, patented by them. Various buildings are in connection with the dock, viz., engine-houses, workshops, timber-steaming apparatus, &c., &c. The first vessel admitted into the dock was the *Agnes Anderson*, 200 feet in length, and the property of Messrs. Martin & Sons. It is in contemplation to construct a basin, 1,100 feet in length, close by, and to prolong the present quay considerably beyond the lighthouse.

DINNER OF THE BUILDERS' SOCIETY.

THE twenty-sixth anniversary of this society was celebrated on the 9th instant, at the Freemasons' Tavern, Great Queen-street, Mr. James C. Lawrence in the chair, and was attended more numerously than usual in consequence of recent proceedings, above sixty sitting down. Amongst them were Mr. Henry Lee, Mr. Thomas Piper, Mr. Charles Lucas, Mr. George Mair, architect, Mr. Dunmore, G. of Bird, Mr. James Bird, Mr. Myers, Mr. Plucknett, Mr. Watts, Mr. Hill, Alderman Lawrence, &c.

Mr. Lawrence discharged the duties of his office very ably. In proposing "The Society," he said it had served to turn ruinous rivalry into honourable competition. He dwelt on the importance of maintaining a high standard of character, and hoped every builder would entitle himself to be spoken of as the carpenters were described on the walls of one of the old Halls of London, where it is said the money was not counted that was handed to the carpenters, because they were faithful to their engagements.

Alderman Cullitt was elected president for the ensuing year; and Mr. Lee, in replying for him and for himself, said the society was founded by seventeen builders, who being asked to tender on a specification they did not contain the arbitration clause, had all declined, and this was still the rule of members of the society. Mr. Plucknett replied for the vice-presidents; and Mr. Thomas Piper, as honorary secretary, made, as usual, a very good speech.

A song by Mr. Cole, let us say, in passing, combining feeling with humour, was much more satisfactory than the music of the professionals engaged.

FEMALE SCHOOL OF ART, GOWER STREET.

A MEETING has been held to prevent if possible the dismemberment of this school. It was attended by about a dozen gentlemen, who at its conclusion formed themselves into a Provisional Committee.

They first took into consideration the merit and value of the school, and unanimously resolved that there could be no doubt as to its importance and claim to continued support. Next came the question as to whether, with a fair start given to it, by the purchase of premises and other help, it could eventually become self-supporting, and this they also came to the conclusion would be the case after a certain time.

They then drew up a brief statement to be laid before the public, concluding with an appeal for funds to enable them to purchase premises, and establish the school on a firm self-supporting basis independent of the annual Government grants hitherto accorded.

We quite agree with the Committee, that the instructions given in this school are eminently

useful, and may be received and eventually turned to profit, without necessarily taking them out of their proper sphere. To throw away the ground won by many years of patient industry would be mortifying, if not foolish; and it is hoped that this appeal on behalf of a school hitherto so ably conducted, and so conveniently situated for the North and West of London, as well as the City, may be liberally responded to, not only by the residents in the immediate neighbourhood, but also by the inhabitants of the Metropolis at large.

STAINED GLASS.

Gloucester.—The restoration of the interior of the west end of the cathedral, according to the *Chronicle*, is now nearly completed, and the memorial brass to the late bishop has been erected. In order to carry out the restoration, the monument of Bishop Martin Benson, which stood on the north side of the doorway, has been removed.

Tettenhall (Staffordshire).—A window of stained glass, executed by Messrs. Hardman & Powell, has been placed at the west end of Tettenhall Church, by the family of the late Mr. William Ward, to the memory of their deceased parents. The subjects, eight in number, are, "Missions of Angels to the Earth." The tracery in the head of the window is filled with a choir of angels. Beneath is a brass plate, bearing the inscription.

Glasgow.—A committee has been appointed for the purpose of erecting a decorated window in the crypt of the cathedral, as a memorial of the late astronomer, Professor Nichol. The committee were empowered to collect subscriptions, which it was agreed to limit to 1*l.* each. Mr. James MacKenzie, of Auchenghlish, according to the *Glasgow Gazette*, has kindly consented to place the window adjoining his vault at the disposal of the friends of Professor Nichol.

PROVINCIAL NEWS.

Seer Green, near Beaconsfield (Bucks).—Schools have been completed at Seer Green from the designs of Mr. L. G. Butcher. The group consists of residence for mistress on the ground-floor, and bed-rooms on the first floor; a school-room 30 feet in length, 16 feet in width; by a height of 16 feet to the collar of the roof, at which level the roof is ceiled in, forming a chamber for the extraction of the vitiated air. The school-room is planned in accordance with the requirements of the Committee of Council on Education, to accommodate fifty children, having separate entrances for the boys and girls. Each of the entrances has an open-framed timber porch. The material of the buildings is brick, made in the neighbourhood, a few black bricks being introduced in the arches over the windows, and in a band running round the walls both of the school and residence. The roofs are covered with tiles, with bands of ornamental tiles introduced, and finished with a plain tile cresting. The funds were raised mainly by the Rev. H. Herbert, the incumbent of the district, aided by a grant of 144*l.* from the Council on Education. The works have been executed by Mr. Jessup, of Maidenhead, at a cost of 465*l.*, exclusive of fences and fittings.

Moccas (Herefordshire).—A rectory house has just been built here for the Rev. G. H. Cornwell. It consists of drawing-room, dining-room, library, and kitchen department, on the ground floor, with eight bedrooms on the first floor. It is built of red bricks, with stone bands. The joinery is varnished, neither painted nor stained. The principal rooms have fireplaces, lined with Poole tiles, and have dog grates. The building looks large from the high road, from being in the form of an L, set with corner towards the road. The total cost is 1,000*l.* Mr. George Truefit is the architect. Messrs. Evans are the builders.

Manchester.—The Manchester and Salford Banking Company have resolved to erect a new building, for which the plans have been prepared, and operations have been commenced for clearing the ground. The site selected is a central one, at the junction of Mosley-street and York-street. The frontage to Mosley-street is 112 feet, and the depth to Back Mosley-street is 80 feet. Mr. E. Walters, who designed the Free-trade Hall and many warehouses at Manchester, is the architect; and the style he has adopted is the Italian. The building will be of three stories; the lower stage being rusticated, and the windows resting upon some 9 feet of solid masonry, marked only by the simplest lines. The height from the ground to the top of the balustrade will be fully 86 feet. The entrance will be from Mosley-street; there being a broad entrance porch which will be carried

only to the height of the lines of the ground-floor. By a flight of steps, and an outer and an inner lobby, access will be gained to the banking room, which will be 84 feet long, 50 feet wide, and nearly 27 feet high. The floor and the ceiling will be fireproof; and there will be special arrangements for "the treasury." The building will be of Yorkshire stone.

**Liverpool.**—Messrs. Phillip & Son's new premises, South John street, are finished. The building is about 70 feet by 40 feet, and 60 feet in height, consisting of four stories above the ground, besides the basement, which is half its height above the street, and is intended for superior printing machinery. The front is built with patent pressed brick, and all the doors and windows finished with Welsh stone dressings. The entrance to the saloon is flanked with red Aberdeen granite columns. Messrs. J. W. & J. Hay are the architects; Messrs. Holme & Nicol the contractors for the brickwork and carpenter and joiner's work; Messrs. Parker & Son for the mason work; Mr. Holt for the plumbing, painting, and glazing; and Mr. Thomas Jones for the slater and plasterer's work.

**Hull.**—It is proposed to provide a public park at Hull, and the town council have appointed a committee to further the project.

#### THE "BUILDER'S" FIRE.

SOME time ago the *Builder* drew attention to a method of laying and lighting house-fires, known as "the *Builder's* fire." One part of the plan consists in closing the bottom of the grate with a plate of sheet-iron, and this alone will effect a considerable saving in coals. Have a piece of thin sheet iron cut to the form of the bottom of the grate, and make the fire above it: the sheet-iron prevents the ashes falling through, and produces a more equal combustion: it does not "dead" the fire, which will burn as brightly and as warmly, indeed warmer, than with open bottom bars. A saving of a fraction of the coal consumed in the metropolis, and a reduction of smoke, are desirable results. The *Builder's* fire will, most undoubtedly, accomplish these: the bottom plate alone will effect considerable saving. I have continued the plan at office and house for some three years, and, therefore, have had this length of experience. Dr. Farr, of the Registrar General's Office, Dr. Southwood Smith, Mr. Graham, of East-ledge, Enfield, and many others, have also adopted the plan, and are satisfied as to the benefit and saving. I only give these names, and my own, as guarantees of the facts stated. Amidst so much trade advertising, and puffing, a disinterested puff, this cold weather, to make the *Builder's* cheap and improved fires burn more extensively, may be allowable.

ROBERT RAWLINSON.

#### MONSIEUR MAZois AND PROFESSOR COCKERELL.

A FRESH edition of the elegant volume of Mazois, "Le Palais de Scarus," has just appeared. This important work, in the form of letters from a German prince, supposed to be residing at Rome, gives, most of our readers are aware, a description of a Roman palace in all the detail of its structural arrangements, embellishments, and furniture, and alludes with minute accuracy to the domestic manners and customs of the ancients, illustrated by numerous plans and views of the parts of a Roman house. This reprint is prefaced by a biographical notice of the author by Monsieur Vauclerc, enriched by original materials found among Mazois' papers. A letter to Monsieur de Clame, dated June, 1815, is of peculiar interest to us Englishmen, and will therefore not be unacceptable, we trust, to our readers, from the tribute it bears to the character of so eminent an architect as Professor Cockerell, when a young man abroad, on his studies, and the moral worth of both these eminent architects, realized in after-life.

"The storm [alluding to the expulsion of Murat and the return of the Bourbons to Naples], has just fallen upon Naples. It has struck down my protectors and dispersed my friends; but there still remain to me my courage, my intelligence, and my love for you. These are more than enough to surmount the new obstacles with which my onward way is so thickly beset. I have no money, which in truth renders my position very critical; and at the same time I am deprived of my pension and of my firmest supporters. Well, let us hope that Heaven will raise up others. Does it ever abandon those who, like me, only entertain legitimate hopes? In the meantime I must have assistance, and endeavour to procure me funds

without contracting new debts. There is but one means to effect that, which is to sell the little house which still is left to us. My work, the ultimate success of which is ensured to me, will be of greater good than this precarious possession. Besides, the least delay in the publication of my work may be productive of serious consequences.

There is a young English architect here, Robert Cockerell, who has just made a long journey in the East. After having traversed Asia Minor and Greece in every direction, he visited, with the zeal of a clever artist and well-educated man, Sicily, and the Kingdom of Naples, and has collected much valuable information. Having heard of the book in which I was engaged, he called upon me; and, finding that our tastes were congenial, we were drawn to each other, and soon became the best friends in the world. The intercourse with such men is not only very precious, but is also very advantageous, as you will see. Mr. Cockerell, with infinite kindness, has offered his services with respect to the introduction of my work into England on his return thither. In the meantime a happy opportunity has arisen, which enables him to render me a still greater benefit. His master, a rich and influential man, in London, as architect to the court, has written to him, saying, that, having formed the project to make drawings and measurements of the ruins of Pompeii, with a view to publication, he begs him to organize this work, and to accept the editorship. Ah! my good friends, what an unexpected blow was hanging over us! Cockerell, with all his loyalty and goodness, hastened to reply that the ruins of Pompeii, drawn, measured, and explained, with as much talent as care, had begun to be published two years before,—that it was matter for regret that England should not know of the work when France and Italy already appreciated its merits. Besides which he, of all men in the world, could take no part in a rival work, for he had too great an esteem and respect for the author; and, as disaster and ruin would be the consequence of the competition, it was only consistent with his honour frankly to state the truth, and to decline contributing to the proposed work.

For me the result has been doubly advantageous,—the abandonment of the English project, and the subscription of the English architect. So that, after this providential occurrence, and although I have 10 feet of water in the hold, I am not at all disposed to abandon the helm or the pump. I have all faith in the future.

MAZOIS."

#### THE WAR OFFICE AND CONTAGION.

Will you permit me to say a few brief words in reply to "X." I ask this favour, because one does not like to seem inaccurate or unjust; and Mr. Herbert is the very last man towards whom a sanitarian—as I presume, in a modest way, to call myself—could wish to be unjust or inappreciative; besides that, as it happens, I, and others of my cloth, owe him a special and heavy debt of gratitude. When I sent you the note on Camp Hospitals, the War Office circular was lying before me, so that I knew quite well what names were at the top and bottom of it, but I never dreamt of imputing any knowledge of it to General Peel or Mr. Herbert, any more than to the greater War Minister than either about whose time I was guessing. The term "Secretary for War" was seemed a convenient mode of saying from what office the order had proceeded. Besides, have we not heard something of a "Sanitary Councillor" who was to be responsible for these things?

"X." thinks that in strict grammar the second order annuls the first. But the War Department is, like the French king, *super grammaticum*, above grammar. If logic and Lindley Murray are against it, why, *tant pis* for logic and Lindley Murray. It never cancels an order. It only contradicts itself. On looking carefully into the matter, I fear that "X." is mistaken. "Contagious" and "epidemic" are not convertible terms. The first order provides for the fumigation of rooms (page 3) as well as of foul linen and bedding. The second speaks only of the latter. I suspect, therefore, that if, in any instance, "X." were to assert the common sense of the latter, and seek to ignore the antique absurdity of the former order, the War Department might say, with the lady in the "Merry Wives of Windsor,"—"Why, were best meddle with buck-washing."

The order being still in force then, let us pause for a moment and consider the extent of its meaning. Never, surely, has authority laid a ruder hand on opinion, since the Pope, one morning, commanded a hundred and fifty millions to believe

the dogma of the Immaculate Conception. For nearly seventy years, ever since the good ship "Hanky," Cox's, Master, sailed southward, he for the island of Balaña, the world has been fighting about the contagiousness or non-contagiousness of yellow fever. Such another angry controversy has never been known in socio-medical polemics. It has almost raised municipal war in some colonies, as at Gibraltar. It has estranged fast friends. It has made fat sinucures and has unmade them. It has made enthusiasts swallow black vomit, and sleep in beds in which men had just died of the disease. I myself have seen a letter from New Orleans advocating non-contagion, and written with the black vomit for ink, handed round to a hundred medical students, the writer thinking that he had thus proved his case. Ducks have been fought about it. It is said that in one tour of West Indian service, an impatient Irishman fought three duels about it, and killed his man in the last, without convicting anybody. One really fancied that Lord Shaftesbury's board (1832) had finally laid the ghost of yellow fever contagion, but, with a stroke of Sir Benjamin Hawes's pen, here it is alive and active again. Not boldly asserted, but gently implied by a conjunction, here is a formal resurrection of Dr. Chisholm and Sir William Pym. Sir Benjamin Hawes writes the little word *or* between "yellow fever" and "other contagious disease," and, forthwith, all the old discarded properties must be furnished up, and put on the stage again; all the obsolete absurdities must be revived: yellow flags, the *quarante jours* of "expurgation and infestation," tobacco-smoked letter-bags, meat steeped in vinegar, oilskin dresses, restricted commerce, broken hearts, and a cordon of sentries, to shoot even a rat if he tries to pass from one house to another. Look again at another result. I, for one, had read myself into a belief in the "localizing causes" theory. Need I say that since Waterloo-day, 1859, I have abandoned that foolish modern innovation, and have dutifully returned to "the wisdom of our ancestors."

Now, seeing that we have, just at present, a Secretary for War who is not only an enlightened sanitarian, but also a man of great and acknowledged taste, what I would like to say to Mr. Herbert, if I could approach him, is this—and I hope that "X." would agree with me.—If *we must* have the closed doors, the closed windows, and the stinking cauldron, let us also have something aesthetic,—the appropriate trio from Verdi's "Macbeth," for instance. Unluckily, so many "departments" are to be concerned in the process that the music would surely be out of all time. CWX.

#### THE RIGHT OF COUNTY SURVEYORS TO RETAIN THEIR DRAWINGS.

THE question on this subject between the county magistrates of Norfolk and Mr. Brown, their late surveyor, has been arranged. It will be remembered that the Court of Quarter Sessions held on the 5th of January refused to accept either of the offers made by Mr. Brown. The first proposition was moved by the Deputy, "To allow the clerk of the peace, or any of the persons appointed by them, to make, for the use of the present and future surveyor, copies or tracings of all the plans and specifications prepared by the late surveyor for the works executed under his superintendence as county surveyor, or to furnish copies upon being remunerated." Mr. Brown's other proposal was, "That the matter in dispute should be referred to two eminent metropolitan architects, with power to call in a barrister as umpire." And they finally determined to instruct the committee who had reported the matter to enforce their claim by legal proceedings if they could not effect an amicable arrangement. On the 11th of January, the clerk of the peace served Mr. Brown with a formal notice and demand for delivery of the plans, to which Mr. Brown's solicitor made the following reply.—"Sir: I have conferred with my client on the resolutions of the magistrates, together with the proceedings (as reported in the Norwich papers) of the court at which they were passed, and we see no reason for altering either our views or our position. The demand is, at least, an unusual one; and I find that no plans were delivered to my client when he entered on the duties of his office. I need not repeat here his views and reasons, which have been already explained to you, except by stating that his claim to retain the plans in question is based on the broad ground that they are his own property, by the recognized usage of his profession, and the proper construction of the terms of his late engagement. I may observe that the opinions entertained by some of the magistrates

themselves, and the manner in which the question has been since taken up by the Royal Institute of British Architects, justify the course taken by my client;" and he concluded by again offering to submit the matter to arbitration on the terms previously offered, or to adopt the amendment moved by the Dean. On the 28th, the clerk of the peace, instructed by the Castle committee, consented to accept the proposition moved by the dean, and nearly unanimously rejected at the sessions. Arrangements have since been made to carry this into effect, and the drawings are being copied by Mr. Phipson, the present surveyor, Mr. Brown retaining the original plans, his property in which is thus admitted by the magistrates.

Books Received.

VARIORUM.

THE American "Annual of Scientific Discovery; or Year-Book of Facts in Science and Art," for 1860, edited by Mr. D. A. Wells, A.M. (Gould & Lincoln, Boston, U.S., and Trubner & Co., London), has been published. It appears to be as worthy of commendation as ever it was, and forms a very interesting volume, in which many of the facts of the year are treated of at considerable length. The whole is prefaced by some twenty pages of notes by the editor on the progress of science for the year 1859.—A pamphlet, titled, "The Invasion of England rendered impossible, by a simple and practical mode of defence," by a "Member of the Naval and Military Institution" (Hardwicke, Piccadilly), suggests that from Edinburgh, southwards, round the east coasts, and northwards, round the west coasts to Glasgow, all open beaches, mouths of rivers, sea-coast towns, &c., should be protected by long 32-pounder guns, 30 yards apart, the whole series comprising some 60,000 guns, costing, say, 6,000,000*l.*, and to be manned, and sand-bag batteries thrown up in time of war, by coast-guard gunners, aided by crews invited from the respective neighbourhoods, under certain pecuniary and other regulations. The pamphlet also contains an interesting account of eight attempts at invasion. The author is of opinion that the object to be mainly kept in view is to prevent a hostile landing, rather than to provide armaments against invaders already landed.—Mr. E. F. Merrill, C.E., has had published (by Wilson, Royal Exchange) "A Letter to Col. A. Cotton, upon the introduction of Railways in India upon the English Plan," in which India stands greatly in need of a few thousand miles of railway; but the enormous cost of many English lines, it is to be hoped, will not be incurred in providing these.—Among other books received we may here note "A Manual of Interest and Annuities, including Fifty-four rates of Interest; the Value of Life Annuities, by the English Life-table; and Suggestions for the more equitable Assessment of the Income-tax," by E. E. Smyth (Routledge & Co.); and "Vacher's Parliamentary Companion," published monthly, during the session, at 29, Parliament-street, Westminster.

Miscellaneous.

"PRIVATE" COMMUNICATIONS.—We are requested to express Mr. Falkener's regret that the observations made by him in last week's *Builder* were printed in inadvertence, in consequence of his having omitted to mark them "private."

THE CRIMEAN MEMORIAL AT CHATHAM.—The excavations for the foundation of the Crimean memorial to the Royal Engineers, to be erected at the eastern entrance to Brompton Barracks, Chatham, have been commenced by Messrs. Mansfield & Son, the builders; but, in consequence of the character of the proposed structure, it is probable that six months will be occupied in its erection. The site selected by the Government is the piece of ground between the Hut Barracks and the Brompton Barracks. The architect is Mr. Digby Wyatt. The design, which have received the approval of the Government, include a large central arch between 20 and 30 feet in height, on each side of which will be a smaller arch, upwards of 12 feet in height and of proportionate width. The general form of the structure will be that of a parallelipedon, nearly 40 feet in height, 44 feet in width, and 10 feet in depth. The whole will be surmounted by an attic, with carvings in relief. It will be built from Portland stone, with white marble tablets and facings.

THE LOMAS-SQUARE NUISANCE AT CHATHAM.—We are glad to hear that the horrors of Lomas-square, Holborn-lane, Chatham, which the *Chatham News* lately dragged into light, are now in a fair way of being removed; the Local Board of Health and Watts's Charity Trustees having come to an understanding as to the nuisance, which the trustees have promised to abate by the erection of various conveniences and other means. At the expiry of the lease in 1861, moreover, the character of the property will be altogether changed.

ST. MARTIN-IN-THE-FIELDS LIBRARY FOR THE WORKING CLASSES.—The Rev. H. Mackenzie, vicar of the parish from 1848 to 1855, when he resigned, reappeared among his former parishioners on February 13th, and entertained them with a lecture on the subject of "The Young Chevalier and the Battle of Gulloden." The reverend gentleman was warmly received by his audience, and a cordial vote of thanks was passed to him at the conclusion of his interesting lecture.

CAMBRIDGE ARCHITECTURAL SOCIETY.—On February 9th, a meeting of the Cambridge Architectural Society was held at the Philosophical Society's rooms, when the Very Rev. the Dean of Ely made a communication concerning the lantern at Ely. He showed by a model the original construction by Alan de Walsingham, pointing out the alterations which it has undergone, so far as can be ascertained. He showed that it was originally a campanile, for there exist documents giving a detailed account of the bells. He explained the several questions which are being discussed concerning the present restoration. In conclusion, he stated that they are still in want of funds for carrying this out. They have under 3,500*l.*, whereas the sum required is 5,000*l.* They intend to commence work in the spring.

GAS.—At a meeting of the Ware Gas Consumers' Company, recently held, it was resolved that 3,500*l.* should be offered to Mr. Holcombe for the present works. He has refused to accept this sum, and has since sold the works to a company in London for 4,000*l.* It is not unlikely, it is said, that the Local Consumers' Company will establish independent works.—The Worcester Gas Company have declared a dividend at the rate of 7 per cent. per annum.—A correspondent of the *Bradford Observer*, asks "How is it that while in Huddersfield the price of gas is 3s. 6d. per thousand feet, and at Saltaire the same price is charged, we in Bradford should be charged 4s. per thousand?" and adds: "It is high time that a Gas Consumers' Association were formed here, to take in hand the whole subject connected with gas supply, with a view to the reduction of the price charged under the present monopoly."—The convenience of a good steady light, it appears, has been obtained in some of the first-class carriages on the East Lancashire Railway, by the use of gas. The meter from which the gas is supplied is contained in the guard's van. It is conveyed to the roofs of the carriages and through the usual lamp holes. There is one light in each carriage, which is sufficient to illuminate the compartment thoroughly, so that the smallest print can be read. The taps are on the roof. The junction between the carriages is effected by means of a flexible tube, with a little slack.

DISEASES.—Is it not living in a continual mistake to look upon diseases, as we do now, as separate entities, which *must* exist, like cats and dogs; instead of looking upon them as conditions, like a dirty and a clean condition, and just as much under our own control; or rather as the reactions of kindly nature against the conditions in which we have placed ourselves? I was brought up, both by scientific men and ignorant women, distinctly to believe that small-pox, for instance, was a thing of which there was once a first specimen in the world, which went on propagating itself, in a perpetual chain of descent, just as much as that there was a first dog (or a first pair of dogs), and that small-pox would not begin itself any more than a new dog would begin without there having been a parent dog. Since then I have seen with my eyes and smelt with my nose small-pox growing up in first specimens, either in close rooms or in over-crowded wards, where it could not by any possibility have been "caught," but must have begun. Nay, more, I have seen diseases begin, grow up, and pass into one another. Now, dogs do not pass into cats. I have seen, for instance, with a little over-crowding, continued fever grow up; and with a little more, typhoid fever; and with a little more, typhus, and all in the same ward or but. Would it not be far better, truer, and more practical, if we looked upon disease in this light? For diseases, as all experience shows, are adjectives, not noun substantives.—*Notes on Nursing, by Florence Nightingale.*

EASTBOURNE DRAINAGE COMPETITION.—The local Board of Health for this town some time since advertised for plans for the drainage of the neighbourhood, to include Eastbourne, South-street, and the sea-side houses. There were fourteen competitors; and the board, at their meeting on Monday last, awarded the premium of 50*l.* to Messrs. Morpew & Green. It appears that the Duke of Devonshire has thrown open a quantity of land for building purposes, which will render a system of drainage absolutely necessary.

"TRAVELLERS' RESTS."—Dr. Kendrick, of Warrington, who has erected a number of "Travellers' Rests" on the highways in that locality, has published an engraving in the *Harrington Guardian*, exhibiting the form and size of these public conveniences, as an inducement to others to do likewise. The "rest" is of stone, slightly rounded on the upper surface to throw off the rain. The dimensions are 5 feet 3 inches long, 22 inches wide, and 16 inches high; and at each end of the centre of the seat, and forming part of it, is one 10 inches high for children, and which likewise forms a convenient footstool for a mother with a child at her breast. The lowness of the seat enables the occupant to bend the body forward, and to rest the elbows upon the knees.

THE DRINKING FOUNTAIN MOVEMENT.—At Yarmouth the fountain presented by the late mayor, Mr. R. Steward, to the town, and placed on the north side of the Town-hall, has just been completed. The water flows from a piece of rough unpolished rock into a red granite basin.—At the Edinburgh Council last week, a communication was read from Professor Balfour as to the erection of a drinking fountain in the quadrangle of the college, which Councillor Hope proposed to be erected at his sole expense. The matter was remitted to the college committee, with powers.—A drinking fountain is to be erected in Elgin, at the west end of the Plainstones, on the High-street. It is to be of cast iron, with four taps and ladles, a trough for horses, a basin for dogs, and is to have a gas-lamp on top. The council have given their sanction to the erection.

THE ELECTRIC LIGHT: APPLICATION TO SURGERY.—One of the greatest obstacles to the success of a surgical operation is the scanty and imperfect light which, in some cases, is the surgeon's only guide, and is fraught with danger to the patient. Thus, the extirpation of a naso-pharyngeal polypus is almost performed in absolute darkness, it being impossible to bring a common light near enough to the patient without scorching him. The problem, therefore, of finding a light which might be introduced into a cavity with impunity, remained still to be solved; and from a communication to the Academy of Sciences at Paris, by MM. Th. Dumonceau, Fossagrives, and Rulnikoff, it would appear that this desirable object has at length been attained by means of the electric light. A glass tube, having a very small bore, is bent into the form of a bell or screw, and by this means a kind of luminous cylinder is formed, which is sufficiently small to be conveniently introduced even into a narrow cavity. The apparatus has been successfully tried in various dental and other operations.

THE PROPOSED FINE ARTS GALLERY FOR MANCHESTER.—We have already mentioned the scheme proposed by Mr. Thomas Fairbairn, for the foundation here of a permanent and free art gallery and museum on a grand scale. In the letter which he addressed to the local papers, Mr. Fairbairn proposes to erect, in a convenient and central situation, a palace, to be devoted to the arts, at a cost of not less than 100,000*l.* Under one roof he would collect, not only what the city already possesses in its various museums and art institutions, but would construct "rooms or saloons, with a floor area of 3,000 square yards, which would give ample space for the proper arrangement of the largest collections of pictures and drawings of the ancient and modern schools, and would permit, also, if desired, a chronological arrangement of the works of the several masters. In addition there should be corridors for works in sculpture, both original marbles and copies of the famous statues and groups which adorn the various capitals and cities of Europe. It might further be found exceedingly advantageous and interesting to devote one extensive hall to the portraiture of Lancashire worthies and local benefactors,—a hall of fame, where aspiring youth might muse upon the features of the mighty dead, where one could claim a kind of acquaintance with the men whose genius and inventions had not only created industries, but built up empires; and with the illustrious men and women who, as authors or artists, philosophers or philanthropists, had shed a lustre upon the places of their birth."

**WASTE IN BRICKMAKING.**—Mr. C. E. Bernard was summoned before the Cardiff Police Court, by James Stockbridge, for refusing to pay him two days' wages. Stockbridge said he was a brick-maker, and engaged by Mr. Bernard last spring at 5s. 6d. per day. On the 17th of December he left work and was paid up to the 15th. He summoned Mr. Bernard for 11s. due to him for the two days. He was engaged by the day. Mr. Bernard said he had an account from plaintiff of bricks on the ground, burnt, unburnt, and waste: in order to check it, he sent a person to measure them, and he made the number 23,000 less. The bricks on the ground, of all descriptions, and those sold, ought to tally with those made and paid for. He had paid for 200,000 which were deficient on the year.—*Plaintiff:* There was a frost last spring which spoiled 30,000. I have not charged for a brick that is not made. You promised to make me a handsome present: have you done so? No; but you sack me in the middle of winter.—*Mr. W. H. Hawkins,* in the employ of defendant, said he measured the bricks, and made them 23,083 less than plaintiff. There was a number of bats measured. Case dismissed. Plaintiff said he should apply to the County Court.

**EXCLUSION OF DAMP FROM BRICKWORK.**—As we are continually asked to state some mode of preventing moisture from penetrating through the surface of brickwork, we may here, in reply to "A Constant Reader," restate one method which has been already more than once described in our columns; at the same time not committing ourselves to any inference or assertion as to its being the best, or even an effectual process. It is said, then, that the evil alluded to may be obviated by the following simple remedy:—Three quarters of a pound of mottled soap are to be dissolved in one gallon of boiling water, and the hot solution spread steadily with a flat brush over the outer surface of the brickwork, taking care that it does not lather: this is to be allowed to dry for twenty-four hours, when a solution formed of a quarter of a pound of alum dissolved in two gallons of water is to be applied in a similar manner over the coating of soap. The operation should be performed in dry, settled weather. The soap and alum mutually decompose each other, and form an insoluble varnish which the rain is unable to penetrate, and this cause of dampness is thus said to be effectually removed. Another method was some time since described (as, by the way, the previous one was) at the Royal Institute of Architects. It consists of sulphurized oil as a varnish or paint, and is said to improve the colour of brick and stone, as well as preserve them. It is prepared by subjecting eight parts of linseed oil and one part of sulphur to a temperature of 275 degrees in an iron vessel. It is said to keep out both air and moisture, and prevent deposits of soot and dirt, when applied with a brush to the surface of a building of brick or stone, or even of woodwork.

**BAKESWELL HALL, LONDON, VULGARLY CALLED BLACKWELL HALL.**—This edifice has been employed for ages as a market for all broadcloths brought to London. *The City Press* says.—Its original name was Basing's Haugh, or Hall, from the family of Basing, who originally raised the fabric, and have given their name to Basinghall-street, and to Basing's Haug (corruptly Bassishaw), Ward. Basing's Haugh, in process of time, descended to a proprietor named Thomas Bakewell, in the thirty-sixth year of the reign of Edward III, and from him it took the name of Bakewell Hall. It afterwards fell to the Crown, and Richard II. sold it, with its garden and appurtenances, to the City, for 50*l*. The old hall, after having been rebuilt in 1558, was destroyed by the Great Fire, and again constructed, in its present form, in the year 1672. The building is square, with two courts, surrounded by warehouses, with two spacious entrances—one from Basinghall-street, the other from Guildhall-yard, which is the principal front. The door-case of this front is adorned with two columns of the Doric order, entablature, and pediment, in which are the king's arms, and underneath, the City arms, Cupids, and other ornaments. Within this building, which also has an entrance on the west side, from Catantou-street, there are divers apartments or warehouses, called by the names of the different cloths. They obtained the names of the Devonshire, the Gloucestershire, the Worcestershire, the Kentish, the Medley, the Spanish, and the Blauket halls, in which each piece of cloth pays one penny for pitching, and a halfpenny per week resting; by which means there arises a large annual revenue, which, by the generosity of the citizens, is applied to the support of Christ's Hospital, and the governors have the sole management of these warehouses.

**THE WESTMINSTER PALACE HOTEL.**—It is stated, and we believe, correctly, that Government has taken a portion of the great hotel near the Houses of Parliament for three years at 6,000*l*. per annum; and that about May the whole staff at the East-India House will be removed there. Further, that so soon as the records can be removed (probably by December), the whole property in Leadenhall-street will be sold.

**REMOVAL OF THE METROPOLITAN EVENING CLASSES FROM CROSBY HALL TO SUSSEX HALL.**—On Thursday, the 9th inst., the final lecture at Crosby Hall was given by the Rev. T. H. Dullock, the subject being "Wise Saws and Modern Instances." After a vote of thanks to the lecturer, the whole of the audience, headed by the two hon. secretaries, the Revs. Charles Mackenzie and Richard Whittington, accompanied by a few ladies, proceeded to Sussex Hall, and took possession of their new premises. Mr. Mackenzie was called to the chair, and a resolution was passed of confidence in those who had the management of the classes.

**STRIKES.**—For some time great dissatisfaction has prevailed among the nail makers of Sedgley, Cosely, Gornal, and neighbourhoods, at the reduction of remuneration for their work. On Saturday week every man refused to take any iron away from the warehouses, and the workmen have determined not to go to work until they get an advance of 6*l*. per cwt. The masters manifest a determination not to yield to their wishes, and there is every probability that the strike will last for some time.—Eighty-seven of the Glasgow furnaces have been damped, owing to the demands of the miners for an advance. Neither masters nor miners appear to be inclined to give way, and it is considered probable that the furnaces will remain out of blast during this month at least.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—The usual fortnightly meeting of this society was held on Wednesday night, the 7th inst. in the Royal Institution. Mr. Horner, the president, occupied the chair. Touching the memorial to the town council, adopted at the special meeting of the society, as to by-laws, Mr. John Hay proposed the formation of a committee of the society, to consider the new by-laws, and to report thereon to a subsequent meeting. Mr. Barry seconded the motion, and the following committee was named and agreed to.—Messrs. Horner, Barry, Pictou, Kilpin, Ellison, Hughes, Goodall, Hay, Sherlock, Waightman, Huggins, Gee, and Stables. Mr. Barry then read the paper of the evening, upon the system of drainage now being carried out for the metropolis. The lecture was illustrated by a map and numerous diagrams.

**NINEVEH.**—At a recent meeting of the Asiatic Society, Lord Strangford read a translation of an inscription of Sennacherib, found on a clay cylinder in the British Museum, which was printed by the Museum authorities. The translation was made by Mr. Fox Talbot. This inscription contains the annals of the two years commencing the reign of the monarch. In it he details the improvements effected by him in his capital of Nineveh. The building of a splendid palace is fully described; the re-establishment of the ancient canals for supplying the city with water, "for the health and comfort of the citizens," and the construction of such new works as were necessary for the same purpose; also the widening of streets and squares, the erection of gates and other embellishments, until the city became "as brilliant as the sun." The inscription concludes by invoking blessings on the restorer of his palace when time shall have caused it to decay.

**MASTERS AND OPERATIVES.**—The bill brought in by Mr. Mackinnon, Mr. Ingham, and Mr. Slaney contains the following provisions:—Power to form councils of conciliation; powers to her Majesty or Secretary of State to issue councils of conciliation; councils to consist of not less than two masters and two workmen, or more than six masters and six workmen, and chairmen; petitioners for council to elect the first council; council to be elected for one year; householders and part occupiers may demand to be registered, and have a vote for the council, and may be elected thereto; register of voters to be kept; meetings of masters and workmen to elect the council; voting-papers to be delivered in case a poll is demanded; no voter to give a greater number of votes than the number to be elected; altering or effacing voting paper to be a misdemeanour; election to be declared within seven days of nomination; council to appoint the chairman; appointment of clerk; and penalties on referees, &c., for refusing or neglecting to attend cases of dispute.

TENDERS

For new warehouse, Wood-street, Silver-street, City. Mr. James Murray, of London and Coventry, architect:—

Longacre & Burge.....	£5,725 0 0
Hedges.....	5,164 0 0
Jackson & Shaw.....	4,905 0 0
Asby & Horner.....	4,712 0 0
J. & C. Hanson.....	4,679 0 0
Piper & Son.....	4,650 0 0
Lucas, Brothers.....	4,617 0 0
Brett.....	4,602 0 0
Jay.....	4,570 0 0
Myers.....	4,461 0 0

For the erection of a warehouse in Major-street, Manchester, for Messrs. Rhomer (Brothers), Messrs. Speckman and Charlesworth, architects. Quantities supplied by Mr. Thomas Taylor:—

Southern & Co.....	£4,720 0 0
Hay, Cochran, & Co.....	3,615 0 0
S. Bramall.....	4,599 0 0
Bowdon, Edwards, & Forsler (accepted).....	4,503 0 0

For gasholder tank, 100 feet in diameter, and fences, in Southth, near Dewsbury, Yorkshire, for the Dewsbury and Batley Gas Company. Mr. Michael Sheard, Jan., architect. Bailey:—

Whitworth & Topham.....	£2,560 12 0
J. Brooke & Co.....	1,870 18 3d
James Brier.....	1,652 0 0
George Simpson (accepted).....	1,563 0 0
Henry Smith.....	1,456 0 0

For alterations and repairs at the Lord Tyravet Tavern, High-street, Marylebone. Messrs. Finch Hill & Paraire, architects. Quantities supplied:—

Hill.....	£1,255 0 0
Turner & Sons.....	1,247 0 0
Elston & Son.....	1,221 0 0
Patrick & Sons.....	1,188 0 0
Brown.....	1,180 0 0
Selleck.....	1,036 0 0

For erecting new premises for Mr. William Royou, No. 33, Essex-street, City. Messrs. John Young & Son, Architects. Quantities furnished by Mr. Shoppee:—

Knight.....	£1,737 0 0
Mansfield & Son.....	1,560 0 0
Little & Son.....	1,527 0 0
Carter.....	1,489 0 0
Lawrence & Son.....	1,430 0 0
Conder.....	1,410 0 0
Axford.....	1,372 0 0
Coleman.....	1,359 0 0
Hart.....	1,330 0 0

For the re-building of house situate in Great Tower-street, for the Corporation of the City of London. Mr. Bauning, architect. Quantities supplied by Mr. Meakin:—

	Amount for the Re-building.	Separate amount for the Molety of East Party-Wall.
McClumont.....	£1,850	£23 0
Garnon.....	1,849	27 10
Jay.....	1,643	27 10
Piper & Son.....	1,621	25 0
Nutt.....	1,630	34 10
Browne & Robinson.....	1,592	31 0
Sewell.....	1,591	34 0
Axford.....	1,515	29 0
Westcott (accepted).....	1,497	40 0

For the supply of glazed stoneware pipes and other articles, and also for the excavation and laying of the main sewers, and the formation and construction of the several streets and passages in the Balfour Estate, for the Burslem and Turstal Freehold Land Society. Mr. Ralph Hailes, engineer:—

Downes & Mc Dougal.....	£280 4 0
Lockett & Pearce.....	812 0 0
Tomlinson & Hargup.....	730 0 0
James Frayne.....	679 0 0
Jos. Smith (accepted).....	615 0 0

For alterations to the Crown and Anchor Tavern, Woolwich, for Messrs. Reid:—

Pritchard.....	£216 0 0
Patman & Potheringham.....	770 0 0
Wagstaff & Son.....	775 0 0
Elston.....	749 0 0

For erecting stabling, &c., for Cranmer Villas, West-end, Aidersholt. Mr. C. Marshall, architect

All materials except bricks:—

Suelling.....	£297 0 0
Goddard.....	260 0 0
F. Birch.....	264 0 0
W. Duke.....	258 13 0

TO CORRESPONDENTS.

J. D.—J. T. C.—J. P.—J. E.—Rev. C. M.—O. J. S.—Ar. P.—E. S.—G. E.—R. G.—Dr. R. (we intend giving particulars; perhaps a view). T. W.—J. F.—E. L. (shall have attention). W. M.—H. G.—W. P.—K. J. S.—Sub (there is no restriction).—E. R.—Shells.—Mrs. S.

**NOTICE.**—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

# The Builder.

VOL. XVIII.—No. 890.

The New Marine Infirmary: Woolwich.



We are now able to respond to an appeal which was made to us some time since, for particulars of the new hospital at Woolwich. The carcass of the building is at present completed. The structure has been generally spoken of as an example of the "pavilion principle" of arrangement which was particularly referred to by us last year, when we were noticing the designs for the Ashton Infirmary, and the new building at Blackburn, and gave a plan of the hospital of Lariboisière, at Paris; and

which principle, as those interested in the subject are aware, had been explained, and illustrated (as by a plan of the hospital at Bordeaux), and prominently urged on previous occasions in the *Builder*, and contrasted with the arrangement of plan followed in the hospital at Netley. As the

building at Woolwich has several times, in Parliament or elsewhere, similarly been contrasted with the building at Netley, on the assumption that the former represents the principle spoken of, we shall be careful to explain in the course of this article, to what extent it does so represent it, and is therefore a step, as it is a considerable one, in improvement of hospitals; and what features of the principle (either form or portion of the design, or must be considered as impaired by what is the actual disposition of the particular structure.) By this course we shall best do justice to the merit of the work, and prevent any misconception of its exact value as an experiment or a precedent.

The new building occupies the site formerly that of the reservoir of the Kent Waterworks, not far from the dockyard, and close adjoining, on the north, the Marines Barracks. It is not sufficiently removed from populous districts to satisfy one of the demands, and that the most important of all, in hospitals regarded generally; but perhaps there are reasons, such as have been alluded to by a correspondent, which necessitate the selection for such hospitals, of sites contiguous to the other quarters of the military or naval service. The present building is for the marines; but may be used for invalid seamen on emergency. The site in question, however, has a considerable elevation; and fine prospects of the country and the river's course are obtained from the building, the roof of which has a promenade 14 feet in width, and about 400 feet in length, over the corridors. The soil is sand and gravel. The longitudinal axis of the building, or main corridor, runs north-east and south-west. From the windows of the wards, and indeed those of the corridors, the prospect is interfered with, through the particular arrangement of the ward-blocks, and on one side also by the barracks. The plan more resembles that of the Blackburn Infirmary, than that of other such buildings as the hospital of Lariboisière, where alone is fulfilled in its entirety the "pavilion principle;" though the arrangement, both at Woolwich and Blackburn, has the wards so far detached from one another, and in separate blocks, as is required in the condition of lighting by windows on two of their sides, and has the like system of lighting and ventilation to the corridor. In the hospital of Lariboisière, as we have been careful to point out, the blocks containing wards are to be regarded as separate buildings joined by a

covered way; in the infirmaries at Blackburn and Woolwich, on the other hand, the open arcade is replaced by a walled corridor, though one, as we have just said, otherwise well lighted and ventilated; and there is not as in the French examples, a staircase to each block; whilst at Blackburn there is not even a lobby intervening between the corridor and the ward, though one occurs in an equally important place, at the farther end of the ward, with advantages which we shall again advert to. The entire plan, whether at Woolwich or Blackburn, consists mainly of a long corridor with the ward-buildings at right angles at regular intervals. Here, however, unless in certain of the features of the separate wards, the parallel would end; and the advantages, except as to the lobby which in a perfect plan would separate the ward from the corridor, and number of the sick intended to be accommodated in a ward, must be said to be on the side of the building in Lancashire. The ward-blocks at Woolwich are not only much too close, but the wards themselves are in some important details of planning other than those we have named, and in their cubical capacity for the number of patients, much inferior to those at Blackburn. The contrast will be shown approximately, from the printer's diagram which we subjoin, of the form on the ground, of the building at Blackburn:—



compared with the form of that at Woolwich, which here follows:—



each figure indicating the plan as intended to be completed, in the corresponding case. The distance of blocks which are on the same side of the corridor, at Blackburn, is 65 feet, the short intermediate projection being here deemed not worthy of notice; whilst the distance of those at Woolwich is only 44 feet 5½ inches; or, in two cases, 45 feet 11 inches; that is to say, since the walls are upwards of 50 feet in height, not half what it should be, if we had the least foundation for saying last year, that the distance should be equal to double the height of walls. The distance at the hospital of Lariboisière, however, seems to be only about 65 feet, for buildings the same number of stories, three, in height. The defect in the light to the wards, at Woolwich, is increased by the omission of windows in two of the ordinary spaces for them, each side; and may be still greater by the existence of small intermediate pavilions, for staircases and lifts, two of these (indicated in the diagram above) only, being completed on the side of the corridor opposite to that on which ward-blocks are at present built. Both at Ashton and Blackburn, the fire-places are at the ends of the wards, instead of the sides; and if the intermediate lobby to the bath-room, scullery, and conveniences in those cases, at the further end of the wards, and the provision for a current of air through that lobby, so that ventilation can be maintained independently of the ward, be correct, the arrangement at Woolwich, wanting this provision, is not an advisable one.

The general disposition of the plan at Woolwich, together with some of the merits and the defects, being now understood, we proceed to give the dimensions, and to fill up the outline of the description. The extreme length of the building on the line of the corridor, or including a bow at one end, and the central feature of the front at the other, is 456 feet 8½ inches; and the width, or length of two opposite ward-blocks, finished,—measuring in, and transversely to, the corridor,—will be ultimately 182 feet 10 inches. The end buildings, one of which is that of the principal front, may be 4 or 6 feet longer. Each ward-block projects from the wall of the corridor about 83 feet.

Except the building which comprises the main front and its wings, and the correspond-

ing feature of the plan at the opposite end of the corridor, the transverse blocks (four) are built only on the north side of the corridor,—the four ward-blocks corresponding southward, and intermediate between the completed wings of the east and west ends, being left for future erection. The meritorious feature of the building is the disposition of the corridor with the ample width of 14 feet, and with windows opening down to the floor, having balconies.

The wards, as already noticed, are in three stories, the upper floors being reached by four large staircases, two next one end of the corridor, and two at the other; and by the two staircases at the south side, to which, when the wards southward are completed, it may be intended to add others north, in similar positions. In these smaller staircases, winders should have been omitted. The small pavilions containing these stairs and the lifts, are carried up slightly above the general height, to provide space for water-tanks,—which thus are two in number. Together the tanks would contain by our estimate, 4,540 gallons, a quantity which would not afford so much as seventeen gallons per patient per day; and although the forty gallons per patient, of lunatic asylums, may not be required, the sixteen or seventeen are manifestly insufficient for the purposes of an ordinary hospital—without considering the future enlargement in the present case. Some use might have been made of the rain-water before allowing it to flow into the drains. The main front, west, will be appropriated, as regards the ground-floor, to the dispensary in the north wing, and to the rooms for the surgeons, in the south, with the entrance-hall between; and the floors above will contain separate rooms for officers who are patients. A portico on the level of the two upper stories forms the centre of the front. The corresponding portion of the plan, at the east end, contains, in the north wing, wards for infectious cases; and in the south wing, on the ground-floor, rooms for the matron and for officers. There are officers' rooms also above in this wing. These two wings are separated by the chapel, over which is the operating-room, having a low-fronted projection and recess, 10 feet radius, glazed at the top for light to the operating-table. The infection wards are repeated in each of the stories; the wing being divided into rooms, 26 feet 6¾ inches, by 13 feet 10½ inches, in the clear of the brickwork; and others' 22 feet by 13 feet 2½ inches, opening from a corridor of 4 feet 8½ inches width,—a square compartment of the plan, at one of the angles, which is made a feature of the design externally, and has its counterpart at each of three similar positions in the building, being appropriated to a scullery on each floor and closets. It is no doubt after some consideration that these wards have been planned, not as a detached building, itself on the pavilion principle. The wing has its own staircase; and the only communication intended with the body of the building is by a single opening (with double doors) for the surgeon's use. It is true that the pavilion principle for hospitals does not recognize the need of separate buildings for fever cases; but the plan at Woolwich is, as we have shown, a departure to a certain extent therefrom; whilst, for fever cases at all events, as we approach, the full measure of the principle is required; and it will be noted that the plan of small rooms opening from a corridor, is that arrangement which it was the object in the general plan to avoid. The basement will be appropriated chiefly to the kitchen and offices; but we are told that wards may also be placed in that situation.

We proceed to notice the internal arrangement of the wards, some defects in which have already been adverted to. Each ward, exclusive of its adjuncts, measures 60 feet 2 inches by 24 feet 2 inches, in the clear of the brickwork, and is 15 feet 3 inches in height, except in the top story, which is 17 feet; and each ward is intended to accommodate fourteen patients. It will be seen that in the ordinary wards, the space per patient cannot amount to more than 1,583 cubic feet—a quantity below that which has been considered desirable, 2,000 feet, and also below what has been provided in the other cases we have named. This is not quite satis-

factory; but equally questionable is the deficiency of window-space. There are only three windows in each side wall. They have 4-foot openings, are 3 feet 6 inches from the floor, and the crown of the arch is about 2 feet 3 inches from the ceiling. The fireplaces in these external side-walls are not opposite one another; and the corresponding piers or breasts were at first intended to receive a hot-water heating apparatus, chases for pipes being left along the face of the wall. This proposal, however, may have been abandoned. The chimney openings are not of sufficient height from the floor. Ventilation has been provided for by the use of Jennings's patent "air-chamber smoke-flues" and "ventilating chimney blocks," the former of these being circular flues for the smoke, with cavities at the angles-as air-channels, and the latter hollow tubes to be built in as wishes. Difficulty was found in working these in, in some of the flues; and expense may have been incurred accordingly, but not greater than the object justifies. The ventilating flues are continued from valved apertures near the ceilings, and terminate in openings at the sides of the chimney-stacks. Like apparatus for ventilation is connected with the closets.

Between the hither end of the ward and the corridor are two rooms, separated by the lobby, each 15 feet 3 inches by 10 feet. One is a nurse's room, having an inspection window to the ward; and the other, at first designed for a scullery, is now intended for a separate sick-room. The fireplace in each case is beneath the window. At the other end of the ward there are a lavatory, a room which is part scullery and part bath-room, and two closets,—the lavatory being in the middle. The closets are to be fitted with Jennings's india-rubber valves.

The walls will, we believe, be finished in trowelled stucco, and the ceilings in plaster, and the floors boarded; but these parts of the work had to be completed at the time of our visit. There is nothing in the window-sashes different from ordinary double-hung sashes, with circular head, except that there is an inner segmental arch, behind the semi-circular one of the brickwork, to allow the lower sash to be pushed up when required to the full height. The floors are framed and laid on Fox and Barrett's principle of rolled-iron joists and concrete, throughout the wards and corridors, and most other portions of the building. Some of the narrow passages are arched, and the floors of the nurse's-room and sick-room next each ward, have half-brick arches and girders. The sleeper joists of the wooden flooring are supported on tiles at intervals on the concrete, so as to leave space for circulation of air. The officers' sick-rooms, in the wings of the end blocks, are the smallest of them about 13 feet square: they are arranged in each wing in which they occur, with a central passage. We should be glad to know whether this arrangement, which as in the fever wards, seems, even where there is but one patient in a room, open to objections that do not pertain to the plan of wards with opposite windows, has been decided upon as fitted for a model, or whether with some other features of the plan, it is the result of inadequate extent of ground.

The portion of the building at present in progress, as we should have said ere this, is intended to provide for 273 patients. Of these it will be perceived that only 168 patients could be accommodated under the more favourable circumstances in the ordinary wards, leaving 105 to be divided amongst single rooms attached to wards, the officers' quarters, and the infection wards. The outlay for this amount of accommodation, as we learn from the Navy Estimates presented the other day, will be probably 65,300*l.*, but inclusive of land, as well as of fittings, boundary-wall, and other items. The gas-fittings and mains, however, would add 750*l.* or more; and there may be some other amounts. The cost of the building, exclusive of moveable furniture, may be set down as about 50,000*l.* At a further cost of 18,000*l.*, making the cost of the entire plan 68,000*l.*, the south ward-blocks could be built, and accommodation provided for 180 more patients, making the whole number 453; whilst it is thought, in cases of emergency, the corridors

could be used (though this would be fatal to the principle), and the number would then be raised to 660 patients. The works were commenced upon the signing of the contract, which bears date September 14th, 1858; and the first portion of the building will be completed about September next.

The bricks used in the building are the Suffolk bricks, grey and red, the latter, with which the fronts are chiefly faced, being from Ballingdon. The stone is Bath. The terrace promenade of the roof is covered with asphalt, laid on the concrete. The contract is one for prices. "Conditions of contract" were drawn up, which set forth that each party tendering was to price the items of a schedule attached to the specification, he undertaking to proceed on acceptance of his tender, to enter into a bond if required, to furnish materials of the proper quality; to give due notice whenever work was about to be covered up, that the measurement might be taken; to incur a forfeiture of 20*l.* per week for delay, and to accept other duties and liabilities. Payments were to be made in the proportion of 900*l.* to each thousand pounds of work as done, or of materials delivered. By the specification, the contractor was to suspend work if called upon to do so, as in time of frost; to observe certain defined methods of execution of the brickwork, masonry, and slating, as that the sand should be sifted through a screen of approved gauge, the lime be kept under an enclosed shed, and no mortar be mixed more than sufficient for a day's consumption; that the slates should have not less than 3 inches lap; and that the iron-work should have the bearing surfaces accurately fitted by chipping and filing. In masons' work, the cube quantity of stone only, as found in the work, was to be measured and paid for, except that no deductions were to be made for sinkings and rebates. Labour on masonry was to be measured nett; and no stoppings, mitres to mouldings, or sinkings were to be allowed, and no extra hoisting. Half a bed only was to be allowed upon stones in connection with brickwork. There was little other matter of any kind in the specification and conditions; but the drawings were sufficiently explicit. The structure contains a large quantity of brickwork; nearly all the internal and cross partitions or walls are of this material, and these are seldom less than one brick and a half thick, and are often more. But lathed quarter-partitions, at the further end of the wards, are needlessly used, and objectionably so. A course of asphalt was laid in the walls to keep down damp.

The plan allows of a small portion of unoccupied ground at the north and west, where there is a retaining-wall next the roadway; and the gates and lodges are being treated decoratively in character with the building. The space unoccupied is, having regard to the site, a good feature of the design; and the same may be said of the terrace-promenade on the roof,—though, we apprehend, the chimneys should be raised to prevent annoyance from their smoke. Where ground is not wanting, the plan of the Blackburn Infirmary would be better, from capability of extension without detriment to previously erected ward-blocks, and from the central position of its offices.

In decorative character, the design has somewhat the same sort of detail as the back of the Admiralty, with the addition of the four small pavilions, at angles, with high curved lead-covered roofs, and the portico in the principal front. The portico is a tetrastyle Italian Ionic, between square piers or ante. It has a pediment, ranges with the two upper floors, and stands on a rusticated basement. The first-floor windows in the portico-recess have enriched console heads, and there are also three medallions charged with the emblems, the rose, the shamrock, and the thistle. The wings, in red brick, have rusticated plaster-like projections in the grey Suffolk brick. The windows of the corridor, both sides, have stone balustrades to the balconies.

The site and the dimensions, the portico and apse, and the tall roof coverings of the pavilions, cause the building to be a conspicuous, and, otherwise, a not ineffective object from the river and other points of view; but good pro-

portion of the stories and other main divisions of the design, and invention and study in the details, are, on nearer approach, somewhat wanting.

We cannot, however, agree with Lord Clarence Paget, in the applicability of certain phrases he used while referring to this structure, the other night, in the House of Commons, in the course of the generally able and excellent address which he delivered, on bringing forward the Navy Estimates. "Architectural magnificence" and "stately colonnades" are phrases not in any degree justified by the character or the details of the new Marine Infirmary at Woolwich. But it is a mistake on the part of men officially responsible for expenditure, to regard such an amount of decoration as there may be in this building, as useless, and to take pride in having elsewhere rejected "remarkably tasteful designs." Lord Clarence, and men of his stamp, may get a cheer from the House, but do not the less misunderstand what true economy is, what art can accomplish, and what the public mind desires; what is the positive duty of individuals and authorities having it in their power to block out a portion of the face of nature with that which may be an eyesore, or may, on the other hand, give a new interest to the scenery that remains; and, in fine, do not understand that, without bating one particle of the useful, the *use*, in any sense taken, requires also what is decorative, and that the beautiful, on its own account, is an end worthy to be sought, and presented to public view. Without speaking now in favour or disfavour of extraordinary embellishment, we take leave to repeat that architectural beauty requires not necessarily anything of the kind: the error, in expression of opinion, which is made, arises from misconception of what is ornament and what is purely structural; and we suggest, as a lesson very useful to the economically-minded members of the House of Commons, who are ever thinking of the sum total of the Palace at Westminster, that one of them should move for a return of that portion of an outlay, in the case of such a building as the Infirmary, to be set down to mouldings and enrichment; and, probably then there would be some surprise at the small per centage, or insignificant fraction of cost, that could be rightly held due to that "too much attention" to "architectural design" and "scope to taste" which, Lord Clarence Paget thinks, are compatible only with "magnificence," and must comprise "unnecessary expenditure." Probably then, works being confided to qualified hands, and the scope being given, we should have works of taste, in architecture, more worthy of admiration than those which official management has produced with all the aid of the money and the ornament.

We may add that the building at Woolwich was designed by Mr. Wm. Scamp, under the general supervision of Colonel Greene, Director of Architectural and Engineering Works to the Admiralty, and with the approval of the Medical Inspector of Hospitals,—Mr. John Haite being the Admiralty Clerk of the Works,—and that the builder was Mr. Wm. Higgs, of Lambeth.

#### ON THE SUPERINTENDENTS OF ENGLISH BUILDINGS IN THE MIDDLE AGES; WITH AN ESPECIAL REFERENCE TO WILLIAM OF WYKEHAM.\*

SINCE the time of Walpole and Dallaway, little has been done to compile any notice of the early practitioners of our art, or to ascertain who were really the persons entitled to the credit of designing the works erected during the Middle Ages. That credit, especially with respect to ecclesiastical buildings, is generally assigned to certain men of high rank in the Church,—while the claims of a body of working men, called Freemasons, to have devised and directed the operations necessary to the development of their employers' wishes, have also been put forward. Searching into the numerous printed as well as MS. authorities whence these respective deductions have been drawn, I have been induced to form a collection of notes

\* By Mr. Wyatt Papworth, architect. Read at the Royal Institute of British Architects, January 23rd, 1860.

which enable me to have the satisfaction of now bringing before you the first classified account of the official situations of persons upon buildings erected during the Middle Ages, with some general idea of their duties. Wherever practicable, I have chosen the words of the original document, or the apparently best translation; a course which has led me to discard some of the hitherto received quotations.

My observations will include the terms architect, ingeniator, supervisor, surveyor, overseer, the employment of William of Wykeham, his master mason, the master of the works, the keeper of the works, the keeper of the fabric, the director, the clerk of the works, and the devizer, reserving for some future occasion all notice of the master mason and of the Freemasons.

Of the term "architect," I find no use within the period to which I propose to limit my remarks. Walpole, in "Anecdotes," &c., 1762, recites a writ, dated 1199 (10th Richard I.), wherein one Elyns, ingeniator, was allowed ten marks by the Sheriffs of London and Middlesex for the repairs of the king's houses at Westminster. This word has been translated "engineer or architect," and Walpole stating that Elyns was certainly an architect, mentions this writ, with another, a few years later, as being the earliest evidences of art in our records. This memorandum is valuable as far as it goes; but it is the only one to which I shall refer in respect of that title, as we may be more inclined to translate the original term in the writ by the single word "engineer."

A term used several years after the Conquest was "supervisor," and this word has generally been translated "surveyor," or perhaps "overseer." The earliest mention of a surveyor or supervisor of the works (even the term "architect" has been applied in the translations), is in the case of the erection of a bridge at Hereford, between the years 1100 and 1135, when Aldun de Malverne is said to have held such an office. Passing some uncertain cases of the term, we are told that in 1349 Edward III. appointed John Peyntour to the office of Surveyor of the Works at Windsor Castle. I am inclined, however, to believe that if the original document were inspected, the word translated would prove to be "supervisor." I lay no stress on this point, because my endeavour is to show that "supervisor," although changed to "surveyor" in later times, never meant the surveyor of the present day. In the following year, Richard de Rocheley (or Richard de Rochelle) appears to have held the same office. He is also recorded to have held it once before. Subsequently, but in the same year, William de Hurlle and William de Herland also received the appointment. The following year, 1351, Robert de Bernham held the office; "and," as is recorded, "to the end that this great undertaking might be honestly and substantially performed, the king (Edward III.) assigned John Brocas, Oliver de Burden, and Thomas de Foxle, jointly and severally, with all care and diligence (at least once a month) to survey the workmen and their works, and to encourage such as did their duty competently well, until he should obtain ecclesiastical preferment." Bernham still held office in 1353; and it was on the 30th October, 1356, that William of Wykeham was appointed to the post of "supervisor of the king's works at the castle and in the park of Windsor," having the like powers with those surveyors first named; the payment was also the same as that enjoyed by his predecessors, namely, one shilling per day while resident at the works; two shillings a day while travelling; and three shillings per week for his clerk. The following year his salary was enlarged to two shillings per day, "until he should obtain ecclesiastical preferment." I have been thus particular in the remuneration, because the clerk of the works at the castle, a few years earlier, was paid, according to the authority I follow, "twopence" per day, but this is clearly a mistake for two shillings, the usual payment for the "clerics operationum regis." This difference would lead us to consider that the supervisor ranked lower than the clerk of the works. Moreover, it is recorded, that in 1358, William de Mulsho was appointed supervisor at the castle; where then was Wykeham? And again, on the 10th July, 1359, a writ testifies that Wykeham was "capitalem custodem et supervisorium castrorum regis," of Windsor, Ledes, Dover, Hatfield, and other places, which included something more than mere works in progress. In 1361, William de Mulsho was appointed clerk of the works; and in the following year, when Wykeham resigned his appointment, he was succeeded by Mulsho, who appears to have held the appointments of both clerk and supervisor until 1364, when Nicholas Dernard took the post of

"surveyor" (as he is called in the translation), for life; and in 1366, Adam de Hertynadon became clerk of the works in place of Mulsho. As these transactions may be regarded as genuine evidence, it is clear that the supervisor, if promotion and remuneration be taken into the account, was of inferior rank. I have also found a notice of this office as late as the time of James I., when Sir John Trevor is called "surveyor and receiver of his honour and castle of Windsor." For the present, however, I must quit Windsor, and see what information other records afford towards clearing up the point. The next in my list, after that of 1366, is dated 1370; in this, Thomas Staple, called the king's squire-at-arms, is granted a shilling a day for good service rendered; in the same year he is termed by the translator "surveyor," and also "overseer," of the works of the lord the king at Queenborough Castle. He had upwards of 153l. (about 1,850*l.* of our money) paid to him for the works then being executed or completed. Was he an architect? In the same year also, 1370, the prior of Rochester Cathedral was paid a somewhat larger sum for works at the castle in that city, while acting as "surveyor" or as "overseer." John Boyfield had been supervisor of the works under the two abbots of Gloucester preceding himself; he is one of the proofs of the supposed system of electing monks, acquainted with building and other operations, to the higher and responsible positions of prior and abbot.

Dated 1417 and 1422, are two orders, written in a mixture of old French and English, giving about the earliest uses of the word "surveyor;" thus, in the first of them is mentioned, "Notre aunc Esquier Robert Rodyngton, survoeur de la construction de nos Tourres a Portesmouth;" in the other, "une survoeure de les oveignes do devf, chastell et villes deing Northgales." But how shall we regard another order, dated 1417, in fairer English, requiring "sum gud, true, suffesaint mon, to be survour of vitel and werkes in North Wales?" This curious union of appointments appears again in 1338, when Edward III. made his clerk of the works at Perth, in Scotland, "receiver of the pennies and of victuals;" and in 1384, Richard II. made his chamberlain of Berwick the clerk of the works there, and also "keeper of the victuals and artillery;" in the same year he was also constituted the "chancellor and chamberlain." During the erection of King's College Chapel, at Cambridge, we find recorded, that in 1441, there was an overseer and manager; in 1451, a clerk of the works; 1479, an overseer; 1484, an overseer; 1513 to 1527, a surveyor, in the person of Thomas Larke, termed "Mr." in the first year, but "Clerke, Archdeacon of Norwiche," in the latter year. All Souls' College, at Oxford, was erected under the supervision or inspection first of John Dymell, 1377-82, and subsequently of Roger Keys, 1423-44. They kept the accounts which were in existence at the end of the last century. Roger Keys had previously (in the words of the grant) rendered such "acceptable and laudable services, and in many and divers ways renders, and will in future render to us, as well in our operations connected with the building of our Royal College of St. Mary of Eton, as in other respects,"—that the monarch, Henry VI., ennobled him by a grant of a coat of arms. He had acted as master of the works, an office to which I will refer hereafter; Robert Kente, William Lynde, and William Waryn were to be the overseers, William Lynde being also Clerk of the Works; and John Hampton, esquire, an attendant upon the king's person, being surveyor.

In 1461, to John Keudale was granted the office of "supervisor of all the king's works" throughout the realm. In 1474, Richard Beauchamp, Bishop of Salisbury, was "master and supervisor of the works at St. George's Chapel, Windsor," then being rebuilt; he was succeeded by Sir Reginald Bray with the same titles. The tower of Magdalen College, Oxford, was added in 1491-95, during which time Magister Gosmore had the supervision, which included keeping the accounts of it. To Jobu Aleock, successively Bishop of Rochester, Worcester, and Ely, and Lord Chancellor, many works in architecture have been attributed, probably because he held the office of comptroller of the Royal works and buildings under Henry VII., which monarch, in making John Islip, Abbot of Westminster, receiver of the money for his chapel at the Abbey there, gave him the supervisorship, and thus, chiefly, has Islip also had the title of architect attached to him.

So late as 1514 William Mavern, supervisor of the works at the Abbey of Gloucester, was elevated to the abbacy. In 1520 the king granted to Thomas Vachell the office of supervisor of all and singular the honours, castles, &c., which had be-

longed to the monastery of Reading and to the late priory of Leominster, for his life, and to receive out of the issues and profits of the same twenty marks annually (13*l.* 6*s.* 8*d.*). He is again called "supervisor or inspector." From this period the term surveyor becomes very common, and it shortly appears to be used in the modern sense of the word. Thus, James Nedsam, carpenter, was, in 1531, appointed carpenter to the king, and in 1539 or 1541 he is named surveyor-general of the king's works, and had the same salary as his successor, Lawrence Bradshaw, also carpenter, viz., 2*s.* per day, the payment, as I have before noticed, of the king's clerk of the works. There was a surveyor at the Tower of London, in 1542, at the same salary, which was increased forty years after by an augmentation of an allowance of 70*l.* for diet, and 25*l.* 13*s.* 4*d.* for riding charges and boat hire. As another use of the word "surveyor," we find in a late period (about 1510) that the endowment of St. Paul's Schools, London, was given to the Mercers' Company, to whom was intrusted its care, charge, rule, and governance; and they were to elect eleven persons annually, free of their company, as "surveyors of the scole." These persons were to receive the rents of the endowments, and to transact all affairs relating to them and to the school; to pay the different salaries quarterly; and when the annual accounts were audited, an assembly should be appointed, and "a littell dinner ordeyued by the surveyors not exceeding the price of four noles." These surveyors were to have 1*l.*s. each for their labour for one year, and the same sum if they rode to visit the estates. A similar sense of the word is to be found in a legal document of 1680, stating that Sir C. Wren, with the parson of the parish and another person, had been appointed "supervisors" of the building to be erected, and which had been designed by that architect. During the reigns of Elizabeth and of James I., the head of the Royal establishment of Works loses the title of "Clerk of the Works" (to be mentioned presently), and becomes "Surveyor and Paymaster;" and in 1628 "Mr. Jones" is surveyor alone. From that period we are well acquainted with the duties of that officer, as now understood. The duty of the Surveyor-General at the Tower of London, in 1756, was chiefly to inspect the stores and provisions of war; to see they were preserved with care; to allow bills of debt; to keep a check upon all labourers' and artificers' work; as well as to see that all provisions were good and serviceable, and that they were marked with the king's mark.

It is only occasionally that we find any mention of the duties of the supervisor. In the case, however, of Wykeham, the first patent, as recorded by Ashmole, states that he was empowered to impress all sorts of artificers, and to provide stone, timber, and all other materials and carriages. The second patent was an extension of his powers, as besides the appointment and disposition of all workmen, providing necessaries for reparations, he was to provide carpenters, masons, and other artificers, stone, timber, &c.; also to hold leet and other courts, pleas of trespass and misdemeanour, and to inquire of the king's liberties, rights, and all things appertaining thereto. Would not our word "steward" be a more appropriate interpretation of the word "supervisor," when used in the old records? In support of this view I would mention that Shakespeare, in his play of Henry VIII., act 1, sc. 2, gives the term "surveyor" to the Duke of Buckingham's steward of the household (as I read the passage),—thus recalling the old term "supervisor." And Shakespeare (to judge from Henry IV., 2nd part, act 1, sc. 3), may perhaps have understood the difference between such an officer and an architect or surveyor of buildings; but this last use of the term might be interpreted both ways.

There is one other employment of the term supervisor, and, as it is found in the words of Wykeham himself, the meaning is of great importance. In his will he directs that the works of the cathedral at Winchester are to be continued under the care of William Winford; of Simon Membury,\* now supervisor of the said work, and also paymaster, who is to be paymaster and supervisor during the continuance of the above-named work; and of John Wayte, the comptroller on the part of the convent. It will be observed that he does not state the exact position which Winford held or was to hold; but as I shall have again to refer to him, I will leave further remarks for that occasion.

Now, so far as we have pursued the inquiry, shall we not be rather inclined to deny that

\* Nunc dii iis operis supervisor non nec solutor, sit etiam solutor et supervisor in futuram, durante opere supradictio.

William of Wykeham is entitled to the name of "architect," in our sense of the word? Tradition, warping the meaning of early historians, has assigned to him wonderful powers of design in architecture. Is tradition always to be relied upon? Allan Cunningham, in his *Life of Wykeham*, states that "under whose auspices he attained his knowledge in architecture has not been told, nor have we any notice of any of his designs before his twenty-third year." We know how to estimate the real value of tradition in the case of Van Eyck, the reputed discoverer, in 1410, of oil painting (he was born just after Wykeham was made bishop, and he died about forty years after him); and also in the case of Sir Richard Whittington, four times Lord Mayor of London, who also flourished during the last years of Wykeham's life. Not only is the origin of the story of the cat placed about a century after its supposed master's death, but it has been discovered that the penniless Richard was the son of a riev man of title. Within the last few years, an enlightened French author has ascribed to the English of the traditional crime of roasting the Maid of Orleans, and shown that she lived a married life for years after the date assigned to the event; while recently, the sorrowful catastrophe of the interesting Amy Robsart has been reduced and vulgarised into a case of *felo de se*. The term "rising Wykeham's" must be, I think, retained for the benefit of young ecclesiastics, rather than of aspirants in our profession, unless, indeed, the time shall come when an architect may again be considered eligible for a bishopric, as some slight return for the usurpation of the title of architect by so many bishops.

It is said that it was partly Wykeham's knowledge of architecture which induced Edward III. to employ him. But examine the authorities, and there is nothing but tradition to support the argument. It was by the advice and persuasion of Wykeham (in 1359 says at least one author) that the king was induced to pull down a great part of the Castle of Windsor, and to rebuild it in a magnificent manner. But works there had been commenced by that king some ten years previously. Moreover, it is said, that it was at the suggestion of the kings of France and Scotland, who were prisoners together at Windsor, that Edward III. was induced to extend the Castle, and he did so at the expense of his captive advisers. Another support of my argument is this: Wykeham was made supervisor of the works in 1356. Mulsho took his place (apparently *pro tem*) in 1358, and Wykeham was appointed constable in 1359; the alterations proceeded slowly until 1363, 1364, 1365, and 1366, when the masons are highest. Now Wykeham resigned his appointment to Mulsho in 1362, the year before the heavy payments began, and at the time when Mulsho was acting as clerk of the works. The traditional account of the words "Hoc fecit Wykeham," attached to the walls of Winchester Tower, is put aside by some of his biographers; and Lowth commenting on his early life observes that all the particulars relating to his name, birth, parentage [education, and early employment], rest either upon tradition or upon accounts penned many years after his death; that is, at least, above fourscore years after the times of which they treat: we have nothing concerning him authenticated by contemporary evidence before the year 1352, when Bishop Elyngdon constituted him his attorney to take possession of certain lands; at that time he was twenty-eight years of age.

It may be in the recollection of many that even the chevron in the coat of arms adopted by Wykeham, was said to be commemorative of his architectural attainments, because the learned herald Upton has written that it was one of those bearings which were carried "per carpentarios et donorum factores," by carpenters and builders of houses. But another herald, equally learned, states that the chevron was usually taken by the head of a new house or family when arms were granted to him (the chevron or raftor being at the top of the house), and it was enlarged by one or two more chevrons, as the wealth of himself or of his heirs increased. The number of coats having chevrons amongst the ecclesiastics, presents a good elucidation of the fact, as well as the number appertaining to those to whom it has never been attempted to affix the title of architect or of carpenter.

In 1360, Wykeham had been appointed Dean of St. Martin's-le-Grand, and continued so until some time in 1363, having been busy "rebuilding the cloister of the Chapter-house and the body of the Church" in a very handsome manner and at a very great expense. He also held from 1361 to 1368 the co-wardenship of the forests on this side of Trent. Although so early as 1319 the king

had conferred the first benefice upon him, it appears that he could not take possession of the living, not being in orders; it was only in December, 1361, twelve years later, that he was admitted to the degree of an acolyte; it is therefore, most probable, that the king gave him the office of clerk of the works at Hereford and Yeshampstead, with that of supervisor in the same and in the following years, in order to afford him an income; indeed, this appears to be the true reason, from the patent of November, 1357, which doubled his salary until he could obtain ecclesiastical preferment. In all the patents of appointments granted to Wykeham he is styled "Clericus," hence many have presumed him then entitled to be considered a churchman. It was "a title addressed to academical students," says Walcott, one of his biographers; but this may be doubted, though it probably was applied to all educated persons, especially those who could write. Thus it is affirmed, that the word "Clericus, often affixed to the names of witnesses in an early period, does not always signify a clergyman, for this was expressed by persona, or if he was not benefited, by capellanus; clerics seems commonly the person who wrote the instrument." This is, however, rather a digression, but yet it was necessary to explain away the seeming force of the epithet.

From the often quoted year, 1361, Wykeham, however, was making rapid progress in the church, until he obtained, within the short period of six years, the bishopric of Winchester, on the 17th September, 1367. During these years, Queenborough Castle was erected (1631, and finished in seven years, as generally stated), and is traditionally ascribed to Wykeham as its designer; yet one author has named Henry Yevele as the supervisor of it. As such works would necessarily, in those days, entail the personal supervision of the designer, I cannot but be strongly of opinion that Wykeham's thoughts and presence were of more importance (to himself) elsewhere, and, therefore, that he did not act as architect at its erection. He is also said to have been the originator of the Perpendicular style of Medieval architecture, but as this assertion rests on the assumption of his having been an architect, the further consideration of this claim for Wykeham may be deferred to the time at which the origin of styles shall be settled. The college at Oxford, founded by Wykeham, was not commenced until the end of the year 1379, twelve years after Wykeham had been installed in the episcopal dignity; the college at Winchester was commenced eight years later still; and it was not until another seven years, namely 1394, that he decided to commence the reconstructions at Winchester cathedral; in 1403 he made his will,—a few months before his death in 1406. Now, supposing that he was the architect of these buildings, we must also suppose that he was a freemason, and acquainted with that important secret of design which we are all so anxious to rediscover; otherwise, much that has been maintained, as to the wonderful attainments of that band of skilful designers and workers, falls to the ground. But I cannot suppose that he was one of the craft. He has, too, the *quasi* honour of being twice mentioned in that very questionable list of grand-masters of the fraternity, under the dates of 1357 and of 1377; the first, the year after he had been appointed supervisor; the second, before he had commenced his colleges. But we yet require some evidence that any bishops were ever made acquainted with the secret; the contrary even might be judged to be the case, by those who have considered all that has been written respecting the celebrated statute of Henry VI., which was passed for putting down the assemblies of masons. We must not forget, either, the fate of a German bishop, who was killed by a master mason, because his son had been beguiled, or had unwittingly betrayed the secret to the bishop. I am of opinion that Wykeham was not one of those initiated in the masonic mysteries, and, consequently, in this light, could not have been the designer of his colleges. Who then was the talented person? This portion of the subject led me into a more extended field of research than I had at all anticipated, and the result is satisfactory only to a certain extent. It leads me, however, to believe that the master masons were generally the architects during the Medieval period in England. The steps of the inquiry will be best understood if explained upwards in this account. Wykeham, in his most carefully-drawn will, declares that "the disposition and ordination" whatever those words may truly mean, "of the works at the cathedral, he made by Master William Winford (I have mentioned his name before), and others sufficient, discreet, and approved persons in the art, as may be depicted

by any executors." But this is the first time Winford is mentioned by him, it may be said. Fortunately, he is almost the only exception I have found to a recurrence of a name; and, furthermore, his portrait exists. In the stained glass of the college at Winchester may be seen the representations of three personages: first, the carpenter, whose name unfortunately is lost to fame, unless it can be recovered from the books of accounts; the second, our already known Willielmus Wynfor, labtonius (or mason, a term to be explained on another occasion); and the third, Dns. Simon Membrury, who has not any office appended, but whom I need scarcely remind you, is also named in Wykeham's will as the supervisor and paymaster of the cathedral works. I conceived that in William Wynfor we thus obtain the architect of the college at Winchester, as well as of the works at Winchester Cathedral. Now for that at Oxford. This, however, is not so easy of proof; I must beg leave for a little conjecture. The college was commenced, as before stated, in 1379. In a roll of expenses of the 44th year of King Edward III., under the date of 22nd April, 1370, it is recorded that William do Wynneford, plasterer (as the original word is translated, which, no doubt, is eumentarius, or mason as it should be rendered), was sent to various parts to retain divers plasterers [Le. masons], to be sent over in the retinue of the late king beyond sea, by command of the chancellor. It is not a little in my favour that the chancellor of this period was William of Wykeham himself. This Winford then was a mason of some position; an equal with Yevele, who was employed for the same purpose, and we know he was a mason by his works at Westminster Hall. We may suppose him to have been about thirty years of age, or more, when entrusted with this command, so that at the end of thirty-three years, when mentioned in Wykeham's will, he would be at least sixty-three years of age, not too old to carry out the wishes of his patron. I should even venture to presume that both he and Yevele had been in the employ of the monarch at Windsor Castle; but as the records of the period, and especially the accounts of the castle are scarce, no other mention occurs of his name; this early date of his employment, however, permits me to conjecture that Wykeham, appreciating his excellence, might have employed him at New College, Oxford. Some further research into the fabric accounts of the buildings may elucidate this point; as no doubt the name of the master mason will be found recorded, as usual, in those documents. Lastly, as respects this part of my subject, a friend has reminded me of the observation made by Wicklife in one of his sermons, probably written between the years 1366 and that of his death in 1354, entitled, "Why poor Priests have no Benefices." It is only by inference, however, that the expression I used was applied to Wykeham, and considering all that I have brought forward, I am not disposed to believe that the epifits his head.

The "magister operum," or master of the works, was an important one in monastic establishments. At Crolynd, he was the first of six greater officers. It was the sacristan, or sometimes the treasurer, who held this post, and it was his duty to receive all the legacies and donations that were made for the support and ornament of the buildings and utensils; to his superintendence was submitted the construction, reparation, beautifying, and enlarging the churches and various buildings of the monastery, particularly those of the abbot below the court, except some houses near the garden. John of Wheatlamsted, Abbot of St. Albans, "who in architecture was the Wykeham of his time," is specially recorded to have instituted in his abbey a new officer called the master of the works. The sacristan was also sometimes the secretary, auditor, and chancellor of the convent, therefore necessarily a very important personage. With this extensive employment it is remarkable how few names of sacristians have come down to us. William Stove, of the Abbey of Evesham, erected about 1319 the new steeple or belfry. Paulinus, of Rochester Cathedral, built between 1125 and 1137 the church at Frenshurst, in the same county. In 1237 died Elias de Lidford, the sacristan of the Abbey of Gloucester, who rebuilt the tower and constructed the stalls of the

\* See Journal of the Archaeological Institute, Winchester Proceedings, 8vo., 1848.

† Lowth, in his "Life of Wykeham," edit. 1777, p. 195, states he employed William Winford as architect; Simon Membrury was appointed supervisor; and John Wayne, controller, &c.

‡ I have traced this application of the observation to Warton, who appears to have first used it in "History of English Poetry," first edit. 1774-81.



two illustrations on the contrary side of the question. I believe that the normal state of the atmosphere is the best, but I do not thereby admit that a large class of diseases attributed to foul air are really attributable to it. If we were to carry out that theory—if we lived in pure air we should live for ever, or die of pure old age, which I believe no man ever died of yet. It will be in the recollection of many gentlemen that in 1832, when the cholera ravaged Paris, there was a large manufactory at one of the *barrières*, at which all the waters of Paris were discharged. At that place there worked a thousand men, women, and children, and they were the only persons in Paris who were exempt from an attack of cholera. I might also go to the men who work in the sewers, and say that they have a strange immunity from those diseases attributed to foul smells. I believe that is undoubted. I should like to see some statistics as to the health of different classes of the community, with the men separated into classes of avocations. I think that would help us. But even that might be fallacious. The generalization of figures is fallacious. One word now as to malaria. I know that I have to run counter to a dogma that is extensively received at this moment. I only hope, indeed, that I shall not be ostracized for it in a leading article. With regard to malaria, does anybody know what it is at all? Dr. Parkin attributes it to volcanic origin. I am not quite sure that anybody knows what malaria is. That a peculiar condition of the atmosphere is the cause of specific illness there can be no doubt; but how that arises I believe nobody knows. As to the epidemics that have passed over the earth, it is very likely that they have died out through simple cosmical changes; and so it will be with regard to the cholera, not because we drain the Thames, but the disease has had its course under some fixed law. We have no more chance of controlling that than we have to fly. I will venture to address myself to the real question that we have under discussion, that is, as to the means of prevention by altering the standard of the houses. We know that we have little control in that respect. Unfortunately you are obliged to indulge the whims of your clients. With regard to epidemics, there is one point that medical men always ignore, and that is the empty stomach. Now, if the disease has power at all, it is, undoubtedly, on the empty stomach. In the next epidemic, take a thousand poor people out of London with 9s. or 10s. a week, a quarter of which is spent in gin; whitewash them, and then place them in one of the royal palaces, and there cholera, or the epidemic, or whatever it is, will appear. The reason is, that the empty stomach is the absorbent of the system; therefore the best remedy you can possibly have is to get a law passed by which every man shall have 1*l*. a week and plenty of butchers' meat. I am no advocate of dirt or filth, but I like to trim this subject in a perfectly practical way.

Mr. H. H. Burnell read an extract from Erasmus, to show that statements which are now made were made in his time.

The Chairman.—I must confess that I have heard with extreme pain, if I may use that word, the statements of the two able speakers who have appeared before us to night. I cannot see what possible good result can be looked for from them; but on the contrary, fear much evil. Both those gentlemen admit, as it seems to me, that bad air is bad, that bad drainage is most undesirable, and yet their ingenuity has been lavished in throwing discredit, as it seems to me—I hope I am mistaken—on those who are desiring to impress those facts on the public mind—to lead to that repeated state which Mr. Burnell very properly said can alone produce a remedy. As it seems to me, they are putting themselves in the way of the progress of those improvements which unquestionably have shown themselves in every town where sanitary measures have been applied as likely to produce an admirable result. We find that in one part of the country thirty persons in every thousand are dying annually, while in another only seventeen per thousand die; and surely these gentlemen cannot deny, with this and other facts staring them in the face, that some of this difference results from circumstances within the control of man, and that those circumstances being discovered, and proper remedies applied, we may hope to save some of those thirteen extra in every thousand who die every year. I have visited many parts of this and other towns, and have given long and painful attention to the subject. I have seen many a house where good health is impossible; where every person who lives in the house loses health. I once went into a house where, on the table, stood three coffins of three

children of one family. Well, it was shown to be as certain that those three children died because the foul drain had become stopped under the house, as that if you were to put your hand into the fire it would be burnt. The cause of the result was as distinctly shown as that heat comes from the fire. In that same family two other deaths under precisely the same circumstances had occurred some years before. It seems to me insulting your common sense to say to you—that if a man lives in a house where no ventilation is, or the ventilation is bad, his health will unquestionably suffer; that if the air he inhaled by foul gases from the sewers, his health will suffer; if his house be put down in swampy ground, undrained and uncovered, he will suffer. Then I do ask you, instead of throwing any obstacle in the way of medical men and others who would point out these evils, to aid them and honour them; for I do say that immense advantages must result from their labours. I know that there are one or two gentlemen who desire to speak, and I must content myself with a strong protest against the tendency of observations that have been made.

Mr. Edwin Nash paid a high compliment to Dr. Drnitt, and urged upon all architects to adopt the suggestion with regard to permeable pipes round dwellings.

Mr. J. W. Papworth said he agreed with Mr. Burnell, but Dr. Drnitt had, nevertheless, done great service in coming forward as he had done. Much of the fault complained of lay with the better classes. He surveyed a house not long ago, and, on going downstairs, he found a passage leading from the back-kitchen into the yard. Out of that passage was a kind of closet which had been made into a bedroom for two servants. The cement was tumbling off the walls, and the mistress said that was the general condition of the place; and yet for fifteen years the servants had slept in that place, and the mistress said they had always some complaint. In another house, he found that the butler slept under the stairs. One of the most active of our leading philanthropists had erected a school-room, but he positively refused to allow of proper ventilation; and yet he acknowledged that, after the children had been there a certain time, he always discovered a disagreeable odour. He then always sent in a chest of oranges, which he said got rid of it. The hon. gentleman concluded by moving a vote of thanks to Dr. Drnitt.

Mr. Ferrey seconded the proposition, which was unanimously carried.

Dr. Drnitt briefly replied to some of the observations made, and the meeting adjourned to the 5th of March.

Messrs. R. Barris, of Wollingham-place, Lambeth; H. H. Burnell, associate, of Bouverie-street; C. Ainslie, associate, of Old Jewry-chambers; and Louis G. Butcher, of Guildford-street, were elected fellows; and Mr. John Young, of Lincoln's-inn-fields, was elected associate.

At the previous meeting Messrs. E. A. Graving, of Grove-house, Highbury-grove; John W. Penfold, of Charlotte-row, Munition-house; E. R. Robson, of Adam-street, and Durham; and Herbert Winstanley, of Great Jaimes-street, Bedford-row, were elected associates.

#### CIVIL ARCHITECTURE.

ON Wednesday evening last, Mr. E. B. Denison, Q.C., delivered a lecture at the South Kensington Museum, on Civil Architecture.

The chair was taken by Mr. Eeresford-Hope, who introduced the learned gentleman as "a devoted student of architecture and expounder of Gothic art."

Mr. Denison commenced by observing that the title which he had selected for his lecture was quite clear to those who heard him. They had Greek architecture, and Gothic architecture, and architecture, and of the fine arts of Gothic, but not of Civil architecture as a style of architecture. They might likewise have heard of Secular architecture and of Ecclesiastical architecture, but not perhaps of that which he ventured to call Civil architecture. The term might, like some things, be logically or historically wrong, but he ventured to think that it was justifiable, and had a meaning. He apprehended that the short and intelligible definition of "style" meant a mode of ornamental building that flourished at a particular time in a particular place. Until a recent period the various styles of architecture were successive. There was the Grecian, the Roman, the Gothic, and so on; but since the fall of Gothic architecture in the fifteenth or sixteenth century,

what was commonly supposed to be a conflict of styles arose; though in reality there was no such conflict until a very recent time. Gothic architecture was supposed to have died out in the country. Then came the style of Sir Christopher Wren and of Inigo Jones, which is now called the Renaissance, or Classic, style. In early times there was no conflict of styles, although in the lapse of ages they might, so to speak, have once lapped each other; but still, distinct traces were preserved of the Norman, the pointed, and the English; there was no conflict. In the time of Wren there was no conflict, for Gothic was dead; Wren was too great a man and too profound a thinker to regard the Gothic with feelings other than those of respect, although his son, who might appropriately be termed the "Little Wren," subsequently spoke of it in a very different manner. The elder Wren instituted a style of his own, expanded the old classical models, and made up a style which was in a great measure his own, although he was not its founder, but merely its introducer—that style which was termed the "domed." While upon this subject he might remark that the dome which we were all most familiar—that of St. Paul's Cathedral—was not a dome, but a cone. Sir Christopher Wren was not only a great architect but a great mechanic and astronomer, and if he had not been famous as an architect, his name would have come down to posterity as a great mechanic. He built the dome of St. Paul's in the shape of a cone, and he was quite right; for, the only way to build a dome to carry a great weight upon it was not to build a dome at all, but a cone, tying the bottom, as Sir Christopher Wren did at St. Paul's, with a strong chain. This skillful treatment in respect to domes ought to be remembered in his credit. He was an inventor and expounder; he invented the Italian steeple, such as St. Bride's Church, Fleet-street, which, however, he (Mr. Denison) considered inferior to the Gothic steeple; but that was only a private opinion. Up to Sir Christopher Wren's time nothing was known in England, of copying styles, or of a conflict of styles. After him came men of little note—Vanbrugh and Chambers, of the former of whom a wit of his day had penned the epigram—

"Lie heavy on him, Earth, for he  
Laid many a heavy load on thee."

Chambers was immortalized in that particularly lively-looking building, Somerset-house, in which the architect intended to construct a model classical building, the windows of which were to be all large, and the corridors full of light! Leaping over another gap, we come to the end of the eighteenth century and beginning of the nineteenth, when there were no architects who would be long remembered in the annals of fame, although their works might stand for many centuries. This was the copying period—the Greek Temple style,—an era of nothing but copies, and many of them bad copies too. How often, for instance, the Parthenon had been copied, upon all scales and in all materials, be would not pretend to guess. This was the epoch in which the London churches began to spring up in the form of Greek temples. The portico of Marylebone church was a portico by Act of Parliament, and as such was entitled to be regarded with respect by all beholders. Then there was the Great Extinguisher church in Langham-place, with a round portico; the church of St. Mary, Bryanston-square, with a semicircular portico at the side (!); and the new church of St. Pancras, distinguished for the money which it cost, and for its close resemblance to some heathen temple, the name of which he had forgotten. St. Pancras was built on the model of a pagan temple; it cost 100,000*l*., and was to be remembered as a distinguished specimen of the church ecclesiastical style of the nineteenth century. But to thoroughly appreciate the utter badness of the copying style, it would be necessary to descend to modern times. In later times architecture seemed to have been set adrift. There was the Greek Temple style, the Wren style, and that of his followers and copyists. At that time no one had any idea that the Gothic style would be revived. At the beginning of the present century, for the first time in this country, there was no style of architecture, because there were so many styles. Gothic was supposed to have died out; the public had become tired of Greek temples; Wren had disappeared from the scene, and mankind were left to choose an architecture for themselves. Time was when the Gothic was spoken of in terms of disparagement, not by a prime minister who had set his face against it, but by a man of recognized authority and taste. In the latter part of the reigns of the Stuarts, the last Catholic kings who sat upon the English throne, Evelyn described Gothic art as "fantastic and licentious"—as ex-

hibiting "great industry in carving, but without heavy, dark, heavy, melancholy, and monkish." Then came the "Little Wren," who styled it, not indeed, "fantastic and licentious," but as "mountains of stone, not worthy of the name of architecture." Now, considering that the metropolitan cathedral occupied a larger area than any other building in the empire, a mountain of stone was about the last thing the son of Wren should have called a Gothic building. The dawn of the revival made its appearance in a shape bordering upon the ludicrous: Horace Walpole's house at Strawberry-hill was the first specimen of Gothic revival. It was scarcely deserving the name of sham; in fact, it was such a sham that, compared to it the worst modern sham, became a respectable reality. Having made a commencement at Strawberry-hill, it gradually crept into churches, and thus got on with quite as much success as the Greek or other ancient styles that came to be revived. There was now a choice of styles between the revived Greek and the revived Gothic. Then came the question—How was the choice to be made? One person said he liked this, and another that, which was fair enough, for the estimate of art was gauged by taste, and not by reason. The object of temples, whether Christian or Pagan, it must be admitted, was the same, although the purpose to which they were dedicated was very different. That object was worship; and in order to worship it was deemed necessary to see and hear. The Greek temples were built to ensure those objects as much as possible; and referring to that circumstance, Mr. Pergusson had pointed out a similarity which he had observed between Greek and Gothic models, in the manner in which the architects of each had endeavoured to obtain their light. If we were to choose the models of our churches upon logical grounds only, he saw no reason why we should not choose Greek temples. The houses of the ancient Greeks we could not, however, copy: first, because there were none of them left to copy; and, secondly, because they were unfit to the climate in which we live. The Greek houses were built for a population living in 32 degrees of latitude, while we lived in 52; and, while the Greeks required but little fire, such was our climate that we required fire and protection from the weather during the major portion of the year. Yet what was the fact; we did not copy Greek temples, and we did try to copy Greek houses. There was another peculiarity of southern buildings, and that was that they had porticos while we had cloisters—not cloisters for monks to read in, but cloisters to keep out the wind and the rain. Now, if we were in reality the practical people that we wished to be deemed, we would have copied cloisters and not porticos. Having briefly referred to the aspect of architecture under the reign of the Stuarts, which he contended was the style of any that partook of a pagan type, because coming from Rome, Mr. Denison referred to town-halls, which, after churches, were growing into importance in proportion with the wealth and enterprise of the age. There were no town-halls in Greece or Rome, but on the Continent they had been carried out in the Gothic style with great success. Among the principal town-halls built in England of late years were those of Liverpool, Leeds, and Halifax. These vied with each other in the costliness of their construction—a proof that even municipal bodies were not free from the vulgar crime of vanity. As municipal bodies were not the sort of communities likely to run into extravagancies of style, and as the town halls of the continent were known to answer their purpose remarkably well, it might be supposed that they would be copied in this country. But they had not been. The Donatist style had not been adopted, of course; but the municipal mind had run into an entirely opposite direction. There was no doubt some reason for this, and if they looked into history the mystery would be solved at once. Gothic churches were first badly copied, but we improved as we went on, and we might now choose our own building—either the church in St. Margaret-street, or the Oxford Museum, or the Chapel of Exeter College, at Oxford. Gothic architecture had now been applied to churches in great perfection. That it had succeeded was conceded, and it was now admitted that it ought to be extended to eleemosynary buildings, to colleges and hospitals, and even to workhouses, for which it had been found to be peculiarly adapted, both as regards the convenience of the inmates and the cost of construction. A writer upon architecture, into whose book he had lately dipped, but whose name he would not disclose, had occasioned him some amusement by contending that Gothic architecture ought to be tolerated notwithstanding it had a

character of its own—an arabic character, just as the Bible was continued, notwithstanding the archaicism of the language—the archaicism of the Bible and the Prayer Book! This was extremely good, as it was an admitted fact that the special prayers composed by hishops of the Church for particular occasions were infinitely superior to those in the book of Common Prayer. But the Gothic was not the only style which had been badly copied. The Italian had been sinned against almost as much, and Downing College, and the University Library, at Cambridge, were about the worst specimens of the Italian style which it had been his lot to behold. The Taylor building at Oxford was also a good specimen of bad Italian. It reminded him of a cherub, all head and wings—or rather, a small head, large wings, and no body. Of Gothic, however, it might be said that although there were many bad illustrations, it was working its way up. But he asked how it happened that in the matter of town-halls the Gothic models of the continent had been wilfully rejected? The same Evelyn to whom he had referred when speaking of what he termed "the great and noble buildings of the Greeks and Romans" had characterized their style as "pompos." Mr. Ruskin had also described it in similar terms, and he (Mr. Denison) was inclined to believe that the pomposity of the Italian style was in accordance with the modern spirit of the age and of the municipal bodies who built town halls. At Liverpool, where there were town dues from which the funds were drawn, 100,000l. had been expended upon the town-hall, and the gates alone had cost 5,000l., including the luxury of a lawsuit; and yet, although the site was spacious and magnificent, the architect had not found it possible to put windows at both sides of his building. The town-hall at Leeds had cost a third of that at Liverpool, and yet nothing could be contrived to relieve the monotony of the skyline but the superimposition of a wonderful tower—a tower which, he ventured to say, would evoke the wonder of Sir Christopher Wren, or of the builder of Canterbury Cathedral. At Halifax, where a town-hall was necessary because Leeds had got one, Gothic and Grecian plans were submitted for approval. The Gothic was rejected, and, to the astonishment and horror of mankind, the corporation resolved to employ their own surveyor to build the town-hall. However, in the end wiser counsels prevailed; the surveyor was set aside, and the building was placed in the hands of an architect of great fame, whose name he would not mention. An engraving of it had appeared in that very useful publication the *Builder*, and in the comments appended the editor had very properly stated that vertically was chiefly aimed at. Singularly enough, however, the town-hall of Halifax was a building in the style supposed to be that in which *horizontally* prevailed. It was, he presumed, what was called a Gothic building with Italian details. But, notwithstanding the failures in public buildings, he thought it was gratifying to find that the taste for Gothic design was becoming every day more generalised, as evidenced by the improved taste exhibited in the Gothic villas in the neighbourhood of London. The Museum of Oxford was also an indication of a revival of Gothic architecture, for there, in his opinion, there was a great deal to admire (as, for instance, the cloistered square, if the roof would fall in once more) and a good deal to blame; but still the portions that were good were very fine, and showed a hopeful tendency in the right direction. Another indication of the spirit of the age was to be traced in the Gothic roofs introduced so frequently in the designs for the new public offices, lately exhibited in Westminster Hall,—these "abominable" high roofs [Mr. Denison drew a section of what he meant] were now forcing their way into Italian buildings. Carving was also extensively introduced, and many of the Gothic realities, including something more emphatic in the shape of towers. These latter were making their way into classic buildings. Mr. Denison next dwelt upon the necessity of paying attention to acoustics in the design of buildings. Town halls were for the most part intended for music and public meetings. It was therefore desirable that the science of acoustics should be applied to their construction; and yet the great halls at Liverpool and Leeds turned out lamentable failures in this respect. At Leeds there were under the same roof four smaller halls or courts, for the administration of justice; and so lamentably had the acoustic properties been neglected, that you could scarcely hear yourself speak in them—the speaker was, in fact, bewildered with the echo of his own voice. Other buildings in Yorkshire were, however, more fortunate. Mr. Lockwood had built several which

were most successful for the purposes intended. As a proof that the great hall at Liverpool was a failure as far as acoustics were concerned, he might mention that Mr. Cunningham had built another hall in the same town, because St. George's Hall was partially useless for the purpose for which it had been built. The chapel at Whitehall, which was cited as being so successful outside, was also sadly deficient in acoustic properties, although so much had been done to cure the defect. Having glanced at the prevailing notions with regard to uniformity and symmetry, and pointed to the case of Cumberland-terrace, Regent's-park, as a mistaken example, Mr. Denison inquired whether a Greek, in designing the approach to a gentleman's park, would have built two models of the Parthenon, in one of which the old woman was to wash, and in the other to bake. Next, with regard to the choice of materials, he thought they ought to consider how buildings would look in ten years hence, or in a hundred years hence, and not how they would look the day they were finished. In his opinion, the only material that would look well, and at the same time bear the vicissitudes of our climate, was red brick, and not stone. He was also quite sure that it was a universal mistake to suppose that any style of architecture would be inaugurated in our day. His impression was that we would go on improving Classic, Gothic, and, in fact, all styles, and that no Victoria style or any universal style would meet with general acceptance.

Mr. HOPE, in moving that the thanks of the meeting be awarded to Mr. Denison for his address, observed that, although he might not be able to agree with him in all the views he had expounded on the subject of architecture, he quite agreed with him that brick, or some material consisting of burnt earth, was the proper implement to wage war against the deleterious climate with which we had to contend. The hon. gentleman announced that there would not be any lecture on Wednesday, March 7, but that he hoped there would be a large attendance of the public to witness the presentation of prizes to art workmen.

Mr. Denison, in acknowledging the compliment, called attention to the Architectural Museum, which, he said, was now nearly out of debt, and afforded an admirable opportunity for the self-improvement of art workmen.

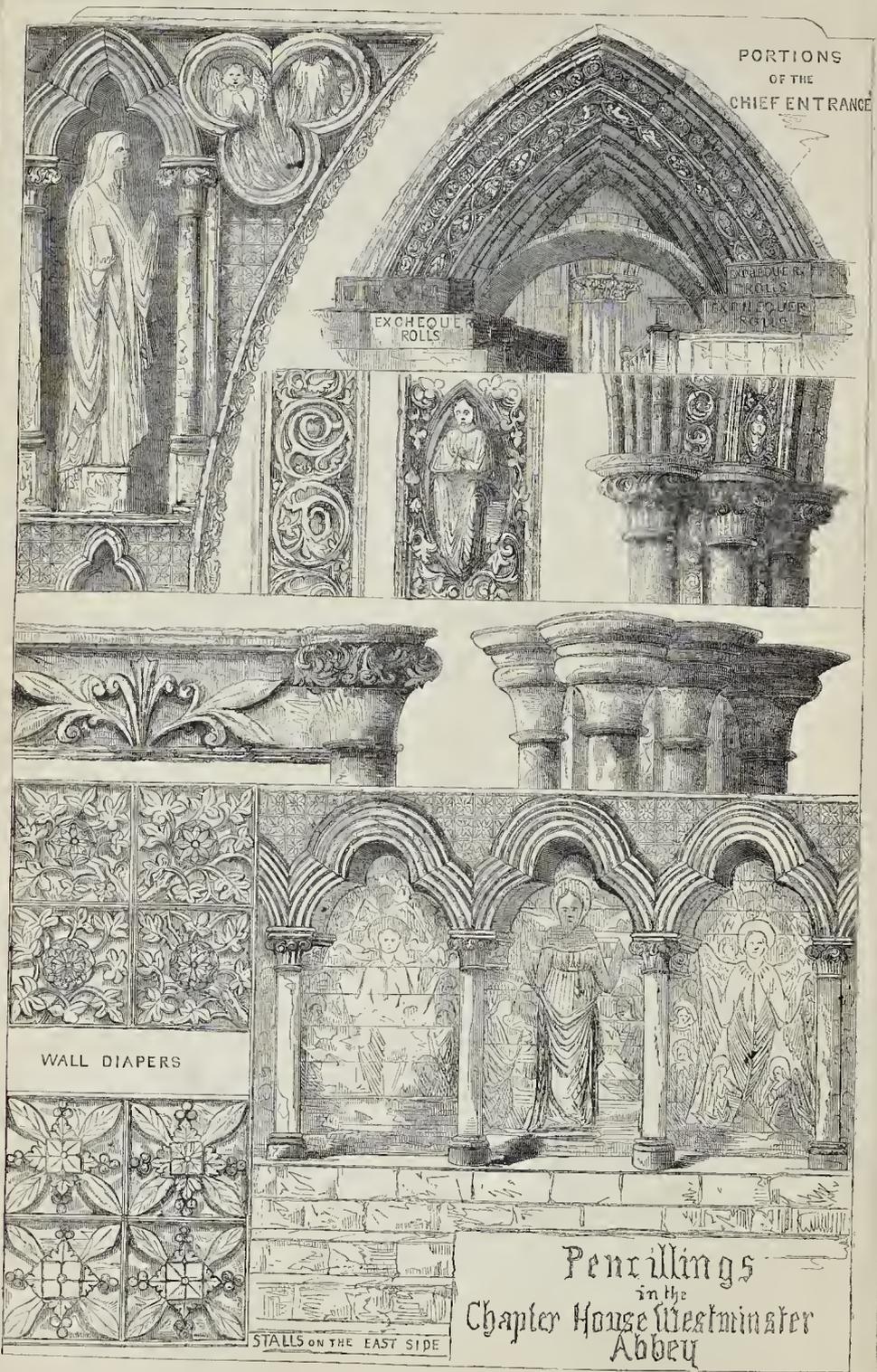
#### PROPOSED CAMBRIDGE GUILDHALL.

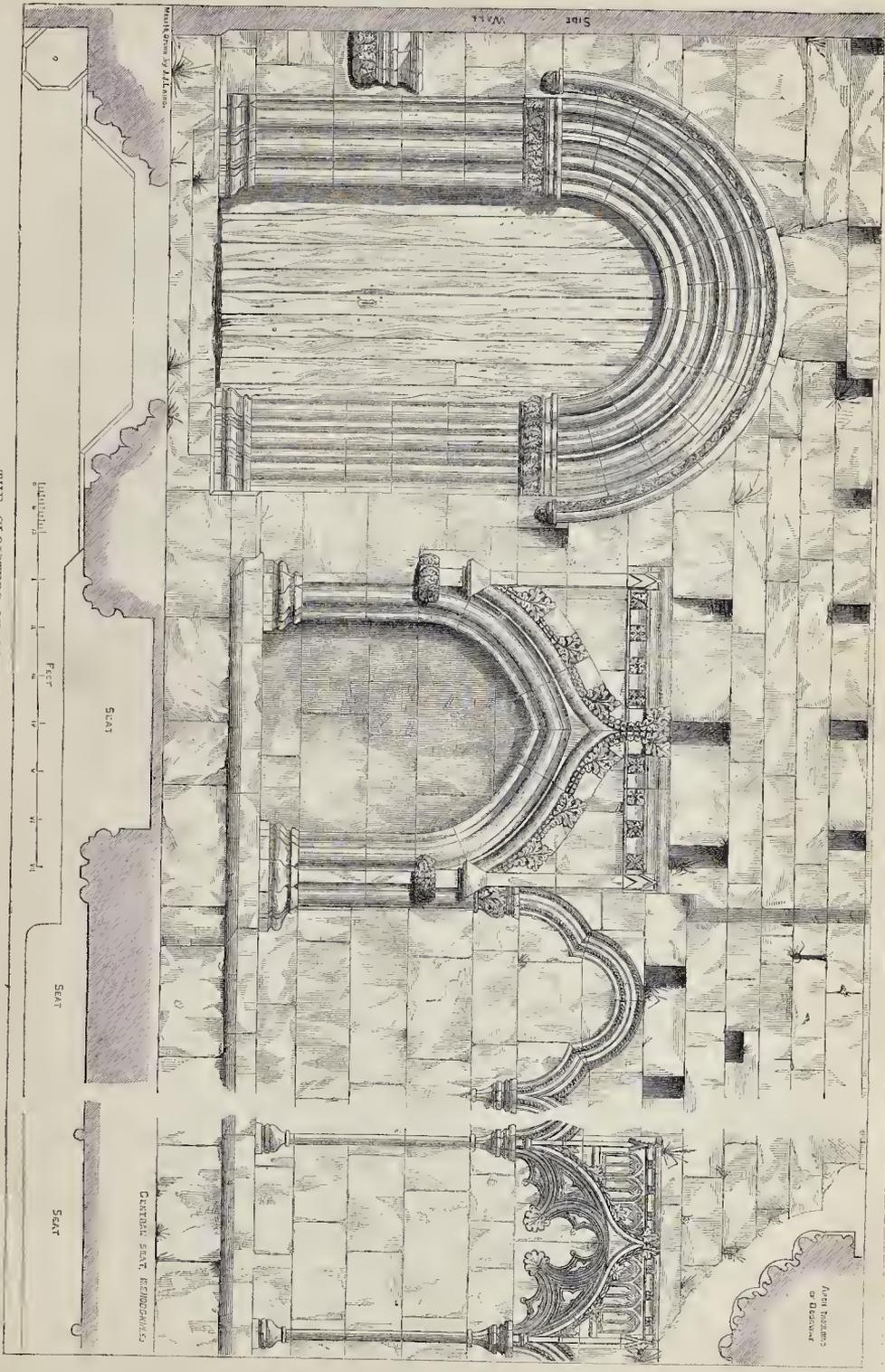
The committee have purchased an additional site for 400l., and have employed the authors of the first-prize design in the late competition, to prepare an entirely new design, with the condition that the lowest tender shall not exceed the stipulated sum of 6,000l.

Should this condition not be complied with, the authors of the second-prize design, it is said, will be employed to carry out their plan with additions.

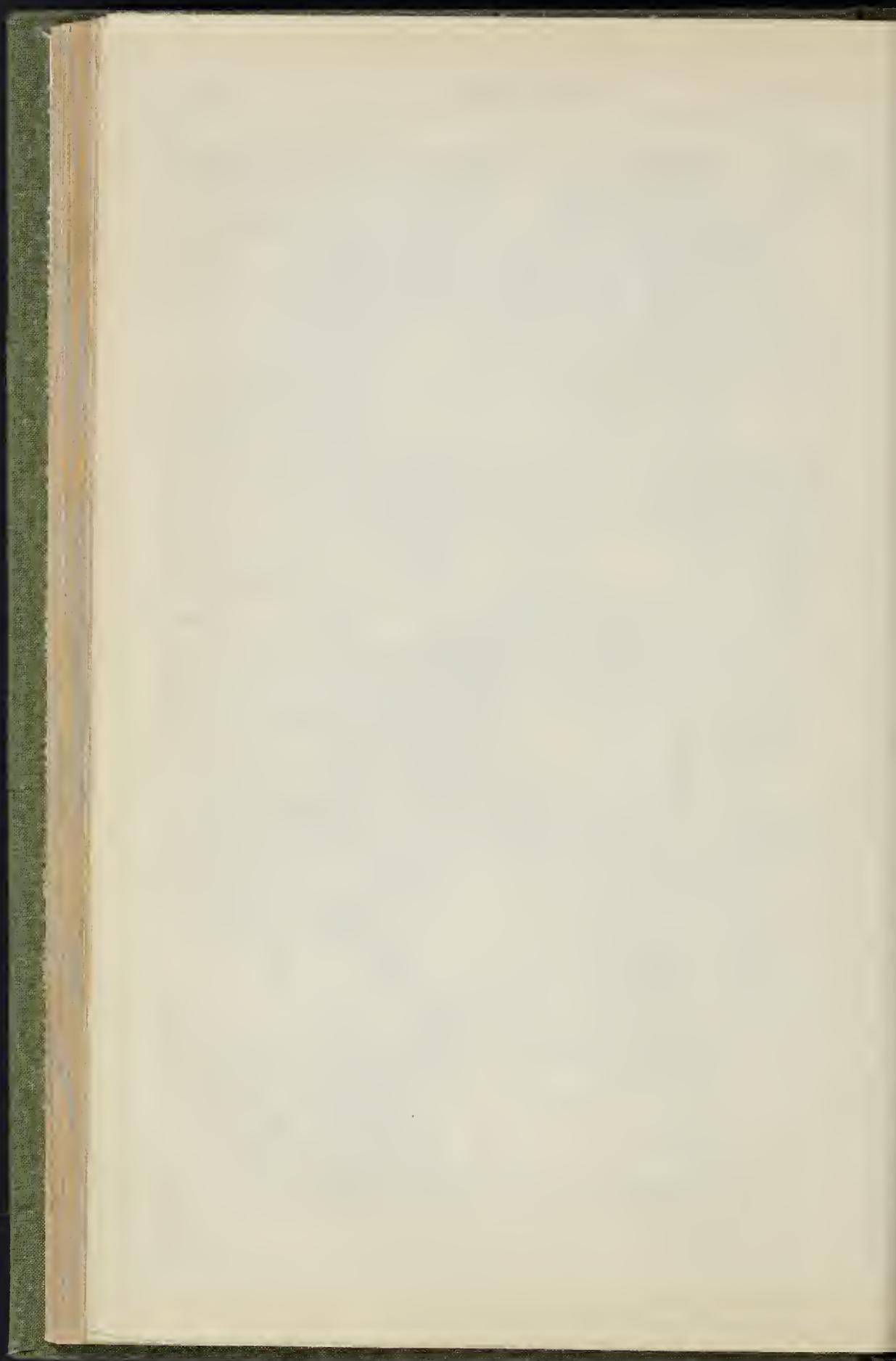
#### THE CHAPTER-HOUSE, WESTMINSTER ABBEY.

We have spoken on various occasions of the beauties of the Chapter-House, at Westminster, and its present miserable condition, and have often urged the desirability of restoring it to a proper state. Full particulars of the structure will be found in Mr. Scott's papers on the Abbey, which we printed not long ago. We now give a number of free sketches, including portions of the chief entrance to the Chapter-House, the mural arcading and wall piers. It will be remembered that an entry was found under the date of 1253, of the purchase of canvas, to fill the windows of the Chapter-House, pending the completion of the works—a valuable fact, as settling the age of the structure. Within the church work is going on quietly in the north transept; and in the lantern men are busily at work, suspended, clearing away the accumulation of black dust which has been collecting for centuries, restoring the gilding, and repairing other parts. The Purbeck pillars are being cleared of impurities. When this portion of Westminster Abbey has been renovated, the stained glass of the principal window there will look very objectionable. At the time this window was thus decorated, it was thought a successful attempt to revive an art which was considered lost, and probably the admission of it gave a stimulus to this important art in connection with church architecture. Since then, however, great improvements in glass-staining have been made, and it would be well to remove this very inferior glass, and refill the window with a better kind, restoring the tracery to its original condition.





THE CLOISTERS OF MELROSE ABBEY, SCOTLAND.



MELROSE ABBEY.

MELROSE ABBEY was founded by King David of Scotland, in the year 1136, for the order of the Cistercian monks. Amongst its famous abbots was St. Waltheof, of whom mention is made in Fordun's "Scottichronicle," where it is stated that he was the second abbot. The abbey is finely situated at the base of the Eldon hills, in the valley of the noble Tweed, from which it is distant but about two hundred yards; and in ancient times was surrounded by rich forests, and with the river and tributary streams, afforded ample opportunities for sport and provision. This district is so great in such resources, that a cluster of abbeyes arose from time to time, such as Dryburgh, which is but a short distance from Melrose, Kelso Abbey, and Jedburgh. In and around these, are the remains of the massive towers or peels, so much needed in self-defence, and security against the invasions of the English. It forms altogether one of the loveliest districts in Scotland to which every tourist is attracted, principally through the writings of Sir Walter Scott; whose seat at Abbotsford is close to Melrose, and near to the romantic glen of Thomas the Rhymer, whose grave is pointed out at the little country church of Earlstone, near to Dryburgh.

The abbey of Melrose is built of red soft stone, easily cut, and capable of the most delicate carving, still seen throughout the whole ruin in its niches, pinnacles, capitals, and elsewhere. It is, in its material and construction, not unlike Strasbourg Cathedral; there being a similarity, especially in its masses of masonry, enriched with light open decorations, which seem to hang like lace-work. In some features it is not unlike Antwerp Cathedral, as in its picturesque turrets, and machicolations in its tower; parts which Scott adapted to his mansion at Abbotsford.

There is a strange mixture of the Early English and Perpendicular styles, with occasional modifications of Continental work, all put together in a peculiar manner, as if in haste, yet in a trim and massive construction peculiar to the Scotch, which may be owing to their continual warfare and struggles, especially when near the Border, whence we see so much of that heavy, often clumsy, and castellated work even in sacred edifices, designed for security against not only English aggression, but against marauders from the neighbouring districts. In 1322, the brotherhood made a decisive stand, with the Douglases at their head, against an invasion by Edward, whose troops suffered so severely from Douglases, that in revenge he destroyed the abbey and slew the brothers, and carried off the communion plate. The soldiers of Richard II., after receiving the shelter and hospitality of the monks, rudely burned it; at which Richard was so conscience-stricken that he made over certain privileges to the abbey, but soon withdrew them.

Greater part of the existing building has been repaired and restored subsequently to these events. In the reign of Henry VIII. it again suffered, under the Reformation and the cannonading of Oliver Cromwell, from Gattonside, on the other bank of the Tweed, made it almost a complete ruin. An attempt was made to obtain the restoration of the nave of the abbey, some years ago, as the parish church of Melrose, but the Duke of Buccleuch, on building a large plain edifice instead, from the hill to the west, became proprietor of the abbey, and preserves it with great care.

Of all parts of the abbey most scrupulously guarded, are the cloisters,—the subject of the accompanying illustration,—which excite the liveliest admiration from the exquisite of the carving, and rich diversity shown in what still remains of them. The cloisters are situated in the north-west angle of the abbey, and probably have been quadrangular in plan; but all that exists, extends from the transept wall on our left westwards 273 feet to the seat shown on our right in the illustration, which is evidently a central or principal nave, there being thirteen of the trefoiled arches, and next the doorway. Extending northwards, along the exterior of the west transept wall, there remains only about 46 feet, containing six deeply-recessed seats similar to that near the doorway. The carving throughout all these is somewhat similar to that shown in the illustration; of some of it is most delicately undercut, through which it is the custom of the Scotch guide (who is a good specimen of the old covenant) to stick straws to show the skill of these ancient workmen. By close examination it will be found that the little square rosettes, as in one cornice over the deeply-recessed seat (some sixty in number), are all different, and most carefully designed and sharply cut.

These cloisters are evidently about the only thirteenth-century part remaining of the abbey, together with the massive columns and their exquisitely carved capitals. The greater portion is perpendicular, particularly the great east window, which Scott calls an oriel. Scott, if he had not ideas on Gothic similar in some respects to that of Sir James Hall, at any rate recognizes the *resemblance* of the theory, when he says in his stanza, in the "Lay of the Last Minstrel,"—

"The moon on the east oriel shone  
Through slender shafts of shapely stone,  
By foliage tracery combined;  
Thou wouldst have thought some fairy hand  
'Twixt poplars straight the ozier wand,  
In many a freakish knot, had twined;  
Then framed a spell when the work was done,  
And changed the willow wreath to stone."

The body of Michael Scott, the wizard, is said to be buried in the chancel of the abbey; and beneath the high altar is said to be buried the heart of King Robert the Bruce, brought from Palestine where it was in charge of the noble Douglas during the Crusades.

Amongst the numerous curiously carved corbels, gargoyles, and grotesque subjects, is a tablet, evidently of the end of the fifteenth century, inserted in the south transept wall probably during some repairs, bearing the following record:—

"John Murdo some time capitall was I,  
And born in Paris certainly,  
And had in kepung all mason work  
Of Sanct-Andreys, ye hie kirk  
Of Sanct-Mercol, Melrose and Galay,  
Of Nyddysdall and of Galway,  
Pray to God and Mary both,  
And sweet Sanct John, to keep  
This haly kirk fra skaithe."

Our engraving is from drawings made expressly on the spot by Mr. J. J. Laing.

ON THE CONSTRUCTION AND MANAGEMENT OF HUMAN HABITATIONS, CONSIDERED IN RELATION TO THE PUBLIC HEALTH.\*

I propose to bring before you some considerations on the manner in which human life is affected by the construction and management of dwellings; and I do so with the belief that the demolition and reconstruction of a large part of London, and the better management of the remainder, is the means through which we may hope to be delivered from some of our common domestic pestilences. Besides it is evident that, when the Legislature confided to your institute the duty of examining into the professional acquirements of district surveyors, it placed in your hands likewise the power of exacting a knowledge of the conditions under which houses are healthy, or the reverse; so that, whilst on the one hand we may be secured against accidents arising from insufficient solidity, we may also be secured against those slow and silent, but a thousand times more destructive, accidents which arise from want of sunlight and fresh air.

It is evident that your calling and mine meet at a certain line. I spend my life in the prevention and treatment of disease, you are the constituted heads of a profession employed in the construction of houses. I shall not apologize, therefore, for endeavouring to present a sketch of the natural history of such diseases as may be presumed to arise from misconstruction or mismanagement of houses; and I will not apologize for treating the question in its medical aspects; any practical inferences will be best supplied by yourselves.

Now, in seeking to display the facts of the case, it is evident how masked and complicated they are as they exist amongst ourselves, and how desirable it is to bring forward some experiments which shall show them in the form of simple analysis. Such experiments are made whenever a body of men go and take possession of a country, and encamp in the open field, as in the common operations of warfare. Then four sets of consequences follow as a matter of certainty, and there is no campaign of which we have any record, from that of the Greeks before Troy to that of our own troops in the Eastern campaign, or that of the Spaniards now in Morocco, in which we do not find distinct evidences of them.

Let me, as a fair specimen, turn to the pages of Sir John Fringie, the historian of the medical events of the various campaigns in the reign of George II.; and I choose him because it delights me to give an incidental mark of respect to one of the earliest and most honest observers of these matters, whose opinions, if acted upon, would have rendered Miss Nightingale's labours unnecessary.

Let us accompany then 16,000 British troops, who, in June, 1742, disembarked in Flanders. Their first autumn and winter were not very eventful. They were quartered in various towns in Flanders, and it was noticed that those who had barracks in high and dry situations were healthy, whilst those in low and damp ones, where their shoes and hats rotted, were unwell. Their diseases were various fevers and dysentery, which lasted through the autumn, but ceased with the first frosts of November, and, during the winter, colds, coughs, stitiches, and rheumatism. But there was one malady observed during this winter which attracted some attention; and this was a peculiarly malignant and fatal fever, confined to the hospital, and seeming to have originated in the foul air of a ward where lay a man with a mortified limb.

So the winter passed, and in the spring the troops marched out, and on the 17th May, 1743, found themselves encamped in an open and healthy country, at Heelst, on the Meuse.

Then began a regular cycle. During the first three weeks various inflammatory diseases from cold prevailed,—pleuritis, coughs, and the like. By the end of June the weather had become very hot: the men fought the battle of

Dettingen on the 27th, and encamped on the spot, on wet ground, without straw, for two or three days afterwards. The dysentery broke out, and Sir J. Fringie takes the opportunity of denouncing the vulgar error that such maladies arise from eating fruit. It continued all July and August, and did not abate till the army marched onwards, leaving the foul, filth-saturated spot of earth behind them.

But mark this. The village of Peckenheim, a league from the camp, was taken up for an hospital, into which besides the wounded, about 1,500 men were sent, sick with the dysentery. By this means the air was vitiated to such a degree, that not only the rest of the patients were infected, but also the nurses and apothecaries, and other attendants of the hospital, with most of the inhabitants of the village. To this acceded a still more formidable disease, namely, the hospital or malignant fever, an inseparable attendant of foul air from crowds and animal corruption. These diseases combined, caused a great mortality in the village, while such as were seized with dysentery, and not removed from the camp, escaped the fever, and generally did well.

Now with regard to the army, when they removed to fresh ground, the dysentery ceased; but the intermittent and remittent fevers of the country broke out, and lasted till the first frost, when the men became healthy again, till from increased severity of cold, again came round the winter crop of stitiches, coughs, and rheumatism.

But no such good fortune awaited the inmates of the hospital. There, no matter what the original malady, they caught the fever, which acquired all the characters of pest plague—spots, blotches, and abscesses of the face and glands. Of the hospital attendants, all were sick, and third died; of the patients, half died; and of the poor inhabitants of the village, between the fever and dysentery, almost all were destroyed.

And now for the last phase. When the survivors from Peckenheim were removed, they were first taken to another hospital, which they infected with their own fever; and then were sent a tedious voyage down the river, in some country barges, to Ghent. Then, it is said, and there seems no doubt of it, that a parcel of old tents, used as bedding on the voyage, were put into the bands of a tradesman to be repaired, and that they conveyed the virus to his workmen, seventeen of whom, out of twenty-three, died.

Here I must leave Sir John Fringie. But without following him in the Scottish campaign of 1745, I draw sufficiently from him to show how four classes of effects follow in definite sequence. 1. Fevers arising from the condition of the surface of the earth, including intermittent and other malarious fevers, 2. Colic, and other catarrhs, arising from insufficient protection; 3. Diarrhoea and dysentery, from insufficient drainage; and lastly, under certain conditions of filth and crowding, fevers of new type, destroying all within their reach, and invested with an intensity which enables them to spread amongst persons not within the original focus.

Now it is these four classes of maladies, of which we have seen the origin in the definite experiment of a campaign, which in a greater or less degree affect us, and which it is the province of the scientific constructor of houses to guard us against specifically.

In fact, there are these four questions, which should be asked concerning every house. Is it protected from malaria, or emanations from the soil? Is it adequate as a protection against cold, and does it supply such an amount of fresh air and sunlight as shall be a protection against scrofula, and other diseases of decay? Is it so drained that the inmates shall not suffer from diarrhoea and other sewer diseases? And lastly, is it so arranged that it shall not be a breeding place for pestilence, nor yet a lurking-place, if it happen to enter from without?

I would more particularly urge the necessity of looking at these things always in their relation of cause and effect. If defective construction and defective drainage cause such and such evils, then where those evils exist let us look for the causes. If, for instance, a fall of the thermometer be followed by a rise in the death-rate from any disease, let us consider whether the habitations of the people are such as to afford them adequate protection from cold.

These, then, are the four points to which I shall direct your attention, although it is the first and last only that time will allow me to notice at length.

First, then, under the term malaria, we may comprehend emanations from the earth generally. And in considering houses, we should never forget the large extent in some countries, the increasing portion of the earth's surface, which is rendered unfit for human habitation by the emanations from the soil. Well, does this fact bear out the divine admonition to *subdue* the earth, as well as to replenish it; and the other divine announcement, that bounds have been set to the habitations of tribes of men? But we cannot wonder at it if we think of the myriads of generations of which the earth's surface has been the graveyard; and that, speak as we may of pure and virgin soils, the whole earth, down to the bare rocks, is full of organic *débris*, and that our valleys, meadows, and marshes, and even some of our hills, are little more than the elevated mud of rivers and estuaries.

I will not dwell on the standard facts respecting malaria; that it affects white races in preference to the black; that it is lost about fifty-five degrees north of the equator; that it is intense in proportion to the heat; that it requires moisture, and yet is destroyed by actual drouth, and is most dangerous after long drouths, when land previously wetted is acutely dry; and that heat and stagnant water undergoing evaporation, above or under ground, are the efficient elements in its production.

Of the effects of malaria, the most specific in this country are agues, which in hotter climates and more marshy soils passes by degrees into the pestiferous fever of Wächleren, the remittent of Spain, the Yellow Jack of the West-Indies, and the fever which secures the annual apothosis of an Anglican Bishop at Sierra Leone.

Ague is now seldom fatal in London; the Registrar General gives only 178 as the average mortality of all England for ague during the seven years '48-54.

In Sydenham's time, the reign of Charles II., the case was different; he speaks of its doing fearful mischief in July and August, 1661, whose families falling victims to it. He speaks of it further as raging in 1668. But the few cases of ague met with now attract little attention, so that terrestrial emanations are virtually disregarded,—whether with perfect prudence is another question.

For it must be remembered that ague, although the specific, is not the only product of malaria. There is, besides, in the first place, that brood of most painful illnesses, called rheumatic neuralgia, of which brood, in face ague, is the commonest type. This flourishes in

\* By Dr. Druiitt, elsewhere referred to.

marsh districts, and can be caught to perfection at Herne Bay (let me say, by way of parenthesis, that the myriads of snails which infest this place are a sure sign of a swampy situation, and that abundance of the signs always indicates the presence of neglected leucoglycogenic matter); but the brown ague is present every year in London; and in practice, one knows that it affects certain houses or streets by preference.

In the next place, it is a property of malaria that it produces the same class of illness which more usually arises from defective house-drainage. Witness, the cholera which broke out amongst our troops in the beautiful but potential valley of Alady, near Varna, and on board the ships of the Black Sea fleet, and amongst the Spaniards now in their Moorish campaign. Witness, too, that love of a low level which is a constant feature in the cholera, and which seems to show its alliance with marsh miasma. Dr. Farr tells us, that taking the mean of the cholera epidemics of 1818 and 1819 in London, nearly 15 per 1,000 of those living under 10 feet of elevation died; 1 per 1,000 of those at the highest elevation; and that if London be divided into terraces of different degrees of elevation, the mortality from an epidemic of cholera is, in round numbers, inversely as the elevation.

Another property of malaria is its power of producing fevers of the continued or ardent type, like our typhus fever. And here let me observe, that any one who reads the works of the physicians of classical antiquity, or even of our own Sydenham, may well be surprised and thankful at the accounts of fevers which were then called, stationary fever, or fevers of the country, of which we have no practical knowledge in our happier times.

Another point to be remarked in malaria, is the remarkable way in which it enhances all diseases of degeneration. The tan-bellies, crooked limbs, pale lips, and glandular swellings of the chest, the scurvy which appeared of the adults at Walcheren, were remarkable.

Again, another point is the power it has of giving intensity to almost any disease; of which the following may serve for an example:—

In the years 1805 and 1806, certain regiments which they had previously contracted the disease, were removed to Dover, and other places, without getting rid of it; and on May 9, 1806, were sent to Riding-street barracks, twenty miles from Dover, to the Marsh. Dr. Vetch, who wrote a description of the disease, called attention to these emphatic facts; it was generated amongst the debased inhabitants of the marshy soil of Egypt, when brought first to the Marsh, and then to violence at Hythe, at the edge of Romney Marsh. At Riding-street, in the centre of the Marsh, it broke out with tenfold violence; it assumed a remarkably mild form when the men were removed to twenty-four miles from Riding-street to Maidstone; and an equally remarkably severe form on the return to Riding-street, when the assizes compelled the men to remove from Maidstone.

Now if we consider these facts with regard to malaria, I can remember that London like ancient Rome, as the regi-tran-general says, built upon low hills, in the midst of an imperfect drainage; and that it was once severely scourged by it; that even now there are occasional indications of its presence; and that it contains in itself the essence of all such diseases as can be produced by muddiness and damp, besides the fact that it is once to itself, and that it aggravates all; the practical question arises, it is not worth while to take even superfluous precaution to get rid of every trace of the evil, and to avoid every thing which would create it anew?

Now it will be well worth asking, are there any present indications of the presence of malaria in London? I believe that it does exist, though generally in a masked form, and undistinguishable from other prevailing sources of illness. Let me give the following instance:—

My attention was called to a small cluster of houses, inhabited by respectable tradespeople, and with no want of drainage or ventilation. In the first place a healthy girl of 18 years of age died of fever at No. 12. Two cases of fever then occurred at No. 11. A year afterwards, another case of anomalous fever occurred at No. 10. I then saw some people from No. 10; the children suffering from diseases of degeneration; the mother told me that last year she had a regular tertian ague, though she had never been out of London. I have long known of these houses, that they stand on the side of a hill, on the very edge of a bank of clay, parallel with Piccadilly, which banks up the water in the great conduits behind; and that these houses are always wet, sometimes flooded; and just the place where theoretically ague might be expected.

A friend of mine lived at Kilburn for some years, with nothing worse than occasional rheumatism; and never anything like fever or ague; moreover, ague was unknown, and fever very rare indeed in the place, till in the winter of 57-58, a railway was constructed, and an embankment of red high made off from under Lord's Hill, at Hampstead. The first effect was to cut off ventilation, and render my friend's garden damp; but so soon as the hot sun acted on this bank, it produced emanations which poisoned every member of the family, more or less. The eldest son had a continued fever, preceded by great depression, sighing, and ocular spectra; two of the daughters had severe tertian ague; another, mumps and slighter ague; the servants and wife were similarly affected, and several other cases of ague in Kilburn.

It must be remarked, too, that there are ague years, as 1801 and 1828, and in our time, 1827 and 1828, when it prevailed unusually in London.

Moreover, there are many instances of the spread of disease, which, in the absence of personal contagion or other common source, can scarcely be being attributed to malaria; and there is no reason to doubt that organic emanations from an undrained soil are similar to those from sewers.

It seems physically certain that malaria may be got rid of by deep drainage. I do not mean merely the closed pipes and impervious channels by which house drainage and surface water are carried away, but the system employed by the scientific farmer. The philosophy of the thing is obvious. A constantly descending capillary current through a porous soil, provides for the oxidation of noxious matters; but this oxidation is conditional on free access of air, which the displacement of absorbed water causes. If this were attended to, probably we should bear less of the fevers which prevail in new suburbs on the outskirts of London, on a clay soil; but as things are, you may see houses erected on a clay soil, covered with stagnant water, which, in just concealed by a little made ground. Last summer, I saw at Weymouth, a whole row of new houses standing in a

swamp. Moreover, in many parts of town, a fetidous elevation is created by means of made earth and rubbish, which charged with offensive organic matter. I can point to examples of this kind in many parts of the town, and Gloucester-road, South Kensington. I may conclude this part of my subject by submitting to your judgment the opinion of the eminent chemist, that the most important point, and the first point to be grounded in the scientific construction of houses.

On the second and third divisions of my subject, viz., diseases which arise from imperfect protection of the system of house drainage, I have not time to treat; but whilst dismissing malaria, let me say one word on the kindred subject of damp. I have many cases collected from various parts of this parish, in which mere dampness by itself produced a most singular and uniform train of symptoms, consisting of extreme mental despondency, and accompanied with anæmia and bodily feebleness, and with a tendency to drink or to suicide.

Passing over these matters, I now wish to direct your attention to a matter in which none of us can help being personally interested. I allude to the origin and propagation of the common domestic pestilences, small-pox, scarlet fever, and others of the group.

Consider, in the first place, the number of them. There are small-pox, measles, scarlet fever with diphtheria, and whooping cough, each of which is, so to say, the centre star of a host of satellites in the guise of chicken-pox, eruptions on the skin, mumps, and others; which, being taken together, form a host of no less than 115, or 116, though they often cause most distressing illness. Now, it is worth remarking, that the average annual mortality from these four diseases, in the seven years 1818-24, was 102,158, or 27.166. The total loss of our army in the Crimean war was under 22,000.

Now, in respect of these four diseases, it is too often taught, both by members of my own profession, and by others, that they arise from a miasmatic cause, or contagia, that is to say, that they never arise de novo, or *ab initio*, out of itself and growing; but that they absolutely originate in their development a germ derived from some preceding case.

Of course, it will be seen at a glance, that belief, in such a case, has some very practical bearings; for if a man be infected with scarlet fever, he may not only contract it from without, derived from pre-existing case, he will carefully look to his front door; he will exclude suspicious friends, and perhaps tamper his letters, and the clothes which come from the laundress; and so desire to be shut out well. But he possibly may neglect to see where it is that the air of the house comes from by night, when his front door is fast, and his window aperture rendered as impervious as possible, which is a clear error; he will enter; and he may neither know nor care that the air of his bedroom enters through an ill-fitting door in the basement, where it has received contributions from a dust-bin, from a cellar full of mouldering old hampers and straw, and from a damp coal-cellar and servants' water-closet in the area.

Now, partly under the influence of this doctrine of specific contagion, and partly from the fact that these four maladies and their satellites for the most part attack us but once in our lives, the public mind has attained to a wonderful degree of credence, in the notion, inasmuch as we are accustomed to look upon them as necessary and unavoidable evils, and to think that the annual loss of 100,000 may be lamented, but cannot be helped.

If I can succeed in dislodging this doctrine, by endeavouring to prove to you that they do arise from the same class of exsues as did the malignant fever in the hospital at Leeds, it will be a venture to hope that our time will not have been quite wasted.

Now, in the first place, let me remark that the above four domestic pestilences are members of a very large family of zymotic diseases, so called, because they, likewise, were once regarded as *specific*, but which now are admitted, on all hands, to be capable of being created under the necessary conditions are combined.

Take, for example, typhus, or continued fever, which destroys 17,841 persons on an average per annum. I was reading the other night an essay by a venerable friend, in which he says that amongst troops in Jersey, in 1806, and he says of the cases of fever, that they are utterly unknown, and looked up in the bosom of the Delly. When, too, I received my medical education at King's College, the professor of medicine, who was all as a most sagacious and benevolent physician, laid particular stress on the doctrine that fever must come by contagion, and that although dirt might create the soil, it could not create the seed. But that resolved typhus into typhus. In one we recognize a fever generated by the vapour of sewers; in another, the product of overcrowding, and so on,—so that no one doubts now that by putting the proper elements together, a fever poison can be bred, as certainly as prussic acid can be formed in the laboratory of the chemist.

Let me, in the second place, allude to that group of zymotic diseases which are generated in hospitals, and I do so for the purpose not merely of showing that they, in their degree, serve amongst ourselves for laboratories of new diseases, as surely as did the hospitals of which, them, but likewise of paying a tribute to your President, whose papers on hospitals are not the least of his services to humanity.

Begin, if you please, with the well-known story, a "Light for the Line," by the authoress of "Hedley Vicars." Thomas Ward, a young navigator, has his arm torn off, and he lost his life because his blood was poisoned while in the hospital, that it was unable to furnish material for healing the severed arteries. He was advised to leave, in order to escape the hospital fever, and went home and died. In the place of the hospital, the patient would bleed to death unless they got out of the hospital air.

It is curious, indeed, are the varieties of effect of hospital miasma. You may have erysipelas, or a form of pyæmia, a condition in which a patient perishes with universal abscesses, or you may have low inflammation, and a purulent suppuration; each of which can be propagated from one patient to another, either by direct contact, or more particularly if the native miasma of the hospital be aided by a blast of sewer air.

Some of the most remarkable and successful operations in the history of surgery, have been performed by one of the leading metropolitan hospitals. The works of the surgeon were remarkable, but the patient died of low inflammation. I heard one of the young men attached to the hospital, say that a patient was held in, which gets all the faces of the *resolventes*; every

patient in that bed lies under a operation. I entered the surgeon not to put this one there; but he does not believe in sanitary measures."

If it could be proved, as we sink into insignificance in all other respects, when we consider the relation which they have to the death of women by purpural fever, at every time when they are most the objects of solicitude and affection, the fever may be cured.

No one not in the medical profession can have an idea of the painful series of facts which have forced accounts, which guard women in childbirth from every source of putrid miasma, and which show that the putrid water-closet, or the ordinary cause of fever, or scarlet fever, may soon rob a house of the mother, and that wherever originated the fever may return.

Still more fully may the source of this domestic pestilence be found in that mistaken and unimproving institution, the Lying-in Hospital. For whole generations has it been known that what is death to the wounded soldier in the Military Hospital is equally death to the poor woman in the Lying-in Hospital. My friend, Dr. Robert Ferguson, some years physician to the General Lying-in Hospital and professor of Midwifery, King's College, writing in 1839, says,—"We have abundant evidence of the disease being most fatal in hospitals. Neither the skill, nursing, nor diet diminishes the mortality to a level with that of the out-door population. It is, in some instances, and is generally better placed with regard to ventilation than in most hospitals, and in no malarial is pure air, quickly changed, so to speak, by the frequent stirring of it, by the chief prophylactic. A lying-in hospital may consist either of a series of cottages, or its spacious wards should contain very few patients. When fever prevails the mortality is high. In the Lying-in Hospital, Dr. Ferguson in 1838. But General Routh, the oldest commander in the British army, regius omnipotens elsewhere; and in 1858 the medical periodicals are furnished with fresh accounts of the mortality in the Lying-in Hospital. Dr. Rigby, senior physician to the hospital, showed that, from January, 1837, to August, 1841, the mortality of women in childbed was 70 per cent. The mortality was high wherever the mother was being obstinately missed by the nurses whilst the old open windows were in abeyance, the death-rate during the period of the epidemic was 100 per cent. The mortality at the rate of 90 per 1,000. Then for a period of seven years of perfect ventilation the deaths were reduced to 4 per 1,000. Again, in April, 1849, the committee determined to experiment with the opening of the windows to time May, 1845, thirty women died, or at the rate of 26.77 per 1,000. No evidence can be clearer than that the purpural fever is an artificial disease, made out of putrid miasma, and that it is a disease which is not to be cured in private life, at least, have received the contagion from hospitals. I must not quit this disease without noting that there is a now almost obsolete disease—the erysipelas of infants, which is a disease which wherever the mother is of purpural fever; and that one disease—look-jaw of infants—is now scarcely met with, even in Ireland."

It is possible that contagion of kind of mortification, attended with exudation of a leathery putrescent material, which is constantly generated in crowded military hospitals, is occasionally the cause of cases in which a capital experiment recorded by Professor Brugmans, of Leyden. In 1798 hospital gangrene prevailed in a lower ward of a hospital to that city. A surgeon, in order to ventilate the ward, had the opening through the ceiling in the ward above, and in thirty hours the disease attacked the three patients in the upper ward who lay nearest the opening. Hospital gangrene of a wound and diphtheria in the throat present the same characters.

Next, glancing in passing at the diseases which ensue more emphatically, although not all exclusively, from the sewer poison, that is, the typhoid fever, rheumatism, dysentery, cholera, and the severer cases of typhus, and bunette—all of which, if severe, are communicable—let me allude to the vast number of diseases of external surface, such as erysipelas, erythema, and others, which are produced, viz. that they may be engendered under certain conditions, and then spread to the healthy. Amongst such maladies are many known to us only by name, although vestiges of them are to be seen in the most advanced stages of the polio, the button scurf, scyosis menti, and the leprosy of the Middle Ages; amongst them, too, are those maladies which are the appointed scourge of incontinence, such as the erysipelas of the face, and the erysipelas of the nose, expresses his belief, that wherever foul and promiscuous immorality prevails there will spring up. Let me not quit this subject without alluding to the fact, which the object of so much dread and controversy in the last generation. Never absent from the debased peasantry who occupy the crowded bays in the towns in the marshy soil of Egypt, it was brought home from that country by our troops in 1805, and was propagated and flourished wherever it met with a congenial habitat; was often noticed to disappear during a march; was aggravated by close, damp air; but always has been, and is now certain to appear in Yorkshire schools, workhouses, and barns, wherever the eyes are irritated and exposed to an atmosphere tainted with human exhalations. But nowhere was this more palpable than in the case of slave ships, and there is an absolute truth in the tale sometimes told by poets, of a ship rolling about at the mercy of winds and waves, and the crew perishing by the inability of the captain and the ship's crew to be blown by the wind.

Equally true is this with regard to the air passages. Let one or two persons ill with common catarrh, shut themselves up in a room, and the atmosphere, and the air, visitors will, to my knowledge, run the great risk of "catching cold."

Another disease, which at times creates an awful interest, is that which is called the plague, and which is the glanders, a well-known disease of the horse. But although the effects of the glander poison are as regular and specific as possible, yet veterinarians have always maintained that it can only be generated *in situ*, under the combined influence of *low condition and bad air*. The constancy with which it breaks out when horses are sent long voyages is worth noticing.

Let me now touch in passing some of the diseases of bygone days, at the Hungarian fever, for example, which was said to have been introduced by troops in the reign of Louis the Great, either by direct contact, or from one end to the other, and still better at the plague, of which Sir W. Petty, writing in 1683, declares that a variation of it occurs once in twenty years, and that it is introduced from the East Indies, and that it is the cause of the plague, says they are "matters, like many others, upon which vain and arrogant philosophy speculates to no purpose," and proceeds to "thank the mercy and goodness of the supreme God," because He



redolent in bloom. The border next Piccadilly was certainly not so favourable for flowers; still they blossomed, despite the incessant thunder of omnibuses; and the various shrubs, laburnums, thorns, and lilacs, whilst they offered a pleasing screen from within, flourished, ay, even under the trees, as in mockery of their denaturalized and civic position. Let those who saw it last summer compare the open iron railing and the view of Buckingham Palace with its aspect when the hawthorn bloomed. All this, however, is to be restored, perhaps only at the cost of 1,000*l.* and the loss of a year's growth.

So much for the management of the "terra firma." There was, however, a question about the water, which agitated the public mind. It was found that the Serpentine had become polluted and fetid; that it was dangerous both to the health of the crowds habitually bathing there, and even to the lives of many. Numerous suggestions were made by the *Builder* and by the *Times* for the correction of these sad disadvantages, and correspondences with the late Chief Commissioner were published, clearly showing that a largely increased supply of water was requisite for its purification. In these reports estimates and figures were given of the expense, and one in particular, sent in by the engineers of St. James's "Canal" improvements, and of the Trafalgar fountains, proposed to supply two million gallons daily during the summer, and one million during the winter months, for 16,000*l.*, and to give distinct supplies of fresh spring water to St. James's Park, Buckingham Palace-gardens, and the Serpentine, for a total annual cost of 1,000*l.* a-year, so as at the same time to effectively change the whole body of the Serpentine once a month, and to gratify the public with a real and incessant cascade at the Knightsbridge pond head!

These propositions were made on the 5th of August, 1859, and rejected by "my lords" on the following day.

At the same time, the same firm offered, for the Serpentine alone, to supply one million gallons daily to Kensington Palace-gardens, and thence to the Serpentine, for 11,500*l.*, and to work it at the charge of 700*l.* a year. This proposal the secretary also rejected on the 11th August, 1859, "by order of the Chief Commissioner."

These data are given from published documents, in apprehension that the works now in operation, whatever may be the cost thereof, will turn out wholly insufficient for the objects so much needed by the public in securing either pure water or a quantity sufficient to meet even the waste by evaporation, not to speak of all of the ornamental or landscape effect.

Now, a contract has been actually concluded at a much larger sum, for not only pumping back the natural supply of the Serpentine into a filtering bed at the Westbourne end, whence it is to be under constant process of filtration, and return to feed the whole expanse of a mile in length.

At this moment, about an acre and a half of the water-bed is dammed off; the slush or mud is being cleared out; tunnels are being built, and iron pipes laid, to withdraw the same identical bath suds of two thousand washers daily, and to return it gradually into this Lake of Acheron by way of purification. But this is not all; for a steam-engine, and, of course, a house, is to be placed on an insulated tongue, close to the bridge at the Victoria-gate entrance.

There is an apprehension, not a little excited by recent speculations, that unwise men may seek to win laurels by short cuts, or not by daring raids against good taste or common sense; no mean skill in diplomacy has been exercised to shield wrong-doers already; and the fear is that politicians, and not engineers, are at the head of the *Improvement Commission*.

Save us, oh! save us, the little of nature that remains in the metropolis; or, if violence is done to simplicity,—if we are bereft of the ornamental and beautiful,—substitute what is really effective and useful.

It is not only the needless waste of large sums of money that is dreaded, but the failure of people plans (that of a table fountain-*toy*), the adoption whereof would be a national disgrace.

QUONDAM.

FALMOUTH DOCKS.—Messrs. William and John Freeman have received the formal acceptance of their tender for the supply of granite for the construction of these works. The half-yearly meeting of the Docks Company is appointed to be held on Tuesday, the 28th instant, and Lord Falmouth has accepted the invitation of the directors to lay the foundation-stone of the breakwater on the day of the meeting.

BALL FOR THE BUILDERS' BENEVOLENT INSTITUTION.

The newly-decorated Willis's Rooms, St. James's, received, on the 16th inst., the friends of the Builders' Benevolent Institution, to the number of about 520, and the ball passed off with great satisfaction to those who were present, and the gain of more than 100*l.* to the excellent charity in whose cause they had assembled. Mr. Joseph Bird officiated, as he has heretofore done, honorary secretary, and with Mr. A. G. Harris, the acting secretary of the institution, exerted himself to ensure the comfort of the visitors.

The rooms look bright and pleasant with their new face, and, if we consider the haste in which the works were executed, are creditable to Mr. Kneekuck's skill as a decorator.

PLEYL LAND COMPETITION.

The committee have awarded the first premium of twenty guineas to Mr. George Felton, architect, Llandudno; and the second of ten guineas, to Messrs. Williams and Underwood, architects, Denhigh. And, inasmuch as many of the plans possessed considerable merit, the committee awarded a third premium of five guineas, to Mr. George Toussaint, of Deva-terrace, Chester.

A MISCREANT IN THE BRITISH MUSEUM.

It is with very great regret we notice that the authorities of the British Museum connected with the library, have felt it necessary to exhibit certain mutilated books in the reading-room, with a note directing attention to the circumstance that portions have been torn out by some person or persons who have visited the room. In one of these, Haydn's Dictionary of Dates, several leaves have been wilfully abstracted, and from an atlas a large map has been torn.

The principal librarian, in directing attention to this most disgraceful act, expresses a hope, in which we cordially join, that the readers will endeavour to discover and put a stop to such proceedings in future. We are sure that no one, except those concerned in this infamous act, can fail to regret this most unpleasant occurrence, and hope that the delinquent or delinquents will be brought to justice. An offence such as this cannot be too severely reprobated. Every reader has an interest in discovering and punishing the scoundrel.

CAMBRIDGE RIFLE BUTT.

The committee of the rifle club have purchased a piece of ground about 450 yards by 50 yards, and erected at the end a brick wall, plated with iron. Several persons interested in property within the line of fire, have threatened legal proceedings on the ground that the wall afforded insufficient security to them. The committee have lately had the butt inspected by a Government official from Hythe, who has reported against it. He requires additional work to the extent of about 350*l.*, to be executed before he can allow it to be used.

The butt was erected by a builder who furnished his own design,—we presume under the common but mistaken notion, that such an arrangement would save an architect's commission.

There are other rifle corps who appear to be at sea in this respect: they are unable to use their barrel because they can't get their butt.

COTTAGE IMPROVEMENT.

MISS MARTINEAU gives, in *Once a Week*, the particulars of such a cottage as can be built in Westmoreland for 60*l.* "By the plan," says the lady, "it will be seen that there is a fair-sized front room [13 feet by 10 feet], a kitchen [12 feet by 10 feet 6 inches], and two bed-rooms above, all having fire-places, by the chimney running up the middle of the house. The walls are two feet thick, the windows large, and the ventilation ample. There is, however, no out-door accommodation; and a pump and sink cannot be afforded for the money. The items of cost are these, 'walling' comprehending the entire building, and paving, and all the stones of the walls:—

Walling .....	£23 0 0
Plastering .....	7 0 0
Slatting .....	10 0 0
Carpenter's work, which includes the entire fitting up of the interior .....	20 0 0
	£60 0 0"

It is to be regretted that Miss Martineau should

lend countenance to any extent to the construction of labourers' cottages with only two bedrooms: there should always be three; so that the male and female children may be separated.

We take the opportunity of mentioning again "The Cottage Improvement Society," Adam-street, Adelphi. The cottages, with three bed-rooms, of which they have circulated plans, can be erected for 160 guineas the pair. Cottages for families with only two bed-rooms lead to an incredible amount of vice.

THE ARCHITECTURAL EXHIBITION.

We must remind our readers that the tenth exhibition will be opened to the public on the 11th of April next, and will remain open till the 30th day of June. All drawings and models must be delivered on the 20th of March. It is suggested that the description sent with each drawing should contain an account of materials, cost *after completion*, object, &c., of the building or design.

Plans and sections intended only to illustrate arrangement, should be drawn to a *small scale*. Inattention to these points, it is mentioned, will, in many cases, cause plans and sections to be left unlung.

There will be a department for models, carvings, decorations, specimens of manufactures, and inventions connected with building, as heretofore.

TREATMENT OF TENDERS FROM BUILDERS.

STR.—Will you please insert the following in your next paper, as we most strongly protest against the system adopted in the decision of this court.

We are informed by the architect that his client "avails himself of the privilege of a clause" in the advertisement for tenders, viz., "lowest nor any tender necessarily accepted," as it appears to us to enable him to get an idea of the cost at the expense of two and trouble of the five or six builders who estimate. If parties about to build have not sufficient confidence in their architect and builder, why not pursue a straightforward and upright course, and employ a disinterested surveyor to go through the bidding estimate, and pay the surveyor for it?

ONE OF THE FIVE.

Villa Residence, Atherstone.—The contract for this work was this day (February 16th) let to Messrs. J. G. & John Fox, for the sum of 2,900*l.*, subject to a reasonable reduction on the price of timber in case the duty should be reduced.

The following tenders were received:—

Pooley .....	£3,620 0 0
Hudson & Meredith .....	3,100 0 0
Spencer .....	2,978 0 0
Harrod .....	2,850 0 0
Potter .....	2,837 0 0

R. JENNINGS, Architect.

THE MORNING ROOM AT ASHRIDGE.

STR.—At the same time that I thank you for exhibiting to me such a choice and unusual subject as the "Morning Room at Ashridge," I must say that it would have been all the more valuable and interesting had Mr. Digby Wyatt volunteered, or had you extorted from him, some particulars that would enable us to understand what cannot possibly be made out from the partial view of the room. To the best of my power of computation, it would not have taken many columns to state the actual dimensions of the room, that of height included. What one is most of all at a loss to understand is, whether there be a corresponding loggia or pillared recess on the side opposite to the one shown in the drawing.

Craving permission to do so, I would further remark that the room does not at all answer to the character of a morning one, the style of its decoration being so exceedingly ornate: this, however, partakes of hypercriticism. A very positive objection, on the contrary, may be urged against the fireplace and chimney-piece, as being not only a decidedly unwholesome feature, but one quite at variance with nearly all the rest of the design. I desist from further observations, or I should protest against the gratuitous offensiveness, to my eye at least, occasioned by the top of the curtain, before the book-shelves being lower than that of the hooks on the uppermost shelf; yet nothing was easier than to avoid such defect, and, at the same time, consult architectural consistency, by merely continuing the entire entablature correspondingly with that over the two projecting columns. It will very likely be said, in excuse for it, that, after all, such irregularity is a very trifling offence,—one scarcely worth animadvert-

upon. But then "the smallest speck is seen on snow;" we are therefore warranted in looking for and demanding the most conscientious observance of synthesis and symmetry in architectural design; notwithstanding that, a new school of architectural antinomianism has now come up, and preaches up the disregard of architectural rhythm as a certain and safe short-cut to architectural eloquence. My pen itches to say a great deal more on this abominable heresy. But the safer course may be to add no more than yours, &c.—  
ZETA.

**BISHOP AUCKLAND COMPETITION.**

Sir,—I really am of opinion that the profession are much indebted to the Northern Architectural Association for the resolutions they passed and addressed to the directors of the Bishop Auckland Town-hall and Market, and it is to be hoped that those gentlemen will not only be induced to revise their decision by being guided by the opinion of those who are capable of forming a correct judgment on the labours of the architect in preparing a design for such a building, but that they may, with others, be able to establish the idea of paying a value of £1, on any set of drawings they may choose to select. It is time that such a course was put a stop to, and the Northern Architectural Association merit the thanks of the profession.  
A SCANDINAVIAN.

**LYNCOMBE CEMETERY CHAPELS COMPETITION.**

Some time since an advertisement appeared in the columns of the *Builder*, offering the munificent premium of £100, for plans of chapels, &c. for Lyncombe. Some forty architects responded to this advertisement. The Board, by advertising in the *Builder*, had thrown the matter open to the whole profession, yet, as I am informed, one of the first resolutions proposed was, that designs not sent in by Bath architects should be at once excluded. Although this resolution was rejected by a small majority, yet there have been selected, had it been carried by local architects. The Board allowed the names of competitors to appear. The Board limited architects to an expenditure of £500. The Board invited designs from a local man, the lowest responsible tender for which is, as I am informed, £2,300.  
A COMPETITOR.

**ARCHITECTS' RESPONSIBILITIES.**

GAY B. DICKSON AND OTHERS.—COURT OF COMMON PLEAS.

Mr. Lush, Q.C., and Mr. Barnard appeared for the plaintiff, and Mr. M. Chambers, Q.C., Mr. Hawkins, Q.C., and Mr. Dowdeswell, for the defendants.  
The declaration stated that the defendants were employed by the plaintiff as surveyors to value the beneficial interest of one Benjamin Parker, in the lease of certain premises at Millwall, together with the plant and machinery thereon, and required to report whether the interest of Parker in the said premises, plant, &c., was of sufficient value to warrant an advance to Parker upon mortgage by the plaintiff of £2,000, upon the security of the said premises, plant, &c. The defendants reported that the said interest was of sufficient value to secure such advance; that the plaintiff had thereupon advanced to Parker the sum of £2,000; that the interest of Parker was not, in fact, of sufficient value to secure such advance, whereby the plaintiff was damaged, &c.

The circumstances of the case were that in November, 1857, Parker, who was the lessee of the premises in question, being then under peculiar embarrassment, and a prisoner in the Queen's Bench Prison, made applications for a loan of £2,000, to an attorney named Marsden, who, acting conjointly with an attorney's clerk named Brady, the plaintiff having then undertaken to find the money, the plaintiff having then undertaken to find the money, the defendants, Messrs. Dickson & Davenport, who carry on business as surveyors, valuers, &c., in Bucklersbury, Messrs. Dickson & Davenport, who carry on business as surveyors, plant, machinery, &c., and state their opinion whether Parker's interest therein (the lease had at that time only two years and a half to run, but it was represented to defendants that there would be no difficulty in procuring its extension) was of sufficient value to cover the advance of £2,000, to be made by the plaintiff. Nothing was said either to the plaintiff or to the defendants of the precariousness of Parker, then a prisoner, and who had already been three or four times a bankrupt; and Messrs. Dickson & Davenport, under the impression that Parker, who was represented as the patentee of a certain invention connected with railway sleepers, was a substantial person, who would be able to carry on his business successfully, in connection with Marsden, an engineer carrying on business in Old-street, St. Luke's, the third defendant, pronounced that Parker's interest in the premises was sufficiently valuable to warrant the proposed advance. In doing so, they acted upon a belief of Parker's ability to continue his business, there being no material respect to his machinery and similar property a material difference between the value as between outgoing and incoming tenant and the "paling down" or sale by circumstances.  
Mr. Chambers having addressed the jury for the defendants, proceeded to call the defendant Davenport.  
The jury, however, without hearing his evidence, in the present case, declared their opinion that the defendants in their valuation had exercised all reasonable skill and care, and returned a verdict accordingly.

(CHESTER ARCHITECTURAL SOCIETY.—The monthly meeting of this society was held on Monday evening last. The Rev. T. N. Hutchinson read a paper on "Gothic Windows and Window Tracery," after which a conversation followed.

**TRADES' UNIONS AND STRIKES.**

A PAMPHLET of fifty-two pages, entitled, "Trades' Unions and Strikes: their Philosophy and Intention" has been published by T. J. Dunning, secretary to the London Consolidated Society of Bookbinders. It is a partisan production on the side of the men, ignores some unquestionable facts, and restates assertions that have been denied. Nevertheless it is temperate and reasonable in its tone, cleverly put together, and we see no reason why all the respectable publishers who were applied to refused (according to the advertisement) to publish it. The writer does not deny that a "trades' union may be so worked as to be pernicious;" what he urges, is that such is not its natural and proper use. He contends, notwithstanding all that has occurred, that the state of employer and employed is for the most part that of amity. "Under no other circumstances," says he, "could the trade and manufactures of the country have so greatly prospered and extended. It should, therefore, be the duty of both to prevent this harmony being interrupted. Each should consider this state their true relation, and consider its interruption the greatest of calamities." This advice cannot be too often reiterated.

In the "Working Men's College Magazine," a history of trades' unions and strikes has been commenced by Mr. Bennett, M.A. of Christ Church. It is not at present sufficiently advanced to enable us to form an opinion of its usefulness. The Magazine is threatened with dissolution for want of funds, but it is to be hoped that this will be averted. It forms an excellent means of communication between the colleges, and appears to be exceedingly well conducted.

A committee, dating from 269, Strand, are circulating a handbill urging the establishment of Councils of Conciliation and Arbitration. After giving some instances of the losses occasioned by strikes, it says,—

"The moderation of demands, the justice and equity of a cause, will always command respect and sympathy, and the friendly advice of the press and the public, more particularly when the proceedings do not interfere with public right or public policy.

We therefore appeal to all to give their earnest support to establish a legal tribunal, believing as we do that great public advantage would be derived therefrom, that numerous causes of dispute arise from the want of confidence and sympathy between masters and men; and that the separation of feeling might be changed into a much kinder sentiment by a more intimate acquaintance of each others' views.  
We leave it with you to decide, whether reason is better than force; conciliation and arbitration better than strikes; peace and piety better than strife and starvation.

We therefore most urgently request that each society will without delay petition the House of Commons to pass a bill to enable masters and operatives to establish equitable councils of conciliation and arbitration."

**Books Received.**

*A Practical Treatise on Sewerage and Drainage.*  
By Lewis H. Isaacs, A.R.I.B.A., &c. London: Printed for the author (2, Verulam-buildings, Gray's-inn), 1859.

This treatise has been specially written for the use of members of vestries, district boards of works, and local boards of health, and is intended to initiate them into the leading principles that should regulate the disposal of the sewage of towns and buildings, and the forms, sizes, and best means of constructing the sewers and drains designed to effect that purpose. The book is illustrated by explanatory plates. It seems to be well adapted to the purpose in view. The author disclaims any attempt to introduce novel theories or views.

With reference to the utilization of town sewage, a few of his observations on which, we may quote, the author remarks,—

"It must be admitted to be a subject of deep regret, that after all the care and trouble bestowed in arranging a system of drainage whereby the removal and collection of feculent matter may be most satisfactorily effected, we have not discovered the means, up to the present time, of employing the result of our labours to profitable account."

It is almost incredible, that at a time when the means of restoring fertility to the exhausted soil are sought in all the kingdoms of nature, and by the help of all the sciences which minister to the wants of man on earth, an immense mass of fruiting material, lying, so to speak, at our doors, should be cast into the sea and wasted. The Chinese maintain, that in this particular their civilization is not much older than ours, but of a higher quality; and they listen with contempt to the methods to which we resort to rid ourselves by pouring into the ocean as a nuisance what they most carefully collect and preserve, and regard as no more wealth. And indeed, town sewage, if rightly treated by chemistry, contains matters which may be turned into veritable gold, and constitutes, in fact, a perfect mine of wealth."

Science, he thinks, cannot fail to solve this

\* At 5, Raquet-court, Fleet-street.

most important problem, so that at no distant day poison shall be transmuted into food, malaria into health, stench into fragrance, and the most loathsome substances into the freshest flowers and most delicious fruits. He is of opinion that "the utilization of the sewage of a town will be best effected, as far as the non-production of nuisance is concerned, by the process of precipitation at the outlet, and it remains for our chemists to discover the means whereby this great desideratum may be most effectually and profitably accomplished."

The recommendation of the use of perchloride of iron, as distinguished from all other modes of defecation or deodorization in the report of Drs. Hofman and Franklaud, to the Metropolitan Board of Works, is, he rightly thinks, a step in advance towards the solution of the chemical problem."

**VARIORUM.**

In "Observations on the Report of the Royal Commissioners of the Refuge Harbours Enquiry," the author "G. Beaulere, esq." speaks of the said commissioners as "illogical," "unthinking detractors," "influenced by personal motives," and "perpetrators of a 40-horse power job," because of the way in which they treat the claims of Ardglass Bay. The writer may be very right in his views, but he does not advocate them with either good temper or good grammar.—In "A Letter" to Lord Palmerston "on Stoppages from the Wages of the Framework-Knitters," by Mr. T. Winters (Truman, Nottingham, publisher), the writer urges a grievous and but too true cause of complaint against the abominable framework-system, by means of which the poor framework-knitters of Nottingham, Leicester, &c., are ground to the dust by unscrupulous master frame-proprietors.—a complaint, many of our readers may remember, as to which we have more than once allowed writers on the subject and correspondents of the *Builder* interested in these hard-used operatives, the use of our columns, in aid of their endeavours to excite the attention of the public and the Legislature. Mr. Winters has our best wishes for the success of his "Plea for Parliament," as he calls his little tract or letter on this subject.—"The Friend of the People" is a weekly journal of Social Science, which deals sensibly with the numerous subjects included in that term. If wide circulation, however, be desired for it, it must be made a little more lively

**Miscellaneous.**

CHATHAM.—Great activity prevails in the dockyard among the contractors and others employed on the several works in progress for enlarging and improving that establishment. In addition to the works completed and those in progress, the Admiralty have decided on an extension and improvement of the dockyard by means of convict labour. The improvements contemplated will involve an outlay of 160,000*l.*, a portion of which has been already expended, leaving 127,000*l.* still required to complete the works. The total estimated amount required for the works to be performed at this dockyard for the ensuing year is nearly 30,000*l.*

IRON MINIMUM.—Lead minium, or red-lead, has been considered till now, in England, as the best opaque colour to cover wood and metals. Doubts, however, have arisen as to its solidity and power of preserving iron vessels from oxidation. Steam navigation companies have had their attention attracted by the injuries caused on their steam-vessels painted with red-lead, after one single voyage to the East Indies. Engineers and chemists have observed histers on the minium cover, and the iron hull brought to light. They have ascribed this awkward effect to the superposition of the lead colour on the iron, and supposed the injury to be unavoidable as long as there would be any lead in the colour. An invention, however, has been made in Belgium, called *iron minium*, which penetrates the objects painted with it, gives them, it is said, an indestructible varnish, and effectually prevents them from oxidizing. This iron minium is used on the Continent, by Belgian and several other railway companies, by ship-builders at Antwerp and elsewhere, by military and civil engineers; and the engineers of the Dutch War Office are said to have declared that the painting with iron minium costs only a fourth part of the painting with oxide of lead. The basis of the newly-discovered colour is *peroxide of iron*; it contains *no acid at all*, and is regarded as a cheap and good paint for bridges, railings, fronts of houses, hulls of vessels, &c.

A HINT TO BUILDERS.—A correspondent expresses regret, and with some reason, that, in constructing houses for the working classes, the juvenile portion of the family are not properly provided for in one of the offices.

A CORPORATION IN A FIX.—The Corporation of Gravesend having mortgaged the whole of its property to Mr. Wells for the sum of 12,721*l.*, notice has been given that the mortgage will be foreclosed on the 20th March next. At the last meeting of the corporation the subject was discussed; and the town clerk stated that there were no means of obtaining the required sum. The Town-hall and the whole of the corporation estates will therefore become the property of Mr. Wells on the day named.

USELESS REDUCTIONS.—Unless the pruning-knife can be applied, not merely to a year's estimates for our larger public expenditure, but unless an economical administration for the future can be secured, you do nothing to the purpose. We built floating batteries at the beginning of the Russian war, then we built harbours at the end of it. After that, last year, we gave all our energies to building great ships, and gunboats were pool-pooled. This year steam-runs are to be constructed; and, with a fleet of 70,000 men, we are subsidizing a naval reserve besides. All the while our administration is a by-word! Sir R. Walker is still allowed the privilege of spending millions with less control than is thought necessary where a few hundreds have to be applied in any other department.—*The Piccadilly Papers*, No. 1. (A good idea.)

THE TIMBER TRADE AT LEEDS.—A meeting of timber merchants was held at the White Horse Hotel, Leeds, on Wednesday, Mr. R. Harrison, of Leeds, in the chair, and the following resolutions were unanimously agreed to:—"1. That this meeting, while it approves of the proposed reduction of duties on foreign timber and deals, as announced in the budget of the Chancellor of the Exchequer, yet deems it but an act of simple justice to the inland timber merchants, who have, as usual at this period of the year, just laid in large stocks for the spring trade, that a drawback should be allowed by government on their duty-paid timber and deals. 2. That it is necessary to obtain an interview with the Chancellor of the Exchequer at the earliest possible period, in order to place before him the anomalous position of the inland timber merchants, and to point out the great loss to which they will be subjected should the proposed reduction be made regardless of their interests. 3. That it is desirable there should be a meeting of the inland timber merchants in London, and that invitations, therefore, be immediately sent to the merchants of other inland towns, to send representatives to meet at Peacock's Hotel, New Palace-yard, Westminster, on Saturday next, at the 18th inst., at twelve o'clock at noon, to determine upon further proceedings." Other resolutions were also adopted to further the wishes of the meeting, and Mr. Harrison and Mr. Illingworth were appointed as a deputation from Leeds to attend the proposed general meeting of the trade in London.

INAUGURATION OF STEPHENSON MEMORIAL.—The School and Institute buildings on the site of the cottage at Willington-quay, where George Stephenson resided, and where his son Robert was born, has been inaugurated. Dr. Bruce, of Newcastle, opened the proceedings, and Lord Ravensworth delivered an address. The corporation of Newcastle erected the plot of ground for the purpose of granting the schools. The building, with its appurtenances, occupies about a quarter of an acre. The erection is from architectural designs by Mr. A. Dunn, the contractors being Messrs. Gibson and Stewart. It embraces three separate school-houses; a boys' school, capable of containing 150; a girls' and an infant school, each adapted for about 100 children. A dwelling for the master and mistress is attached, besides a reading-room for the inhabitants of the neighbourhood. The style of the building is Gothic. It is of brick, with stone facings. The girls' school has been used as such for some time, and the boys' school has just been opened. The old Mechanics' Institute of the village will resume its operations in the hall assigned to it; the books and other property belonging to the Institute being handed over to the trustees of the new building for that purpose. Once more we must express our regret that the cottage of the Stephensons was pulled down, in contradiction to the assertion made to us at the time; and we scarcely think there was much delicacy of feeling in consulting the late Mr. Robert Stephenson on the subject, or in trusting forward his opinion in favour of its demolition as a ground for sweeping it away.

GAS.—The town council of Ross have resolved to reduce the price of the gas supplied by their gas committee to the inhabitants, from 8*s.* to 6*s.* 6*d.* per 1,000 cubic feet, and to charge the public lamps to the rates at 2*l.* each per annum.

—The Leeds old and new gas companies have resolved to lower the price of their gas from 4*s.* 6*d.* to 4*s.*, subject to the usual conditions. The gas company of Marsden, near Huddersfield, have declared a dividend of ten per cent. for the last year.

DISCOVERY OF ROMAN REMAINS IN WILTS.—An interesting discovery of Roman buildings has just been made, it appears, in the parish of North Wraxall, Wilts. The workmen have already cleared the foundation walls of one entire building, measuring about 130 feet by 36 feet, and containing more than sixteen separate rooms, or courts, and traced out several other walls extending over an area of two or three acres. Among other articles met with, were numerous iron cramps, a large iron key with complicated wards, several iron chisels, bronze style, coins, &c. Mr. Ponlett Serpice is superintending the excavations. North Wraxall is on the "Fosseway," or "Acman Street," between Bath and Cirencester.

HENRY IV. AND HIS DRAINAGE SCHEME.—In the year 1599 Henry IV. published an edict enforcing the draining of marshes throughout France, and it was mainly instrumental in causing the "grands dessèchemens de marais pendant plus d'un siècle." On this is based the new project of drainage in France, submitted to the Emperor a few days ago by the Ministers of Public Works, of the Interior, and of Finance. The total marshes to be drained is 185,460 hectares, of which 5,061 belong to the state, 58,383 to communes, and 122,015 to private persons. The lands and uncultivated grounds belonging to communes are 2,706,672 hectares. All the reclaimable ground is to be valued by a state decree, and the works are to be executed at the expense of the communes. If the latter have not the means, or are unwilling to carry out the designs, the Government will cause the works to be done, and look for reimbursement with interest. In cases where the communes are unable to effect the reimbursement, they will be exonerated from any claims from the crown on ceding to the state one-half of such land reclaimed. Ten million francs are proposed to be advanced by Government for the present.

ZEOIDELITE.—Such is the name which has been given to a new composition which has recently been patented by Mr. Joseph Simon, of Paris, and intended as a substitute for lead. According to the *Mining Journal*, he mixes, with about 19 lbs. of sulphur, 42 lbs. of broken jars or glass finely pulverised; he exposes the mixture to a gentle heat, which melts the sulphur, and then stirs the mass until it becomes thoroughly homogeneous, when he runs it into suitable moulds, and allows it to cool. This preparation is proof against acids in general. To unite it in slabs no solder is required; a portion of the molten zeoideite being run in between the slabs placed 1 inch apart, when the heat being 200° cent., the edges of the slabs will be melted, and a uniform surface will be obtained, the whole forming but one piece.

FRIGHTFUL ACCIDENT AT THAMES-BANK.—On Saturday afternoon, Mr. Bedford, the coroner for Westminster, held a lengthened inquiry at the King William the Fourth Tavern, Thames-bank, into the death of Oliver William Thompson, aged twenty-three years, who lost his life by the fall of an iron platform on the premises of Messrs. Simpson, engineers, Thames-bank, on Tuesday before last. The platform was about 40 feet long and 10 feet high. It was constructed to hold coke for feeding the furnaces, and there were about 48 tons upon it. The construction was of iron, and was supported by iron girders, 21 feet long by 12 inches deep. These girders were imbedded in the wall, and the distance between the bearings was 18 feet 6 inches. While a number of men were at work underneath and about the place the greater portion of it came down, completely burying the deceased and others who were at work under the stage. An examination of the broken girders showed that in one of them there was a flaw, consisting of dross or scum, in the middle of the iron of one of the girders. The stage was supposed to be capable of holding 100 tons, but 70 or 80 were the most ever placed upon it. The jury returned a verdict of accidental death, from the breaking of the scaffold. In answer to a juror, the court was informed that the Messrs. Simpson had done everything for the family of the deceased, two members of which were in the employ of the firm.

HIGHEST TIDE FOR A CENTURY.—M. Babinet, the successor of Arago, says, in the *Journal des Debats*, that there will be the highest tide on the 8th of March next that there has been in Europe for a century. Let those who are concerned look out.

TENDERS

For building new offices at 29, Fleet-street, for the directors of the Promoter Life Assurance Company. Mr. William G. Bartlett, architect. Quantities prepared by Mr. D. Campbell:—  
Lee & Son ..... £4,147 0 0  
Mansfield ..... 3,573 0 0  
Ashby & Son ..... 3,540 0 0  
Rider ..... 3,533 0 0  
Piper & Son ..... 3,409 0 0  
Macey ..... 3,285 0 0  
J. Wilson (accepted) ..... 3,265 0 0

For National Orphan House, Ham Common, Surrey. Quantities supplied. Messrs. Waring & Blake, architects:—  
Lucas, Brothers ..... £5,158 0 0  
Turner & Sons ..... 4,799 0 0  
Holland ..... 4,734 0 0  
Hibcock ..... 4,469 0 0  
Gannon ..... 4,129 0 0

For a villa residence, Atherstone. The contract for these works has been let to Messrs. George J. & John Fox, for the sum of £2,000 subject to a reasonable reduction on the timber, in case the duty should be reduced. Mr. Robert Jennings is the architect. The following tenders were received:—  
Pooley ..... £3,600 0 0  
Haddon & Merideth ..... 3,140 0 0  
Spencer ..... 2,978 0 0  
Elston ..... 2,560 0 0  
Potter ..... 2,837 0 0

For new schools, Holy Trinity district, Burton-on-Trent. Mr. George Edmund Street, architect:—  
Wilmam ..... £2,974 7 0  
Revelley ..... 2,961 0 0  
Pooley ..... 2,470 0 0  
Low ..... 2,250 0 0  
Broadbent ..... 2,212 0 0  
Lilley & Elliott ..... 1,233 0 0  
Thompson & Fryer (accepted) ..... 1,140 0 0

For new warehouse, Allen-street, Clecklenwell, for Messrs. Frost. Quantities not supplied. Mr. W. P. Griffin, architect:—  
Brass ..... £1,370 0 0  
Ebbage ..... 1,274 4 0  
Fowler ..... 1,247 0 0  
Elston ..... 1,233 0 0  
Hunt ..... 1,237 0 0  
Brake (accepted) ..... 1,212 0 0

For new warehouse in Windsor-street, Bishopgate-street, City. Messrs. Trench Hill & Paraire, architects. Quantities supplied:—  
Myers ..... £1,583 0 0  
Cobea ..... 1,515 0 0  
Holland ..... 1,409 0 0  
Hill ..... 1,388 0 0  
Piper & Sons ..... 1,345 0 0  
Turner and Sons ..... 1,349 0 0  
Lang ..... 1,299 0 0  
Patrick & Son ..... 1,271 0 0  
Brass ..... 1,233 0 0  
Elston ..... 1,192 0 0

For rectory house, Orwell, Cambridgeshire. First Tenders:—  
Quinise & Attack, Cambridge ..... £1,445 0 0  
Gray & Son, Cambridge ..... 1,295 0 0  
Second Tenders, after the foregoing were opened and the amount of the same ascertained:—  
Gimson, Royston ..... £1,360 0 0  
Wilmam, St. Neots ..... 1,169 0 0  
Third Tenders after a deduction of work to the value of 7*l.* was made:—  
French, Melbourn, ..... £1,338 0 0  
Wilmam, St. Neots ..... 1,235 10 0  
Gray & Son, Cambridge ..... 1,225 0 0  
Quinise & Attack, Cambridge, (accepted) ..... 1,190 0 0

For new infant school and teacher's residence, St. Mary's district, St. Marylebone. Mr. Eales, architect:—  
L'Anson ..... £1,444 0 0  
Morris & Phillips ..... 998 0 0  
Keyes & Head ..... 993 0 0  
Longmire & Burge ..... 877 0 0  
William Carr ..... 870 0 0

For plumber's work of two houses at Spring Grove, Isleworth:—  
Thornbury Houses. Mr. Tufnell's.  
Lovegrove ..... £220 0 0 ..... 100 0 0  
Bacon ..... 152 0 0 ..... 75 0 0  
Oiler ..... 154 0 0 ..... 85 0 0  
Howell ..... 150 0 0 ..... 74 8 0  
Roband ..... 135 10 0 ..... 75 10 0  
Curtis ..... 121 2 4 ..... 65 13 10  
Eastham ..... 126 10 0 ..... 63 6 9  
Crupper ..... 125 0 0 ..... 72 13 0  
Godson ..... 118 9 5 ..... 69 9 10  
Mason's work, same houses:—  
Late ..... 213 10 0 ..... 84 15 0  
Welber ..... 179 0 0 ..... 58 10 0  
Beaver ..... 169 0 0 ..... 59 0 0  
Mitchell ..... 160 0 0 ..... 65 0 0  
Keley ..... 155 0 0 ..... 58 0 0  
Dorcy ..... 153 0 0 ..... 53 0 0

For alterations & additions to Holy Lodge, Richmond. Mr. William G. Bartlett, architect:—  
Penfold ..... 690 10 0  
E. & F. J. Wood (accepted) ..... 550 0 0

# The Builder.

VOL. XVIII.—No. 891.

Incentives to Study in  
London.



I ME was, when our country consins, reaching London by tedious stages of some days' duration, considered themselves recompensed for their fatigue by a sight of the lions and other wild beasts then kept in the Tower. Seventy years ago there was not a very

marked improvement in the class of entertainment provided for their edification. Sir Joshua Reynolds was president of the infant Royal Academy; the British Museum was located in a nobleman's deserted house, and so little visited that, as the books show, in a whole month there were sometimes but five readers in the library; Miss Burney, penning her sketches of London life, as seen from that central rendezvous of wits, her father's house, in St. Martin's-lane, makes her country-bred heroine, Evelina, visit Ranelagh, as the most absorbing of metropolitan attractions. But in those days our country consins are better provided for. They may now speed up to town, stageless, with steam steeds, and find intellectual feasts of the highest order spread for them in every direction. On all sides they may see around them incentives to greatness, which can scarcely fail to produce an effect upon every mind, however unimpressible. Evelina could now visit educational collections from which she might return, if she had eyes to see with, and ears to hear with, a beautiful blue-socking. At two extreme points of the metropolis two magnificent establishments have arisen within the last half-dozen years, vying with each other in the vitality of their efforts at industrial and art teaching—the Crystal Palace and the "South Kensington" Museum, both marvels our ancestors would have been accounted mad or dreaming to mention. Within little more than the same space of time, Montagu House has been razed to the ground, and the present noble and substantial Museum built on its site; the National Gallery has been removed from Pall-mall to Trafalgar-square; the Geological Museum built; and similar improvements made to public property of an educational description in numerous other instances. The new reading-room at the British Museum contains twenty-five miles of book-shelves and upwards of half a million books, whose number annually increases to an extent of 20,000.

No eye can look with apathy upon the price-less literary treasures carefully preserved in this library. In one case is a half-finished sonnet to a lady, written in Italian, by Michelangelo, on the reverse of a rough chalk sketch of a man's face and leg; in another, an order from Peter the Great to his shipbuilder in St. Petersburg, to put the ship, *La Ferme*, in the same order and repair as that in which it arrived from England. In another case, among the avenues of table and screens spread out with missals and autographs of the first interest, is a letter from Lady Jane Grey, calling on the Marquis of Northampton for his assistance in the defence

of her title against the "fayned and untrewed" claim of the Lady Marye, bastard daughter to our great uncle Henry the eighth, of famous memory," signed, "Jane the Queene." And not far from this is the small manual of prayers, margined with her handwriting, the poor lady used on the scaffold. King George II. gave to the Museum all the old royal libraries accumulated from the time of Henry VII. Among these regal relics is a duodecimo volume, whose silken cover is embroidered with silver, in the handwriting of Queen Elizabeth, when princess. It consists of a translation of English prayers or meditations, composed by Queen Katharine Parr, into Latin, French, and Italian, with a dedication to the king, her father, to whom it was presented. There is also a crimson book, with gold clasps and corner pieces, entirely written by King James I. for the instruction of his son, Prince Henry; and a quarto volume in the handwriting of Charles I., when prince, consisting of a selection of passages from the Latin poets, presented to his royal father, to show his progress in his studies. This old regal treasure is rife with glimpses of court occupation 300 years ago. In a book of Hours, preserving the autograph of Henry VII. and his Queen Elizabeth, Henry VIII. and Queen Catharine of Aragon, is contained a prayer translated from the Latin by the Princess Mary, when only eleven years of age. With these tangible hits of history before his eyes, who would not be an historian? Nor can the enthusiasm of the visitor be unmoved when he finds himself before the original Book of Indentures made between Henry VII. and John Islippe, Abbot of Westminster, for the foundation of the King's Chamber in the Abbey, enhanced in interest as it is with the enamelling on its crimson velvet cover; or before the famous Durham Book, cast out of the *Season*, after shipwreck, uninjured, "through the miraculous agency of St. Cuthbert;" or before the Psalter of the Nuns of St. Clare, whose slender figures wrought the intricate needlework on the cover; or before the Psalter of Jerusalem, in a cover of carved ivory, set with turquoises. All these things address themselves to the students of the past, as do the contents of the Roman, Anglo-Roman, Greco-Roman, Lycian, and Assyrian galleries under the same roof. View the veritable fragments from ancient Greece, caryatides, columns, friezes, architraves, cornices, and coffers! Think of the sun-laked bas-reliefs from the overthrown cities of Assyria, representing hull hunts, lion hunts, sieges—showing architectural effects—serrated parapets and arched gateways, capitulations, the triumphal returns from battles,—kings, soldiers, priests, musicians, horses, and grooms; bronze bowls, ornaments, weapons, vases, ivory carvings, fragments of beautifully coloured glass, and, more curious still, the two odd eyes intended for statues, one of which has an iris as deeply blue as an Assyrian pool. Then contemplate the sand-bidden remains of Egyptian magnificence, the sculptures, the obelisks, sarcophagi, and paintings; the ebony chairs inlaid with ivory, the lamps, the bronze mirrors, the vessels in alabaster, serpentine, glazed steatite, porcelain, glass, and terra cotta; the tools, musical instruments, and writing implements, till you can trace the manners and customs of an ancient Egyptian to the dread day when he was made a bugle-decked mummy.

The South Kensington collections may be more especially considered Young England's Museum. There are arranged educational apparatus of every description, from the approved forms on which scholars should sit, to the well-chosen books and maps from which they should learn; so that any country clergyman coming to town for, perhaps, a rare holiday, may take home to his village school information he could scarcely have hoped otherwise to acquire. This boon is so new, that we are not able to estimate the incalculable effect it is certain to produce upon the educational developments of the rising generation. The horn-book, already a thing "not generally known" (*vide* Mr. Timbs), will, by its influence, be looked back upon as a leaf from the Middle Ages. The scheme of this section

of the collection is assisted by the others; in the first degree, perhaps, by the illustrations of food and animal productions. Under this head we can see creations, almost, at a glance; the cereals and fruits of every clime, every thing that can be either eaten or worn, furs, feathers, woollens, silk in every form, in cocoons, wound, dyed, and woven; in fine, everything the ingenuity and enterprise of man could collect is here displayed. These, however, and the architectural illustrations and materials have been too often mentioned in these pages to require now more than an enumeration, to show the immense educational advantages the Future will enjoy over the Past. There is scarcely an object of note on the Continent that cannot be seen now nearly as well in London, either by facsimile, model, or photograph. The decorations of Raffiello's Loggia in the Vatican are faithfully represented in the Kensington Museum. Casts of the finest statues in Rome are there, too; bits of mosaic, cameos,—in short, the particular individuality of Rome is now within a fourpenny ride of the Bank. No passports required; no sea voyage. Open free of charge on Mondays, Tuesdays, and Saturdays! And then the glorious old furniture! What art-workman, countryman or Londoner, could view the rich carvings of the cabinets, the jewelling of the reliquaries, the paintings on porcelain, the enamelling, engraving, or other art-work, unmoved by a determination to go and do likewise? Let him but spend a couple of hours under the influence of the feelings conjured up by these master-pieces, and he must be conscious of an inward and ennobled change in his sympathies and aspirations.

Of the Geological Museum we have already spoken at some length in a former number: on its usefulness as an incentive and assistance to the attainment of scientific greatness, we need not again enlarge; but will remark, instead, upon the great pleasure and varied information just now afforded there by the lectures of Professor Owen. Sculptors would do well to hear these, for the professor boldly points out conventional errors in the anatomical details of their zoological subjects.

Passing on to Sydenham, we see Streatham in the distance, famous as being the residence of the Thrales and their distinguished guest, Dr. Johnson. Here came Miss Burney, flushed and encouraged with the success of "Evelina," which Johnson praised, and Reynolds and Burke sat up all night to read; by the side of which the popularity of "Jane Eyre" pales, and that of "Adam Bede" appears clouded. It is worth while to read afresh a book that the fashionable world feasted on with so much relish, to note, as a phase of our subject, the great improvement that has taken place in the quality of the intellectual food provided for the public.

The contents of the Palace are all that its magic-suggestive name promises. For picturesque effects we have fountains and fishpools, flowers and plants; for art-teaching purposes we have statues and paintings, with uooks of Spain, Pompeii, Nineveh, and Egypt; for examples of industrial arts, manufactures from all the civilized nations. In this building we can again take art from its cradle in Assyria or Egypt, and trace, after its long sojourn on the banks of the Nile, its progress through Greece and Rome, and during the Middle Ages, to the Renaissance. No need to draw upon the imagination. Here are casts and faithful representations of the most important objects that modern research has discovered. The English artisan, with little time for study, and less hope of travel, is, by this means, made acquainted with the works of races whose names were unknown to his forefathers, and familiar with antediluvian monsters, whose pre-Adamite existence was but faintly shadowed out in the griffins and dragons of romance. The Crystal Palace has, like Kew Gardens, especial value for Londoners, for there they may be sure of a real holiday—a day's life in the sweet country air, with "medicine for the mind."

The mention of Kew Gardens brings us to a consideration of the advantages the botanist, and, stranger still, the zoographer enjoy in London. It is all very well for our country cousins to write of their moors and mountains,

and to tramp thirty miles a day after specimens, with their trousers tucked up, and their tin-cases slung at their backs. Let them resort to Kew Gardens as well, and view the Luriant exotics, the hardy plants of the North, the palm-trees of the East, and the firs of Siberia, all thriving within sight of each other, and they will find the instruction they receive equal to the enjoyment.

For the zoographer and zoologist have been gathered together the matchless collections of birds, beasts, and fishes, in the Regent's-park. Visitors, once content with the sagacious elephant and aged camel, and aiming at nothing more than to get the bear up the pole with promissory buns, and see the lions feed, may now study individuals of nearly every known species of quadrupeds. The collection of birds has been increased in the same proportion; while numerous reptiles, and a house-full of zoophiles have been newly added.

Another museum that furnishes incentives to improvement and fame, is that of the United Service Club. Here may be seen weapons of every age, chronologically arranged; the different uniforms of the European armies; models of the successive improvement in fighting ships, of harbours; plans of battles, soldiers' beds, Chinese junks, canoes, and other curiosities from foreign seas; and it is most especially interesting and stimulating, now, as being the repository of the heart-rendering relics of the Franklin expedition.

Enough, however, has been said to re-direct attention to the great opportunities London affords for self-culture in every branch of science and art. People are sometimes known to live at the foot of a mountain all their lives, and never to take the trouble to ascend it. In the same way we may be apt to overlook our metropolitan advantages, if not occasionally reminded of their importance.

#### THE METROPOLITAN MAIN-DRAINAGE: THE DEPTFORD PUMPING STATION AND MACHINERY.\*

THAT doubts might be expressed by some authorities as to the sufficiency of valved-pumps for sewage, is shown by the statements made to the Government Commission of 1857, by Mr. W. Husband, who superintended the erection of the machinery for drainage of the Haarlem Lake, and is well acquainted with results of experience in Holland, where the difficulties would not seem to be as great as with the London sewage. Mr. Husband truly says, it is necessary to consider that this sewage "consists of every refuse that can be got into the sewers by an immense population; indeed, in some of the city sewers it is difficult for a man to walk, his legs becoming entangled by *ropy-like stuff*; there are also *bricks, wood, and other substances*." Mr. Lindley, we may add, in his evidence before the same commission, says of the Iamburgh sewers, which are not likely to be worse than those of London, that substances got in, that it "was impossible to account for, such as brick-bats, pieces of granite, stone, &c., which were too large to pass through the gratings in the streets;" and though this evidence, with more, is given to show that heavy substances, or weighing as much as 15 cwt., could be moved even through a siphon-dip, and "washed out by the force of the water," it equally points to the tendency which must be apprehended, for valves to become choked by any "ropy-like stuff," "wood," or "other substances."

Mr. Husband said in continuation of his previous statements—

"It is evident, therefore, that pumps are unsuited for the work; wherever there are valves they must become choked; and the pumps would not be lifting water half the time: there would also be frequent breakage."

By the pumping machinery for drainage of the Haarlem Lake, they were enabled to pump 500,000,000 gallons of water in twenty-four hours; but, he says—

"Although these pumps eventually accomplished the work, yet there was considerable detention, on account of the pump-valves breaking, although the water was comparatively free from drift wood, &c."

Also that—

"In the London water-works great care is found necessary to prevent floating substances getting into the pumps; a small piece of wood sometimes occasioning considerable damage."

And he—

"Was certain that pumps could never effectually be

\* Concluded from page 99.

used for the lifting the London sewage, on account of the grit which would be sure to find its way into and obstruct the action of the pumps."

He therefore recommended an entirely different contrivance.

Of two alternatives, he, in the first instance, preferred scoop-wheels to screws, as being less likely to be obstructed. A reason for preferring wheels to pumps was that—

"... In case of accident one of the former could be thrown out of gear, and the engine continue its work with another wheel; while with a pump, the engine is so intimately connected, that when the former is stopped, the latter must be stopped also."

We have given some means of judging whether or not these objections pertain to the machinery proposed for the Deptford pumping-station; and it must be allowed that some of those last mentioned are got over by the provision of several engines, and several channels for sewage; so that the question left, irrespective of one of annual outlay, may be whether the engine-power and the troughs and pumps are provided in excess, and sufficiently so, of the demands as they may arise on some ten or twelve days of a year.

The doubt of the sufficiency of pumps with valves is, we need not say, not confined to Mr. Husband. In the same Appendix (of the Report), in which appears the evidence we have spoken of, is to be found a design by Mr. Archibald Slate for an elevating wheel, of which the author says—

"It is constructed of wrought-iron, on a cast-iron centre, and combines the powers of the ancient Persian wheel and modern dredging-machine, so that whatever comes down the sewer, whether bricks or silt, carcases, or baskets of goods, shall inevitably be lifted with the sewage, and pitched into the upper level."

The delivery would be from the centre of the wheel; and it was proposed to place the contrivance in a building hermetically sealed, and to pass the driving-shaft through a water stuffing-box, so as to prevent escape of effluvia from the agitated sewage. One wheel such as he proposed, the author considered would be equal to several pumps, whilst in cases of emergency, the efficacy might be further increased by increase of power; and he thought that the contrivance, if adopted, would allow of lines and levels for sewers in low districts, which would entail much less cost than the raised aqueducts that otherwise might be required.

The difficulties apprehended in the use of valved pumps, need not be less regarded from the fact that the opinion on what should be substituted for them, given by out-of-the-way witnesses, becomes modified on consideration. At first Mr. Husband advised scoop-wheels, on account both of facility and economy of working, and thought them preferable to screws, as being less likely to be obstructed. He said:—

"The velocity in scoop-wheels would be quite sufficient to prevent any deposit at the foot of the wheel, while the case with screws would be very different."

The water raised from the Haarlem Lake by pumps, was lifted a second time into the "Y" by scoop-wheels. One 200 horse-power engine at "Spierdam," drove ten wheels, 18 feet diameter; and at "Halfweg," a 100 horse-power engine was erected for driving six scoop-wheels, 20 feet diameter. These wheels "lifted from 2 to 5 feet, were rarely out of repair, and have accomplished the work in a satisfactory manner." But Mr. Husband said:—

"Gratings were, however, used to keep out the drift-wood; and it appears that as the water way diminishes from the entrance of the water to its eventual discharge, the water should be cleared from substances liable to choke."

Whether from this latter-mentioned experience, or on general grounds, he then proceeds to say that,—

"The machine which, under all the circumstances, seems best adapted for lifting the sewage, is a modification of the open screw, as used in Holland for drainage purposes."

This proposition was explained by a drawing and model, of which the former appears with the Appendix. "The course of the water through the machine being in a line with the sewer," he says there would be but little friction in passing large substances through it; or, the machine being open throughout the length, anything not passing freely could be easily removed. Each screw (laid in the direction of an inclined plane) would be "constructed taper," and with the pitch of the screw increasing towards the top or point of discharge, so that every substance that could enter at the bottom would pass through a channel of gradually increased dimensions until discharged at the top. This arrangement, the expanding channel, Mr. Husband said, "should form an important feature in any machine adapted for lifting sewage." The reverse, as our description at least shows, is characteristic of the particular valved pumping machinery now proposed for the Deptford station.

The taper screw, it is considered, would readily pass up large substances, irrespective of specific gravity.

There is much in the Appendix from which we have quoted, in commendation by Mr. Husband of the advantages of his proposed screw, and the screw in general, over the scoop-wheel,—the advantages of either screw or wheel over the valved pump, being considered demonstrated; and it must be admitted that on the engineering question, and that of economy, the statements made from the experience in Holland are worthy of some attention. We may add that scoop-wheels have been used with great success in the fen districts of England.

Besides the objections which there may be to valves for the particular case of sewage, it should not be forgotten that in pumps usually an enormous proportion of the power applied is lost in the passage of the water through the pump. The experiments of General Morin have shown that this loss in some pumps amounts to eighty per cent., whilst there are machines which will raise, with the same power applied, twice the amount of water from a given depth, as the common pump. It is true that part of this loss of power, it is calculated, may be saved by increasing the area of valves, and this increase seems to characterize the pumps shown in the drawings before us. Indeed, we have not thought it necessary to question the propriety of the decision in the present case, though we have considered it necessary to adduce some facts, and to quote the opinions of others.

With reference to the nature and quality of the materials, the specification for the Deptford pumping machinery says of castings, that they "shall be clean and sound, both externally and internally, and shall be carefully fitted and smoothed;" the cylinders, air-pumps, sewage-pumps, and plungers being of "mottled grey and white iron, as hard as can be worked," and bored and turned parallel and cylindrical throughout, "no stopping or plugging being on any account permitted" in case of holes or flaws; "nor shall any portion of the castings be made in open sand." Minute directions also are given for the finishing of the wrought-iron work. Parts of the engines, above the floor, to be finished bright, are, after being "properly drawn-off in the direction of the strain," to be "smoothed with fine emery, and finished in the best style of dead polish." "The brasses" it is said, "shall be made of a strong and durable mixture of pure copper and tin, no lead, zinc, or antimony being used therewith," &c.

The contractor is to complete his undertaking on or before the 30th of June, 1861, or forfeit as liquidated damages a deduction of 250*l.* per week from the amount of contract; and he is to provide four foremen, and have charge of the engines for twelve months after the time of their starting. The payments are to be made by instalments; and as regards disputes, the decision of the engineer to the Board as to what is the true intent and meaning of the specification and drawings (whether or not matters or things he particularly mentioned and described) is to be binding on both parties, to which intent this submission shall be without power of revocation by either party, and may be made a rule of any of Her Majesty's superior courts at Westminster on the application of either party.

The drawings of the machinery and buildings, fill thirteen large sheets; and the specification of the machinery comprises thirteen pages. These last end with a form of tender which is to be filled up, and signed, and delivered with the specification attached, to the clerk to the Metropolitan Board, on the 1st of March next. Somewhere about that time the specification for the buildings will be ready, in order that these may be proceeded with for the reception of the boilers and parts of the engines to be first placed or delivered. One reason why the works for the pumping machinery are to be put in hand at once, or before the drawings for the Low-level Sewer are ready, is that the machinery may be available at the time that sewer is in construction, for removal of the water expected to be met with. As regards the low-level district, it should be stated that the present outlets into the river, which may be made available for flushing the new sewer as mentioned, may also be used for the discharge of storm-water, should the necessity be concurrent with time of low-water; so that really the full demand upon the power of the machinery might not arise, perhaps, a single day in a year, though necessary to be provided for as a possible and a sudden occurrence.

Information of the progress of works in course of execution, which are part of the general scheme of metropolitan sewerage, will be given hereafter.



date. It is, however, beyond all question, inherent upon that form of revived Classic art with which we are surrounded.

The same may in fact be said of truthfulness in minor things. It would be unjust to father the contemptible and endless fallacies of our own day upon Classic architecture. It is true that they pervade and saturate many of the modern productions of the style, and that the revival of Gothic architecture has somehow led to their exposure; but the truthfulness which we are proud to claim as one of its great and leading stars, we freely yield as the property out of one style but of all noble architecture.

Did time permit, I might follow up the *raisonne* of the style under consideration as evinced in the judicious employment and treatment of, and the mode of workmanship applied to, different materials as well as different branches of artistic decoration. The Medieval architect adopted the material he could most readily obtain, and adapted his design to suit the peculiar qualities.

If he used block stone throughout his work, or united it with rough walling-stone or rubble; or if his building were of brick or flint or pebbles, he studied to use them so as to look well and to aid the effect by their variety. As instances of this I will refer to the exquisite stone and flint structures in the Eastern Counties, and the interstratification of freestone with the thinnest rubble in some of the coltic districts; to the brick domestic architecture of Norfolk, of Northern Germany, and of Lombardy; and to the timber structures of innumerable districts and cities; to the variously coloured stones in the buildings in Auvergne; and, last, but not least, to the magnificent marble structures, with their inlayings and mosaics, which delight the eye in the most perfect principle was how best to utilize the materials which nature had provided: where nature had been chary in her gifts, even external plaster was not despised, but truthfully made use of; where she had been lavish, even precious stones were used as building materials, as at Prague, where there is a chapel whose interior is faced with a kind of rubble work, polished amethyst, the stones being cut through, but otherwise unaltered, and irregular joints being covered with embossed gilding.

In metal work, each metal was treated on its own merits and its own natural characteristics. I give an extract.\*

In decoration, frescoes, mosaics, tapestry, needlework, enamels, &c., were profusely used when means permitted. Indeed nothing was neglected, and the absence of homeliness or expense, provided it suited the work in hand and the means at command.

But what, I may be asked, is the utility of tracing out evidences of a fact so probable on the face of it, as that our forefathers acted upon reason when engaged on so practical a thing as architecture? I would reply that its utility is twofold. In the first place, we have too much the last sight of the *raisonne* of architecture, and of the necessity of acting upon it. I do not wish to rip open old sores, or to object against others, errors of which we are all of us guilty. Let us each examine ourselves, and ask ourselves how far we act upon truth and reason in our designs; and, if compelled to admit our delinquencies, a review like that on which we have been engaged may be more likewise than useful, quite apart from any question about what style we are working in.

In the second place, it is an undoubted fact, as my able coadjutor said the other day, that we are at a transitional period of our art—that we are dissatisfied with the present, and aiming at an altered future; and that some of us are following up that aim on the basis of a revival of the style of which I have been treating; while, as he also truly says, there is a *vis inertia* in art which is not easily overcome, but yields reluctantly to change. How important, then, is it to us to know that the style we are reviving was itself based, at all good architecture must be, on the firm rock of common sense; and how essential to our success that we should place our revival on the same basis! Shall we, then, secure this object by doing only what our forefathers did? By no means. Rather, as I have urged in a former lecture, let us do as they did; that is, *act upon reason*. They thoroughly suited all their works to their varied objects and requirements; they made their houses comfortable to the extent of their habits. Let us make ours so to the greatly increased extent of our own habits. They welcomed every invention as it arose. Let us do the same, by the invention of our own prolific age. They utilized every material which modern science or ingenuity has placed at our command,—only let us do all this truthfully and consistently with reason. For example, if we meet with an invention suited to the surface decoration of rooms, but devoid of constructive strength, let us use it as a surface decoration, and not, as is too commonly done, make troughs and pipes of it, and pass them off for beams and columns. If we admire a vaulted construction, by all means let us use it; but do not let us emulate the vault-

\* In a letter which I have received from a high practical authority—Mr. Skidmore, of Coventry—on the subject of the practical reasonableness of the modes of workmanship applied to metals by the Medieval artists, he shows most clearly, and expresses a very strong opinion on, the superior *raisonne* which guided them in their work, to that which is now, for the most part, practiced upon. He shows that the true measure by which to judge of such a *raisonne* is the degree in which the artist judges of his material; that in modern work this is very much neglected, and that designs for metal-work qualities of the metal to be used; indeed, an modelled in clay just as if they were to be executed in marble or alabaster, so that, if the "piece of plate" were panned over, no one would be able to guess of what material it was formed; that even when any regard is paid to the matter, it is usually to one only of the qualities of a metal, and inasmuch as metals possess it only in common with many other materials,—I mean its susceptibility, with cast in a mould; whereas the Medieval artist, without neglecting this, gave greater prominence to the qualities of malleability, ductility, the faculty for receiving engravings, inlayings (such as niello, &c.), enamelling, and filigreeing in different metals, so that, on the whole, their mode of treating metals was far more rational than those which, in these peculiar cases, prevail amongst ourselves, in and more or less acted, though of course well known and neglected.

ing of Diocletian's Baths, and Westminster, or the domes of the Pantheon of St. Sophia, in lath and plaster! If we want plaster casts of ancient monuments, let us place them in our museums; but, for goodness sake, let our buildings themselves be real!

The conditions to be demanded of our future architecture, whether destined to be based upon the Classic or the Gothic Renaissance, or whether the lines to continue ever, as now, to assert, side by side, their rival claims, are a perfect and unshattering fulfilment of practical demands, whether of construction, convenience, or comfort; equally unshattering adoption of the materials, inventions, and mechanical and constructive appliances of the age; a capability of reasonable economy or of judicious magnificence, in all degrees and proportions; a character at once noble and in harmony with the country and climate and with national associations; a perfect freedom of treatment, united with perfect truthfulness; and a free admission of the sister arts in their highest and most perfected forms. How happy would it be for art if we could proclaim an armistice between rival styles, while the advocates of each devote heart and soul to the realization of those conditions so obviously demanded of reason and common sense!

That Gothic architecture is in its spirit well fitted to unite these conditions, I think, may be judged by much that I have shown you in this and the preceding lecture. It lays claim in a pre-eminent degree to the character of freedom. Free in its use of arched or trebled construction, in its use of the square, in its use of the form of its arches, which, in addition to those used in other styles, assumes other and excellent forms which enable them to assume all possible proportions of height to span; free in its use of the vault, which has power and facility for adapting itself to every possible space and plan; free in its proportions, as well as infinite in the varieties of its columns; free as air in the sculpture it applies to their capitals, as well as to other architectural uses; free in the pitch of its roofs; in the size, number, form, and grouping of its windows; and, above all, absolutely free in its planning, in which the practical requirements of the interior have undisturbed sway irrespective of external design. It seems as if it could not be otherwise than suited to an age in which freedom is the great point to be aimed at in all our undertakings, and in which, in every case, let us devote ourselves, hand and heart, to the task: let us bring all our energies to rendering the style we select as our groundwork, really, and absolutely subservient to the wants and to the spirit (so far as it is a healthful and a fruitful spirit) of our age; let us apply to the work all our reasoning powers, and found all we do upon common sense; but let me not be mistaken—this cannot be done by mere abstract considerations. Let me, therefore, urge upon you who are students, to exercise your reason and common sense in another way? and to be assured of this, that you cannot succeed in the practice of an art, unless, in addition to the practical considerations I have had occasion to allude to, you make yourselves, in the strictest sense of the word,—artists.

#### ON BUILDING STONES—THE CAUSES OF THEIR DECAY, AND THE MEANS OF PREVENTING IT.\*

In a district of so peculiar a nature as the environs of London (where clay of a highly plastic description occurs in great abundance), the style of construction adopted is so markedly characterized by the use of the local material, bricks, that we, inhabitants of London, are apt to forget that other districts are, as it were, compelled by analogous circumstances to adopt a style which is diametrically opposed to our own. In London, and, indeed, we may add, in a large majority of our centres of population, bricks are habitually cheap and good; stone is rare and expensive; and it thus happens that stone becomes to us an object of luxury, only to be employed in monumental structures, or in the decorative parts of ordinary houses. In France the contrary rule prevails, as it does likewise in some of the cities of Yorkshire and of Scotland; and there stone is the common material used in building, and brickwork is the exceptional ornament. It has always seemed to me a matter of regret that this should be the case, for, beyond question, the taste of the London builders has been injuriously affected by the small and unbending character of the material they habitually employ; whilst the grander and more monumental appearance of such towns as Edinburgh, Bradford, Paris, &c., may, to a great extent, be attributed to the fact that in them large ashlar stone is habitually employed. But in addition to this æsthetic inconvenience arising from the absence of building-stone as an ordinary material of construction, the builders of such towns as London labour under the more serious one of being less acquainted with the nature and properties of stone than are the builders of more favoured localities; and we, therefore, find that even when the former do resort to the more costly materials, they frequently employ them under such circumstances, and in such positions, as to expose them unnecessarily to danger and decay. Emphatically this has been the case of late years with many of the London buildings, and it may, under such circumstances, be desirable to dwell for a short time upon the nature of the stones

which usually appear in our market, and upon the various injurious actions to which they are exposed.

The building-stones employed in London are capable of being divided, according to their mechanical properties, into two classes,—namely, those which can only be worked by the pick or by wedges, and those which can be worked by the mallet and chisel,—the latter being known by the name of freestones, in contradistinction to those which do not work freely. These classes, in their turns, are susceptible of numerous subdivisions, such as, in the first class, the granites, porphyries, basalts, whinstones, and the countless varieties of the plutonic and volcanic formations; the quartz rocks, mica schists, gneiss, and the more dense altered quartzose sandstones, the quartzose conglomerates, and the grits or agglutinated sandstones of the secondary and tertiary strata. The slate rocks, perhaps, might be grouped as a subclass of the stones not workable by the mallet and chisel, for they present too decidedly marked cleavage to allow of their being worked freely, though they are susceptible of being sawn, or even worked on the edge, in the same manner as the freestones themselves. In the second class, or the freestones, are comprised the marbles, sandstones, limestones (both carbonates and sulphates), in all their endless modifications. The bituminous rocks furnish materials which may be classed as a subvariety of the freestones, in an analogous manner to the classification of the slate rocks in the preceding division.

Now, of the stones above described as being of the first class, the London market consumes large quantities of granite from the Chamel Islands, Cornwall and Devonshire, Mount Sorel, in Leicestershire, Aberdeen and Peterhead, in Scotland. The Whinstones, basalts, and volcanic tufas are hardly ever seen here—unless in the form of the pouzzalans and trap, which are occasionally imported from Italy and Germany for making artificial hydraulic cements—whilst the quartz rocks and the quartzose sandstones, the mica schists, &c., are never used. The quartzose conglomerates, such as the Bramley Fall stone, are occasionally employed in engineering works, and the tertiary grits, or sandstones, of Windsor forest are used in the neighbourhood of Windsor as paving materials for streets and stables, just as the grits of Fontainebleau, their geological analogues, are used in Paris. The advantages offered by the best of these various materials consist in their extraordinary hardness, their density of texture, their non-absorbent properties, and, generally speaking, their powers of resisting atmospheric influences; but the whole of this class is exposed to the serious objection that the labour upon all its varieties is very costly; and that from the mere fact of their being composed of heterogeneous ingredients in the far greater number of cases, they are also exposed to the action of causes which are able to produce either disintegration or decomposition of their elements.

Thus, for instance, the Cornish and the Devonshire granites, and some of the porphyries and tufas from those counties, frequently contain a notable proportion of felspar; and, when they are exposed to the action of rainwater, containing (as it usually does) carbonic acid in solution, that felspar decomposes, and is then easily removed, leaving the quartz and the mica in relief without any cementing material. Illustrations of this mode of decay may be observed in the granite used in parts of Waterloo or London Bridges, or in the granite piers of the crypt under the hall of Christ's Hospital; but the process is very slow, and it would seem to be subject to some laws not hitherto discovered; for the decay of the felspar does not take place according to any known rules. The more crystalline, in fact, the felspar of any of these bodies may be, the more perfectly does it resist the decomposing action of the atmospheric agents; and we shall have occasion again to allude to the influence of this mechanical state of mineral substances upon their durability. In the meantime it may be added, that in the Bramley Fall and in the analogous stones, the silicious conglomerates, the same phenomena may be observed. The cementing material frequently decomposes, and is washed away from the ingredients it naturally held together, and then the latter, as certainly, fall asunder, or the cementing material decays, and in so doing it produces a dangerous disintegration of the mass. It follows, from these observations, that the smaller and the more uniform in dimensions the materials of these heterogeneous rocks may be, the greater is the probability of their duration, and in the case of granite especially, it is essential to select those descriptions which do not contain large crystals of

\* Read by Mr. G. R. Borell, C.E., at a meeting of the Society of Arts, on Wednesday evening last, Mr. Godwin in the chair. At the close of the paper a discussion ensued, in which Professor Assheton, Mr. Hunt, F.R.S., Mr. C. H. Smith, Mr. Warrington, Professor Tennant, and the chairman, took part, and to which we shall hereafter refer.

felspar. It is singular that some of the granites of Normandy, Brittany, and the north of Spain, present identically the same mineralogical peculiarities as the granites of Devon and Cornwall, and they are equally susceptible of decay. The varieties in the lithological characteristics of the Bramley Fall stone, and in those of the quartzose conglomerates, are still more hard to define than even those of the plutonic rocks: in the same quarry, and even in the same bed, the qualities of these stones will change within a very small distance; and the great irregularities of this description of stone form, in fact, the most serious objection to its use. Nevertheless, when the Bramley Fall or the silicious conglomerates are well selected, they are extremely valuable for engineering purposes, on account of their hardness, and on account of their resisting crushing weights. They yield to atmospheric influence when the silicious cement exists in the soluble silica, and is of an amorphous character: if, on the contrary, the cement assume a crystalline character, it becomes unattackable even by caustic alkaline solutions, and the silicious conglomerates are then as durable as the best descriptions of granite themselves. Of the granites which are used in London, those obtained from Aberdeen, Peterhead, and Mount Sorel are the most valuable, but also, on account of their hardness, the most expensive. They can be obtained of any required dimensions, and are capable of receiving any desired form, and thus are admirably adapted for the construction of buildings of a simple monumental character, designed "not for an age, but for all time;" their colours, moreover, are agreeable, especially those of the rose-tinted granites of Peterhead and Mount Sorel. The best silicious conglomerates used in London for building purposes are extracted from the lower members of the Yorkshire coal-field; their colour, it may be added, is far from being as agreeable as that of the good granite; and at times, when there is much oxide of iron in the cementing material, the colour of the conglomerates becomes unpleasantly fovy.

For the reason above cited, namely, the difficulty of working the first class of stones, the other, or the freestone class, is the one most generally used in building operations, the selection of the variety employed in any locality being too often only regulated by the consideration of its ultimate cost. In London, the freestones commonly used may be stated to be as follows:—amongst the sandstones, the Cragleith, the Dundee and Arbroath, the Yorkshire stones, and the sandstones furnished by the Wealden deposits near Tunbridge Wells, or by the subcretaceous formations of the neighbourhood of Godstone, Maidstone, or Folkestone; amongst the magnesian limestones, the Anston and Bolsover stones; amongst the carbonates of lime, the Portland, Purbeck, Ketton, Barnac, the Caen, Ranville, Aubigny stones, are to be met with in commerce without difficulty, whilst it would be easy to increase their number by the introduction of the remarkably valuable tertiary limestones of the Paris basin. In some localities, even the common chalk becomes so indurated as to allow of its being used as a building stone; less frequently, it is true, in England than in France, for in the valley of the Lower Seine this material is extensively used in the best buildings, as at Rouen, Vernon, Louviers, &c. I dwell a little upon this detail of our subject at present, because I am convinced that a process for the preservation of building-stones, which I shall have the honour to bring before your notice, would enable us to convert to useful purposes of construction the immense stores of chalk with which we are surrounded. I would add that the sulphates of lime are occasionally used for ornamental purposes in interiors, but they are almost invariably so unfit to resist the action of the atmosphere externally, as only to be of value from the fact of their yielding the important material known by the name of the "Plaster of Paris." The argillaceous limestones do not often occur under such conditions as to warrant their use as building materials in other than in the localities where they are found, and this sub-class is only resorted to, for the London market at least, for the purpose of obtaining the hydraulic limes of the blue lias, or the Roman cements, made from the septaria nodules of the Oxford, liassic, or London clays.

The Cragleith stone, of which the majority of the buildings of Edinburgh are constructed, is occasionally used for foundation or basement works in the metropolis, or for the execution of staircases exposed to great traffic; but the hardness (and the consequently high price of labour) of this stone limits its use to such situations. It is ob-

tained from the carboniferous formation, and is composed of minute grains of quartz, with occasional plates of mica, united by a silicious cement, containing usually about 98 per cent. of silica, 1 of carbonate of lime, and one of bituminous and other miscellaneous ingredients. The weight of a foot cube of the Cragleith stone is about 146 lbs., and it is stated to resist a crushing weight of 5,800 on the inch superficial. Generally speaking, the colour is of a greyish white, and, in consequence of the density and the non-absorbent character of the material, it retains a clean appearance for a very long time. The London atmosphere has very little action upon it.

The Dundee and Arbroath stones, obtained from the red sandstone series on the eastern coast of Scotland, are sometimes employed in London; the former as an ordinary building stone, the latter principally as flag pavement. The colour of the Dundee stone hitherto brought to London is rather disagreeable, for it is of a dark purple brown, or a deep oxide of iron tint, but the stone is hard, and resists weather very satisfactorily: in consequence of the colour, however, this material is never used in ornamental buildings. The Arbroath stone is of a denser character than that obtained from Dundee, but it is more decidedly "flaky," to use a workman's phrase, and it is, therefore, almost exclusively used for the purposes above mentioned. Occasionally, however, blocks of the largest dimensions, and of very uniform character, are obtained from the Arbroath quarries. They are hard; they resist weather satisfactorily: the stone is easily worked, and its colour (a light greenish grey) is far from being disagreeable. I am not aware of any observations upon the specific gravity of this stone, or of the crushing weight it would bear; but, judging simply by the eye, I should be disposed to class it in these respects with the Yorkshire sandstones, to be noticed hereafter. As Arbroath lies immediately upon the seaboard, it is strange that the stone from that locality should not be more commonly used in the metropolis.

There are several varieties of the Yorkshire sandstones used in London, of which the most generally known are the flagstones from the neighbourhood of Halifax and Huddersfield, and the compact stones from the neighbourhood of Leeds, commonly called the "Park Springstones." The normal composition of the whole of this series of rocks is that of a fine-grained quartzose sand and decomposed felspar, with an argillaceous cement, and with numerous flakes of mica in the planes of stratification: sometimes the mass is coloured by the presence of the oxide of the silicate of iron, and the colour varies from a decided blueish-green to a light ferruginous-brown. The weight of a foot cube of the paving stone is about 145 lbs.; and the crushing weight it can support may be considered to be nearly equivalent to that of the Cragleith stone, a remark which, by the way, may be extended to the Arbroath stone. It is worthy of especial notice that although the Yorkshire flags absorb water freely, and part with it in as easy a manner, they do not suffer from the action of frost; it may be because their distinct lamination allows the expansion of the water to take place freely in a horizontal direction. But when the Yorkshire stones are used in elevation (that is to say in vertical walls) they are not able to resist the singular destruction which takes place at the extremity of the zone of capillary action in almost all porous stones. They do not, in fact, to use another workman's phrase, "stand well between wind and water," and should not, therefore, be used in the basements, or in plinths, of buildings immediately in contact with damp earth, or in positions to which water has access at irregular intervals.

The Tunbridge sandstone has been occasionally introduced here, but with very satisfactory results. No doubt it would be possible to select stones from the Wealden deposits of Tunbridge or elsewhere, which would resist the action of the atmosphere; but with the exception of the limestones of this series of deposits, to be noticed hereafter, the materials derived from these beds are of far too irregular and too dangerous a character to allow of their being used at any distance from the place where they are obtained.

The sandstones of the subcretaceous rocks are also of a very irregular character, and even when of the best quality they are but ill qualified to resist alternations of wetness and dryness. Nevertheless, the Godstone and Maidstone freestones, as they are called, are of great value in the arts, on account of their powers of resisting the action of fire, through the large quantity of soluble silica they contain, in conjunction with a certain propor-

tion of the carbonate of lime. When these stones are used for ordinary building purposes they require to be kept above the ground, or the influence of capillary attraction upon the moisture it may contain, and also to be protected from rain, by being covered with some impervious material. If these precautions be observed the freestones do not rapidly decay; and in some of the oldest parts of Westminster Abbey, or of the Temple Church, specimens of them may still be seen in a fair state of preservation. For internal elaborate Gothic tracery, the freestones may be advantageously employed, because the ease with which they are worked reduces the cost of labour of such decorations. The colour, a greyish light-green, is far from being unpleasant.

Whilst thus speaking of the subcretaceous building stones, it may be as well, even at the risk of a little departure from the strictly logical classification according to the nature of the materials, to call attention to the Kentish rag, which is now so extensively used in the modern revival of Medieval architecture. This stone is a limestone, with a very small proportion of earthy matters, frequently subcrystalline, but ordinarily of a confused texture, the beds from which it is obtained varying from about 6 inches to 3 feet in thickness, and the colour varying from a lightish green to a deep blue. The stone is, when well chosen, very hard and dense; and indeed the labour upon it is so expensive that it is very rarely that the ragstone is used for anything but rubble masonry, in districts remote from the quarries. It is the custom, at the present day, on account of the expense of working this stone, to execute all the moulded or decorated part of churches, &c., in Caen or Bath stone, and even to carry up the quoins of those materials, whilst the intervening spaces are filled in with the hard rag. In other words, the exposed parts of such fashionable specimens of constructions are executed of soft and yielding materials, whilst the protected parts are executed of hard and durable ones. However, the walling thus produced is certainly picturesque in its effect; and if some of the process for the preservation of the softer stones, to be noticed hereafter, be applied to the Caen and Bath quoins and copings, or weather-tables, there can be no valid objection to the use of the Kentish rag in connection with them, on the score of the durability of the work, at least.

Of late years, in consequence of the report of the commission named for the selection of the building stones for the new Houses of Parliament, the magnesian limestones, from the Anston and Bolsover quarries, have been largely used in the metropolis,—in some cases, as in the Museum of Economic Geology, with tolerable success; in others, as in the Lincoln's-inn Library and the Houses of Parliament, with a precisely opposite result. This discrepancy proves at least that the magnesian limestone is quite as much exposed as any of the formerly used building-stones to great varieties of composition, and, therefore, much attention must be paid to its selection and mode of application. The colour of the best varieties of this stone is of an agreeable light-warm and slightly ferruginous brown; its density is rather greater than that of the oolites; the labour upon it is intermediate between that upon the Yorkshire or the Portland stones, and it can be obtained in blocks of any required dimensions. For many reasons the use of a stone presenting the external characters of the magnesian limestones would be very desirable, and it must be a subject of sincere regret that so little care should have been displayed in the selection of the varieties employed for the important buildings we have above referred to. The decay of the stonework in the Houses of Parliament is really painful to witness,—I had almost said shameful.

With the exception of the Purbeck stone, which is obtained from the local modification of the Wealden deposits found in the Island of Purbeck, the Isle of Wight, and near Petworth, the other freestones, before cited as being used in London, are obtained from the oolitic series. It must not, however, be understood that the oolites are the only valuable sources of supply, for very valuable limestones, adapted for building purposes, are to be found amongst the transition rocks and the mountain limestone districts of Devonshire and of the Midland counties; whilst the blue lias itself is frequently adapted to such uses. But, in the first place, the materials yielded by the transition, and by the mountain limestones are so hard, and so difficult to work, that they are never able to be used beyond the immediate neighbourhood of the quarries; and in the second place, the purer varieties of the limestones from the blue lias series, are so irregular in the thickness of their beds and

in their powers of resistance, that they are equally avoided in general use. The tertiary limestones of the Paris basin might no doubt furnish building materials of a very superior description to those usually employed; but they are, comparatively speaking, unknown in England, and certainly they never appear in the London market. In fact, the only limestones habitually used in the metropolis, are those obtained from the oolitic series, and amongst them the Barnack, Ketton, Ancaster, Portland, Bath, and Caen stones, are those which are most generally known to our architects and builders.

Of these stones, the Barnack stones, obtained from the oolite of Northamptonshire, figure to some extent under a false name, for the real Barnack quarries have long since been abandoned, and in its place the Casterton stone is now commonly employed. Both the original Barnack and the Casterton stones are of a lightish brown colour, and they are composed of a tolerably pure carbonate of lime, of a compact but oolitic character, and containing an infinite number of fragments of pearls and corals. Their specific gravity is about 2.090: the crushing weight (instantaneous) would seem to be about one-fourth of that of the Craghead stone, though there are some marked discrepancies between the results obtained from the respective materials. Nearly all the Medieval structures of Cambridgeshire, the Isle of Ely, and the North of Suffolk, were executed in the Barnack stone, which certainly has resisted atmospheric influences in a very remarkable manner, when care had originally been taken to select for the more dangerously exposed positions the less earthy varieties.

The Ketton oolite, which was largely used in the construction of the numerous beautiful churches in Northamptonshire, and has even of late years appeared with successful practical results even in London itself (as in the tower of St. Dunstan's-in-the-East), is very much like the Barnack stone in colour, but it is more regular in its characters, harder, and more difficult to work, and from the singular apathy of the quarry holders, it seems even to be more costly in the first instance. The colour of the Ketton stone is of a rather warm cream colour: its specific gravity is about the same as that of the Barnack stone, and the crushing weight it will bear is rather greater than that required to destroy the latter. If this material could be brought at a cheap rate to London, there could be little doubt of its being extensively used; for the original colour is decidedly pleasant, and the London atmosphere seems, from the state of the tower of St. Dunstan's, to have very little action upon the Ketton stone, either in producing decay or in changing the colour.

The Ancaster oolite is obtained from Lincolnshire, and is largely used in our midland counties, on account of the beauty of its grain, its pleasant colour, and the ease with which it is worked. Its specific gravity is greater than that of the Barnack stone, and its cohesive force is also greater. This stone is, however, but little known in London, and until it has been exposed for some time to our peculiar atmosphere, it would be dangerous to pass a decided opinion on its merits. In Lincolnshire and the Midland Counties, the Ancaster stone, it may be observed, has resisted the ordinary causes of decay very satisfactorily; and, with proper care, there can be no *prima facie* reason why it should not succeed in London.\*

#### DR. DAUBENY ON THE SEWAGE QUESTION.

DR. DAUBENY, PROFESSOR of Rural Economy in the University of Oxford, recently delivered in Oxford a lecture "On Sewage, with special reference to Baron Liebig's remarks relative to the system of disposing of sewage adopted in the principal cities of this country."

The lecturer remarked that when a man of Baron Liebig's extended European reputation lifted up his warning voice to the British nation on a subject on which he had a right to speak with authority, and staked, as it were, his character as a man of science, by foretelling the ruinous consequences of a system in which the inhabitants of our large cities are embarked, it seemed to be the duty of all who thought they could either directly or indirectly influence public opinion, to secure, if possible, a calm and impartial hearing to the arguments advanced. He proceeded to point out three methods by which it had been attempted to render the sewage of large

cities available for agricultural purposes. The first of these methods was to detain the excrementitious matter in its passage towards its outfall for a sufficient time to allow of the solid matter suspended in it to deposit itself, and then to collect this portion as a manure; the second arrived at the same object by a different expedient, viz., by bringing about a separation of the solid matter from the water, which was its vehicle, through the instrumentality of certain chemical re-agents; and the third was to convey the whole in a liquid state to the very spot where it could be usefully applied, by the aid of pipes and other mechanical contrivances calculated to supersede the necessity for employing cartage and vessels capacious enough to contain so bulky a material. The first of these methods was adopted at Cheltenham, the second at Leicester, and the third at Rugby. It would appear, however, that except in a few small places, like Rugby, which scarcely held out an example which great cities could safely imitate, no successful method had as yet been discovered for combining the sanitary with the economical object sought, and accordingly in London, the public appeared to have acquiesced in a plan which, at a vast expense, was intended to carry off the filth of the city to a distance, and disregarded altogether the agricultural value of the material itself. It was against this procedure that Baron Liebig entered his protest. It might be urged by a practical man, in defence of the metropolitan system, that the valuable constituents of the manure were equally sacrificed under the old *regime* as they will be when the new arrangements are brought into complete operation; that, although cesspools might exist, their contents were rarely made available for the purposes of agriculture, and that no more use was made of the manure, when poured into the Thames in the immediate proximity to the city, than will be the case now, when it is conveyed to a distance of many miles. Thus, the sanitary object, at least, was provided for, whilst the economical question stood upon the same footing as before. The authority of chemists of great eminence might also be appealed to, who reported, as the result of their investigations, that in their opinion no profitable application of the sewage of London to useful purposes that could be adopted on a large scale has up to the present time been suggested. Those and similar reasons, however, although they might serve by way of apology for embarking in the present system in lieu of a better, left untouched the main argument advanced by Baron Liebig, and could not justify us in a blind acquiescence in the system pursued as one intrinsically good. The transport of the sewage matter to a distance from the metropolis had, indeed, become, with the present arrangements, a matter of paramount necessity, but the accomplishment of that end ought by no means to stifle the inquiry as to whether some means ought not to be devised for rendering the same material available for useful purposes. If the citizens of London were as fully impressed as they ought to be with the importance of the subject, if they could realize the enormous pecuniary loss they are at present sustaining by the system pursued, they would not quietly acquiesce in the report of those chemists who have expressed doubts as to the practicability of employing their sewage for agricultural purposes, but would persevere in putting both science and capital into requisition until the difficulties had been surmounted.

#### STRENGTH OF IRON SHIPS.

MANCHESTER PHILOSOPHICAL SOCIETY.

At the ordinary meeting, February 7th, Mr. W. Fairbairn, F.R.S., President, read a communication "On the Strength of Iron Ships." The writer said,—

Recent disasters have recalled to recollection numerous defects in the construction of iron vessels, more especially in their powers of resistance to a transverse strain. When we consider the enormous amount of life and property that is at stake, and dependant upon the security of these vessels, it is assuredly a duty to point out the defects in their construction, and the remedies which it is necessary should be applied.

Vessels of a length equivalent to eight or nine times their breadth of beam are subjected, when pitching in a heavy sea, to two distinct kinds of strain. First, when rising on the crest of a wave, the ship is supported in the middle with the stem and stern partially suspended; and, secondly, when supported at each end and suspended in the middle, as the waves roll under her. In these ever-changing positions it is obvious that her deck, as well as the lower parts of the hull, are subjected

to alternate strains of tension and compression; and the tendency is to tear the ship asunder in the middle. That this does take place is evident from the fact that both wooden and iron vessels have been known to founder by giving way and breaking asunder. Circumstances may at any time arise when the danger from this source becomes greatly increased. The vessel may be cast ashore, and with the receding of the tide may be left suspended partially out of the water, and remain supported at only one or two points in her length, by ledges of rock. Such cases have occurred, and it has become doubtful whether our present construction of iron vessels enables them to withstand the shocks and impacts, to which in such a case they may be subjected.

This is not the first time I have applied myself to the inquiry, for the purpose of ascertaining, in the first place, what is the transverse strength of vessels as now constructed; and, next, whether the builders of iron ships have been guided in their construction by right principles, and have obtained the greatest strength with the smallest quantity of material. In pursuing this investigation, I have come to the conclusion that our present iron vessels are dangerously weak when exposed to strains of the kind I have indicated; and I believe that this defect of construction may be remedied by a more careful attention to correct principles of proportion, without in any great degree increasing the weight of the vessel.

To ascertain the strength of our present ships, I have supposed them to be placed in the extreme position of danger to which they are ever likely to be exposed; that is, supported at the centre of the vessel on some rock with the ends freely suspended. In this position an iron vessel is, in fact, a wrought-iron hollow girder, and we may apply the simple

formula,  $W = \frac{a d c}{l}$ , by which we ascertain the

strength of such constructions.

If we take vessels of the great length of which they are now made, we shall find that they are far too weak along the deck to resist the force of tension, to which, in the position we have assumed, that part is exposed. Taking as an example a vessel of 300 feet in length, built some years ago, I found that she would have given way with four-fifths of the actual displacement of herself and cargo. Taking a vessel constructed according to Lloyd's last rules, and registered A 1 for twelve years, I found her still inadequate to sustain the stress to which she would inevitably be exposed in such a position, the weak part being still the upper deck. I am therefore forced to the conclusion, that a large increase in the sectional area of iron in the upper part of the vessel should be adopted; and the plan I have proposed consists in the introduction of two rectangular and two triangular cells of wrought iron (similar in principle to those in the Britannia and Conway tubular bridges), placed longitudinally under the upper deck of the ship. Cells of this form would increase enormously the strength of that part, and might be adopted without any great modification of the other arrangements of the ship.

In the second place, I am led to recommend the substitution of the new system of chain riveting along the decks and upper and lower portions of the sheathing, in place of the present weak plan of double riveting. This change alone would secure an increase of 30 per cent. in the power to resist tension in those parts; and although there are practical difficulties in the way of its adoption, I believe these may, to a great extent, be overcome.

Now, in looking at the principles on which iron ships have been constructed, it will be found that sufficient attention has not been paid to proportioning every part to the strain it has to bear. As now constructed the iron is distributed almost uniformly throughout the length and uniformly throughout the depth of the vessel, and in this way much material is wasted. In constructions which have to resist transverse strains, economy can only be obtained by collecting the material towards the top and bottom in the transverse vertical section, and towards the centre in the longitudinal section. The longitudinal cells and stringers should be placed as near as possible to the upper deck or the keel, as the case may be, and they should be gradually reduced in thickness from the centre towards the ends of the vessel. With the exception of most of the sheathing plates and ribs, which may be left uniform, no more material should be expended upon the intermediate parts, approaching the neutral line, than is absolutely necessary.

With the adoption of this improved system of construction, and a closer adherence to sound

\* To be continued.

principles of design. I am of opinion that greater security may be obtained, and the fearful accidents which have so frequently occurred be greatly mitigated in severity, if not entirely prevented.

WALL BLOWN DOWN.

The high wind on Monday last, blew down the greater part of the flank wall of a house in Islington, which was ready for the plate of the roof. It happened most fortunately when the men were away to dinner. The work was of a fair description, better than much which stands. Not half an hour previously, the district surveyor had pointed out, with reference to the corresponding wall of a house close by it, the weakness of lofty flank, or party walls, especially where they adjoin the opening left for the staircase. In a house of four stories, there is a wall perhaps 40 feet high, two stories of 14-inch work, and two stories of 9-inch, without any bond in it, and with nothing against the wall in its whole height to steady it. Such a wall, too, is often run up rapidly, and with inferior materials, so that the mortar even at the bottom is quite soft, and yielding. The wonder is not that walls in such a condition do now and then fall, but that any of them stand.

WAR APPLIANCES.

The Armstrong strong arm is not to be left without a rival, although Sir William is confident that when his new cannon is expressly made for the long range, which, it seems, it has not yet been, it will out rival its formidable Whitworth rival. Meantime, like every one else, we may notify and record a few of the experiments recently made with the Whitworth rifle cannon, or cannon rifle. These experiments were made at Southport, before General Sir John Burgoyne and other officers. A three-pounder, loaded with eight ounces of powder, and set at an angle of 35 degrees, was pointed at a mark, which is said to have been far out of sight of the best telescopes; but how it was pointed at an invisible target is not explained: a mariner's compass, one would think, must have been requisite, if even that could have been exactly enough applied to the purpose in view, — or rather not in view. The projectile, it is stated, fell at a distance of 9,688 yards—more than 5½ miles—and only thirty-four yards to the right of the mark; and this deviation was thought to have arisen only from too great an allowance for the strong wind then blowing. At an elevation of 20 degrees the practice, it is said, was the most wonderful that has been witnessed with any artillery in the world. The first shot went four miles, and fell only four yards from the right line of the fire, and the greatest amount of divergence from the true line, at 7,000 yards range, was only 22½ yards. Fired at a regiment in square, or even a picket of a dozen men, every shot would have told! The vault engraven on the old gun at Dover,—

"Load me well, and keep me clean,  
I'll carry a ball to Calais Green."

will be no great promise soon it would appear. Some pamphlets have been forwarded to us in reference to Turner's tents, which we think have been already noticed in the *Builder*. They seem to be a decided improvement on the old close and unsatisfactory field accommodations for our soldiers, which it is the purpose of these new patented tents to supersede. They are covered with Warne's patent mineralized fabrics, or other suitable waterproof material; and the bell tents are ventilated at the apex by a simple arrangement, which also insures safety in reference to fire, the tent-pole being an iron tube or flue connected with a compact and convenient stove of a simple pyramidal form. It fitted to the tent-pole are stays of galvanized wire cord, secured by lanyards to galvanized iron pegs of cork-screw form, screwed into the earth; and over these cords of course the waterproof covering is stretched.

ON THE APPLICATION OF HARMONIC ANGULAR PROPORTION TO GOTHIC ARCHITECTURE.

ATTEMPTS have been made at various times to rediscover the principles and proportions used by the architects of the Middle Ages throughout Europe. One of the most successful, and certainly the most popular of these attempts, is embodied in the rules laid down by Cesarianus in his "Commentary on Vitruvius" (1521). Upon these Mr. J. S. Hawkins, in 1813, founded the part of his interesting "History of the Origin and

Establishment of Gothic Architecture," which treats of this branch of the subject. These rules purported to fix the various proportions of certain Mediaeval churches by means of a kind of angular measurement produced by a system of equilateral triangles; and the plan and sections of the cathedral of Milan were given as illustrations. Nothing more, however, need be said concerning it than that though all the proportions of Milan Cathedral might have been determined by means of equilateral triangles, yet that church is by no means free from the charge of monotony; and the rules of Cesarianus would certainly not be comprehensive enough to account for the more varied and artistic proportions of the churches of the same era in France, Germany, and England.

The equilateral triangle, however, enters largely into, if it does not entirely control, all Mediaeval proportions, particularly in the ground-plans. In Chartres Cathedral (the ground-plan of which will be found in the *Builder* of October 29th of last year), the apices of two equilateral triangles, whose common base is the internal length of the transept measured through the two western piers of the intersection, will give the interior length; one apex extending to the east end of the chancel within the aisles; the other to the original termination of the nave westward, and the present extent of the side aisles in that direction. With slight deviations, most, if not all the ground-plans of the French cathedrals are measurable in this manner, and their choirs may be so measured almost without an exception. Troyes Cathedral is in exact proportion with that of Chartres; and the choirs of Rheims, Beauvais, St. Ouen at Rouen, and others, are equally so. Bourges Cathedral (which has no transept) is exactly three equilateral triangles in length inside, from the east end of the outer aisle to the eastern columns supporting the west towers. Most English cathedrals appear to have been constructed in their original plans upon similar rules. In many cases (as, for instance, at Amiens), it is easy to see the reason for deviating from the original symmetrical plan, but the discussion of this would be foreign to the immediate purpose of the present article.

There is an interesting paper on the above system of proportion, in C. R. Cockerell's memoir of William of Wykeham: Proceedings of the Archaeological Institute, Winchester, 1835.\*

Although the system of equilateral triangles will go far to fix the relative dimensions of many of the Mediaeval buildings, yet it will soon be felt on applying it, that some more comprehensive method is wanted to enable us to account for, and systematize, the ever-varying yet always beautiful proportions of the grander Gothic edifices of Europe. The above, indeed, forms only part of a much higher system of harmonic proportion, of which it is the object of this paper to treat. This system is called by Mr. Hay, the "Harmonic Law of Nature," and it is as applicable to Mediaeval buildings as it is to the Parthenon and the Temple of Theseus, to which Mr. Hay has successfully applied it, as mentioned more than once in the *Builder*.

This law has already been referred to in the *Builder* of May 14, 1859; but it will be necessary to recapitulate the practical part of what is there stated, before testing it by an existing example.

Mr. Hay's mode of constructing a series of harmonic rectangles is shown in Fig. 1, where ABDC is a square, and ACEE a rectangle, having its longest sides equal to the diagonal of ABDC. ACHG is a rectangle, having its longest sides equal to the diagonal of ACEE, and so on. The angles of the rectangles ACEE and ACKI have to be slightly altered or tempered, in order to bring them to a number of degrees having numerical proportions to the others; and this gives the following series:—

45° 36° 30° 27° 24° 22° 30'.

Completing the series by adding 40° (the angle of a rectangle erected on the base, and having its height equal to the vertical of an equilateral triangle, nearly), 33° 45', and 25° 42' 51" (respectively ½, ⅓, and ¼ of a right angle), a series is obtained proportionate to the notes and intervals in the natural scale of C major, with the addition of B♭; and by doubling and bisecting this scale, thereby taking one octave below and one above it, a set of working scales is obtained, as thus:—

\* Mr. W. P. Griffith's researches in this path are well known.—Ed.

	C	D	E	F	G	A	B	H	C
I.	90°	80	72	67½	60	54	51½	48	45
II.	45°	40	36	33½	30	27	27	24	22½
III.	22½°	20	18	16½	15	13½	12½	12	11¼

This series, with four additional octaves, has already been given in *The Builder*.

These angles, with their bisections and complements, will give almost every rectangle used in those Mediaeval buildings on which care and thought were bestowed. All other rectangles appear to be either subordinate to, or inevitable from, some harmonic rectangles of greater importance, or to be derived from proportionably cut polygons.

Figs. 2 and 3 show the application of the above principles to a part of the ground-plan, and a cross section of the eastern part of the Temple Church.

Fig. 2 shows two bays of the choir; one-half contains the angles of construction, the other, the plan of the ribs and groins of the vaulting. The angle ABC is 60°, forming an equilateral triangle to the centre. The angle ADC is 90°, forming two squares of the side aisles. By reference to the other side of the plan, it will be seen that the vaulting ribs of the centre aisle intersect at an angle of 36° (⅓); those of the side aisles at an angle of 48° (⅔). The space between is the thickness of the columns, from which the spring of the vaulting ribs is measured.

Fig. 3 gives the principal angles of the cross section and the points from which they are measured. For the sake of simplicity many have been omitted, as also the east window, the dimensions of which also appear to be fixed by the application of the same principles.

It is to be noticed that the line AB is somewhat above the present level of the floor. It is believed that AB was the original level of the interior of the choir. In the proceedings of the Oxford Society for promoting the study of Gothic Architecture, for Easter and Trinity terms 1815, it is stated that "in the recent restorations of the Temple Church in London, by lowering the level of the floor of the church more than a foot, and leaving the bases of the pillars that much above the present floor (ceasing the part below with marble to correspond with the rest), they are made to appear stilted," &c. In old drawings of the Temple Church, the bases are not shown stilted, and it seems probable that they were not so originally. They are not so in the Lady Chapel at Salisbury, which, in some respects, resembles the choir of the Temple Church.

It will now only be necessary to refer to the angles laid down in Fig. 3, to show the application of the harmonic angular principle to this most exquisitely proportioned church. The rectangle of the whole section has its angle, BAC, 30° (⅓); the angle, BED, which fixes the height of the columns, is 40° (⅔); BEG, which extends to the top of the opening of the side windows, 36° (⅓); BEH, extending to the bottom of the side window opening, 12° (⅒); BEL, 10° (⅒); KLM fixing the point of springing of the side window arches, 5° (⅒); the angle at P, fixing the thickness of wall and buttress, makes an angle of 18° (⅒), with a perpendicular from P (though this angle is correct its originality appears doubtful); BVF, 50°, or the complement of FVS, 40° (⅔); and the angles at O and T, being the angles of the arch sections of the centre and side aisles, 68½ (not harmonic), and 54° (⅔). With regard to the angle O of the centre aisle arch section, its want of proportion appears to have arisen from a desire to have the arch sections of the centre and side aisles of the same radius; and it is evident that the angle of the arch section of the side aisles must have been determined first. The two angles at P are doubtful by reason of the alterations that have taken place at various times—in both buttresses and roof, in the course of the numerous restorations; and from the gradual raising of the ground level outside having concealed the original base mouldings. Probably the angle of the centre roof was originally 60° or 63°.

Enough is here shown to prove the accuracy of the harmonic theory in its application to one of the most beautiful edifices of its age, and on which it is evident great care and thought were bestowed. If its dimensions were determined by any other principle, it is plain that it could not have been that of proportion of lines, for there is scarcely one harmonious combination to be found by those means. It is almost impossible that any two distinct systems could so exactly coincide, the greatest discrepancy between the angular and

HARMONIC ANGULAR PROPORTION AND GOTHIC ARCHITECTURE.

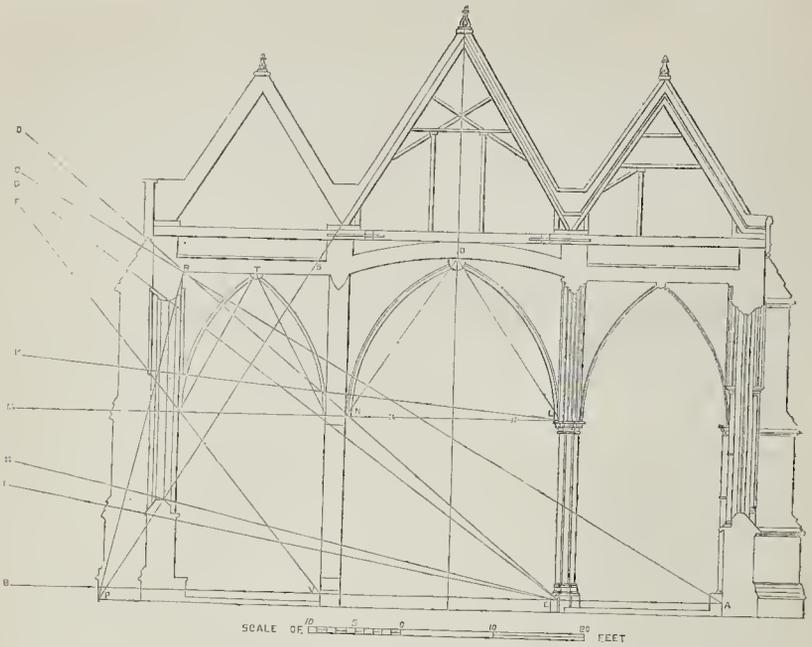


Fig. 3. Section of the Temple Church, London.

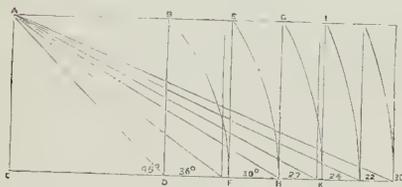


Fig. 1.

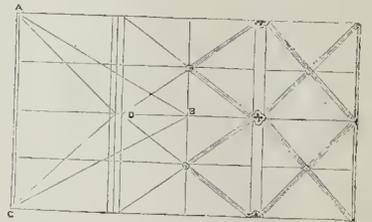


Fig. 2.

actual measurements not exceeding 3 or 4 inches, save in the instances pointed out, being less than those found by Mr. Hay in the Parthenon and Temple of Theseus. It would be easy to show that the whole building is governed by the same principles in the proportions of its longitudinal section, and of the circular portion, the latter being founded on a symmetrical plan; but a full development of their application would require many diagrams, and a pamphlet, if not a volume.

But though the harmonic law is so beautifully developed here, it is not from this building alone that its principles are to be rediscovered. Every application of it to our cathedrals, and more carefully erected buildings, shows plainly how much harmonic angular proportion must have been studied by those who planned them.\* The rules, indeed, were so simple, that they could have been easily learned, and applied by the rudest masons, and such seems to have been the case; the results being, the production of beautiful proportions before which the rules of Palladio and the Renaissance school shrink into insignificance. It is to be hoped that the time will soon arrive, when no architect will allow his designs to be "written in stone" without first carefully testing them by some such principles as those shown in the above simple harmonic law; the proper use of which, to curb and chasten, not to fetter, or clog genius and invention,—can be traced alike in the polished marbles of ancient Greece, and in the coarser stones of Mediæval France and England.

\* Of this, the choir of Lincoln Cathedral is an exquisite illustration.

STANLEY FARM, NEAR BRISTOL.

STANLEY FARM consists of about eighty-four acres, the property of Thomas Proctor, esq., and is worked in connection with Walls' Court Farm adjoining. Of the latter, provided with railway, water supply, school for children, and other appliances, we have given a description, views, and plan in a previous volume.\* Since these were published very considerable additions and improvements have been made.

The house on Stanley Farm, shown in our present view, is occupied by the bailiff; and the buildings erected near it are used as stables, and sheds for carts, waggons, and agricultural implements. There is also a piggery.

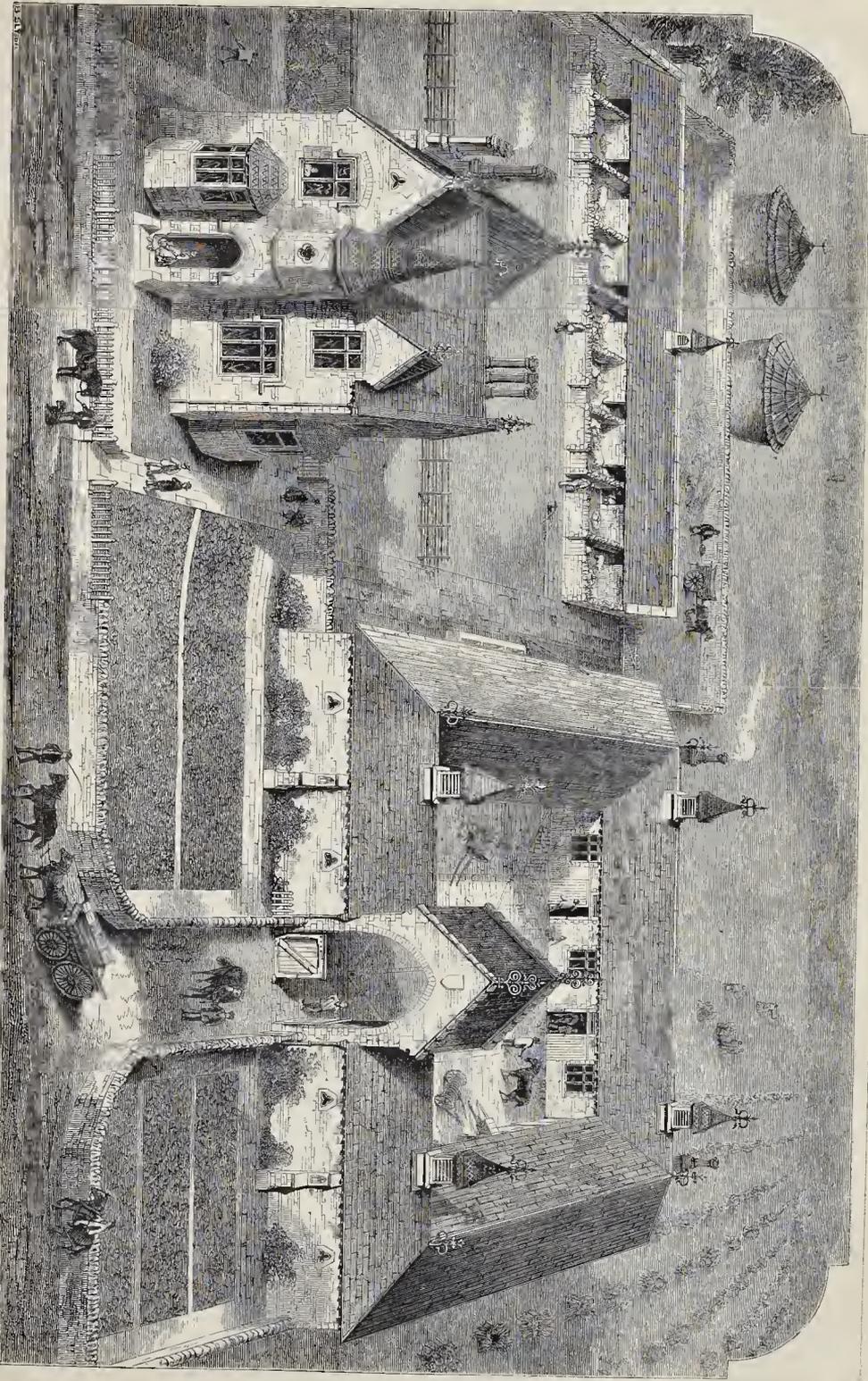
The cattle-sheds at Walls' Court are conveniently situated for the grass land, and Mr. Proctor's residence is near them. The buildings, now shown are about 700 yards from the cattle-sheds, conveniently situated for the arable land; and the proximity of the bailiff's residence gives the opportunity for proper supervision of the horses on the farm. In forming an opinion as to the capabilities of the buildings at Walls' Court, the two views must therefore be taken together. According to the present experience of Mr. Proctor, he finds it work well thus to divide the views with reference to the requirements of the farm, rather than concentrate them all on one spot.

Some years ago, when draining and improving the grass land, Mr. Proctor thought it desirable

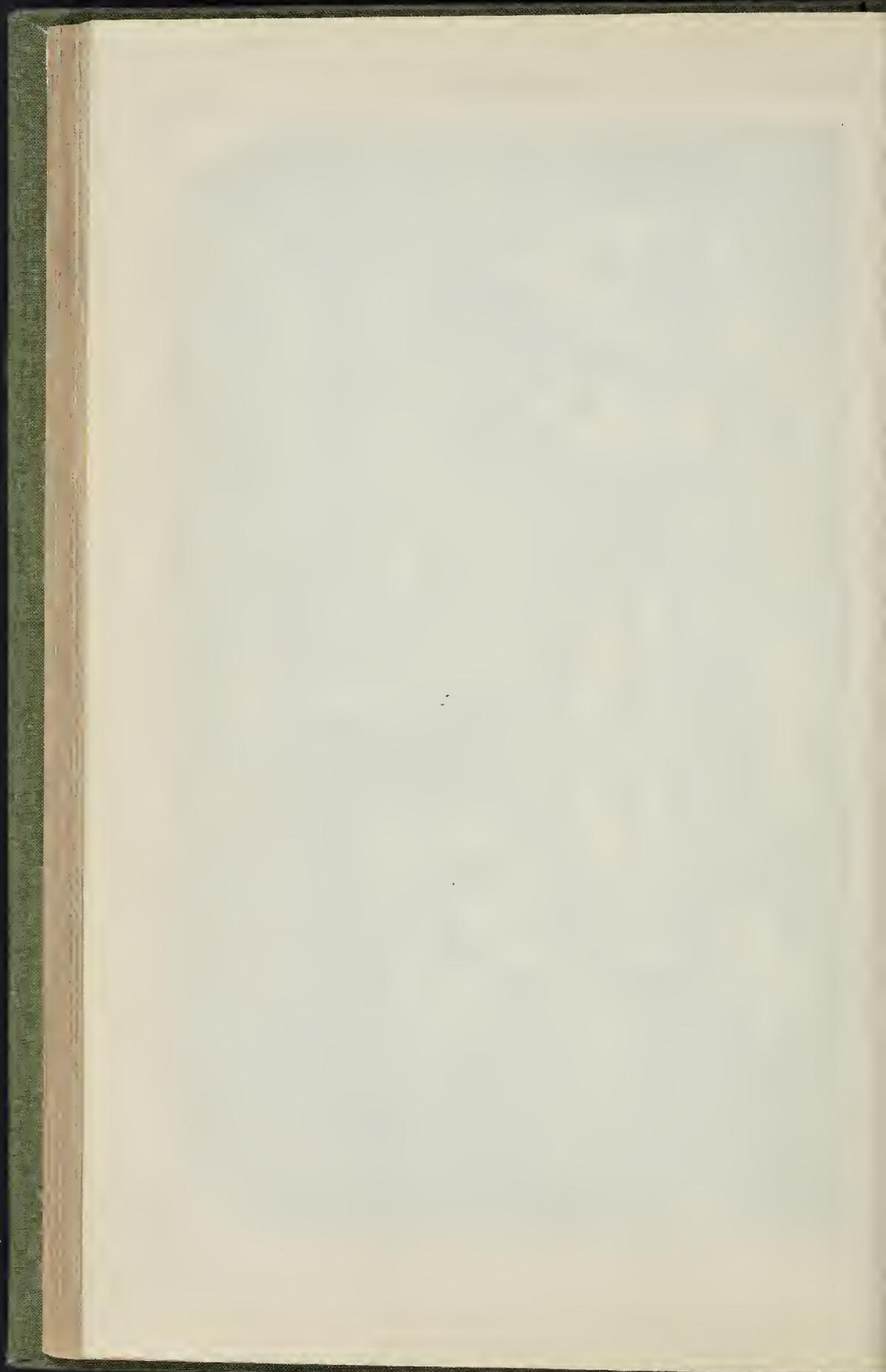
\* See vol. XIII. p. 349, and p. 367 (July and August, 1855).

to endeavour to ascertain how far improvement was to be attributed to each operation, and he therefore left some fields undrained which he manured in exactly the same way as those drained, and he also left drained and undrained land without manure. He found that, although the quality of the grass was improved by drainage, to obtain a fair return for his cost, it was necessary to apply manure at a liberal rate on the drained land, as the quantity and quality of the grass on the unmanured drained land was not in the same proportion to the outlay as on that which was drained and manured. On that which was manured but not drained, he found the quantity and quality of the grass improved; but the vegetation on the undrained was from ten days to a fortnight later in the spring, and gave out from ten days to a fortnight earlier in the autumn, thus giving nearly a month's longer growth in the season on the drained land, and that at two very important periods of the year.

Drainage in other respects is of the utmost importance. We may add, from Mr. Proctor, that his holdings and arrangements are open to any of his brother farmers who may desire to see them: they are at full liberty, he writes, to take measurements, and may have any information concerning them that they may desire. Mr. Proctor has strong notions on the value of interchange and experiences, and no faith in concealment. He wisely believes in the proverb,— "There is that scattereth, and yet increaseth; and there is that withholdeth more than is meet, but it tendeth to poverty."



STANLEY FARM, NEAR BRISTOL, THE PROPERTY OF MR. ALDERMAN PROCTOR.—MR. GODWIN, ARCHITECT.



## LONDON BORES.

NEVER, in the memory of that celebrated individual, "the oldest inhabitant," were the streets and thoroughfares of the metropolis so much disturbed as they have been recently. In all directions bands of workmen are busy as moles burrowing the earth, each in his way, advancing the great drainage works; and now operations have been commenced for making the underground of London available for railway purposes, and soon below the crowded streets the locomotive whistle will sound and trains roll rapidly along. The squares north of Hyde-park are blockaded, and poor ladies look out from their windows agast, and postpone intended "parties."

In the neighbourhood of King's-cross extensive works are in progress for the purpose of diverting the sewerage from the middle of the road to new sewers,—one under each of the foot-paths,—so that the centre may be left clear for the City railway tunnel. Deep diggings are also going forward in the York-road (Maiden-lane). We have watched with care the openings which have been made in this neighbourhood, in consequence of the tradition that Battle-bridge was the site of a great conflict between Alfred and the Danes. The soil has been turned up in all directions, and yet not a relic, so far as we can learn, has been discovered.

## PROFESSIONAL EXAMINATIONS.

SOME of our readers will be glad to hear that the council of the Royal Institute of British Architects have appointed a committee to consider as to the propriety of affording to members and intending members of the Institute facilities for passing a voluntary professional examination, of which certificates should be given. The Committee have already held one meeting, numerously attended, at which some important resolutions were passed, and are about to meet again.

## THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of the Association was held on Friday, the 17th of February, at the house in Conduit-street.

The chair was taken by Mr. Penfold, the president.

Mr. T. Blasbill read an abstract, containing the principal views advanced by him in the paper read at the previous meeting, on the application of iron-work to architecture. In the course of his observations he exhibited specimens of iron in its various stages, and described the processes through which it passes from its native state, until manufactured into wrought iron and steel.

The Chairman said he was convinced of the importance of the subject in connection with their profession, though he differed from the writer in a few of his conclusions. According to Mr. Blasbill, if the Greeks had been initiated into the properties of iron, they would have thought the Parthenon a lamentable affair. The suggestion of introducing iron instead of brickwork into the facades of our street buildings was especially valuable. The writer considered it wrong to adopt curves in cast iron, or straight lines in wrought iron, and that there was abundant room in the same building for both materials. In connection with his observation on the introduction of iron into fireproof flooring, the chairman added that whoever could suggest a cheap system of such floors would benefit society.

Mr. Roger Smith considered the suggestion as to introducing iron into shop fronts peculiarly valuable. No doubt practical difficulties would present themselves to such application of the metal, but these were incident to every novelty, and by study and experience would be overcome. If we began with iron in the basement story, we should not turn therefrom to the heavier material as we went up. He (Mr. Smith) thought that the timber houses still to be seen in parts of Great Britain and France would be a good guide to us in the design of an iron front, as the material of which they were built was the same from bottom to top. In his opinion, Mr. Blasbill hardly spoke of ancient examples as they deserved. To have recourse to nature alone as our guide would lead us to absurdities. We could not now-a-days give up our hooks, and retire into the woods to study architecture. We must learn in bricks and mortar what had been done already; though we need not despise nature, and thus run into the other extreme. He wished to mention some remarkable instances of ironwork which the present day had produced. There was first the Crystal Palace, as it originally stood in Hyde-park. At the suggestion of Sir C. Fox, it was built on squares of a fixed

dimension—as few as possible. By this plan any column could be set up at once, and any girder upon it, without the trouble of scabring for the fitting-place of each. To bring about this certainty and facility in the erection, Sir C. Fox made all the drawings with his own hand, working sixteen hours a day for several weeks without intermission. Then there was the Great Western Railway Terminus, at Paddington; the dome of the British Museum Library; the roof of the new Covent-garden Theatre (a description of which had been given by its architect, Mr. Barry, to the members of the Institute of British Architects, and who had solved therein the problem of making fireproof roofs); and the roof over the courtyard of the new Museum at Oxford. He admired, especially, the imitations of foliage which had been inserted in the latter. He showed as specimens of this introduction of ironwork, drawings of fan-lights over the doors, ventilators in the ceiling, and spandrels in the roof which had been adopted in the design of a public hall at Maldon. These were cast at Messrs. Baker's Works, Falkirk, from the designs which he had furnished. These decorations corresponded to fretted work in wood; but had the advantage of finer lines, as cast patterns in iron were sharper than in any other material. Besides, a single design and repetition would afford the groundwork for any number of castings, and thereby the most skilful labour would be saved, namely, that of the designer and of the pattern-cutter.

Mr. Lewes observed that the principal objection in his opinion, to iron-work when partly covered, and partly exposed to the air, was liable to rust. This difficulty did not arise in the case of fire-proof floors, as no part of the iron was exposed, but would present itself in roofing. As was seen in the case of the Houses of Parliament, painting or galvanizing would not afford a sufficient protection, for the slightest defect in the coat, even a pin-hole, being uncovered, would admit the rust. The metal nickel, mixed with iron in certain proportions, would prevent rust, and prove superior to painting or galvanizing.

Mr. R. Smith exhibited some interesting photographic sketches, to show how ironwork could be adapted to architecture. Three of them represented views taken in Venice, one of them a building in Constantinople, and one a sketch from Florence. He might also refer to Mr. D. Wyatt's work for the same purpose.

The Chairman produced sketches, showing specimens of designs in iron of the seventeenth and eighteenth centuries, and observed that the gates to Queen Anne's Walk, in Hampton Palace, were very fine examples of the excellence to which wrought-iron could be brought. The apparent difficulty arising from the expansion and contraction of metals, under the influences of heat and cold, might, he thought, be got over in the same way as the same influences were counteracted in rails by fishing them.

Mr. Blasbill, in reply to the several observations, said neither nature nor any of the styles should be imitated; all styles copied their predecessors, but not entirely; they rather improved on them, as the Greeks did on the Egyptians. To show the folly of taking types, he begged to instance the drinking-fountains, which, as novelties in connection with their profession, might be expected to have elicited appropriated designs. And yet he would say that there was not a fountain of suitable design in London. The general design introduced was that of a shell looking out of a window, and no one seemed to rise further than the bivalve window. This afforded a proof that designers were trammelled by the study of the antique and the Medieval. As regarded the strength of cast-iron, there was greater danger of breaking it when made into patterns than when it was in the solid piece. The joints of the pattern would be the weakest part, as in the case of a beam let into a wall, which was less capable of resisting force at the part let in. In wrought-iron, on the contrary, the whole strength was brought into play in resisting the blow. He deprecated the folly of designing down to the ignorance of people who had no scientific knowledge.

Votes of thanks were passed to Mr. Blasbill and Mr. Smith, and the meeting separated.

ARTIFICIAL STONE.—Messrs. Pavin de Lafarge, Viviers, Ardèche, propose to employ a compound of quartz and clay as a substitute for sandstone. The dry portion of the compound is finely-powdered quartz, and the wet of aluminous earth. The mixture is cast in moulds, and then subjected to the necessary pressure.

## GLASGOW ARCHITECTURAL SOCIETY.

## THE WALLACE MONUMENT.

A PROTEST, it may be remembered, was made in our columns against the award of the committee in this competition, on account of a departure, in the successful design, from the conditions of the committee itself, as to colouring the drawings.

At a meeting of the Glasgow Architectural Society, on Monday evening, the 20th February, Mr. Thomas Gildard, architect, moved—"That the Glasgow Architectural Society views with, and hereby expresses its, extreme surprise, regret, and indignation at the recent adjudication on the competition designs for the Wallace monument, intended to be erected on the Abbey Craig, Stirling."

Mr. Gildard spoke at considerable length in support of his motion, chiefly dwelling on the fact that, while the advertisement mentioned that the plans and elevations must be tinted in Indian ink only, and no coloured drawing be received; notwithstanding this, seven coloured drawings were received, and to one of these seven the first premium was actually awarded by a large majority of the committee. "The competition system," said Mr. Gildard, at the close of his remarks, "has been long in corruption; but we, as a corporation, have surely something in our power to both stay the progress and restore it to its pristine health and influence; and towards this, I think it chiefly attaches to us to denounce every inance in which we find have been disregarded the common principles of moral rectitude. Let us, as an Architectural Society, show a bold and united front to all mal-practices in competitions, and very speedily committees wishing designs will be unable to afford to injure and insult us, and competitors will be found, as at least respects instructions, working more harmoniously."

Mr. Gildard's motion was seconded by Mr. Alexander Watt, architect, who also spoke at some length.

The motion was carried unanimously.

Mr. Gregory, Mr. Burnett, and others, remarked that they understood that the drawing of the successful competitor had been coloured by the artist in Edinburgh, without the competitor's knowledge or authority.

Mr. Baird moved, seconded by Mr. George Thomson—"That the remarks by Mr. Gildard, in introducing his motion, should be adopted as the expression of the mind of the society; and, to attain one of the objects for which such a society has been instituted, he hoped that the press of Glasgow and Edinburgh, and those publications throughout the kingdom more particularly devoted to the interests of architecture, would publish them *in extenso*, the subject being one of national importance." This also was agreed to.

## THE SHEFFIELD SCHOOL OF ART.

THE annual conversation of this school has just been held, Mr. Redgrave in the chair. The meeting was a good one. An extensive and varied collection of works of art on the walls formed the fourth annual exhibition of the School. Mr. Redgrave addressed the meeting at considerable length, and is fully reported in the *Sheffield Independent* of 25th ult. In allusion to British constructive skill and French taste in art, he said:—"Mr. Shepshanks, who has done so much for art, on the occasion of the Exhibition of 1855, gave an order for several pieces of furniture to be made for exhibition at Paris. I have seen the Frenchmen taking the drawers out of them, with perfect wonder at the ease with which they worked, holding up their hands in astonishment to think that such marvels of workmanship should be there from England. But they looked with equal astonishment at the absence of any display of taste in them. Whereas the French goods, though beautiful in ornamentation, are badly finished, and you might be pulling at a drawer for half an hour before you could get it out. The people, however, will take those works without utility, rather than those devoid of beauty. But as soon as the Frenchmen get the English tools, it will be found that they can make their articles beautiful, and at the same time as good as your mere fabrics, and they will be in London supplanting you."

After the prizes were distributed, Mr. Young Mitchell, the head master of the Sheffield School, remarked that, for each national medallion gained by the pupils, the school received from the Department the value of ten guineas in works of art. The School had already received these advantages to the extent of 150 guineas in the shape of rare electro-types and photographs of the cartoons of

Raffaello, &c. The present awards would entitle them to further contributions.

The School, upon this occasion, had twenty-nine out of the maximum number (thirty) of medals that could be awarded to any one school at one distribution.

#### FOREIGN RAILWAY WORKS.

THE important works for the enlarging of the Paris terminus of the Chemin de Fer du Nord are to be commenced at the end of February. The land has been valued, the plans completed and approved of, and all formalities gone through.

Many branches of the Pyrenean railway group are being already surveyed, especially between Bayonne and Pau, and from Pau to Bagueres de Bigorre. The inhabitants of the localities to be benefited by them are in anxious expectation of their being commenced.

The Minister of Public Works announces for 1860 and 1861 the opening of 450 kilometres of railways in France. These are Astricourt to Lillers; Aillevers to Favernay; Nonzon to Conlommiers, Bar-sur-Seine, Rennes to Redon and Montauban, Saint-Lô, Saint-Christophe to Rodez, Monet to Montargis, and Burgundy to Beaumont. In two years the Paris and Neviers line, a direct railway to Lyons, will be probably opened for traffic.

In a few years hence we shall have the two banks of the Rhine placed in direct communication on no less than six points between Waldshut and Cologne. Two permanent bridges, our readers are aware, have been already constructed and opened for thoroughfare; that of Waldshut, between Switzerland and the grand duchy of Baden, and that of Cologne. The Kehl bridge is in a fair way of construction, and will be open in a year. Two others are proposed between Mayence and Coblenz. The drawings have been got out and negotiations are on foot between the governments on each side the river and the different railway companies interested in their construction. As soon as some questions are settled, the works will be commenced. The sixth bridge is one that the Grand Duke of Baden has recently declared to be of paramount importance, viz, over the Rhine at Mannheim, and he has urged the necessity so forcibly that the project may be looked upon as decided.

In 1856 the concession of the Florence and Arezzo Railway was accorded to the Marquis de Flers, but the works were never terminated. The Tuscan Government has now issued a decree annulling the original concession, and ordering that the works be continued at the expense of the state.

#### GOthic ARCHITECTURE IN AUSTRIA.

THROUGH Herr Reichensperger's correspondence with the *Ecclesiologist*, we are from time to time informed of the architectural news from Cologne and the north of Germany. Being now in the south for the purpose of observing the advancement of the arts, perhaps a few lines may not be uninteresting to your readers. Having lately made the acquaintance of Herr Ferstel, I have had much opportunity of closely inspecting modern buildings. He has in hand, and nearly finished, the New Exchange and Bank Buildings, Vienna, a work of very high merit. In style it is difficult to describe, but by giving you some idea of this gentleman, you may conceive, perhaps, his last work. He is a great lover of Gothic, and gained the prize in the competition for the Votive Church, now being erected here outside the Schottenhof. Well, his design for this Exchange is, in motive, Gothic: the carving and general idea are Gothic; but the arches are round, and there are many Classic ideas in the building, particularly the pillars. The metal-work is very Gothic: the lamp-brackets, door-handles, &c., are cast in bronze, and very chaste in design: the gates are pressed and wrought. There is a great use of imitation stucco, marble, and Portland cement, designed in the style of the Italian very Early Gothic marble mosaic. In this manner many of the halls are decorated, and the effect is most charming. This seems to be a most legitimate ornamentation, as it is not a sham.

The Bank direction-room is very elegant, and the furniture admirable; patterns flat and inclined towards Gothic: the wood carving (only so far conventionalized as to be in good taste and according to decorative principles) is the finest and most life-like I have ever seen; and the polychromatic decoration is very elegant. Above the wainscot the wall is covered with pressed leather, diapers of which are very chaste, and much colour

and gold is used on this leather: the effect is excellent. The chairs are also of pressed leather, with gilded and coloured patterns.

Herr Ferstel's new church is a cathedral-like building, about 300 feet long, somewhat after Cologue in idea, and perhaps too German and liny for our taste, but still a noble work, and particularly as German Gothic architecture.

I think the future of Gothic domestic architecture is very hopeful and bright in Vienna; and in the next ten years I anticipate many fine buildings. Herr Ferstel has a thorough knowledge of what is required in modern domestic Gothic. Herr Schmidt, who gained the prize for the Berlin Town-hall (which of course was not executed), is a Goth, and is now professor in the Academy, and is a perfect master of his craft. Herr Ernst is now restoring St. Stephen's, but not at all according to our ideas: dreadful Vandalism, and no Conservatism, although the modern work is not bad at all. Of course Herr Ferstel has to feel his way here, and begins with round arches, &c. He is intent, however, on working in true architecture by degrees. As to Munich Gothic, it is ludicrous, Maximilian-street having become a proverb.

Vienna.

W. TAYLOR.

#### THE LATE W. H. PLAYFAIR, ARCHITECT.

ARCHITECTURAL INSTITUTE OF SCOTLAND.

AT a recent meeting of the Architectural Institute of Scotland, held in George-street-hall, Mr. J. Murray Graham, of Murray's Hall, read "A Notice of the Life and Works of the late William H. Playfair, Architect." The paper was illustrated by Mr. Playfair's own drawings of the most important works executed by him. The following abstract of the paper has reached us.—Mr. Playfair was born in 1789 in London, where his father, also an architect, carried on business. He came to Edinburgh at the age of fifteen, and for some time attended the classes of his uncle, Professor John Playfair. His architectural teacher was William Stark, of whom Sir Walter Scott had so favourable an opinion that he got from him the first design for his house at Abbotsford. When, in 1816, a Parliamentary commission was appointed to decide upon plans for the repair and removal of the Edinburgh University Buildings, Playfair's plans obtained the first prize, of 100 guineas, and with some slight modifications, his plans were carried into execution. The interior front of the buildings facing the quadrangle were universally admitted to furnish an excellent specimen of Italian architecture. In 1815 he supplied plans for the Astronomical Observatory on the Calton-hill, and for Dollar Academy, both in the Roman style of architecture. In 1810 he furnished an elaborate design for the Advocates' Library, with a colonnaded portico fronting George IV.'s bridge, on a much grander scale than was afterwards carried out. In the same year he designed the gateway and lodge for Heriot's Hospital, which is in admirable keeping with the main structure. In 1820 Mr. Playfair was employed by the magistrates and proprietors to plan various crescents and streets for the side of the Calton-hill and among other designs now filled up, were the Regent, Royal, and Carleton terraces, Brunswick-street, Hillside-crescent, Windsor-street, as well as the Royal Circus on the north side of the city. His reputation as an architect was now considerably raised, and in 1822 he was employed to furnish the designs for the Royal Institution buildings on the Mound. After describing the architectural features of this structure, Mr. Murray Graham said, as a whole, it was deficient in effect, and that chiefly on account of its position. The style of the Grecian temple required that the building should be placed upon a height, and in all the ancient specimens this condition was observed. In 1826 Playfair took part in furnishing the designs for the national monument, in the style of the Greek Parthenon, and also for St. Stephen's Church. Mr. Graham next remarked upon his domestic buildings in the Italian style, illustrated by Dumfries House, in Morayshire, the late Lord Mackenzie's house at Belmont (now the property of Mr. J. Hope, D.K.S.), and Drunbanagh House, Armagh; and those in the Scotch baronial style, which he had either wholly built, or materially added to—such as Baunore, Prestongrange, Craigcrook, Bonaly, and Islay House. One of his best strictly classical works was the College of Surgeons' Hall in Edinburgh, which, without being a mere copy of any ancient example, displayed in its front elevation the genuine air and spirit of Greek. His Calton-hill monuments to Professor Dugald Stewart and Professor Playfair deserved a word of commendation. The first,

effective and beautiful, and was finely placed on the edge of the rock; while the second was a good example of the severe classical style, and was monumental in its character. After a brief notice of Lurgan House, and the Mansion of the Duke of Roxburgh at Fleurs, designed by Playfair in the Tudor style, and the latter of which especially was very successful, Mr. Murray Graham referred to Donaldson's Hospital, which was his largest work in this style, and had gained for him a most extensive reputation. His only Gothic building were Minto Chapel, and the Free Church College in Edinburgh. The National Scottish Gallery, designed in 1850, was his last important work. Mr. Playfair's life, apart from his professional engagements, was not an eventful one, and he died in 1857 at the age of 68. He was an architect of consummate knowledge and taste, rather than of original genius. He kept within the rules of his art, and was most laborious and conscientious in his attention to correctness of detail.

#### A SUGGESTION AS TO THE WESTMINSTER BELL.

AT the meeting of the Institution of Civil Engineers, on January 17th, Mr. S. A. Varley exhibited a cracked bell, the metallic continuity of which had been restored, by simply soldering the crack with tin, so that the bell rang as perfectly as before it was injured. It was explained, that tin had the property, when heated above its melting point, to nearly a red-heat, of rapidly dissolving copper. If, therefore, the cracked bell, after being soldered, was kept at a dull red-heat, or nearly so, for a little time, the crack would become filled up with an alloy of tin and copper, of nearly the same kind of composition as the bell itself, and in absolute metallic union with it, and quite as brittle and as sonorous as the other portions of the bell.

#### DESIRED EMBANKMENT OF THE THAMES.

On Monday morning a deputation from the vestry of St. Luke's, Chelsea, waited by appointment upon the Right Hon. W. Cowper, at the Office of Works, Whitehall-place, to urge upon Government the equity of spending the money (£8,150*l.*) now in their hands, and voted by Parliament for that purpose, in continuing the embankment from Chelsea Hospital towards Battersea-bridge.

Mr. Fife, M.P., stated the case of the parish. He observed, that under an Act of Parliament, passed in 1816, the sum of 145,000*l.* had been voted for carrying out the embankment and road, the whole of which had been expended with the exception of the balance above stated. The powers of the Act, though renewed by a subsequent one, had ceased, and the object of the deputation was to induce the Government to recommend the revival of the parliamentary powers to acquire the necessary property to continue the embankment which now ended at Chelsea Hospital on to Cheyne-walk, and so to Battersea-bridge. The total expense was estimated at between 60,000*l.* and 70,000*l.*; but if the Government would authorise the appropriation at once of the 38,000*l.* balance from the former votes, the parish suggested that the remainder might be spread over series of years.

Mr. Byng, M.P., the Rev. Mr. Burgess, the rector of the parish, and several members of the vestry, represented the importance of the improvement in a public sense.

Mr. Cowper fully admitted the importance, both in a public and local sense, of the proposed embankment. The misfortune was that the 38,000*l.* referred to, not having been claimed within three years from the time specified, had gone back under a general rule into the Exchequer, and was treated as a saving, so that if anything was to be done again, in the present state of the public finances, he thought very strong and cogent grounds would be required to induce the House of Commons to pass such a vote. He assured the deputation of his entire sympathy with the object they had in view, and promised to represent their wishes to the Government, but he could hold out no hope of their accomplishment under present circumstances.

Members of the Chelsea vestry had another interview with the Chief Commissioner of her Majesty's Works on Thursday, March 1st, with reference to the bad condition of the new road leading from Lower Sloane-street to Chelsea Suspension-bridge.

## IRELAND.

ADDITIONS and alterations are to be made at Enniskillen court-house, according to plans by the County Surveyor; the expenditure not to exceed 2,500*l*.

A new minor model school is to be built at Monghan, by the Board of Public Works.

The Bagenalstown and Wexford Railway Company have received tenders for 20,000 sleepers of larch or foreign timber.

A trial will take place this term in the Dublin Law Courts, relative to the fall of house in Cranford-street (Kempston v. Butler, as already noted in the *Builder*); and some interest will be occasioned by the following cases, likewise announced to come off, viz.—Lord Gough v. Carmichael; breach of duty as an architect; Hugh Kelly v. Crampton; payment for ditto and labour as a builder; Bolton v. Tyrrell; ditto; Burke v. Carroll; damage to adjoining premises during building operations.

The county surveyors have had an interview with the lord lieutenant, relative to their memorial previously alluded to by us; and his Excellency, having acquainted himself with the detail of their alleged grievances, promised that the memorial should receive favourable consideration.

Numerous gentlemen of commercial status have requested the corporation to withdraw the proposed bill for the new water supply, until the citizens should have ample opportunity to study it, and form an opinion upon its features. It appears to be not unlikely that even at the eleventh hour an amicable and mutually satisfactory arrangement may be made with the Canal Companies, for the supply.

It is proposed to erect a new music-hall of spacious dimensions, at Derry. Subscriptions to the amount of several hundreds of pounds have already come in.

A new church, for Roman Catholic worship, has been erected at Gargary Dolly's Brae, after designs by Mr. W. J. Barre, of Belfast and Newry, architect. Another, for same purpose, is being built at Contraquaddy, and Lord Carew has subscribed 100*l*, and given a free site.

New convents are to be built at Mountlincrook (J. S. Dutler, architect), also at Upper Glanmirewood, Cork; and others are in progress at Roscommon and Sligo.

An asylum for twenty-six widows has been completed at New-street, Dublin, at the sole expense of Alderman and ex-Lord Mayor Atkinson, after plans by Mr. Joseph Maguire, architect. Mr. S. H. Bolton, the builder. Cost, about 1,000*l*.

The new station at Ballybay, on the Dundalk and Enniskillen railway, is a Gothic building, representing a frontage of 85 feet, and cost 1,700*l*. (Mr. W. J. Murray is the architect; Mr. John Nolan, the builder. The company are about constructing the line from Clones to Cavan. Mr. James Barton, C.E.)

## CHURCH-BUILDING NEWS.

*Castle Rising (Norfolk)*.—A commencement has been made to rebuild the south transept and aisle of the church of Castle Rising. Mr. G. E. Stretton, is the architect; and Mr. Wm. Brown, of Lynn, the builder.

*Saffron Walden (Essex)*.—The church here is to undergo an extensive reparation under Mr. Bussey, of London, by Mr. William Brown, of Lynn.

*Cambridge*.—For rebuilding All Saints' Church on a new site, about 3,000*l*. have been already promised towards the 5,000*l*. that are wanted. It is intended, says the *Chronicle*, to employ an architect of undoubted reputation, so as to have a church built in the true principles of Gothic art.

*Northampton*.—The committee for the restoration and enlargement of St. Sepulchre's Church, Northampton, have resolved to proceed in the carrying out of the plans prepared by Mr. Scott. There were seven tenders received, viz., from Messrs. Myers, Parker, Whitmy, Ireson, Jackson C. Co., and W. M. Cooper, of Derby, the last of which, being the lowest, was accepted. The work has been divided into three sections, the first one of which only it is intended to proceed with at present, the funds already promised and collected being only sufficient for that purpose. The committee have, however, reserved to themselves the option of accepting Mr. Cooper's tender for the remainder of the work, at any time during the progress of the first section. To carry out the complete design, an additional 3,000*l*. will be required.

*Islip (Oxford)*.—Of the Islip Church bells, the *Edinburgh Journal* says,—"Two of them were cracked and sent forth what might be called 'fractos

sonitos." The operation (performed on one of them) of cutting out the crack was by no means effective in restoring harmony of tone. In August, 1859, a generous offer was made by John Parsons, esq., of Oxford, to defray the expense of recasting the whole set. The offer was at once gratefully welcomed by the rector, churchwardens, and parish at large. The work was entrusted to Mr. Alfred White, of Besselsleigh. The five old bells were taken by rail to Mr. Menz's foundry, Whitechapel, and successfully re-cast into six, sent down to Mr. White, at Besselsleigh, for fitting and arrangement, previous to being re-erected, and brought back again to Islip on January 22nd, of this present year. The arrival being expected by the inhabitants, a large assembly spontaneously went to welcome the bells. They were played into the village by the Islip band, the rector, churchwardens, and others walking in a kind of extempore procession into the churchyard and up to the foot of the old church tower, where the rector read aloud the new inscription on the tenor bell, and delivered a short address, after which the work of raising the bells immediately commenced. Not the smallest accident occurred during the whole business.

*Brighton*.—It is in contemplation to erect a new church on a site in Victoria-road, in the west of Brighton. The architect is Mr. G. F. Bodley, of London. The style is to be Gothic.

*Cosham*.—A vestry meeting was recently held in the parish of Wymering, for the purpose of accepting the sum of 1,200*l*, left by the will of the late patron of the living, Mr. F. J. Nugee, towards restoring the parish church. The plans, executed by Mr. Street, were submitted to the meeting. The fund was thankfully accepted, and the plans adopted.

*Amsbury*.—The new burial-ground and mortuary chapel here, provided by Sir Edmund Antrobus, has been consecrated. The new ground is conveniently situated, and is enclosed by a wall. The chapel is constructed of red brick and mud (according to a *Wills* paper), and the entrance is surmounted by a bell-turret. The interior is paved with Minton's and Peak's tiles: the seats and roofs are of stained deal. Mr. Butterfield, of London, was the architect; and the works, which have cost about 1,000*l*, have been carried out by Mr. Edward Andrews, builder.

*Chetwode*.—The small church of Chetwode, according to the *Sherborne Journal*, having undergone, during the past nine months, a work of restoration and enlargement by the erection of a chancel, has been consecrated by the Bishop of Salisbury. The probable cost of the restoration and addition will be about 700*l*. or 800*l*. The new chancel was erected (under the superintendence of Mr. Slater, the architect of Sherborne Church restoration) by Mr. C. Down, of Sherborne, builder; the plumbing work being executed by Mr. Upsall, of the same place. The chancel is about 25 feet long, by 17 wide, is built of Ham-hill stone, and contains five windows, two in each side, and one at the eastern end, which was erected in memory of the late Major Chadwick, by his family. This window is of coloured glass, supplied by Messrs. Clayton & Bell, of London. It contains three lights. In the centre light is a representation of the crucifixion of our Saviour; and on either side are the "holy women" and Joseph of Arimathea. The tracery, which is in accordance with the style of architecture, is filled in with evangelistic symbols and the sacred monogram. On the north side of the chancel is a memorial window to the late ennobled, the Rev. John Sanctuary. This is also of coloured glass, and consists of two lights, representing the apostles St. Peter and St. John. It was placed there by public subscription. The floor is of black and red diamond-shaped tiles, laid diagonally. The roof of the nave (lath and plaster) was scraped, when the framework of an oak roof was discovered; this has been entirely restored, and is of a wagon-headed form. The old square oak pews in the nave have been removed, and open, stained-deal seats have been substituted. By the alteration, forty extra seats have been appropriated to the poor. The church will now accommodate about 250 persons. The cost of erecting the chancel (about 300*l*) has been chiefly borne by the Chadwick family, the restoration of the nave being defrayed by the parishioners.

*Yeovil*.—The restorations at the parish church have been completed. The works have been confined principally to the renovation of the interior. The whole of the internal space from west to east was crowded with heavy galleries, the beams and timbers being let into the stone piers, which were mutilated by their insertion, as were also the attached wall shafts and moulded window jambs. The ground-floor was filled over its entire area with

high pews, the principal framing, however, being of good wainscot oak. The timber roofs throughout were plastered and whitewashed internally. All these deformities the architect has had removed. The stonework throughout the church, as far as practicable, has been made good, the moulded bases and other piers restored, a single shaft in an obscure corner retaining its mouldings having been the authority for this part of the work. The mouldings and tracery of three side windows, in the south aisle, have been taken out and renewed, and the jamb mouldings made good; also the large window at the east end of the same aisle has been similarly treated. The three side windows just named have been filled with glazing by Messrs. Lavers & Barrand, of London, and in each are arranged various geometrical lines and figures, diapered with foliage and flowers, and enclosing coloured compartments, in which are presented the emblems of the Passion, the sacred monogram, and other devices of symbolical import. The whole of the lights of each window are surrounded with coloured borders and foliage, and surmounted either by a corona or mitre in the alternate compartments. The glass for one other window at the west end of this aisle is still in hand, and will be shortly completed. The eastern window has been executed by the same artists, at a cost of 150*l*. In the five principal lights are depicted five miracles of our Lord, viz., "The blind receive their sight," "The lame walk," "The lepers are cleansed," "The deaf hear," and "The dead are raised up." The tracery in the head of the window is filled with glass displaying foliage. The oak roofs and timbers of nave and aisles, and chancel, have been oiled, and the bosses and principal moulded ribs and plates have been decorated in gold and vermilion, and powdered with gold stars. The available area of the church, in nave, aisles, transepts, and choir, has been fitted up with open benches, framed with moulded and carved ends of wainscot oak, each exhibiting an appropriate device. Various other restorations have been effected. The north transept is enclosed; but much yet remains to be done to make a complete restoration inside and out. The oak fittings and carvings have been executed by Mr. Geake; the masonry and carpenter's work by Messrs. Harwood & Sons; and the ornamental painting by Mr. Foot, all of this town. The restoration of the Ham-stone work, and the execution of the new rosettes, &c., have been carried out by Mr. Joseph Staple, of Stoke-sub-Hamdon, and the entire work throughout, from the designs and under the superintendence of the architect, Mr. R. H. Shout.

## METROPOLITAN BOARD OF WORKS.

## TENDERS FOR DRAINAGE, &amp;c.

At a meeting of the Board held on the 24th February, the following tenders were received for sewerage works in the eastern division of the metropolis, viz.—

Munday, at 5 per cent. above prices in schedule.

Walker & Neave, ditto.

Messrs. Wood, ditto.

R. Robinson, 2½ above.

W. Lavers, at the schedule prices.

W. Hill, Whitechapel, 3½ per cent. under ditto.

E. Cole, 6 per cent. under ditto.

Dethick, 10 per cent. under.

Mr. Dethick's tender was accepted.

For Works in the several Parishes South of the Thames.

Dethick, 5 per cent. above schedule prices.

R. Robinson, 2½ per cent. above.

W. Lavers, 2 per cent. above.

Walker & Neave, 2 per cent. above.

W. Hill, at schedule prices.

E. Cole, 5 per cent. under ditto.

Mr. W. H. Rowe's tender for the Northern Middle Level Sewer (264,533*l*), submitted with others at the previous meeting, was accepted, his proposed securities being considered satisfactory.

It should be mentioned that at the previous meeting of the Board, a recommendation to increase the salary of the superintending architect from 800*l*. to 1,000*l*. was negatived. Further, a report was received from the Building Act and General Purposes Committee, on a letter from Mr. William Henry Smith, submitting, for certain reasons stated therein, that Mr. Reeves, Police Surveyor, does not fulfil the description of a "competent surveyor" as defined by the 33rd clause of the Metropolitan Building Act, and that the Board has done wrong in certifying that he is entitled to receive fees under the provisions of that Act for the supervision of dangerous structures.

The committee had replied to Mr. Smith that the Commissioners of Police and not the Board of Works, were responsible for the selection, and that they did not agree in his interpretation of the term "competent surveyor."

Mr. Smith had replied as follows:—

4, Devonshire-place, Brighton, December 6, 1859.  
Sir, Your letter, dated December 2d, has been forwarded to me here. Having neither the "Act" nor any advertisements aid, I answer it at a disadvantage.

Considering the great and irresponsible power with which the surveyor is invested by the Metropolitan Building Act, 1855, I regret to find the Metropolitan Board of Works willing to construe "competent" to mean only "reasonably skilful."

The competency of a surveyor is, ordinarily, matter of opinion, the opinion of one man not being binding upon another. Judging from his works at Westminster, I may entertain the erroneous opinion that Sir Charles Barry is not a "competent" surveyor. If he does his work to his satisfaction, a commissioner of police may consider 2 2/3 of the force a "reasonably skilful" surveyor.

The Metropolitan Buildings Act, 1855, has provided a standard by which the surveyors employed in carrying out its provisions may be measured. The survey (I quote from memory) is to be made by the district surveyor, or some competent surveyor.

The district surveyor must be a competent surveyor: the surveyor who may set in his stead must be a competent surveyor. We turn then to the Act, and that it considers those only competent who have received a certificate of competency from certain constituted authorities. I cannot conceive anything more clear.

I have addressed myself to this one point only, that I might not unnecessarily occupy the attention of the committee; but there are those who dispute the actual as well as the legal competency of Mr. Reeves, and the numerous names of staff who discharge his duties for him.

I decline to combat, but you must not therefore conclude that I concur in your definition or limitation of the duties of the Metropolitan Board of Works in this matter.

I presume I shall be informed of the decision of the Board, that I may, if I deem it expedient, bring the subject under the notice of other parties.

WILLIAM HENRY SAUNDERS.

The committee reported that this reply had in no way altered their opinion.

#### COTTAGE IMPROVEMENT.

You state Miss Martineau builds a cottage in Westminster for 60*l.*, the particulars of which I had already read of; but you will see that no details are given by that lady of any real weight to either landlord or builder.

I have not seen the Cottage Improvement Society's plans, alluded to in your last number; but what rent does a proprietor obtain for two cottages erected at the cost of 160*l.*? I erected two cottages (a pair) on my estate, with two living-rooms, three bedrooms, larder, and porch. The patent fire-range made by a firm in Newark. Fireplace in one bedroom upstairs (for woman in confinement or persons in illness); spouting carried to a soft-water tank under kitchen, with small pump. Built of my own stone, mabbled, slated, and white foreign wood; privy, ash-pit, and two pig-sties,—price 260*l.* Now the labourers about here (Yorkshire) obtain 15*s.* a week, and I only ask 4*s.* per annum for these cottages—5*l.* on 250*l.*—and yet they grumble at the rent, and think a hovel at 20*s.* for six months to be preferred.

My tenant-farmers came to me and complained of the want of labour, and proposed erecting cottages through the Lands Improvement Company. To this I acceded. Now the lowest-priced three-bedroomed cottage we can erect is 125*l.* (the tenant-farmer doing all the leading). The per centage of 6 2/3 per cent. charged by the Company for twenty-five years makes the rent of each cottage about 8*l.* 10*s.* per annum (independent of leading bricks and lime four miles). I, as landlord, do not obtain a sixpence, and my tenant pays between 8*l.* and 9*l.* for a cottage for his labourer. Too high a rent, in my opinion, remembering the wear and tear of twenty-five years. I consider the subject requires ventilation, which I trust it may have in your columns. Either cottages must be built cheaper or labourers at 15*s.* a week give higher rents than they feel inclined to do now.

A LANDLORD.

Sir,—In your last week's number you quote from *Once a Week* some particulars, by Miss Martineau, of a cottage building in Westminster; you give the sizes of the rooms, viz. "13 feet by 10 feet," and "12 feet by 10 feet 6 inches," and two bedrooms above; you then express a regret "that Miss Martineau should lead countenance to the construction of cottages with only two bedrooms," and recommend the plan issued by the Cottage Improvement Society, "the cottages with three bedrooms."

Every one will agree with you "that the male and female children should be separated," and that "cottages for families with only two bedrooms lead to an incredible amount of vice."

If you refer to the Cottage Improvement

Society's plan, you will see that the living room is 11 feet 4 inches by 9 feet 4 inches, and the kitchen 11 feet 4 inches by 9 feet 4 inches also; there is one bedroom over the living-room, and two made over the kitchen, one of which is 9 feet 4 inches by 5 feet 5 inches, and the other 6 feet 10 inches by 5 feet 9 inches, which must be admitted to be scarcely worthy of being called bedrooms, one having less than 300 cubic feet, and the other about 350 cubic feet.

Now, by dividing the smaller bedroom in Miss Martineau's plan, viz., the one 12 feet by 10 feet 6 inches, you can make two bedrooms larger than the Society's plan gives,—one would be 10 feet 6 inches by 6 feet, and the other 8 feet by 5 feet 10 inches,—each about one-third larger than the Society's plan.

My attention was called to this from having seen the Society's plan partially carried out about three miles from this place, by the Rev. Shelton Sackling, rector of Shippeadon, Suffolk, who purchased some wretched hovels in his parish for the purpose of pulling them down and erecting cottages fit for human beings. I happened to pass these a few weeks since, just before their completion, and saw the rev. gentleman. I asked him some questions respecting the Society's plan, as one of my employers (who has built several cottages with three bedrooms) proposes building from the Society's plan. I asked Mr. Sackling if he did not find the two bedrooms over the kitchen very small? He replied that he had not divided that part into two, as he found they would be small and useless if divided; he also said, that if he built any more, he thought of carrying the walls about 1 1/2 feet to 2 feet higher, and making rooms in the roof, which I suppose would add 20*l.* or 30*l.* to the Society's estimate of 168*l.* I thought this increased height of the walls would spoil the proportions of the Society's plan, and the rooms in the roof would be so hot in summer and cold in winter as to be of little service.

There is one other objection, I think, to the Society's plan; the pantry is only a very small closet under the stairs, with no chance of admitting external air,—not a very good arrangement for keeping the food, &c., of the family.

I think the Society scarcely give what their plan states: "A pair of inexpensive cottages, with three bedrooms each; cost, 168*l.*"

JOHN D. BOWWRIGHT, Builder.

#### HOLLOW WALLS.

Sir,—I take the liberty of forwarding to you my experience with regard to hollow walls. Several years since I introduced in the erection of a small detached house a 12-inch hollow wall, constructed with a 4 1/2-inch brick wall inside and outside, leaving a space of 3 inches between, and tied together with 12-inch headings at convenient distances, to make the work secure. Small air-bricks were inserted at the bottom and top of the wall, to give a current of air through the walls. I found it answer very well, and since then a number of houses have been built in the same manner: one especially I may name, that has been rebuilt by the side of a brook, in a very damp situation,—so damp that it was impossible to keep paper upon the walls of the house previously standing upon the same spot. I have taken the trouble to inquire at this and several houses if they find any damp at any time in any particular place, and the answer is in the negative. I therefore infer that the above experiment is successful, and that the damp does not find its way through the headers, neither does the admission of a current of air cause the inner portion of the wall to become damp; but, on the contrary, I think the admission of air would keep it dry; care, however, should be taken that a course of headers is not put under the windowsills, or the damp will find its way through them, especially if the sills are not properly throated. If I am in error I should be very glad to be set right.

WM. PEACHEY.

#### SOCIAL BRIDGES: THE SEWING-MACHINE.

EVERYONE remembers the immortal "Song of the Shirt" of poor Tom Hood, and the fearful revelations respecting the condition of the needlewomen in general. It seemed as if labour had been ground down to its lowest point, and that no prospect of relief were possible. The facility with which females could take to needlework always caused the labour-market to be overfull, and the rate of wages to be maintained at the very minimum, thus causing an occupation which might have afforded a chance of profitable employ-

ment to many to become one of the most precarious means of existence possible. This arose partly from a fact which is now ceasing one of the most remarkable controversies of the day, namely, as to the means of employment for females in general. How far the invention of the sewing-machine will affect the question it is impossible to tell at present, but its use has caused many of the former ill-paid needleworkers to receive good wages as machinists, while the greater number, if not all, of those who were temporarily deprived of work by its introduction have since found full occupation in the various finishing departments, because the increased facility of production has occasioned a large and steadily increasing demand. The strikes at Northampton, Stafford, and elsewhere, having ceased, and the above facts having become apparent, have occasioned the machines to come into general use, and led to many new and valuable improvements in their construction; so that, after being beaten for awhile, the English-made machines stand confessedly superior to all their foreign rivals.

House-decorators, upholsters, and others are availing themselves very largely of the sewing-machine in the getting up of tapestry fittings, curtains, hangings, &c.; and the value of the machine to them has been largely increased by the invention of a binding guide to fit on the machine for the purpose of binding the edges of the materials. The beautiful regularity of the machine-made stitches occasioned the less finished appearance of the hand-binding to spoil the harmony of the whole. Hence the value of the new invention. The best binding-guide seems to be that made by the Messrs. Bradbury & Co., of the Rhodes Bank Foundry, Oldham. It has come into extensive use, and is a beautifully simple contrivance, of a highly valuable nature to those who are in the habit of manufacturing textile decorations for mansions and large private or public buildings.

J. P.

#### WANTED, AN ASSISTANT!

Sir,—A relation of my experience in regard to answering advertisements may, perhaps, prove useful to others. A few weeks since I received an advertisement in your paper for an architectural assistant, with a salary of 70*l.* per annum, which, in the folly of my ambition, though young in the profession, I imagined myself to be fully worthy; especially when flattered by the firm that I should suit them. Judge, then, of my surprise, when admitted to an interview, at a country town not 100 miles from London, to find the firm are auctioneers, and therefore not requiring a junior assistant, as I admitted myself to be, but a gentleman competent to carry out all the various branches of a good professional practice, which they hoped to form out of his services; particularly mentioning designing, modelling and other drawings, preparing working and detail drawings and specifications, and superintending the works in progress; for which duties the magnificent salary of 70*l.* per annum is all the poor fellow might expect. AN ARCHITECTURAL ASSISTANT.

#### THE MAGNESIAN LIME-STONE FROM MANSFIELD WOODHOUSE.

Sir,—Observing a letter in your last number on this subject, I think it right, though that letter appears in the form of an advertisement, to send you a copy of the summary of the statements which it contains, so far at least, as my own observation extends. I have no opinion (though I am a matter of opinion only) that the Mansfield Woodhouse stone may be considered to be virtually though not nominally, that recommended by the Geological Commission. The parts of the Houses of Parliament in which it was made use of have been recently pointed out to me by a perfectly disinterested party, who was at the time engaged on that work, and these parts were certainly in a high state of preservation, so that one would suppose that, had the same stone been used throughout, the evils since complained of, would have been avoided. The structure of the stone, when examined with a magnifying glass, appears much more perfect and crystalline than some other stone, which seems to suggest a *prima facie* probability of its being more durable. As to colour and texture, it is about the most beautiful stone that I know of; indeed, I know no material preferable to it for work of a superior character, where beauty, compactness, and durability, are the chief desiderata.

GRD. GILBERT SCOTT.

#### WORKMEN'S INSITUATE AND BENEFIT CLUB, 34, YORK-ROAD, LAMBETH.

A LECTURE was delivered by Mr. J. Tild Pratt, registrar of Friendly Societies, to a large body of workmen and others, assembled in the reading-room of this insituate, on Friday evening, the 24th. The meeting was presided over by Jerome Smith, Esq., and the following gentlemen were also present, viz. Messrs. Charles Lucas, St. Leger Glynn, G. J. Bower, J. S. Gilhatt, A. West, F. D. Mucatti, C. W. Grenfell, W. B. Ranken, and W. A. Wilkinson.

In the course of the comprehensive lecture which Mr. Pratt gave "On the Constitution of Friendly Societies," he said there were six objects essential to their success to be provided for, viz.—relief in sickness, to the aged, sixty or sixty-five; a superannuation allowance after that age; medical attendance and medicine; endowments for children; a sum of money at death; and deferred annuities to members from the age of sixty-five. He said that sixty or sixty-five should be the limit of a sick-leave of absence, because after that age came infirmity and old age,

which should be met by insuring for superannuation; pointed out the advantage of members paying according to their age, and the importance of the rules and tables being duly certified; and added that, as the workmen's benefit club, the rules and tables of which he himself and an actuary had certified, included these several features, he considered it to be the best society in the kingdom. At the conclusion of his lecture Mr. Pratt was addressed by some of the workmen present, to whom he gave explanations; and a vote of thanks to him was passed.

STAINED GLASS.

Ardeur Church.—Lord Lorton is about to place in the church of Ardeur (now rehuilding) a memorial window, to the memory of the late Viscount and Viscountess Lorton, at a cost of about 300l.

Gloucester Cathedral.—Messrs. Clayton & Bell, of Wallis (of Newcastle), and Mr. Hardman (of Birmingham), have furnished the Dean and chapter with designs for the restoration of the east window of this cathedral. The window is 4 feet in height. Mr. Warrington has also sent a specimen of imitation ancient stained glass, with which he suggests the window should be filled.

St. Thomas's, Newport (Isle of Wight).—Two sections forming part of the great window proposed to be placed in St. Thomas's Church, says the Dorset Chronicle, have been forwarded to the churchwardens for inspection, and have been placed in one of the chambers of the Town-hall, they consist of two designs, completed in stained glass, from the original plans of the artist, Mr. Holland, of Warwick. The first one, having an arched top, represents the angel appearing to the Virgin Mary, with the Holy Ghost descending on her in the shape of a dove. The other section is a square one. The subject is "Christ's entry into Jerusalem on an ass."

Books Received.

Memorials of Workers: the Past to encourage the Present. A Lecture. By GEORGE GODWIN. Robert Hardwick, 192, Piccadilly; and at the Office of the Builder. 1860. Price 6d.

content ourselves, for obvious reasons, with announcing the publication of this lecture, and giving a few extracts from it. The writer says as follows:

"It happens that I am occasionally called on to correspond with men of the humbler classes who are reaching onward,—men who desire to cultivate the powers with which they are endowed, who have aspirations beyond their position, and, in many cases, courage and energy to carry them out if they could assure themselves that success was probable. The man, however, with which they are possessed that, work as they may, there is no chance of advancing, relaxes their endeavours and keeps them down. They are more ready to say with Emerson,

Rarely they rise by virtue's aid who lie Plunged in the depths of helpless poverty," than Milton, who teaches that,

"The mind in its own place and in itself Can make a heaven of hell, a hell of heaven."

But writes one, "I have neither money nor means. Strive as I may I shall never make myself felt." I may be wiser than he, but I will not listen. The obvious answer to this is,—recollect what others have done who were as ill-placed as yourself, and who laboured under similar difficulties,—that their number is not small; that they may be pointed to in every pursuit and every branch of human knowledge;—and it occurred to me some time ago, that it might not be useless on a fitting occasion, to describe some few careers which afford encouragement, and might induce to worthy efforts. When the heart of the striver sinks, when the world looks like a desert, and no pathway is visible; when energy has evaporated, and effort seems needless; then the recollection of what others have done, what difficulties they overcame, how bright a future they forged out of a dreary present,—how beautiful a tissue they wove out of tangled yarn,—has a value that can scarcely be estimated,—calls back the flitting powers, braces the mind, and encourages to fresh exertions."

Value of Perseverance.—"Is there a man reading these lines, who, recalling the cow-boy, the picker at the millinery, or the mender of clocks, uneducated and unprovided, will venture to say that his own opportunities and chances of progress are not as great as those of stout-hearted George Stephenson? "Do as I have done," he might say to those who complained to him of want of success,—persevere. Every step he made was conquered by patient labour and devotion to the work in hand, what is that might be? Take a lesson from him:—

Art thou poor? Does Fame pass by thee? Persevere: 'tis but to try thee."

Art and Manufacture.—"Flaxman was always proud of his early works in connection with Wedgwood. He is said to those who complained to him of want of success, his beautiful chessmen, or his exquisitely decorated cups, he was aiding in disseminating a taste and a love of the beautiful. It is to be hoped that the same will be the case with the article of domestic use which he obtained of tasteful designers: none the dearer because elegant, appropriate, and harmonious. To bring about, we wait, not merely educated art-workmen, but art-workmen, who will not act by vessels of beautiful form, or carpets of harmonious tints and possible truthful patterns, we may be sure that manufacturers will cease to produce such, and will content themselves with those works of questionable taste which command more favour."

Money Value of Art.—"The prices paid for specimens of pottery and porcelain afford striking instances of the power of art and opinion to confer value on mean materials. At Mr. Bernal's sale, one of Paisley's small dishes, 12 inches diameter, with a lizard in the centre, was sold for 162l. In the Ceramic Court of the Crystal Palace, a most interesting and important collection, there is a silver plate for which such a dish for which 1000l. have been offered. At one of the Government exhibitions at Gore House, two or three years ago, there were two small silver vases for which a dealer told me he would give 2,000l."

Soane and his Museum.—"Soane, the architect, born 1753, was the son of a bricklayer, at Reading. Poor and neglected, he came to London; and one of—

"The best spirits who go up to wood That terrible city whose neglect is death, Whose smile is fame."

He went into Dance's office as an errand-boy, but he worked his way—built the Bank of England—many structures for the government which Time's crasing fingers, helped by Sir John Soane, have spouted out,—became Sir John Soane; and, when he died in 1837, he left behind him, to say nothing of a fine fortune, a remarkable collection of books, prints, pictures, and antiquities for the benefit of the public. Whether this collection, boxed up in the house in Lincoln's-inn-fields, and approachable by tickets during a small part of the year, is made as available as it should be may be a question with some. It is certainly, however, no question with me, and I trust a long time will not elapse before a complete change in the management be made. It has, at present, all the silliness and repose of private property, and from year's end to year's end the books and folios remain closed."

The Scott Monument, Edinburgh.—"The ranks of the working masons would supply us with many examples of self-teaching and self-raising. George Mickle Kemp, who designed the Scott Monument in Edinburgh, was brought up an obscure carpenter, and impelled by his love for Gothic architecture became a working mason, getting employment, when he could, near an old building, so that he might measure and draw it. He worked his way all over Scotland and England, and in some foreign countries, and would walk a whole night to get a detail for his sketch-book, and this was not a chattering voice, for no one knew of his doings. When the Scott competition was advertised, he set himself to apply the knowledge he had acquired, and entered the lists without a friend. The design was submitted under the signature "John Murray," but, with a thoughtlessness that characterized him, he omitted to enclose his right name and address, so that for some time he remained ignorant of his selection, and the committee of him. Great was the surprise that followed when the author of the design was found to be a rough, self-taught man. Much controversy ensued; great anxiety for poor Kemp; then a triumph, and soon after an untimely death, which, but for a few common, but none the less fearful falling, had probably not occurred."

The lecture is published in a cheap form for distribution by such as may chance to think it likely to be useful.

Journal of the Bath and West of England Society for the Encouragement of Agriculture, Arts, Manufactures, and Commerce. Vol. viii. Part I. London: Ridgway, Piccadilly. 1860.

AMONGST the articles in this well get up Journal are reports on the exhibitions of arts, and of implements, live stock, &c., held at Barnstaple in June last. The Arts Exhibition appears to have been varied in detail, and attractive as a whole. In the fine arts department, which, together with a selection from the Brompton Museum, occupied the middle part of the building, were some drawings by Turner, "some of whose relations were living in Barnstaple as artisans, and came to look and wonder." The Arts Exhibition building was simply a wooden one, 100 feet long by 40 feet wide. The cost of the skeleton building, roof, and glass (the permanent property of the Society) was 250l.; and the hire of wooden flooring, sides, &c. cost 100l. There was also a canvas shed, 75 feet by 40 feet, hired for some 26l. to 30l., and other accommodations. The exhibition as a whole yielded a sum exceeding by more than 1,500l. any amount received at former meetings in the West of England.

The Journal under notice is in future to be issued in two semi-annual parts, instead of in one larger volume as heretofore.

Miscellanea.

A FREE LIBRARY FOR BIRMINGHAM.—It has been resolved by a large majority of a meeting of burghesses of the borough, called by the mayor, and held in the Townhall, to adopt the Free Libraries and Museums Act. There must have been about 1,500 persons present.

THE PROPOSED EXHIBITION OF 1862.—The council of the Society of Arts have begun to move in this matter. The guarantee deed for raising a sum of not less than 250,000l. on behalf of the Exhibition has been approved, and Earl Granville, the lord president of the council; the Marquis of Chandos; Mr. Thomas Baring, M.P.; Mr. C. Wentworth Dilke, and Mr. Thomas Fairbairn are made trustees of the fund. As far as the required amount is guaranteed, the intention and scope of the Exhibition must be made widely known, so that those who propose to take part in it may get to work. There is no time to lose.

BISHOP AUCKLAND TOWN-HALL COMPETITION.—We are informed that the first premium has been awarded to Mr. J. P. Jones. The design is Gothic in style.

THE IRONMONGERS' ASSOCIATION.—At a meeting, on the 24th February, a lecture was given by Mr. W. B. Tegetmeier, "On Lamps, their Chemistry and Construction," at 270, High Holborn.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—The first conversation of the season was held on Wednesday, February 29th, at the Gallery of the Architectural Photographic Association, Conduit-street, when Mr. G. Montague Davis, B.A., read a paper "On the Fine Arts, their Rise, Decline, and Present Aspect." And this was followed by a performance of vocal and instrumental music.

INSTITUTION OF NAVAL ARCHITECTS.—Meetings of this society are now being held in the Hall of the Society of Arts, Adelphi, Strand. On this Friday, March 2, there will be read at the evening meeting, papers "On an Improvement in the Form of Ships," by Mr. Joseph Maudslay; "On a Method of Constructing Diagonal-Built Ships," by Mr. J. White; and "On Certain Improvements in Marine Engines," by Mr. Robert Murray: and on Saturday morning, "On Mechanical Invention in Relation to Improvements in Naval Architecture," by Mr. N. Barnaby; and "On the Wave Line Theory, Part II.," by Mr. J. Scott Russell.

A WARNING.—A foreigner, who gives the name of John Bower, or Bauer, has for the last three years been living upon architects, by travelling from town to town and soliciting alms from them, upon the plea that he was formerly occupied in the drawing-office of the French sappers and miners, whence he deserted many years ago, and he has occasionally been employed in the offices of English architects; with the usual sequel that he has lately lost his wife, and been obliged to sell his instruments. On the 29th of February he was at Cambridge, on his way to London.—A. B.

THE SHEFFIELD TRADES UNION.—The "Association of Organized Trades of Sheffield and the Neighbourhood" have held their first public dinner at the Music-hall, Sheffield, under the presidency of the mayor; Mr. C. Beggshaw, the president of the association, occupying the vice-chair. Upwards of 400 persons partook of the repast. The after proceedings, which were protracted to a late hour, were enlivened by glee and songs. Much good sense (with an intermixture of less judicious material, however) was displayed in the speeches delivered in course of the evening. One speaker, the Rev. B. Herford, after referring to the vast power of the organization, and what it ought to do towards the promotion of education, the abolition of drunkenness, the payment of wages on Fridays, &c., went on to speak thus of the villainous doings which, as the mayor said, had made Sheffield an abhorrence and a disgrace to the nation. "As a friend and an outsider [we quote from the local Independent], he felt bound to tell them that the impression on numbers who would faint take their part—upon some who did take their part in spite of it,—was, that they did not always fight fair in Sheffield. There was sometimes kicking; and though they might each lay his hand upon his heart and say, 'I don't know who did it,' yet somebody did it; and it was done for the sake of the union. Those rattenings—that taking away—he would not call it stealing—of wheel-hands, was a silly trick. Then again, as they knew, there were worse things. He had been in Sheffield four years [the system was rampant at least fourteen years ago], and during that time those worse things had occurred, not only once, twice, thrice, nor simply half a dozen times. Those explosions, those assassinations—he did not speak of them as outrages; they were mean, dirty, un-English tricks, whoever they were done by. He did not say that unions, or union secretaries, could be held responsible for them, but he did say that unions could help them if they tried. If all the working men present at this meeting were to go away with the resolve to wipe this stain from their class; resolve that if they could catch a man who had done such a thing they would turn him out of their order altogether, would send him to Coventry, and have nothing to do with him; if they would look upon the thing in that way, these outrages would in a mysterious way cease. He wished to God it was so. Such proceedings cut away the ground from them (the middle-class men), who tried to defend unions; they made defence difficult because they were brought forward as the practices of unions. It was well enough known from what these arose, though it might not be known who did them."

**THE STATUE OF RICHARD CŒUR DE LION.**—Mr. Hankey asked the First Commissioner of Works in the House of Commons when the statue of Richard Cœur de Lion, by Baron Marochetti, for the erection of which a vote of 1,650, was granted last year, would be put up on the intended site. Mr. Cowper said that the delay had arisen in consequence of the difficulty of getting the granite pedestal out of the quarry. The statue was all ready except the pedestal, which would be ready within two months.

**MONUMENTAL.**—The committee of the Chester Memorial to Matthew Henry have completed arrangements for the erection of a polished granite obelisk. Mr. James Harrison, architect, has made the design, and will assist the committee in its erection. The obelisk will be 15 feet high, on a pedestal of the same, 2 feet 8 inches, and plinth 1 foot 6 inches, on a basement of steps 5 feet high, of Halkin limestone. The whole elevation will be 24 feet 2 inches; and, when completed, it will cost about 200l. The obelisk will be executed by Mr. A. McDonald, of Aberdeen.—The committee appointed, at Glasgow, for erecting a memorial window, to the late Professor Nichol, the astronomer, in the crypt of the cathedral, are sending proposals for estimates, it is said, to some of the most eminent designers in this country and abroad. The subscriptions have been limited to 1l. each. The treasurer to the fund is Mr. John Kerr, 14, Moore-place, Glasgow.

**BOROUGH SURVEYORSHIPS.**—The surveyor to the Worthing Local Board of Health (Mr. S. J. Smith), is said to have resigned his office.—We have received a suggestion, says the *Stockport Advertiser*, whether, on the appointment of a successor to the late Mr. Samuel Hunt, as borough surveyor, it would not be wise if the Town Council would select one for the whole borough, who could devote all his services to the office, and by which means a great deal of "petty jobbing" might be prevented, and money saved in the five townships, where there are as many district surveyors.

**GAS.**—The Liverpool Gas Company have just declared their usual maximum dividend of 10 per cent. per annum, for the half-year last past, free of income-tax. The continued increase of demand for gas has been met by an issue of 500 shares of 25l. for outlay.—The forty-sixth half-yearly meeting of the Cardiff Gas-Light and Coke Company has just been held, and a dividend at the rate of 10 per cent. on the old shares, and 8 per cent. on the new shares, declared.—From the "Report" of Dr. Lethely, the medical officer of health for the City of London, "On the Great Central Gas," it appears that this company's gas is 29 per cent. above the requirements of their Act of Parliament as respects average illuminating power; and that the chemical quality of the gas has been equally satisfactory as regards the absence of ammonia, sulphuretted hydrogen, and fetid raw water. During the last eight years, the report states, that illuminating power has been 25 per cent. above the standard, with an advantage of 11 per cent. in favour of the argand burner. The average chemical results are said to have been also favourable.

**SHORE TO SHORE TUNNEL, SCARBOROUGH.**—A scheme has been projected by Mr. Josiah Forster Fairbank, of Scarborough, civil engineer, for making a tunnel under the town, from the South Sands to the North Shore, and the scheme, with plans and sections, has been sanctioned by the local council. Mr. Fairbank stated to the council that he had entered into an arrangement with each of the owners of property under whose land the proposed tunnel is to be made. The engineering difficulties are not thought to be great, the nature of the strata being favourable for such an operation; and very little water is expected to be met with. The tunnel will be arched and lined with bricks from one end to the other. The length of the tunnel is 540 yards, while the distance over the hill to each end is 2,600 yards. It is not contemplated making a tunnel for horses and carriages, but only for foot passengers. The tunnel will be brilliantly lighted, and will be open all day, and about half-way there will be a daylight shaft, for ventilation, under which it is proposed to construct a stalactite cave, with rockery, and alpine plants. The probable cost of the undertaking will depend upon the size of the tunnel, but the engineer estimates it at from 6,000l. to 10,000l., according to size, which sum includes every expense. A company is to be formed under the Joint Stock Act, with limited liability, and it is thought probable that the work will be in progress during the coming summer season.

**THE SERPENTINE IN HYDE PARK.**—In the Commons Mr. Cowper has procured the appointment of a committee to consider the means of effectually cleansing the Serpentine.

**SCULPTURES OF ELEUSIS.**—The model of the newly-discovered sculptures of Eleusis, which have been placed in the Beaux Arts, is attracting crowds to view them. These sculptures were brought to light about a year ago, in digging the foundation of a school-house at Eleusis, and are thought to be the remains of the temple of Triptolemos, often mentioned by ancient writers as containing genuine specimens of classical sculpture.

**THE STRAND-BUILDINGS COMPANY.**—The committee of this company (for the erection of improved dwellings in Eagle-court, Strand) has just published their second report. The rents for the first half-year, ending at Christmas, 1858, amounted to 168l. 5s. 6d.; and they were during the past year, for the first half, 201l. 13s. 4d.; and for the last half, 225l. 18s. 9d. During last December all the sets of rooms were occupied, and the rental rose to 9l. 6s. a week. The efforts made to establish a laundry, washhouse, and baths had failed. The balance of income over the expenditure of the year, including arrears, amounted to 237l. 17s. 2d., of which 112l. 10s. had been distributed as dividend, at 4½ per cent. per annum to Midsummer, leaving 125l. 7s. 2d. for further dividend, at the same rate of interest.

**PURIFICATION OF THE THAMES AND THE SERPENTINE.**—Mr. C. M. Kottula, of Ely-place, Holborn, has patented (but offers without stipulation of fee or reward for purifying the Thames) the use of salt with which to increase the specific gravity of the fresh water in tidal rivers near towns in which the sewage is emptied into the river, the purpose being to cause the contaminated water to sink, and so pass off seaward, while it is replaced by clear sea-water. Whether Mr. Kottula has ever calculated how much salt it would require to salt the Thames we do not know, but we should fear it would be about as difficult to do so effectually to the end in view as to "set fire to the Thames." Still, even that is not an impossibility, if the old alchemist, Van Helmont, is to be believed; for he says that when Thames water is used on board of ships, it stinks in the tropics, and may then be set fire to, after which it becomes quite sweet and drinkable again! For the purification of the Serpentine Mr. Kottula proposes eighty tons of alum, which he says will sink a green matter to the bottom, and so freshen the water for many years.

**KETTERING CHURCH AGAIN STRUCK BY LIGHTNING: STILL NO LIGHTNING CONDUCTOR.**—On Sunday afternoon before last, as the congregation assembled at Kettering Church were engaged in Divine worship, the edifice was struck by lightning, and a scene ensued which will not be soon forgotten by those present. As they were on their knees repeating the General Thanksgiving, a mass of electric fire was seen to rush up the nave from below the western gallery, and a tremendous explosion was heard, resembling the report of artillery. Most of the people rushed simultaneously from their pews in frantic terror; some, who were too much excited to open the pew doors, climbing over the tops, and others, upsetting the forms with the school children, caused a general panic also among them. The confusion that ensued cannot be described. As the panic was at its height, a second flash, intensely vivid, followed instantly by loud and crackling thunder, added to the alarm. There was a great rush to the doors, and a frightful crush, and when egress was obtained, many fled through the storm, leaving their hats, cloaks, and other garments, behind. Most fortunately no one was seriously hurt. It was found that the spire had been struck near the second window on the west front, the mullion of which was driven in, and one of the pinnacles knocked off, as well as some other damage sustained. The chime wires were melted. Some of the stones forced from the spire fell into the bell chamber, and others outside the tower. It appears that the lightning ran down the stove piping near the western entrance into the church, the flue probably acting as a conductor, for want of a better one. Marks of its agency may be seen on the flue. This is the second time this spire has been struck by lightning within the past seven months. The *Northampton Herald* says it is now intended to provide an electric conductor; and full time too; had any lives been lost on this occasion, the churchwardens or other authorities of the church would have deserved trial and sentence for culpable homicide, in neglecting such a warning as the lightning stroke of last year: the want of a conductor still, betrays either gross carelessness or gross ignorance.

**NEW WESTMINSTER BRIDGE: HEINKE'S DIVING APPARATUS.**—Now that the new bridge is about to become partially available to the public, it is due to the ingenious apparatus of Mr. Heinke, of Portland-street, Portland-place, to state that all along it has been in successful use in doing the whole of the under water work. This same apparatus has been used in the demolition of Rochester-bridge, and Mr. Heinke was engaged by the Government to teach its use to the royal engineers for that and other purposes. One singular advantage of this apparatus appears to be that the life of the diver is not necessarily sacrificed by accidents to the apparatus, and the dress is used as an airholder, by means of which he can either ascend or descend at will, as, in fact, the fishes do by means of what is sometimes called "the swim."

**TENDERS**

For the erection of an additional wing and other works to the Tavistock Hotel, Covent-garden, for Messrs. Harrison & Co. Mr. Wm. Hunt, architect. Quantities supplied by Mr. R. L. Curtis:—

Nixon	£11,977	0	0
Brown & Robinson	11,924	0	0
Lawrence & Sons	11,891	0	0
Stoner	11,880	0	0
Hayward	11,492	0	0
Allen	10,960	0	0
Evans, Brothers	10,952	0	0

For new stables, &c., Over Lowey, near Bride-waters. Mr. H. Clutton, New Burlington-street, architect:—

Mansfield, London	£6,150	0	0
l'Anson, ditto	6,100	0	0
Myers, ditto	5,850	0	0
Polard, London	4,950	0	0
Pritchard, London	4,565	0	0

For Presbytery attached to St. Mary's Catholic Church, Leith, for the Rev. J. Noble. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. Marples:—

Wells	£2,660	0	0
Kinghorn	2,437	0	0
Wilkie	2,370	0	0

For finishing three houses, Nos. 5, 6, and 7, Argyll-road, Kensington, for J. P. Shaw, esq. Mr. E. W. Crocker, architect:—

Macey	£1,129	0	0
Pritchard	1,065	0	0
Little	760	0	0

For the Abel Smith Memorial Schools, Hertford. Mr. John M. Hooker, architect:—

Coker, Ware	£1,665	0	0
Higgs & Barker, Dunstable	1,648	10	0
Rayment, Hertford	1,493	0	0
Collins, ditto	1,461	12	0
Ekins & Sons, ditto	1,447	0	0
Andrews, ditto	1,440	0	0
Kirkby, Henton	1,335	0	0
Brown, Ware, road	1,244	10	0
Pooley, Peterborough	1,240	0	0

**Morton Bagot Rectory.**

Hardwick & Son	£965	0	0
G. Street	965	0	0
Clark & Son	958	0	0
Wm. Grove	895	0	0
Thomas & Roberts	895	0	0
Wm. George	874	0	0
Messrs. Callaway	857	0	11
Hallan & Co.	850	0	0

**STR.**—We have received a letter from the architect explaining that our tender was not accepted because the rector was personally acquainted with Messrs. Callaway, builders, of his locality; but that otherwise our tender would readily have been accepted. Why did the rector advertise in a widely-circulated London paper for tenders? Why did he not limit his application to builders with whom he was personally acquainted, and so have saved the time and expenses of other competitors?  
HALLAN & CO.

For a dwelling-house at Newark for Mr. H. Hall. Mr. Alfred Allen, architect. Quantities supplied:—

Lane	£883	10	0
Mackenzie	834	10	0
Cooper	789	0	0
Henderson (accepted)	785	0	0

For building a storehouse and superintendent's rooms in Hyde-park for the Royal Humane Society:—

Lavers	£375	0	0
Nash	359	0	0
Tracey	330	0	0
Cassell	285	0	0

For re-erection of Star and Garter Tavern, Kensington-road, for Mr. John Compton. Mr. W. H. Heath, architect. Quantities supplied:—

	Each Stone.	Portland Stone, Extra for front.	Portland Stone, Extra for front.	Marble, Extra for front.		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.		
Langridge	2,750	10	0	175	18	0
Lawrence	2,744	0	0	25	0	0
Pritchard & Sons	2,565	0	0	16	0	0
Axford & Co.	2,454	0	0	16	0	0
Heath	2,312	0	0	25	0	0
T. Hay & Hancock	2,250	0	0	20	0	0
Smith (accepted)	2,250	0	0	20	0	0

# The Builder.

VOL. XVIII.—No. 892.

Art, not Style.



ALTHOUGH, according to Sir Charles Wood, it may be some time before the vexed subject of public for the new public offices is settled (the Indian department removing to the Victoria Hotel in June), it seems not improbable, that before many weeks have expired, the question will be again mooted in Parliament, what shall be the character of the building which must be erected for the Foreign Office. Regret how we may, that questions of art should find us continually unprepared for solution of them,—and, as in this case, in danger of a course that

ought, before the completion of the building, to be regretted,—there will be no means of longer giving off the decision in the case, unless the interests of at least one most important department of Government are to remain provided in a manner which, if the public have been fully informed, entails serious inconvenience and loss, national discredit, and expense which in many points of view needless, and is without justification as a constant recurrence. Wanting a building, therefore, the question is, whether the work is to be consigned to some speculative builder who, we will suppose, would house the department according to instructions from the Under-Secretary, but adding one of those so-called decorative features which, through similar agency, have formed the face of London and its suburbs with too much of ugliness; or whether the occasion is to be used, as every such occasion should, to substitute building also architecture, to thereby answer to what is an ever-felt and natural desire, to love of beauty and of art,—one which it approaches to criminality at any time to balk or to go unanswered,—and to perfect a work which, being that of the nation, shall be consistent with the national attainments in the present age, and up to the mark of those particular, existing somewhere, as proved in professional writing of the day, and by the executive skill of architects; by the knowledge that there is, at all events of certain examples; and which attainments were made manifest in the competition for the Government Offices,—as admitted; though it be understood generally, how much the management of that competition made it an adequate test. As straws that show which way the wind is blowing, we have before us a pamphlet and a book, that are as much coming from Anster and Boreas, whenever they meet. The blasts in this particular instance differ in quantity: by any test of mental effect, however, the impelling force, or logic, is not directly in proportion to the matter, or the volume.

Considering that the question of foundation

of style for the new building, is one on which much affecting a right decision may yet be said, it has been regretted that the question cannot be deferred for a year, or rather more, when there might be greater unanimity in the profession itself, if not amongst those who affect an interest in architectural art. We do not participate in the detraction of the merits of the Palace at Westminster; yet we think it possible that had the style or character for that building to be considered now, "instructions" very different would be issued to those of the competition in that case, which have brought into realization a work which is unsatisfactory to Gothicists, and which may not be equal to what its architect could have produced. As our readers are aware, however, we by no means hold, as to the Westminster Palace, that the building deserves the censure which it is just now the fashion to inflict upon it by a few amateurs of the Mediaeval way of thinking: its site may be had; its architect may have erred in the amount of ornament which he has given to the principal parts, or in the grouping of the building as a whole,—though here we should do right to take into account how far his judgment was subjected to distracting influences, as in the ventilation and other matters which have influenced the outline of the mass, including the towers; but the building, especially in its interior, has qualities of art that every considerable work of architecture should possess, and which seem by many of those who enter into the present discussion, to be held secondary in importance to the observance of a particular character of detail. Whatever it may be as Mediaeval or Gothic, the Palace at Westminster has features which are in every sense work of the art, and qualities which we should be glad to see recognized by some of those who are just now writing or talking about style. With such perception general, the selection for the Foreign Office of either groundwork, as compared with the other, would be of little moment; as, either way, the course taken by architects would soon merge into that best for future progress and future art. The question, however which, wanting the Office, we have to decide, is, how shall we, whilst the perception is lacking, best bridge over the interval between the present need, and the end, the higher character of all our future architecture? and, seeing there is no step, unless from the building of hints, to be taken without utilization of some previous gain or formation, shall we begin on this groundwork, or that other?

The advocates of a Mediaeval basis contend that "Italian" architecture is not English national, and that this is shown by the name, and that it was only a revival of what they call Pagan art; that it has never existed in this country but as an exotic, and is not suited to the climate; whilst Gothic architecture had its best development with us, and is associated with the recollection of Magna Charta, with some of the most interesting passages in our history, and with an age of faith and good deeds to which our money-getting propensities are in disadvantageous contrast; that if the Italian architecture be in possession of the field, it is worn out, and capable of no further expression, since it is bound by rules such as fetter the exercise of genius, whilst it is at variance with the complete attainment and expression of use in a building. Reject, therefore, they say, what is bad; go back and start again from the basis of a time when there existed what we regard as the best English architecture,—taking advantage of, however, and introducing all improvements that have been made since. The advocates of the existing basis which we call Classical would say, there is no style of architecture national by origin, more than there was, according to De Foe, the "true-born Englishman;" that styles of the principal countries of Europe started from Italy, and were then made by these countries their own,—somewhat as every style of architecture, unless the earliest, has had its precedent; that the question can only be between what is of the Teutonic family of nations, and what is European or universal;

that the "Revival" did not exist in fact, except in the general sense of revival of letters; as according to Michelet, it was more than the return to antique examples and to the forgotten forms of nature; and, whilst new liberty was given to the architect and painter, and a fresh development of art took place, it included the greatest of poets, jurists, and philosophers,—or if otherwise admitted of architecture at the commencement, that is to say, leaving out of consideration that the course in Italy, in some instances, had never been interrupted, the obloquy of such going back would be more fittingly applied to that reproduction of Mediaevalism which, if now repudiated by the more enlightened men of the present school, was the commencement of their career, and still characterizes their practice in church building,—that the term Christian art might better be confined to styles which are even of marked Roman origin, than to the Gothic styles which appear to have originated partly from, and in great part resemble, the Mahomedan; that the high-pitched roof is found in Italy in the Gothic, and in France and England in the Italian styles; that the pitch of roofs is governed as much by the material of the covering as anything else; and that there could have been no structural argument for a high pitch, involving great exposure to wind, where the covering was lead, and where there were parapets to retain the snow instead of preventing its lodgment; that the national greatness is rather to be dated from the time of Elizabeth, or the liberty from that of William III., than from the Middle Ages; and that in literature much is owing to Italy; that there is as much to recoil from as to admire in the annals of the Middle Ages, and more to be proud of than the reverse, in our present position; that the occupation of the field, by regular transmission, is a fact not to be altered or got over, since it is impossible to go back, unless by ignorance; that rules, "feters only to men of no genius," are needed to save us from that which is novel, but is nothing more; that symmetry is essential in a work of art, is accordant with the lesson of nature, and in plan of a building furthers even the use; and, in fine, that the low condition to which a style has been brought by ignorance or pedantry, is not a reason for saying it is worn out, but should be rather an inducement to turn to it and correct it through the study of other styles, and to add to it and invigorate it; thus bringing forth eventually new art by the line of action on which such art has been produced ever.

There is considerable difficulty, however, in setting forth the points of the controversy, because they are shifted from time to time, and we cannot exactly mark where issue is to be joined. Each army of disputants is divisible into two forces; and on the Mediaeval side it is hard to say whether most the Gothic revivalist embarrasses the progressionist, or whether the latter has convenient and imposing support from the appearance of the other at his heels. The author of the pamphlet asserts, with some reason, that this last is the case. He remarks that the Gothic style, properly so called, is already condemned even by its friends, as alike unsuited to the proposed building and the present age, being an idea associated only with the feudal system, with "the turbulence, ignorance, and cruelty" of the Middle Ages, the serfdom of the people, with faith which was but superstition, the dissoluteness of the clergy, and the reverse of all, of chivalry or religion, that is attributed to those times. The real question, therefore, he says, lies "not between Classic and true Gothic, but between Classic and a new imitation of Gothic," which, by confession of its advocates, is an infant groping its way,—

"... a state of the question which somewhat embarrasses the inquirer, and offers considerable advantages to the supporters of the new Gothic, by enlisting in its favour, under its name of Gothic, the admirers of that style, with a delusive promise of reviving it; eluding objections to Gothic by saying that the new style is not Gothic; and dexterously meeting criticisms on the violation of Gothic properties, by alleging that the nineteenth century Gothic is exempted

Remarks on a National Style in Reference to the proposed Foreign Office." 8vo., pp. 48; Bell & Daldy.  
Pagan or Christian? or, Notes for the General Public on our National Architecture," by W. J. Cockburn Muir, pp. xii., 289; Bentley.

from observing them, or that such and such details are not essential to the new style.

"Quo tenam vultus mutatem Protea nodo?"

It is Gothic for some purposes, and not Gothic for others, according as it suits the turn."

Though "the real Gothic" is thus, he says, not directly in question, the qualities and associations claimed for it afford the countenance to the infant Gothic which, deprived of that countenance, would be "a helpless bantling," and "would speedily perish by sheer neglect. It is, therefore, quite necessary and right to consider the claims of the real Gothic, for these are, in fact, the only claims of the mock Gothic," &c. The aim of the pamphlet, therefore, is to show that an assertion that Gothic architecture "is emphatically and pre-eminently the national architecture of England," is, in the ordinary sense of the words, "manifestly untrue," and that "any prejudice in favour of a style, arising from the fact of its being our national style, ought to be entirely on the side of the already domesticated Revived Italian, or some modification of it." He speaks of the change in sentiment, modes of thought, manners, tastes, and habits, wrought in the interval between this century and the thirteenth, and following the writer of a letter in the *Times* (November 1st, 1859), signed "A," says that the argument of nationality is worthless, through the fact that the style was the product also of other nations, and very different to our own; and therefore it had origin in circumstances common to all, namely, the feudal organization,—a position which Mr. Scott, in one of the lectures reported by us, adverted to, but did not answer. "A revived Gothic architecture, therefore, so far as the new style preserves the characteristics of the old, must be, in modern England, no longer the national, but both an exotic style and an anachronism," &c. "Nor is there," he says, "such a general feeling or taste for Gothic as to entitle it to be called National, even in a limited sense." The effort to revive it, great and earnest though it be, is made by a limited party, not agreeing as to nature and extent of the revival.

"It is popular with a portion of the more highly educated members of the Church, including the clergy, and that more numerous and enthusiastic class, the members of diocesan architectural societies, who, debarred of the opportunity of studying other than Medieval antiquities, have naturally been led to exaggerate the merits, and palliate the defects of the exclusive object of their attention; but it is discountenanced by the great body of our artists, architects, and men of taste, the influence of whose opinion is deservedly great, and is entirely disregarded by the mass of the people, if we are to judge by the aspect of our terraces and streets, of our manufactories, warehouses, docks, bridges—even ships; of those engineering works whose practical effectiveness, simplicity, and freedom from any littleness of aspect or purpose, recall to mind the monuments of Roman greatness, and even suggest a comparison between that people and the English nation."

To these instances of the exclusion of the Gothic should be added, also, fittings and furniture, porcelain and glass in common use, and jewellery and dress. Of the discordance noticeable even at the Houses of Parliament, where the greatest effort has been made to secure the reverse, we have spoken on previous occasions, and we should find the like in the houses and the studios of those who are our Gothic architects. How far are these circumstances to be taken as showing that Gothic and the national bent are opposed to one another? How far is that which is Gothic revived needlessly for the end of art, and operating to delay the general appreciation of the art, which are the chief aims, or should be so, of the practice of architecture?

Having shown how little claim there is to the title exclusively of Christian architecture, and remarking that the cell of the temple is reproduced in the chancel or sacrament of the church, the author adverts to that general progress which has been contemporary with the revived Classical style. He repudiates, however, any support from other sources than intrinsic merits, though he attributes the Gothic movement to an illusive view of the Middle

Ages. On the question of merits, he shows that the picturesque is not the exclusive property of the Gothic, since it may be doubted whether, in its highest degree, it is not rather to be found in the combinations of the severest Greek. The failure in the revival of the old Gothic, as confessed by the introduction of a different manner in the design for the Foreign Office, is attributable chiefly to the difference of feeling and circumstances between that time and this; and it is to be regretted that the attempt has been so extensively made in modern church buildings. The circumstances under which the revival commenced in church architecture, are to be explained; and the movement was greatly fostered by that in the church, towards what are sometimes called Anglo-Romanist doctrines. Significance was imparted to matters which had previously been left to the province of taste. Thus the depth of a chancel was regarded as affording a just estimate of its builder's piety.

But assuming the attempt at revival to be abandoned, and the necessity for new Gothic to be admitted, Mr. Scott, says the author, has not met the demand for a new style, his design having been condemned by persons who have intimate knowledge of old Gothic. Here we must interpose, and say the design has probably suffered through attempt to show the fertility and freedom of the style. But, qualities admirable in the old Gothic are unsuited to the present age, and no substitute for them is yet afforded in the new style. The "attempt to combine the sash with the tracery window, is sure to be unsatisfactory." Strip Gothic architecture of its mullions, and generally of its faults, excrescences, and elements of detail, to form the new style, and there will remain a mere carcass. Why not, therefore, he says, instead of this mutilated style, adopt and work upon the Classic, already perfectly adapted to modern civilization, whilst the Gothic is not in harmony. "It is a mistake," he continues, "to suppose that the Classic style prohibits any other than a flat roof." The roof was an architectural feature both in Greek and Roman temples. In many churches of the Renaissance, the pitch of the roof equals that in the Romanesque. The Mansard roof is well known, and Sir Christopher Wren's roofs were generally of high pitch. The omission in recent times to make the roof a feature, is not chargeable to the spirit or principle of Classic architecture. Regarding symmetry, this is essential in Classic and Gothic,—the author of the pamphlet says, in an equal degree. Readers of the *Builder* will discover much in these views that is identical with our own.

It is to be remarked that most of them coincide with those expressed by Mr. Scott himself in one of his lectures this year at the Royal Academy, already referred to. That lecture, in fact, expresses no more than would be said by those who believe that the nearest way to what can be the only object, namely, the general practice of art in architecture, is first through the prevailing or the classic medium. But it is time that we looked into the volume, before alluded to.

We cannot but think there is reason for the regret of the author of "Pagan or Christian?" for the "little time" which he was able to devote to his "hurried pages," and which did not permit him to "bestow more thought on so essential a point" as the definition of Gothic architecture. Seeing that this is the only thing needed at the moment,—the definition of what is peculiar to, and characteristic of Gothic, and what is rather characteristic of all good architecture,—a book which, from the cause mentioned, puts forward apocryph in lieu of the definition satisfactory to the writer's mind, is not likely to be otherwise than injurious. There is much, it may be allowed, in the book, which, far from condemning, we recognize as in advance of popular views; the main argument, however, by which the author seeks to show that what he calls the national style and Christian architecture, is alone possessed of elements of further development, and that the Gothic (though the "English Gothic" rather than the manner of Mr. Scott's design) alone fitted to be used for the Government offices, is erroneous, and would lead to results which

the author is unable to foresee. The book not more appears to be "contradictory;" it is full of contradictions,—to the facts in history itself, and to statements and reasonings in the book itself, which would suffice to upset the last generalizations that are made. The imitation of Mr. Ruskin's manner is observable throughout, and with the ill effects which might be predicted,—although it is seven years since the author read any portion of "The Stones of Venice." Noting the contents of the book, we find they are divided under the heads,—"Introductory," "Faith," "Reminiscences," "Moorish Episode," "Pagan?" and "Christian?" Without pausing to expose half the mistakes that are made, we may say he states that the object of the "Notes" is "to evolve certain facts in the psychology of architecture, which may serve to conduct the mind of the untechnical public towards definite conclusions on the general controversy between the advocates of different architectural styles;" and in the course of the Introduction he does not escape the mistake of treating leniently the "reproductions" of Medievalism, whilst speaking of "flunkeylike conformity" to patterns of another character of style, or the fashion of calling the Houses of Parliament "that ornate blunder." The prejudice of the writer, also, is shown by his assertion of "the fact," that "we are so given up to the getting of gold, and the worship of it," that the cultivation of taste is not even thought of. He returns in the course of the last chapter to the inquiry, "How are we to conceive of this cotton-hestridden nation ever awakening to the amenities of art?" having just then forgotten how great is the diffusion of art, according to the painters and sculptors, which results from the money-getting; and his own reference to an example, though not the best he might have found, of the warehouse architecture of the north of England, which usually is in a style of modified Italian. Next, he endeavours to show that the artists of the Pagan time had only "the intellectual belief," and not the loving faith in art which animated "the artists of the Mid-Christian time;" and that the Italian artists relapsed into the scepticism of the Roman. In the "Reminiscences" and the following chapter, he reviews the characteristics, or as he states them, of the leading styles,—adverting to the pitch of the roof, and to the quantity of flat surface, which latter, he says, taking little notice of the pediments of the Parthenon, increases as we go southward. In the same chapter he speaks of the Conquest as the commencement of proper English history, saying there was no art prior to that time. He says the picture of vices in the Middle Ages is, as to the early period, "simply untrue," and judging from his words, the character of Front-de-Bœuf would be a very erroneous illustration. He "cannot think we outshine the old men in realness," and proceeds to show this by referring to the naturalistic ornament of their architecture. After endeavouring to prove that Gothic architecture had its earliest development in this country, and that English art kept constantly ahead of its cognate species in the rest of Europe, he finds that Englishmen of the early Medieval period had the three prominent attributes,—Religiosity; Realness arising out of that; and Love of Nature, akin to both." In proof of the first, he mentions the verticillity of architectural composition. He also adverts to reduction of the amount of flat surface. He mentions the number of years occupied in building cathedrals, as though this were a merit. Defining ornament as "structural" and "accessory," and saying that the claim to high art is in proportion to the prevalence of the former, he treats the columns of a Greek temple as accessory,—whilst they rather were "the virtual building." He also contrasts what he calls the Grecian Hecatombædonism, with the non-mechanical character of the Gothic,—a favourite line of argument with non-professional writers, and strangely at variance with what is recognized by those who seek to discover the system of proportion in the Medieval structures. To say that there was no idea of proportion at all, in the Gothic

architecture,—which alone can be the meaning of the contrast drawn,—would, indeed, be the condemnation of the style. Mr. Mit's grouping of Sculpture, Painting, and Poetry, as *Imitative*, or *Descriptive Arts*, and Music and Architecture as *Ideal Arts*, and his description of Architecture as the Idealization of External Nature, are correct, except that as to the first three, the common meaning of "Imitative" fails to convey that there is art; but his reference to the Gothic cathedral interior, as resembling the avenue of trees, whilst the Greek peripteral temple is like nothing in nature, displays as much misconception of the relation of art to nature, as does his reference to the non-uniformity of the landscape as in favour of inattention to balance of parts in a composition. Respecting the nationality, he endeavours to controvert the assertion of Lord Palmerston, that the Gothic was not an English style, but "was imported from abroad,"—not noticing such evidence as that of Gervase, of the employment of William of Sens at Canterbury Cathedral, and whilst speaking of the proneness of public men to hazard assertions without examining facts asavouring of "pervading untruthfulness," quoting passages from certain lectures and papers which prove nothing as to the point in question. From Mr. Scott, he would differ on matters of the greatest importance; but to these and other matters we must refer hereafter.

#### ON BUILDING-STONES—THE CAUSES OF THEIR DECAY, AND THE MEANS OF PREVENTING IT.\*

THE Portland oolite is the material which is most frequently used for the higher class of buildings in London, and which certainly has stood the action of time and atmospheric changes more satisfactorily than other stone introduced on a large scale. It is, as its name implies, obtained from the upper members of the oolitic series in the island of Portland, at least for the London market, but there are outlying patches of the same formation at Upway, near Weymouth, and near Fishery, in Wiltshire, which might be rendered serviceable, now that the railway communication with those parts of England has been so much improved. The colour of the Portland stone is at first of a rather cold chalky white, and indeed it is always rather objectionable, though the rapid accumulation of soot which takes place in London renders the consideration of colour one of very minor importance. Blocks of any required dimension can be obtained from the Portland quarries, and the stone is hard, dense, usually free from shakes or vents of a serious character, and yet it is easily worked either by the chisel or the plate-saw. The ordinary weight of a foot cube of this material is 147 lbs., and the load it would bear is stated to be about 3,297 lbs. per inch superficial. The upper beds of the quarries are used in some public works, under the name of "roach;" they are specifically lighter than the common beds, very full of fossil shells, and have a distinctly oolitic character, and from the more perfectly crystallized character of the carbonate of lime, which forms the cementing material of the mass, they are better fitted to resist deteriorations of dryness and moisture. It is for these reasons that the Portland roach is so extensively used in docks, piers, or other hydraulic works. The weight of the foot cube is about 127 lbs. The stone obtained from the eastern side of the island of Portland is very inferior in quality to that obtained from the western side, a fact of which the architects of the time of Sir C. Wren seem to have been aware, but which did not seem to have attracted the attention of their successors of some thirty years since; for the stone used in St. Paul's, the City churches, Somerset House, &c., was stated remarkably well; whilst that used in the gates and screen of Hyde and Green Parks is now decayed. The former was obtained from what is locally called the West Cliff quarries, the latter from the East Cliff, or near the extremity of the island.

The Bath stone is obtained, as its name implies, from one of the members of the great oolite in the neighbourhood of Bath. In colour this material is more agreeable than the Portland stone, and its texture is very similar, but it is softer (so much so, indeed, as to allow of its being worked with the tooth-saw), and more absorbent; and,

therefore, unless precautions are observed in the manner of using the Bath stone, it is exposed to rapid decay. Some very painful illustrations of this fact may be witnessed about London, and, amongst others, the restoration of Henry VII.'s chapel may especially be cited. The weight of the foot cube of Bath stone is about 123 lbs., and the load it will bear before crushing is estimated to be 1,800 to 2,000 lbs. per inch superficial.

The Caen stone is obtained from the great oolite of Normandy, near the town of that name, and is much used in building operations in London, on account of the beauty of its grain and colour, and of the ease with which it is capable of being worked; for when freshly quarried, the Caen stone can be cut with the toothed saw, and carved with ordinary carpenters' chisels, even more easily than the Bath stone itself. The upper beds of the quarries near Caen yields stone of small dimensions, but of a much more durable nature than those furnished by the lower beds. Unfortunately, however, the requirements of architects have induced the stone merchants to abandon of late years the material of superior quality, in order to secure the large blocks so universally called for; and thus the reputation of the Caen stone has rather unjustly suffered. But it is perhaps advisable here to remark, that in the public buildings of the town of Caen, the local material is not usually employed in positions where it would be exposed to the rainfall, or be able to absorb water by capillary attraction, and that the basements, or the exposed pinnacles, towers, or steeples, are built of other and more resisting stones. The weight of the Caen stone is about 120 lbs. per foot cube, and its crushing weight about 2,000 lbs. per inch superficial.

In addition to the Caen stone, the oolite of Normandy supplies the London market with a material of great beauty, known by the name of the Aubigny stone, which is harder, finer in its grain, more crystalline in its structure, and able to support a greater crushing weight than the Caen stone. From the fearful state of decay of the mediæval buildings of Falaise, the town in immediate proximity to the Aubigny quarries, it may, however, be suspected that this material would not be of a durable character, notwithstanding the fact that the supply is now obtained from different beds to those formerly worked. But there are other stones to be worked in Normandy, which might furnish our builders with extremely valuable resources, such as the Ranville, Fontaine Henri, Creully, Coursulles, and Quilly stones; but, unfortunately, they are little known amongst us, and the prejudice against the use of Caen stone (in consequence of its failure when injudiciously employed in such buildings as Buckingham Palace, Mr. Hope's mansion, &c.), has extended to the whole group of Norman stone.

All these varieties lately mentioned as coming from the oolitic series, are characterized by the remarkable purity of the carbonate of lime which constitutes the basis of the stones. The carbonate is often sub-crystalline, and generally speaking assembled in minute globules, similar to the roe of fishes, from whence the formation derives its name. Many shells, and vegetable and animal remains occur in some of the varieties, and they give rise to some peculiar and hitherto unexplained conditions of durability in the stones. Thus, when the test of the shells has been replaced by the decidedly crystalline carbonate of lime, they assume a remarkable degree of hardness, and if present in sufficient numbers they communicate great powers of resistance, as in the case of the Barnack, and the Roach Portland; but this influence of the shells may be imperceptible if the cementing material should happen to be of an earthy, or of a soluble character, and if much organic matter should be present, it would allow the formation of certain salts when the stone is exposed to air and moisture, which would seriously endanger its cohesion. The fossils also tend to define and separate their beds, and thus to render it more than usually necessary to pay attention to the practical law, that "stones should always be used bedwise;" and here it may be advisable to remark that whenever the materials of a stone have not been affected by their proximity to any source of igneous action, they will not admit of the stones being used in false bedding, although some varieties of the Jurassic limestone, or of the tertiary deposits of the Paris basin, are occasionally used in such positions without any immediate or apparent risk. Nearly all the oolites yield a pure rich lime, of great service in agriculture, but of little real value in building operations (on account of the solubility of the lime), unless mixed with some form of soluble silica. The blue lias lime, which contains a large proportion of the silicate of

alumina, is, however, much used for hydraulic works.

The Purbeck limestones were formerly much used in London for paving footpaths, and some varieties were worked for sinks, troughs, or cisterns, under the name of the Purbeck Portland, but the irregularity of hardness, and the small dimensions of the Purbeck flags have led to its almost universal abandonment in favour of the harder and more uniform Yorksire stones. The Purbeck and Petworth marbles (which are composed of an agglomeration of freshwater univalve and bivalve shells, united by a crystalline carbonate of lime, of a pleasant green colour, and some considerable beauty) were formerly much used in ecclesiastical decoration, and when placed bedwise they have resisted the action of time very satisfactorily, provided always that the earthy variety had not been used. Some of the shales of the Wealden series are occasionally used to cover the roofs of buildings in Sussex, but their weight, and their very irregular texture, oppose their general application at a distance from the quarries.

Now, the conditions under which the stones above described decay, when they are placed in a building, are partially mechanical and partially chemical. Of the former, the most important are, first, the dissolving properties of atmospheric moisture, in its various forms of rain or mist; secondly, the disintegrating action of changes in atmospheric temperature. Of the latter, the most important are, first, the chemical reactions which take place in the ingredients of the stones themselves; and, secondly, the new forms of matter which are superinduced from without, of a nature to affect the stability of the original combination.

The dissolving power of atmospheric moisture seems to depend greatly upon the quantity of free carbonic acid gas it holds in solution, and though this quantity in any given volume of water be extremely minute, in course of time every substance which has an affinity for it will yield more or less to its action. The silicates of potash and soda, for instance, which are present in the igneous rocks (or, to dwell especially on the class of materials under our notice, in the Devonshire granites), are easily decomposed when rain-water falls upon them; and, being removed mechanically by any of the countless actions of nature, they leave the other ingredients of the material exposed to the mechanical disintegration of changes of temperature. The simple carbonates of lime, again, sometimes absorb carbonic acid with much avidity, and pass into the state of the soluble bicarbonates, and, thus, in proportion as the original face of a stone is removed does the lower surface become exposed to the action of the rain. The rain-water of such a town as London not only does contain large quantities of free carbonic acid, but it also contains sulphuric acid and ammonia, which are capable of exercising a very deleterious influence upon the carbonates of lime. In discussing, however, the effect of these agents upon building stones, it is essential to bear in mind the fact that the mechanical state of the elements of those materials greatly modifies their resistance. Those which are of a crystalline character do not yield so readily as those which are amorphous, and the crystallisation produced by volcanic or plutonic influence appears to be even more permanent than that which takes place in the ordinary way.

It follows from these considerations that the stones of an irregular, confused, earthy texture (which are able to absorb considerable quantities of moisture, and which contain silica in a soluble form, or the carbonate of lime), should never be employed in positions where rain water could lodge upon, beat against, or be taken up from external sources by capillarity, or any other action. In positions exposed to any of the above dangers, none but non-absorbent and decidedly crystalline materials should be used, and as those qualities are almost exclusively possessed by dense stones, it may be considered that the mere specific gravity of a stone is a *prima facie* indication of its constructive value.

But atmospheric moisture, when absorbed into building stones, acts upon them quite as much through the changes in its own volume, in passing from the liquid to the solid state at the time of frost, as it does by the chemical dissolution it produces. If the stones should be placed in such a manner as that water should accumulate in any perceptible quantities between its various layers, and if the position of those layers be such that the expansion of the water in freezing cannot take place freely, the respective layers containing the water will be violently detached from one another. Now, all stones, even the crystalline limestones and slates, have certain planes, or directions of cleavage, or of stratification, along which water

\* See page 132, ante.

flows more readily than in any other course. If the stones be placed in a building with those planes in a direction likely to retain rain falling upon, or absorbed through, the surface (which is the case when stones are placed "bed to weather"), disintegration must ensue, unless the edges of the beds be left free; and even in that case there is danger of frost detaching one layer from another. It is indeed a primary law of construction that every stone should be laid "bedwise," and few modern theories have produced so much practical mischief as the one lately propounded, that "it was a matter of little importance in what direction of the bed a stone was laid." Fortunately, even unpractised eyes can detect the bedding of the majority of the London building stones, either from the position of the fossils, or the variety of texture, or of colour; in the less distinctly marked stones even, practised eyes can detect the planes of cleavage, and a good workman will hardly ever be mistaken in his judgment. It is unfortunate that the modern system of competition throws so great a temptation in the way of the practical builder, as to render it a mere matter of chance whether the constructive law, above mentioned, be observed or not, unless a costly system of supervision be organized, and thus the precautions often taken by the stone merchant, to indicate the upper bed of the material he delivers, are defeated.

In the stones which present distinct traces of bedding it often happens that a difference of the chemical, and even of the mechanical structure may be observed to exist in the respective layers about the lines of separation: under such circumstances, when the stones are laid bedwise, it is by no means rare to see the softer parts, near the lines of bedding, removed to a considerable depth from the surface. This action may be observed, amongst other instances, in the Purbeck marble of the pillars of Westminster Abbey, and quite in the protected parts of the building. It would seem that, in this particular case, the more earthy particles upon the planes of bedding are decomposed by the action of the moisture they absorb from the vapours suspended in the atmosphere, and that the cohesion of the various particles being thus destroyed, they gradually fall away. Westminster Abbey furnishes also numerous illustrations of the danger of placing stones, of whatsoever description they may be, in any other than the natural bed, for even a glance at the sheltered parts of the north transept, in the chancelyard, would enable anyone to detect, by their conditions of decay, the stones which have been laid well or ill.

The chemical reactions which take place in building stones, other than those resulting, in the interior of the country, from the agents directly presented by atmospheric moisture in the form of carbonic acid gas, sulphur, and ammonia, or upon the sea-shore, in the form of hydrochloric acid, or of common salt itself, in minute particles, are mainly those arising from the oxygenation, or the hydration of the various ingredients of which those stones are composed. Thus, if the oxide of iron be present in any notable proportions, it is likely to undergo changes of a nature to disturb the stability of the compound, and even the crystalline sulphates of lime are exposed to chemical decomposition, in consequence of the liberation of the sulphuric acid gas they contain. The other mineral salts, such as the silicates and the sulphates of iron, so often met with in building stones, are at times susceptible of very injurious decomposition, and the soda, potassa, or the organic matters the stones may contain, as frequently give rise to the formation of new salts; mainly under the action of the atmospheric moisture it is true, but also under the influence of the partial decompositions which take place around them. It is to be observed, however, that the danger to building stones from this peculiar class of actions, is very small and very slow in its action, compared with the dangers arising from the mechanical disintegration produced by atmospheric causes; and that, with the exceptions of the action of free carbonic acid upon the felspar of granites, of the changes of state produced in limestones by the same agent, and the modifications of the abundant salts of iron in some peculiar stones, there is little practical necessity for dwelling upon this interesting but obscure branch of applied chemistry.

The actions sufficient to affect the stability of the composition of ordinary building stones, by reason of the new forms of matter they superimpose, may principally be considered to be those resulting from the absorption of the gases of the atmosphere, and especially the extraordinary process known by the name of "saltpetering;" or, more correctly speaking, of nitrification. This

process displays itself in the formation of minute crystals, efflorescing from the interior to the exterior of the stone, and it leads to the destruction of the exposed surfaces of the latter, through the gradual removal of the minute particles, in consequence of the disintegration produced by the passive action of the crystals in process of formation. It is supposed that the organic matter diffused through nearly all stratified deposits gives rise to the formation of certain nitrates (such as the nitrate of lime, or the nitrate of soda), under the influence of damp, and of air, and of light of certain descriptions; for nitrification certainly takes place most abundantly near damp ground, rising in a wall *pari passu* with the range of the capillary attractions of its materials, and upon the northern or shaded faces of the said walls. Not only does this nitrification throw off the minutest and less adherent particles of the building materials themselves, whether they be stone or brick, but it is also able to detach any protecting coat which may be put upon them, if the adhesion of that coat to the adjacent material should not be of a very energetic nature. Let the adhesion, however, be ever so energetic, if once the action of nitrification should have been established, it must run its course, and the amount of evil it is capable of producing will simply depend upon the quantity of organic matter originally contained in the materials, or susceptible of being absorbed by them from the atmosphere. The secondary limestones which have not been affected by plutonic action,—the loamy clays, some kinds of pit sand, sea sand, and some descriptions of natural cements,—are particularly exposed to the danger of nitrification in damp positions; and, whenever it is once established, it is in vain to expect to be able to preserve any mural painting, or even a sculpture of a delicate character. Dumas and the French chemists appear to consider that the atmosphere itself would be capable of furnishing the nitrogen required for the production of the effect under consideration; but there is hardly any occasion to resort to so extreme a supposition, when we reflect upon the extraordinary diffusion of the remains of animal life in stratified deposits. It is also to be remarked that nitrification will frequently take place in the most dangerous manner precisely in those materials whose exposed surfaces are covered with coatings impervious to the air, and that in houses or buildings of that character it is most energetic on the interior faces of the walls, or precisely on those which are least exposed to the atmosphere. In fact, it is mainly in consequence of the absorption of moisture by the building materials, and of the chemical changes thus produced in the organic matter those materials may contain, that the peculiar form of decay which accompanies "saltpetering" arises.

Practically, then, the great agent of destruction of building stones, in any of its modes of exhibition, is the damp, or the water supplied by the atmosphere, either directly or indirectly, and the efforts of those parties who seek to prevent this destruction must be directed to combating this primary source of evil. Fortunately, the precautions to be observed for this purpose are very simple, and they only require a little common sense on the part of the builders charged with their application to the materials at least which have been long before the public.

The first and foremost rule is never to employ a porous absorbent stone in the ground, or in elevation, unless, in the former case, it be maintained constantly wet; or unless, in the second, the absorption of moisture from the ground be prevented by the interposition of some impermeable material. Stones of the description just mentioned should never be employed for the copings, parapets, window-cills, weather beds of the cornices, plinths, strings, or other parts of a building where water may lodge. Care must also be taken to bed such stones with mortars which are not exposed to develop in themselves, or likely to excite in the stones the efflorescence of any of the nitrates of soda, potassa, or of lime. If porous or absorbent building stones must, however, be used in exposed positions, and no efficient precautions be taken to prevent their decay, it will be found that the decay will commence, and be most apparent in the zone of alternate dryness and humidity, or, as the workmen say, "between wind and water." The stone work about that zone should, therefore, be executed in such a manner as to allow of its being easily replaced, if requisite, and in case the exhibition of the decay should take place inwardly, care must be taken to isolate the surfaces which are likely to be covered by efflorescence. These precautions are, after all, only very unsatisfactory palliations of an evil which

ought never to exist; and it is therefore, advisable to direct the attention of our English builders to the practice of their French neighbours, who use different stones according to their position in a building. In Caen itself, for instance, the plinths or basements of houses are executed in granite, or in the Ranville Chereux, or Creully stones, which are practically non-absorbent; and moreover, in the best buildings the Creully stone is used for the exposed parts of the elevation although the Caen stone is found at the very base of the town.

But even when every precaution has been taken to prevent the absorption of moisture from the ground, or the actual rainfall, it is necessary to protect the exposed surfaces of the soft and absorbent, or, to use a technical phrase, of the hygroscopic stones, by some coating which shall prevent their taking up the injurious moisture from the air. This is done in various ways. 1. By painting. 2. By impregnating the expressed surface with oleaginous or fatty matters. 3. By washing the face with some solution able to convert the material itself into an insoluble non-absorbent substance. 4. By filling in the pores of the stones with an insoluble material which should effectually exclude water.

1st. The objection to oil paints consists in the facts that in proportion as the oils which serve as their vehicles evaporate, the particles of the stone they originally protected become again exposed, and even the absorbent powers of the stone itself contribute to this action. It, therefore, becomes necessary to repeat the painting frequently, and thus, in the end, the delicacy of any mouldings or carving must be effaced. The unequal rates of expansion of the stone and of the oil paints in time of frost tend to increase the danger of irregular and unequal exposure above attributed to the evaporation of the oil.

2nd. As to the injection of oleaginous, fatty, or waxy matters, it must be evident that it likewise can only act mechanically by closing the pores of the stones; and, therefore, although instances may be cited in which when the surface so protected is maintained at a constant moderate temperature, the system of injecting those materials has succeeded; yet, if the protected surfaces be exposed to extremes of heat and cold, the heterogeneous materials thus affected must be acted upon in very different manners. Experience has confirmed this theoretical inference, and it has been found in practice that the protecting coats of any of the materials alluded to are gradually detached from the stone, and that they require to be renewed quite as frequently as oil painting itself does, when used on the exterior of buildings.

3rd. One of the most successful attempts yet made to prevent the decay of soft building-stones, by washing their exposed faces with a fluid able to affect their nature, is the process lately introduced by M. Kuhlmann, in which the carbonates of lime are washed with a solution of an alkaline silicate, with a view to converting them into silicates of lime, through the elective affinities of the lime and the silica. In some cases this ingenious and beautiful system has succeeded, and very great hardness, very resisting powers, have been communicated to the stones operated upon. But, unfortunately, the action of the silicic acid is a very slow one; and when the surfaces washed in the manner described are exposed to rain, it is by no means rare to find that the solution is carried away. There is another very serious objection to the use of the simple alkaline silicates, namely, that when they do act upon the subject stone, the soda and potassa (which are generally used) are left free, and in efflorescing, they are likely to moulding; at the same time, as they form, to some extent, deliquescent salts upon the face of the stone, they attract to it a dangerous amount of humidity.

4th. The problem of protecting the surface of a soft building stone, after every precaution had been taken, to be observed, to prevent the internal absorption of moisture, seems to me to have been the most successfully solved by Ransome's last patent process. In this process, a fine precipitate, clothing the whole of the pores of the surface of the stone, is produced by firstly cleaning the stone carefully from dust, or other extraneous matters; then the stone is made to absorb as large a quantity as possible of the silicate of soda or of potassa, and when this solution has dried into the stone, a second wash is applied, consisting of the chloride of calcium or of haryta. In practice, Mr. Ransome uses the most frequently the silicate of soda and the chloride of calcium; and the effect of the respective applications is, that a double decomposition takes place in the washes, giving

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## BUILDING AND THE BIBLE.

rise to the precipitation of a finely crystallized silicate of lime or of baryta in the pores of the stone, and an efflorescence of extremely soluble salts of the chlorides of soda or of potassa. The former remain in the pores, the latter are speedily washed away by rain. As the rate of contraction and expansion of the silicate of lime is, as nearly as may be, the same as that of the stones it is intended to protect, there is no danger of the precipitate being detached by this cause. It may be added that Kuhlmann's process is only applicable to the preservation of the carbonates of lime, whilst Ransome's process is equally applicable to that class of materials, or to the sandstones, or even to bricks, or plaster, or cement. It was precisely to this process also that I referred when speaking of the use of chalk as a building material, and I am convinced that, by its application, that abundant and economical substance might be very advantageously applied to our daily wants.

Perhaps it is going a little beyond our immediate subject, but I cannot refrain from saying that the principle of the double decomposition, applied by Ransome to stones, might be applied to the precipitation of a soluble glass upon woods or textile substances, and even to the protection of timber from the attacks of the boring worms.

Finally, I repeat what I have said elsewhere, namely, that the common sense of the whole matter is to use only such stones as have been proved by secular experience in the locality of the building to be little exposed to decay. I use the term "secular experience," because the Commission appointed to select the building stone for the Houses of Parliament (which Commission cost the country 11,000*l.* for its report, and, perhaps, 60,000*l.* extra on the price of the labour of the building), recommended an untried stone, mainly upon faith in the indention of Brard's test, which had, even in those days, been seriously challenged. The consequences of this unfortunate error are now notorious, and it is worthy of remark, that the newest parts of the Houses of Parliament, viz., the west front, are precisely those which are most seriously affected.

There are, however, many economical and constructive reasons for resorting occasionally to the use of soft, easily worked, and, as such, almost always perishable stones. In such cases, those stones must be isolated from ground, or other camps, as effectually as possible, and their exposed surfaces covered at once with an efficient protecting coat, before the process of sulphureting can commence. I believe that Ransome's process is the best which has been yet presented to the public for this purpose; but, at the same time, I equally believe that if any internal decay, or any organic decomposition, so to speak, be once allowed to establish itself in a building stone, it will be impossible effectually to arrest its progress. The efflorescence produced by any serious tendency to nitrification will, in fact, continue, however effectually the exposed surface of the stone be closed by a mechanical or a chemical deposit, and it is precisely on this score that we may explain some of the equivocal results of even Ransome's process for preserving stones, which are said to have taken place. Whatever process may be adopted for protecting the surfaces of soft stones, it is, moreover, necessary to pay attention to the constructive law of laying them upon their true bed, and also to protect the more exposed portions of the work by covering them with harder, more resisting, and impermeable materials. Even the latter materials themselves are at times exposed to decay between wind and water, and therefore every possible precaution should be observed to limit the range of the absorptive powers of the stones; the first and foremost precaution for basement works being to establish an effective drainage all round the building, at such a distance from it as to prevent the capillary action of the stones themselves from obtaining any supply of moisture from the ground. In the upper parts of a building it is equally essential to prevent the rain from lodging upon any parts of the stone work, especially when absorptive stones are used above projections likely to arrest falling water.\*

The ordinary meeting of members was held on Monday last, at the house in Conduit-street. The chair was taken by the president, C. R. Cockerell, esq., R.A.

Mr. C. C. Nelson, hon. secretary, read the minutes of the last meeting, which were confirmed, and also a list of donations to the library. A vote of thanks having been passed to the donors.

Mr. Godwin, vice-president, observed that the committee appointed by the Society of Arts was again considering the question of copyright. He held in his hand a draft of the bill which it was proposed to introduce into Parliament on the subject, and his motive in mentioning the matter was, that architects, as a body, should aid in endeavouring to get protection for their copyrights. The bill went to this extent, that the author of any "architectural work," and his assigns, should have a copyright in the same for the term of his natural life, and for thirty years after his death. In looking to the interpretation clause, he found that the architectural work which it was proposed to bring within the provisions of the bill meant the representation of any design for any edifice or part thereof, by plan, section, or model; but it did not give any protection whatever to works executed. It, therefore, became a question of some importance to the profession, whether or not they thought themselves in a position to ask for some protection against the copying, and reproducing of works executed. He was induced to mention this subject in order that the Institute might, if so minded, offer suggestions to the Society of Arts, and which he felt persuaded would receive attention at their hands.

Professor Donaldson said he quite agreed with Mr. Godwin in the propriety of his suggestion. He hoped the subject would be taken up by the profession; and, if the draft of the bill were submitted to the committee of the Institute which had been appointed to consider the subject, they might be able to introduce words which would include the works of the architect, as it frequently happened that the works executed were of more value than the work drawn.

Mr. Papworth said he wished to draw attention to another subject of great importance to the architectural body. He found, on reference to a journal which he held in his hand, that the council of the Institute had appointed a committee to consider the expediency of instituting a voluntary examination of students, and the granting of certificates. If the paragraph to which he referred was correct, he must say that, as a member of the Institute, he was exceedingly glad to hear it, and was surprised that so important a subject had come first to his knowledge through the instrumentality of the press.

Mr. Nelson said it was certainly correct. A meeting of the committee had been held last Saturday week, and another meeting would be held next Saturday; and any conclusion to which it might arrive would be communicated to the Institute in due time.

Professor Donaldson observed that the question of Mr. Papworth was very *appropos*, and that as a committee was sitting on the subject, it was probable that many members of the profession might wish to submit their opinions to it.

Mr. Nelson said the council, having the power to appoint committees, had appointed a committee on this subject, and the scheme would be further considered, and, when ready, would be submitted to a general meeting of the members.

Mr. Robert Kerr then read a paper "On the historical References to Building and Art in the earlier Writings of the Old Testament," of which we give, for the present, the following abstract of conclusions:—

The only written record of the primitive ages ever likely to be at our command is that contained in the sacred writings of the Jews. To that the purely historical element of these, when separated from the purely theological, becomes of the utmost value in historical and chronological science, treating, as it indirectly does, of all that rises to the surface of society from the infancy of civilization to the very time of Herodotus.

The manner of free translation attributed to Ezra does not materially lessen the historical value.

Whether written by Moses himself or not, the account of the Exodus may be taken as belonging to the time of the events, and, therefore, directly historical.

The history of Genesis is of Chaldean type as opposed to Egyptian. Egypt is ignored.

It is, moreover, of pastoral type as opposed to the civil-agricultural of the time; the building of cities being always attributed to races accursed.

The ark of Noah, in description, is a timber house of the period, built free to float; not a vessel for sailing.

Nimrod was the founder of primitive empire, and, as such, execrated in tradition. From his Babylon sprang Nineveh, received chronology being here questionable.

The term *city* signifies an agricultural hamlet, large or small, generally fortified.

The principle of enclosures was described. The Babylon of Herodotus was alluded to, and proof offered in figures that his description might be reduced to credible form.

The Tower of Babel was probably the ruin of the first colossal effort in building, attributed in tradition to Nimrod.

The pastoral patriarchs built no cities; they introduced to us the altar, the monumental pillar, the grove, the sepulchre, the heap. The Pyramids of Egypt are of the class of the heap.

The manufacture of teraphim and amulets was the very first step in delineative art. The spiritual monotheism of the race of Abraham was specially directed against this, as the Protestantism of the age.

When we come to the time of Moses, we have to deal with direct history, capable of application to the theories of Egyptian and Assyrian chronology as connected with this by the date of the Exodus.

The period of the nineteenth dynasty of Manetho for the Exodus (it being generally supposed to correspond with this) can scarcely, without further inquiry, be accepted as regards Scriptural allusion, the state of Egyptian society described being not that of flourishing and powerful empire so much as that of a very primitive and simple form of government.

The usual proofs of synchronism being referred to, the question was, whether the Exodus could be thrown back in date to correspond with a period even before the Pyramid builders.

Future Jewish art was strangled by the prohibition of image-making. The works of Solomon were Tyrian. Their departure from the true principle of the Mosaic law occasioned the immediate downfall of the nation, as an evidence of the absolute necessity at that time of the Mosaic policy against art.

At the conclusion,

Mr. Lockyer said that no one could doubt the talent, industry, and great research, which Mr. Kerr had brought to bear in the preparation of his paper; but he (Mr. Lockyer) was of opinion that he was entirely wrong in the view which he had taken, from a misconception of the books which he had studied. The five Books of Moses had been written more as a body of law than for any other purpose, and as a short synopsis of the history of the Hebrews. Having referred to the various speculations on the subject of the precise period of the Exodus, upon which, he stated, the sacred records themselves were somewhat contradictory, Mr. Lockyer proceeded to state the reasons which induced him to believe that it must have occurred under Menepthah, a king of the nineteenth dynasty, for the following reasons. The Mosaic narration was corroborated in many particulars by the Egyptian tradition of the expulsion of the lepers, which occurred during the reign of that king. Moreover, the father and grandfather of Menepthah—Rameses, and Setbos—must have reigned previous to the Exodus, as they overran and conquered the whole of Western Asia, of which we find no record in Holy Writ. Their conquests are recorded at Karnak, and amongst the conquered tribes are found the Canaanites, Amorites, Hittites; Phœnicia also appears, Mesopotamia, Syria, and even Bactria. The land of Canaan was not, as was assumed, a hilly place, but Mesopotamia was. He also thought it hardly possible that the Egyptians would have called a city built by them Rameses, unless after the king who founded it, and there was no Rameses until the nineteenth dynasty. With regard to the manufacture of bricks, there was a view of a tomb at Thebes, engraved by Sir Gardner Wilkinson, in his work, showing the process by which they were made. Sir Gardner was of opinion that the manufacture of bricks was a monopoly of the Government, and that there was a tax upon them. There was no reason to suppose that Moses was ever at Thebes, for the Jews were in Lower and not in Upper Egypt. It was said that the shepherds were "an abomination to the Egyptians," and the only reason for supposing this to have been the case was, that the Hyksos invasion had oc-

\* THE ATLANTIC TELEGRAPH.—At a recent meeting of this company, a resolution was unanimously adopted, to the effect that an additional capital of 100,000*l.* be raised to attempt to bring the existing cable into working order, or, in the event of failure, to sell it.

\* Report of discussion which ensued we shall give in our next.

cluded previous to the events recorded in the Mosaic account. On the subject of Egyptian architects, it might be interesting to know that some of these individuals were better endowed with worldly possessions than their modern brethren, as one of their tombs at Thebes contained a record of the extent and nature of his possessions, which included 825 oxen, 760 goats, 970 rams, and so forth.

Mr. Fergusson said that there was comparatively so very little reference to architecture in the paper they had just heard, that he felt some difficulty in making any observations upon it. The Temple of the Sphæres, erroneously considered the ruins of the Tower of Babel, was undoubtedly built by Nchachaduezzar, for every brick of it was stamped with his name. Sir Henry Rawlinson had proved this to be the case, as he had dug up some of the bricks from the very centre of the pile, and the cylinders at the corners also showed that it had been constructed during his reign. There was not in his opinion any reason for supposing that the Temple of the Sphæres was the Tower of Babel. It had been built in stories of several colours to represent the planets; and, so far from being the tower mentioned in Scripture, there was conclusive evidence that it was not. The domical building in the diagram referred to by Mr. Kerr was a sepulchral monument,—a tumulus similar to the Assyrian tumuli,—but they subsequently became used in India as relic shrines, or as the sarcophagi of Catholic churches were subsequently converted into altars. With regard to the walls of Babylon, he thought the account, by Herodotus, of their extent, was extremely doubtful. There were no remains of them, and there was no proof that the city was so large as Herodotus represented it to be. The walls of Nineveh were not one-tenth of what Herodotus represented them to be; and therefore Herodotus could not be depended upon in his account of Babylon. Mr. Kerr stated that he had taken out the quantities of the walls of Babylon, but he (Mr. Fergusson) would like to ask an architect to build a perpendicular wall of mud 300 feet high, to stand near a tropical sun, and hear what he would say to such a proposition. Indeed, he considered the statement too absurd for a moment's consideration.

Mr. Ashpitel expressed his regret that not a single word had been mentioned in the paper about any building of which the record was preserved in the Old Testament. The first buildings we read of in ancient Scripture were the Temple of Jerusalem and the House of the Cedars of Lebanon, the dimensions of which were given, and which had attracted the attention of so many learned persons. He owned he was startled by many of the assertions made by Mr. Kerr, involving, as they did, vested matters of theology. As, however, they were not theologians, but architects, he would not attempt the discussion of them.

Mr. A. Beresford Hope wished Mr. Kerr had carried his investigation into the discovery not only of the houses and tents, but of the actual cities of the Moabites in the wild mountainous regions to the east of the Dead Sea, made by Mr. Graham, who, unfortunately, not being an architect, had merely played round the subject, and had not furnished any drawings from which a correct idea might be formed. There was a great field open in the treatment of early Christian architecture, and he would be a great benefactor to the science of ecclesiastical architecture who would undertake it. So little was known about the early history of the Cities of the Plains, that any researches on the subject could not fail to be deeply interesting.

A visitor said that it might, perhaps, be interesting to know that Mr. Graham's discoveries had been followed up by the Prussian consul at Damascus, and that some very interesting explorations had been made at the scene of his labours, of which accounts had been published in a German periodical.

Professor Donaldson expressed the hope that as Sir Gardner Wilkinson, whose name was celebrated in connection with Egyptian antiquities, was present, he would not allow the discussion to close without making some observations.

Sir Gardner Wilkinson said that he could not at so late an hour enter into details. The chronology of Egypt, to which Mr. Kerr had referred, was in a very uncertain state, and it was extremely difficult to say when the Pyramids and other monuments were built; but, in his opinion, there could be no doubt that they were built before the Exodus of the Israelites. The fact of the Pyramids not being mentioned in the Bible was no argument against their not being in existence, as it was not the object of the authors

of the sacred books to write the history of the Egyptians. He was not surprised, therefore, that no mention of the Pyramids was to be found in the sacred writings. It had been said that Homer had never mentioned them, and that consequently they did not exist in his time; but this was not a fair argument against their non-existence in Homer's time. Herodotus, who visited Egypt, scarcely speaks of Thebes at all; and did not mention the great temple of Caruæ. The question of chronology was, in fact, as yet in a very uncertain state; but something might possibly come to light one day to enable the curious to fix the date. It was remarkable that the horse was not represented on the tombs before the eighteenth dynasty, but as horses were mentioned in the Bible it was but reasonable to suppose that the tombs were anterior to the Exodus. With regard to the architects of the Israelites, all that was known was that they worked for the Egyptians; but with regard to their being prohibited from representing the human form, it should be remembered that the Arabs, who were similarly interdicted, had exhibited a good deal of taste in architecture.

Mr. Papworth said he found himself obliged to dissent from almost all the speakers who had preceded him. Sir Gardner Wilkinson said that the Arabs had a high style of architecture, but he (Mr. Papworth) challenged any one to point out a single Arab architect. The Byzantines furnished the first, and the Spaniards the second buildings, while the Armenian Greeks were in later times employed by the Arab Sultans. Mr. Papworth, in conclusion, proposed a vote of thanks to Mr. Kerr, whose lecture he concurred in thinking would form a novel introduction to the history of Early Eastern architecture.

The Chairman said, the lateness of the hour (ten o'clock) would prevent them from going into any further discussion, or, perhaps, he might say confusion. Mr. Kerr had favoured them with an eloquent and interesting paper, and it was to be regretted that more time was not left for its discussion.

The vote of thanks having been unanimously accorded,

Mr. Kerr, in acknowledging the compliment, said that the brief discussion which the paper had elicited showed that the subject was altogether uncertain. In treating the subject which he had selected for his paper, he had endeavoured to do the best he could; and, if he had shown that very little was known about it, he was quite satisfied.

The following gentlemen were on ballot elected Fellows of the Institute:—Raphael Brandon, of 17, Clement's-inn, Strand; John Loughborough Penson, of 22, Harley-street; John Pollard Seddon, Associate, of 6, Whitehall.

Mr. Norman Shaw, of 8, Albion-road, St. John's-wood, was elected an Associate.

#### PRIZES TO ART-WORKMEN.

##### THE ARCHITECTURAL MUSEUM.

On Wednesday evening last the prizes awarded to art-workmen for the most successful specimens of carving and coloration were presented in the theatre of the Brompton Museum.

Mr. A. Beresford Hope presided; and there was a numerous attendance of artisans and others interested in decorative art.

The Chairman observed that the present was, without exaggeration, one of the most gratifying, if not the most gratifying, of the many occasions which brought them together in that building. Many societies were formed for the purpose of social intercourse, to see and be seen, to be complimented and to compliment, to read instructive papers, and so forth. These were all worthy objects in their respective lines; but there was something in this world higher and greater than complimenting or being complimented, and that was work—the hard labour of the hand and mind; and this work was the object of the South Kensington Museum to promote. That institution was not only a museum and society, but it aimed at the realization of the old, emphatic word, a school—a place in which education went by precept and performance; and the sovereign way in which they taught by performance was to call upon their friends to come forward and produce the fruits of their instruction. They wished to show that, before schools of design came into vogue, there was a school of art-workmen. That school was established in no paltry or narrow spirit, for if Art was eternal and all-pervading, it must exist in the smallest as well as the largest affairs of life. The Venus, the Apollo, the Cathedral of Cologne, the Minster at Lincoln, were all grand illustra-

tions of art in its most elevated forms; but a turned candlestick or a piece of embroidery were also illustrative of the same feeling and taste for the beautiful. There was no reason why workmen should not be artists in their respective gradations. The master of a cotton-mill might, in his sphere, be an artist, and so might the smallest boy who gathered the floss from the machine. He did not wish to derogate in the least from the credit due to manufacturers; but as there were master manufacturers, so there were master joiners, mason artists, who might attain to a high position in the cultivation of the beautiful. The workman might be an artist quite as much, as his scope went, as the most accomplished sculptor or painter.

It was with the view of developing that art that the Institution in which they were then assembled offered prizes for wood-carving, for metal-work, for moulding, and for decoration or coloration. In fine, they proposed to give prizes for those particular branches of art for which Michael Angelo, Giotto, and Quentin Matsys had made their names famous in all ages. With regard to the prizes awarded in respect of the year 1859, he had to report that eleven specimens of wood-carving had been submitted, one of which, however, arrived after the 1st of December, and was, consequently, too late for the competition. It would be satisfactory, however, for him to state, that although the design in question exhibited much ability on the part of the author, the work was not one to which the judges could have awarded a prize. The first prize of five guineas for a specimen of Gothic wood-carving had been awarded to Mr. James Allen, in the employment of Mr. Phillip, and now engaged at Exeter College, Oxford. It was a most praiseworthy work, but he was sure the author would not be displeased if he (the chairman) were to criticize it a little, and to say that the only drawback which he observed in it was, that it was rather too solid and stone-like—too rigid to be formed of so plastic a substance as wood. In all other respects, it was admirable, and true to nature. The second prize was also in the Gothic style, and was the workmanship of Mr. Charles Allen. The production was a sort of foliage very common in the early Middle Pointed age. It was executed in soft wood (the first prize carving was in hard wood), and its great merit was, that while it represented a well-known type, Mr. Allen had exhibited originality of feeling, and a graceful combination of foliage which could not be too highly applauded. The third prize (which they were enabled to offer through the kind liberality of Mr. S. C. Hall), was a panel in the style of the sixteenth century, and was the work of Mr. William Bayliss. The artist had not strictly adhered to existing specimens, as he had introduced, among his flowers, the fuschia, which was not known in England two hundred years ago. He also had succeeded in producing a graceful and delicate combination of foliage, which attested not only skilful execution, but a conception of art in its most elevated phases.

The next prizes (given by the Ecclesiastical Society) were for coloured decorations, of which nine specimens had been submitted in 1859 against six in 1858. The plan adopted, with reference to these productions, was to select a well-known panel, and offer it for coloration. The two panels selected on the present occasion, although consisting of one figure only, were very different in the character of their decoration. In one, the colours were subdued, and in the other positive. In one, no gilding had been used, while in the other it had been applied with a judicious, but a glowing hand. The judges had awarded the first prize to that in which the colouring was subdued. They were of opinion that there was a higher tone of art in a coloration which consisted of nothing but dull yellow, lilac, and chocolate, than in the more attractive medium of diaper and gilding. The first prize, therefore, had been awarded to Mr. Simpkin, and the second to Mr. Harrison, a gentleman who had taken a first prize last year. The judges were extremely pleased with both works; but, after mature consideration, they resolved to award the highest prize to the design which, in their opinion, exhibited the greatest artistic feeling. Now, with regard to the campaign for next year, he was happy to say, that the prizes which it was intended to offer for works to be executed in 1860 would be more numerous than those which had been awarded in respect of those sent in in 1859, and he trusted that the larger opening to be made would create a more numerous band of competitors. In former years they had given prizes for stone carving. Now, as they all knew, stone was an ugly customer to deal with. The workman

was obliged to bring the block home to operate upon in his leisure hours, and he need scarcely say that small flakes chipped off flying into one's eyes, and the larger ones through the windows, were rather inconvenient, and perhaps not encouraging. In order to get rid of these physical difficulties, it was proposed to give prizes next year to the three competitors who should prove themselves to be the most successful in designing and executing a medallion in clay of the head of the Duke of Wellington, enclosed in a border of the Middle Pointed style. The prizes for these medallions would be five guineas, three guineas, and two guineas each. The next prizes would be for metal-work; two prizes of five guineas, and a prize of three guineas for the best specimen of a key in the Mediaeval or Renaissance style. Prizes would likewise be given for wood carving, and the work to be executed would be a carved oak panel, to be used as one side of a church Bible binding. The ornaments, figures, or inscriptions were to be in harmony with the sacred character of the volume which it was to enclose, but with this exception, the utmost scope would be given to the genius of the artist, who would not be bound to produce a strictly original design, as an old type remodelled would be considered a compliance with the conditions laid down. A new prize of three guineas would also be given for a cartoon drawing (not coloured) of a painted glass canopy head for a figure such as was frequently seen in cathedral windows. A figure itself would not be accepted, neither would the use of colours be admitted. A prize of five guineas would be given for a coloured decoration, and the Ecclesiastical Society would also give three guineas as a prize for the second best design. The specimen would be a group of two figures, and a cast of it would be supplied to competitors at a charge of five shillings each. Mr. Hope concluded by expressing his hope that these rewards would serve to stimulate art-workmen to aspire still higher, and to become more useful to themselves and to the age in which they lived.

The prizes having been awarded to the successful competitors, to whom the Chairman addressed a few words of congratulation and encouragement, The Rev. J. D. Maurice said, that many of the workmen belonging to the institution, at the north of London, with which he was connected, would have been present but for the distance, which would have trespassed too much on their brief period of leisure. They were, however, fully sensible of the value of the South Kensington Museum, and more especially of its architectural features, and they felt that it was not only a credit and a source of usefulness to the neighbourhood in which it was placed, but to the whole of England. He was much gratified to find working men speaking out as he had heard them that night through their art performances. It showed that they were gradually entering more and more into the institutions of the country, that they were identifying themselves with its progress in art and civilization, and that they were standing forward to take that place in society which their intelligence and good conduct entitled them to assume. The reverend gentleman also added that a good many of his friends at the north of London had joined the rifle movement, and that the circumstance of that being a drill night also accounted for the absence of many of them. The zeal with which the working classes had come forward to join in the national plan of defence, which Her Majesty had that day so signally recognized, proved that the artisans of England felt, in common with their countrymen in the upper circles, that they had an interest in asserting the honour and independence of their common country.

Mr. S. C. Hall expressed the gratification which it afforded him to meet so many of those art-workmen whose labour had so eminently contributed to improve not only the architecture of the age, but the public taste in reference to every-day objects. He showed that it had often occasioned him regret not to be able to ascertain the names of those whose hands and hands had produced so many graceful and artistic forms. When visiting that church at Doncaster built by Mr. Scott, which he had no hesitation in saying was, to his thinking, the finest specimen of ecclesiastical architecture which the last five centuries had produced, he had inquired in vain for the names of those who had executed the beautiful carving of the pillars. The name of the superintendent, it was true, had been mentioned, but he could not glean the names of those whose thoughtful heads and cunning hands had produced the works which elicited so much of his admiration. With regard to the growth of artistic knowledge among workmen, he was glad to say that an immense improvement had been effected in that respect within his own recollection.

He was old enough to remember forty years ago, and he could not but contrast the limited knowledge which then existed with the power and excellence which now prevailed in almost every branch of manufacture. There was no reason why the beautiful in art should not be carried into the production of domestic and familiar objects. In his opinion, the man who designed a tea-pot or a saucer of graceful and artistic form was a public benefactor; and, in the same sense, the man who produced the abominations which too often meet the eye was as much an offender against public morality as the delinquent at the bar of the Old Bailey.

Mr. George Gilbert Scott said he wished to add a few words, in order to guard successful competitors against exaggerating the results of their success, lest it might act as a stopping-place instead of an incentive to improvement. People who were fortunate enough to obtain prizes were, as a general rule, too apt to rest upon their triumphs as a proof of their skill. It was to be hoped that the entire world of art was advancing; and if those who got prizes did not go on improving, they would soon be left behind in the race. There were several objects which might serve as the inducement to art-workmen to compete.

In the first place they might wish to obtain more remunerative employment, which, however laudable in itself, was only a secondary and not a primary object. Neither was it by any means the object to single out individuals, and put them above their competitors. Emulation was no doubt an excellent incentive; but it was not desirable to put one workman in a marked degree above another. Neither should it be their object to give a positive stamp to their work as having attained to positive excellence, for in future years there might be absolute excellence. It must not, therefore, be considered that a prize was meant to be the stamp of positive merit. What those who gave the prizes wished was, to afford an incentive to future study and improvement. They did not wish that those who received prizes should say that they had attained to positive excellence, and that the fact of their having obtained a prize was a proof of it. The great and leading object of all competition was to encourage the student of art to renewed exertions in the path to excellence.

The Chairman then announced that the next lecture would be delivered on the 25th instant, by Mr. John Bell—the subject, "The Union of Sculpture with Architecture."

#### ARCHITECTURAL ASSOCIATION.

The ordinary meeting of this society was held on Friday last, at the house in Conduit-street, Mr. Penfold, president, in the chair.

Mr. Herring, honorary secretary, read the minutes of the proceedings of last meeting, which were then confirmed.

The president, in the absence of Mr. Thomas Purdie, read a paper written by him "On the Applicability of Fixed Mathematical Laws to the Production of Beauty in Architecture," to which we shall return.

Mr. T. Rickman said, as the present paper was an attack on one written by Mr. Hay, "On the Harmonic Law of Nature," and which this gentleman had entrusted to him to read before the society in April last, he would make a few observations upon it. To apply a fixed mathematical law to all buildings was now out of the question, but, as some system was wanted to which architectural designs would conform, he thought Mr. Hay's the simplest for that purpose. This system was founded on the harmony of music, and required to be examined with great caution, as a theory which professes to deduce an analogy between musical law and mathematical dimensions must require a vast amount of mathematical knowledge from any one who sought to establish or attack it. Mr. Purdie's objection to Mr. Hay's theory was, that there was nothing in the eye to enable it to measure angles and mathematical dimensions, as there was in the ear to judge of the vibrations of musical chords; but an examination of the mode in which the eye is hung, of the formation of its muscles, and of the fibres by which these muscles were connected with the brain, showed that the mind was made acquainted with the proportions of a figure by a muscular action returned through the eye to the brain; but, as Mr. Purdie thought these proportions were set aside in perspective, he (Mr. Rickman) would instance an equilateral triangle. It could not be said that the eye would measure the circle which the triangle will recall to the mind of some persons, nor the square in which it is inscribed, nor the arithmetical ratio between its height and

the width, nor the algebraical formula in which this ratio is stated. Undoubtedly, the mind seeking to store things for future use will resort to the algebraical as the simplest form to retain the impression of the triangle, but the difference between looking at it straight and in perspective is simply a difference of ratio in the width and height. If you look at the object straight, the rectile muscles of the eye are called into play; if in perspective, you must exercise the oblique muscles, and those which bring the eye to a focus at the nearer and more distant points; consequently, Mr. Purdie's theory, that there was nothing in the eye to appreciate these proportions, fell to the ground. He would observe, in conclusion, that these mathematical theories were worthy of attention, and were studied as classics, at the present time, in Modern Athens.

The Chairman observed that, in the case of the vibration of musical chords, the sound strikes the ear by a mechanical motion from the object, and the ear recognizes the motion in the drum; so that to hear requires the exercise of no faculty, whereas, in the case of seeing, the eye requires a faculty. Perspective was a stumbling-block, in his mind, to the reception of Mr. Hay's theory. Now observe a proportion; but, if you change your position in reference to the object, this proportion changes, and the eye seems to move in a different way, according as the object is ugly or handsome.

Mr. Hewitt, whilst agreeing with Mr. Rickman, thought that the question how or why impressions of beauty were conveyed to the brain from external objects was purely anatomical.

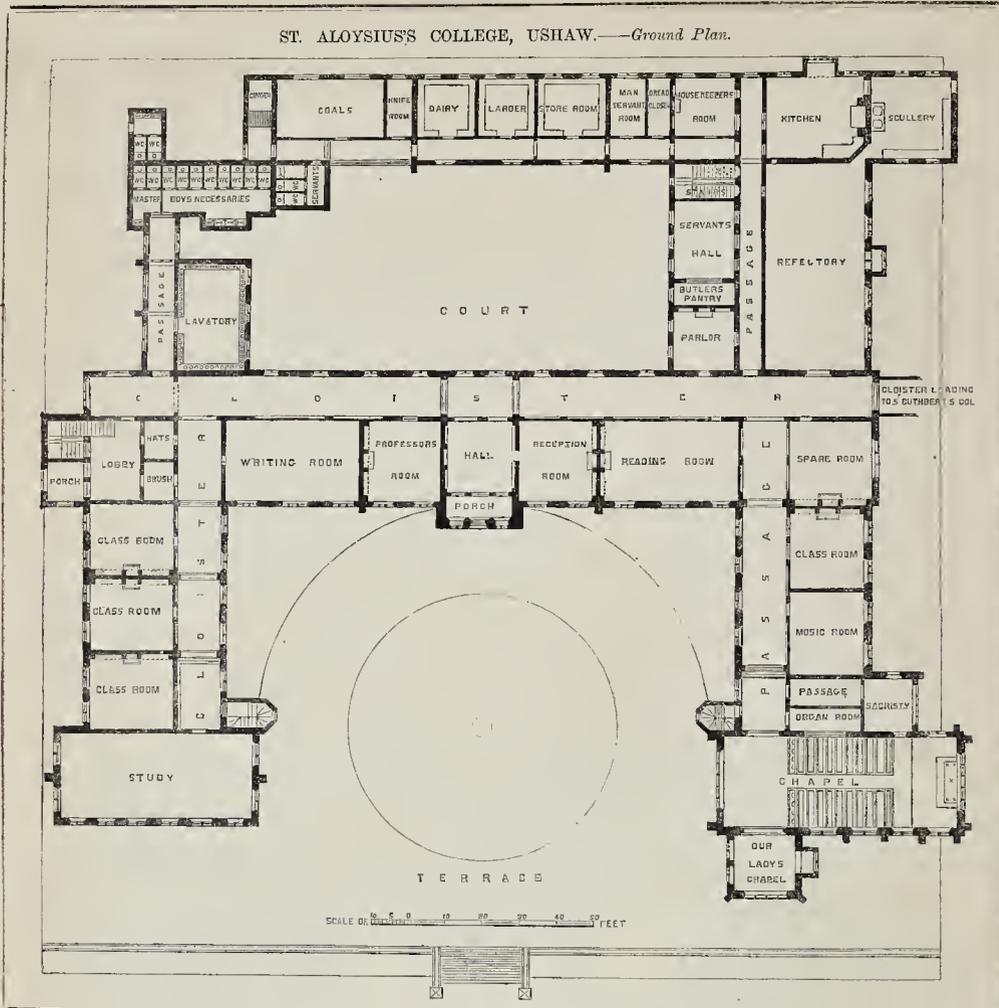
Mr. Brashill stated, that though an analogy existed to a certain extent between the organs of sight and hearing, yet that there was nothing in the vibration of musical chords correspondent to angles in buildings. The question how the impression of beauty arises is distinct from any anatomical one: we do not derive pleasure from sending our eye over a picture: we look at the picture as a whole: to do so the eye is adjusted as a telescope would be, and for the time being remains immovable.

The meeting then broke up.

Mr. Capes will read a paper, on the next night of meeting, on "Light; its Influence on the proper Arrangements in the Plans of Buildings."

#### LECTURES ON ARCHITECTURE. OXFORD ARCHITECTURAL SOCIETY.

At a meeting of the Society, on Tuesday, February 21, Mr. Parker read his third lecture on the History of Architecture in England, comprising the twelfth century, or rather the Norman style, beginning with the reign of William Rufus, and ending it with Henry II. He considered the last ten years of the eleventh century as belonging in architectural character to the twelfth; and he observed that the same rule applies in each of the following centuries. The change of style was not exactly coincident with the century, but the last quarter of each century was a period of change or transition in style. He then explained the gradual change of style during the Norman period itself—from the heavy massive plain work of about the year 1100, such as the White Tower and the transepts of Winchester, to the comparatively light and elegant work of the time of Henry II., or about 1150, such as the Hall at Oakham, and the Galilee at Durham; and exemplified this by examining all the different parts of a building, and showing the gradual change which took place in each, the letter workmanship, and the development of ornament; he included castles, houses, and churches, and showed the same progress in each. (1) Arches, showing by a model the mode of constructing a recessed arch, or an arch of two or more orders; at first square edged, then chamfered, then ornamented in various ways, and gradually developing into the succeeding style. (2) The pillars, at first of the same diameter as they are high, as at Westminster and in the crypt of Gloucester; these gradually increasing in lightness as much in crypts as in other parts, until in the latest Norman work they are six and even eight diameters in height, as in the crypt under Becket's crown at Canterbury, the Galilee at Durham, and the Hall at Oakham. The fashion of ornamenting the pillars and shafts was introduced in the time of Henry I., but became more usual in later work. (3) The capitals became gradually more enriched, and with deeper and better carving. Those of the early period are very plain and clumsy, and those of the eleventh century may generally be distinguished by a plain piece of stone projecting from the centre of each face, in the place of the anticelli of the classical capital, but never carved until the twelfth century. Late in the style, a close



imitation of the Corinthian capital is used, and then comes the change. (4) Doorways follow the same order; the deep, rich doorways are always late, very often inserted in earlier work. (5) Windows are very much the same as diminutive doors in the later period, in the early work they are small and plain. Round windows are not so common in England as on the Continent. Domestic windows are generally of two lights, while those of churches are of one light only, excepting in towers. (6) Early masonry is distinguished from late by the wide joints of mortar between the stones: in late work the joints are so fine as scarcely to be seen at all, as mentioned by William of Malmesbury, in describing the works of Bishop Roger, of Salisbury, about 1119. At Winchester, the work erected after the fall of the central tower in 1107, can be distinguished from the old work by the jointing of the masonry. (7) Surface ornament is used in the later Norman work, ornamental arcades included. (8) Sedilia are peculiar to England, and not found on the Continent; a few examples of this period were shown. (9) Mouldings and other details were taken in succession, and the gradual change illustrated by a great number of examples. (10) Norman keeps were the usual habitations of the nobility and gentry of the twelfth century in England, on account of their security, and houses were built in imitation of them in Scotland and in Ireland, and in many parts of the Continent, in disturbed districts, down to a very late period, sometimes as late as the seventeenth century. The Pell-towers of the border countries are diminutive Norman keeps. (11) Fireplaces and chimneys owe their origin

to the necessities of the Norman keeps of the twelfth century. (12) The practice of vaulting was also partly introduced in them, and the staircases and passages were made in the thickness of the walls, as security against fires, where there were no vaults. (13) In churches the aisles only were vaulted, until about the middle of the twelfth century. Barrel-shaped vaults and groined vaults were used simultaneously, and equally early. Ribs were a subsequent invention after 1100. (14) Houses of this period, as distinct from castles, are only found in fortified towns, and are rare; but the few examples we have are very interesting, and it is in these that the tall round chimney shafts were first developed. (15) The great number of buildings of this period still remaining, made it impossible to enumerate them. The number of monasteries of the Benedictine, Cluniac, and Cistercian orders, founded about this time, enables us to fix dates with accuracy, as there can be no buildings before the foundation, and these serve as a test to compare with other buildings of the older foundations, which have been rebuilt.

#### OPENING OF THE FLORAL HALL.

On Wednesday night, in the Floral Hall, the Volunteers mustered, both little and tall; in uniforms red (the "6 feet" were they), and uniforms green and uniforms grey: there patroness ladies, ranged all in a row, showed bravery, hearty, its prize as we know, and gaslights and wax stretched the roof-lines along, and Gye looked contentedly down on the throng; while Barry, designer, Lucas Brothers, contractors, on their

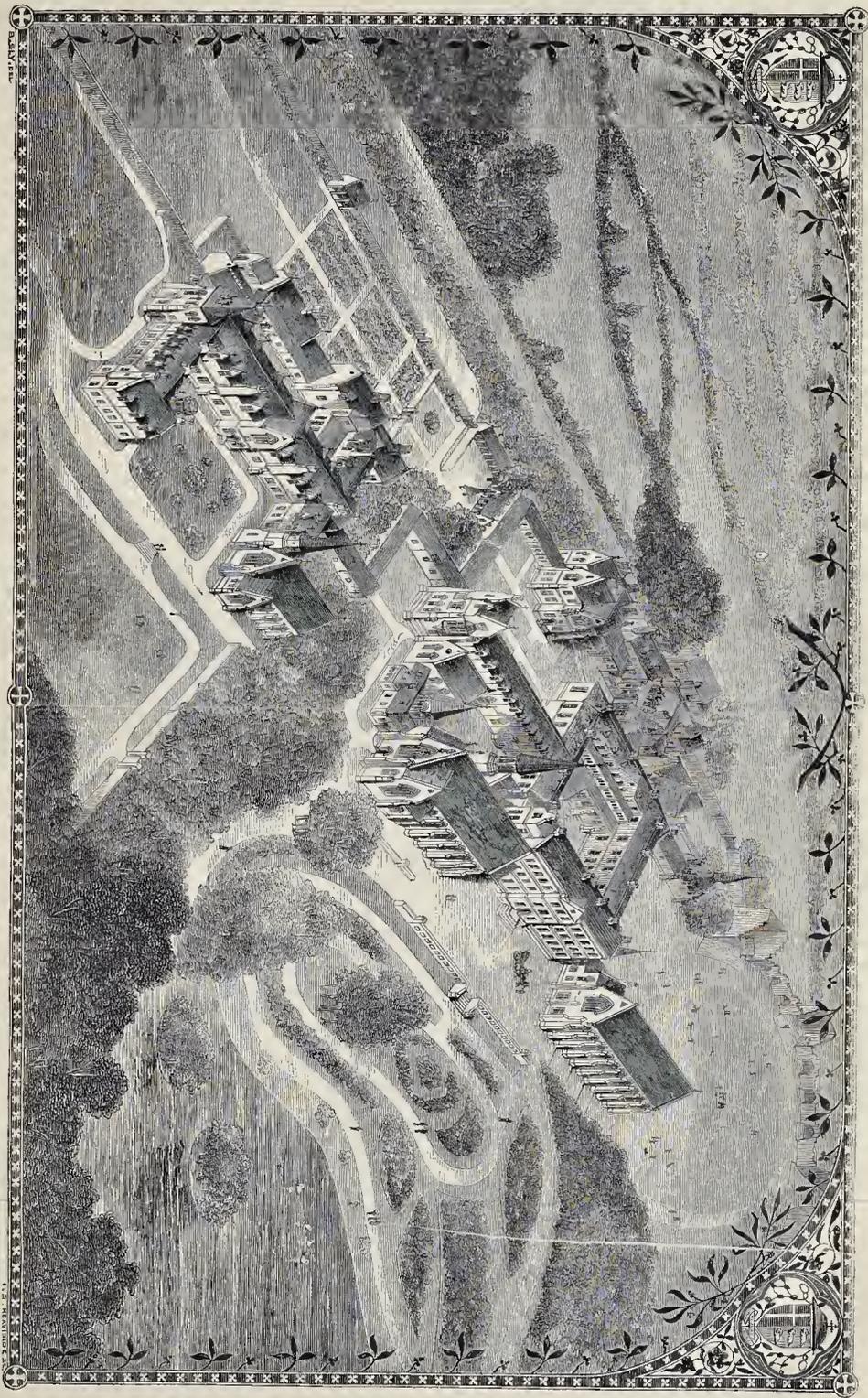
work gazed, complacent, and feared no detractors; though in truth we must say, and they'll not think us spiteful, if the doors had been larger, 't would have been more delightful; for brave volunteers, who are ever the best men, were forced against their will to be nothing but pressed men: still, sprinkled with roses and etched in with gold, no fault could be found with the glass vault so bold; and those who looked down on the floor of that hall, when the mass tried to move at music's sweet call (the moon shining glorious, above and through all), will not soon forget our brave Riflemen's Ball.

#### ST. ALOYSIUS'S COLLEGE.

The college just completed was commenced in 1856, from the designs of Mr. Welby Pugin, who obtained the commission in a select competition. It is erected with coursed stone, which is found in the neighbourhood; the dressings are in sandstone, which is brought from some distance south of Durham. The college is provided with accommodation for ninety students, with provision for a full staff of professors; and though attached by a cloister to the college of St. Cuthbert, it is arranged as a perfectly separate institution.

PROPOSED MACCLESFIELD INFIRMARY. — We believe the good people of Macclesfield have fixed on a site for their new infirmary. It is to be hoped they will make up their minds to have a building of the best kind,—one that will help to cure, not to kill.

ST. ALOYSIUS (R.C.) SCHOOLS, AND ST. CUTHBERT'S COLLEGE, USHAW, NEAR DUNHAM.—MR. E. WELBY PUGH, ARCHITECT.



E. WELBY PUGH



ON THE SUPERINTENDENTS OF ENGLISH BUILDINGS IN THE MIDDLE AGES; WITH AN ESPECIAL REFERENCE TO WILLIAM OF WYKHAM.\*

At Salisbury there appears to have been a "regular master of the works," although the nature of his duties does not seem to have been noticed by the historians of the reign of Henry I. In the agreement made with John the plumber, in 1307, it was arranged that he, the plumber, was to work with his own hand wherever he should be required by the master of the fabric or by another on his behalf; and if at any intermediate time of the year the fabric should not require his labour or repairs, having first asked and obtained leave of the chapter or of the master of the work, he might lawfully work elsewhere:—he was to return when required by the master of the work. At the same period there appears to have been a keeper of the fabric, who was to settle the amount of the day's work for the plumber and his servants, and who was to pay the salary at the stipulated periods. The master of the work, the keepers of the works, and the master mason are also all mentioned together in a document of the same period, so there is no chance of confusing them one with another. Henry VI., in his will, orders a payment of ten marks to be made to be paid to each of the masters of the works at his college of Eton, and of King's College at Cambridge, &c. &c. The appointment of the clerks at each building is given in the following manner:—Edward IV. erected Richard Beauchamp, bishop of Salisbury, to the office of master and supervisor of the works which I have mentioned. This was in 1471; and in the will of this monarch, dated in the following year, he says, "We wot that the church of the said college begunne by us of newe to be builded be thoroughly finished, and all things thereto appointed to be done by his sight and assent of the said Bishop of Sarum during his life, and after his decease by the oversight of the dean of the said college for the tyme being, so alway that he have a designer of architectural works than William of Wykham. He was the first Chancellor was, in the early part, the clerk of the works, but the name of his predecessor is lost. This Sir Reginald Bray has also mentioned, times out of mind, the credit of designing Henry VIII.'s Chapel at Westminster, but he died some few months after the first stone was laid 24th January, 1523; and the king refers in his will, dated 1509, to the prior of the works of the chapel, who had a picture, dedicated to him by the king, of the manner in which the chapel was to be desked. This prior was William Bolton, who was almost a great constructor of edifices.

I have no other noted officer for nearly 200 years, until so late as 1701, when Robert Strutter, painter, was master of the work to be done in the rebuilding of Windsor, with the privilege of doing and carrying out the works of the town, which was equal to that of the meaning of the term had been altered equally with that of supervisor. This officer would seem, if not almost the very similar position to that of the superintendent, at least to have been so well as himself as evidently was to keep the accounts as paymaster; occasionally giving directions as to carrying out the masonry. In the reign of Henry II., the name mentioned as "His Majesty's Surveyor" and also as "Master of the King's Works," being then engaged on the buildings at Holyrood House, near Edinburgh, executed 30l.

The keeper of the fabric, and the keeper of the works are two titles which have been already mentioned in conjunction with the master of the works. The earliest mention of these titles is appended to the names of Henry de Cerne, the treasurer, and of the case of Winchester, from 1222 to 1236, who are called Custodes Operamentum. About the same period, Odo, goldsmith, of Westminster, held the same position at the Palace of Westminster, and numerous others as well as himself as to his son and successor Edward, show that they bought things for the use of the king, and had works carried out "which we had enjoined him to have constructed." This Edward, more especially, was appointed one of the treasurers of the new exchequer constituted for carrying out the rebuilding of Westminster Abbey. The keeper of the fabric of the church at Westminster had upwards of 3,000 marks paid to him in 1257, the period of its rebuilding. The keeper of the works at the Tower had 30d. paid to him to provide necessaries for the works, Master Thomas of Saint Spulchre, being overseer of the works of the king, and also called engineer of the king's warships in the Tower. Our next keeper may not have been worthy of his office, if the following report of him be correct:—William de Wykeles, keeper of the old fabric erected of the cathedral church of St. Paul in London, received 40l. from the king for an iron tomb lately placed over the tomb of the Venerable Father Henry, late Bishop of London, purchased for the tomb of Philip, late King of France, the Queen of England, within the Abbey of Westminster, the custos at the Palace of Westminster in 1332 was required to report up some lead which he had in his care. In 1350, the roll of accounts kept in the wardrobe was that of the treasurer of Lincoln. But more especially from Browne's "History of York," published 1838-47, we obtain much interesting information. From the year 1311 until 1335—about the year of the death of the monarch's succession of the keeper of the fabric: they all were receivers of the contributions for the works, and paymasters of the expenses. The roll of accounts kept in their names: one is called the master of the fabric. But there is a curious incident connected with the three last persons who held the office of keeper, which most probably would not have attracted inquiry. These three are not pursuing this course of the roll of accounts kept in the wardrobe. See the successor of the Vicars Choral, and custos from 1315 to at least 1318, after which no fabric rolls are found until 1326, the Master Thomas Marsar was custos until 1355. In 1325, however, Master John Colman, treasurer of the church, was custos, as known from the

following circumstance:—that the adjoining church of St. Michael le Belfrey, belonging to the Dean and Chapter, was rebuilt in the time of Thomas Marsar, the second above mentioned, and there were, and there are perhaps still, existing in that church, three stained glass windows the memory of these three keepers, who, in the three inscriptions are recorded to have been called "the clerk of St. Peter's works" (not keepers of the fabric), and their inscriptions are in black letter English; therefore there can be no error except in the acceptance of the term in our modern usage of the word. Notice is also given of a person at present often in charge of carrying out work at our cathedrals still retains the title of the clerk of the works. From the quality of the persons above described, we might almost presume that the services rendered were somewhat akin to those of an accountant; the strange mixture of names and offices is most perplexing, and I fear I have much that requires further elucidation.

During the early years of the Medieval period, another title obtained, yet so rarely, that, but for the one name connected with it, I should scarcely have considered it of sufficient importance for introduction here. The name is that of *Revisor de Barchin*, or *Barchin*, and the office that of director or master. He is placed by English along with Wykeham and others in his list of the best of the English Medieval architects, on the ground, I presume, of the words by which he is distinguished, as the "rector" for twenty-five years of the new works of Salisbury Cathedral; at the same epoch, as we are told by some authors, *Leland*, "Robertus Cementarius rexit per viginti annos in officio rectoris, et in officio rectoris ad real meaning of these words applied to the two men:—one, who was rector the ruler; and another who rexit, was the ruler also."

About the same time we find that the works at Windsor Castle were placed under the direction of William de Burgh, who was succeeded by Walter de Burgh in 1210. This Walter was also keeper of the manor of Kenyngton (parish of Salisbury), and he issued many and numerous orders from the king for improvements and alterations; also for works at Brill, at Cliff, at Geddington; and he is likewise called "keeper of our demesnes." Under such a title, too, the monarchs were accustomed to appoint a person to each of the royal palaces for its care and preservation, often nominating some old servant to the office as a pensioner.

The last office which I noticed on the present occasion is one perhaps as important as any of those to which I have yet requested your attention. This is the clerk of the works. I have already mentioned how, in an ecclesiastical establishment, the clerk of the works is to be appointed, appropriated this title as well. We might almost conclude that the title was retained for use by royalty only, for it so happens that with two other exceptions this designation is not met in connection with any works other than those executed for the monarchs: one exception is on behalf of a member of the Royal family, and the other on behalf of the king's Warden. The three instances above mentioned appear to show that another name was adopted for this clerk when in other establishments. The household of the monarch comprised an office for carrying out the royal works. This fact would seem to have escaped the observation of all my predecessors commenting on the histories of the palaces inhabited by the sovereign, as well as by those who have investigated the history of this period. The earliest list of such an establishment which I have yet met with is that of Edward IV., whose reign comprised the years 1461 to 1483. The manuscript unfortunately is not dated. The clerk of the works therein has a fee of 2s. per day equal to 50l. 10s. per annum of the period; a clerk, for whose expense he is allowed an annuity of 20l. also, as per day for riding expenses, and 20d. for boat hire. The next officer in the list is the comptroller, then follow the clerk of the engrossment of the records, the purveyor, with an allowance for his horse; the keeper of the storeroom; the clerk of the check; the clerk of the comptrolment; the carpenter; the plumber (the mason in this list is omitted); the joiner; the glazier; the surveyor of the mines, who has also 30l. 10s. per annum; audially, to my great surprise, the devizer of building, who has the same amount. The Society of Antiquaries published so long ago the "Ordnance" of the King's Household, among which is one called the Liber Navi, from a manuscript of the period of Edward IV. Amongst these "Ordnances" is the following passage, commencing with the words, "Venerabilis:—Clerke of the works, called by the noble Edward, 'clerke des œuvres du Roy, praignant sa gages fees et autres choses appartenant a son office par l'assignement de Thomeas d'Angleterre de hors le charge de l'ostiel du Roy." This clerk hath no duetie looking to him in this household, by virtue of this office outward; but if he be appointed by the sovereignties of household to take wages and clothing with the household, it might cause him to be the more attendante for necessary byndynes in offices in this house; and so he may take livery as assuer of household." The next list is not earlier than the time of Elizabeth. In these the clerk of the works has become the surveyor and paymaster, and surveyor and clerk. In 1614 Mr. Basil is the surveyor; and for the year 1619 there is a list of the household of Prince Henry, in which is the very acceptable name of "Jaigo Jaunes, surveyor of the works," the paymaster and overseer is Mr. Smith; and the clerk of the works, Edward Carter. We here obtain the modern acceptations of the words of office, and the names of the persons who give the name of Jaigo Jaunes, surveyor: Denham, Peter still, was surveyor-general; and Wren, surveyor of the works, is also known as surveyor-general. I must not now attempt to cater upon any of the numerous observations arising out of these very important lists, in the history of our profession, which exhibit the precursor of our modern name of the clerk of the works. Many will remember the conjunction of this name with that of John of Padua, who is usually styled devizer of his majesty's buildings, on the faith of certain patents dated 1544 and 1549, respectively, Henry VIII. and Edward VI.; but, on referring to the documents as printed, I cannot find the slightest mention of the word devizer; nor have I been able to discover the name of any person appointed to that office. Various writers, Walpole says, John of Padua's office seems to intimate something novel in his practice. He was termed devizer of his majesty's buildings. In one of the office books which I have quoted before is paid to him of 30l. 10s." To this office book, however, he does not afford any clue; and were it not for the lists I have already

quoted, I should have felt inclined to consider the whole as one of his mistakes. Dallaway, in the notes to Walpole in 1820, observes, that John of Padua "acquired a title not before this patent given to any architect," so that he evidently was not aware of the lists to which I have referred.

I will now refer to the list which I have compiled of those who have held the appointment of clerk of the works. The earliest is in 1241, 25th Henry III., when directions were given for certain works at Windsor Castle begun by these officers: similar orders were issued in 1242 and 1244. During the reign of Gaerwarren a Castle, begun 1284, the clerk of the works was paid 2s. a day, and the master of the works 13s. a week, or 2s. 2d. a day, the Sunday not included. The Sunday, it appears, was paid for to such officers who had a yearly salary, as the accounts often mention the 365 days at the 6d. or 1s. per day. A lapse brings us down to 1316, when Nicholas de Wykeham, late clerk of the works at the king's palace at Westminster, was paid 14l. and upwards, for certain timber and planks used against the coronation of Edward II. In 1320, John de Ditton was appointed clerk and keeper of the king's works (this recalls the nomenclature of the officer at York) at the palace of Westminster and the Tower of London. In 1326, William de Chailion, who was acting as surveyor or supervisor, was appointed clerk of the works at both places, which also entailed the honour of looking after St. Stephen's Chapel at Westminster. About three years afterwards William de Kellesey succeeded him. Both these clerks kept the accounts of receipts and expenditure. Peter de Bruges, in 1347, was clerk of the works at Westminster, whilst Westmister was keeping the accounts at the Tower until 1351, when Robert de Campsalle succeeded him at both places; and he was succeeded by Thomas de Stunford, who appears to have been acting previously as controller. William de Lambeth was appointed surveyor, and two years afterwards clerk of the works. In 1361 William de Stunford was also appointed surveyor, and in the same year he was clerk of the works, whilst in 1365-6 he is termed clerk and supervisor, and was paid 15s. per day.

Returning to the year 1327, I find the constable of Windsor Castle directed to pay Ralph de la More, clerk of the works, an amount for wages at 2d. per day (as before stated, I consider this a mistake for 2s.). No other mention has been found of such an officer at Windsor, until 1380, when William de Mulsho was appointed clerk of the works at Windsor and elsewhere. After him came Adam de Hertyngham in 1366. In 1370 Robert de Sybthorpe was clerk of the works at Sheen, Eltham, and Rutenburgh; Henry de Mannesfeld, at Chiddingfold; John Edward, at the castle of Lodes; Richard Berens, at the castle of Odylian; and Richard de Blore, at Queensburgh Castle,—all royal property. I must not forget to mention here William de Wykeham's appointment, for five months only, at the manors of Heule and Yeshampton. In 1382 Arnald Brocas was clerk of the works at Westminster, the Tower, Windsor Castle, and divers others of the king's castles and manors. In 1395 John Godmanston was clerk of the works of the king's Great Hall at Westminster, although Strype and Stow state that John Boterill was the clerk; but as there appears to be a slight error in the date of 1395 for 1397, he may perhaps have succeeded Godmanston. On the 12th July, 1397, Geoffrey Chaucer was appointed a clerk of the works, his patent mentioning not only Westminster and the Tower, but also Beckenham, Kennington, Eltham, Chiddingfold, Sheen, Byflete, Chiddingfold, and Fekelsham, a careful consideration of the life of Chaucer, by Godwin, I cannot find any circumstance to warrant a supposition that he was so minutely occupied with building operations as to be qualified for the practical duties of the office: the short time he held it affords some grounds for the supposition that he had not the requisite knowledge; and the permission to appoint a deputy would also lead one to the same inference. The next, too, at which the office was given to him, strongly marks the favour of the king, bestowing on a favourite a gift for good services rendered: John Gadney, his successor, 27th June, 1391, also appears to have been allowed a deputy; and he is the first clerk of the works I have found recorded as having had a certain quantity of cloth given to him for a livery. In 1407 this office was given to Henry Nerston, who also had a livery. From 1411 to 1413 Robert Rolleston's name is met with as acting as deputy-master and the Tower. He was succeeded by John Strange in 1413, who recorded having received the office of livery in 1416, and as being engaged at Sheen Palace in 1413 and 1418. In 1422 John Ardenhe held the office. In 1440 William Lynde, as early mentioned herein, was clerk of the works at the College of Eton. In 1415 William Cleve, "the king's poure chapelyn," petitioned for the payment of 1,000l. for works done at Eltham, Sheen, Westminster, and the Tower. John Canterbury was clerk of the works at the commencement of the erection of the King's College chapel, Cambridge, in 1451, having previously been engaged at Eton as Lynde's successor. In 1474 Thomas Gauceler held that situation at Windsor, where he had 10l. per annum and a livery; in 1483 his accounts were ordered to be determined. In the early part of the reign of King Richard II., Thomas Hunt was appointed clerk of the works for life; and in 1481 Thomas Danyell is named. A lapse of some sixty years brings the date down to about 1559, when Eustace Mascall was clerk of the works to Cardinal Wolsey at the building of St. Dunstons, in Oxford; this is one of the exceptions in the office of the title, and who was for seventeen years chief clerk of accounts for all the buildings of King Henry VIII. within twenty miles of London. From 1553 to 1559 Michael Woodward is named as the "clerke of the works and castle of Windsor." And lastly, in 1575, Humphrey Michell, the clerk of the works at the castle, asks leave to resign his office on account of the difficulties and opposition met with in discharging his duties, and the delays in procuring money and passing his accounts. Most probably he was acting as the clerk of the works as now understood. The effects of this remonstrance appear to have been his appointment as superintendent of all payments for repairs done to the castle, under a warrant from the constable, the Earl of Leicester, who at the same time nominated Henry Hawthorne to be surveyor of the works. The salary of each of these officers was 2s. per day. There is much similarity in the office held by Wykeham to this appointment of Michell, as superintendent of all payments for repairs done. In this case, however, Michell is under the constable, in Wykeham's case, by his second appointment, Wykeham was also the constable, "capitalem custodem et supervisorem."

The second exception, which I mentioned at the beginning of this division, comes under the date of 1435. The name of our Supervisor?

\* Some other references to him as a director will be seen in the Winchester volume, to which allusion has already been made.

clerk of the works is once named in the contract for the erection of Fotheringhay church, for the Duke of York, in the paragraph—"And if so be that the said Will. Horwode (the freemason or builder employed), may not have full payment of all or any of his workmen, then the clerk of the works shall pay him in his presence, and stoppe as may be in the said Will. Horwode hand, as the payment that shall be due unto the workmen comply to," clearly showing what was at least one part of his duty.

Among the foregoing observations will be found, I think, an elucidation of some points hitherto generally considered obscure. The salary of the clerk of the works has been considered exceptional, whereas I have shown that it existed for many years, and at nearly the same amount. Sir Christopher Wren received 45*l.* 2*s.* 6*d.* the usual fee for the office of surveyor-general being, for himself, at 2*s.* a day, and a clerk at sixpence a day—a sum now equivalent to about 15*l.* If I mistake not, it has always been considered that the livery of this royal officer (withdrawn temp. Charles I.) was first given to Luigo Jones, whereas it was a customary present some 150 years previously; and at the burial of King Edward VI., the surveyor of the king's works had seven yards of cloth, and each of his three servants three yards.

There is one circumstance respecting nearly all these officers which, perhaps, needs a passing comment. It will have been remarked how very many of them were either ecclesiastics or were rewarded with ecclesiastical preferment. But it must be remembered that, during the period to which our attention has been directed, the church was the only field for exertion open to those of the nobility and gentry who were not inclined to embrace the profession of arms, and also a means by which to obtain remuneration for a livelihood; therefore the clergy, so called, would thus secure the offices at the disposal of the monarch and of the nobility. Some few, however, of those thus employed appear to have been unconnected with the church.

It is very difficult to understand clearly the duty of these officers. The overseer would be, perhaps, the most easily explained; but his Latin designation, as in the Records, is unknown to me, unless the Latin word "supervisor" has been the one our translators have found. The English word "supervisor," if that of steward be questionable, is, I think, best kept for those who, acting on behalf of others, as Wykeham for the monarch, have yet no grounds to be considered the designers of the building. The master of the works, a designation scarce in the monastic establishments, whilst in Scotland it took the place of the English king's chief professional man, was, I feel certain, one of the talented advisers of the day. The English king's clerk of the works is clearly stated in the obituary of the architect. The master or keeper of the fabric was, probably, the keeper of the whole structure; and the keeper of the works was, perhaps, only the custodian of the particular works then in progress; the duties, under these circumstances, being developed by the master of the works, or by the master mason, to the latter of whom I may, perhaps, be permitted to return on a future occasion. But there is one title in the list of the royal establishments of whom we should desire to know much, but of whom, at present, nothing whatever is known; I mean the divisor of buildings.

*Postscript.*—Whilst this paper has been in course of printing, my attention has been directed to a passage in Hunt's "Tudor Architecture," 1856, p. 24, who states that "it appears indeed, that in these times, the duties of the works" acted invariably under a supervising officer, who, leaving the artist's fancy and genius unshackled, controlled and restrained the expenditure of money." This latter is exactly the position held, I consider, by Wykeham at Windsor. Also, that "it was common to depute the superintendance of buildings to churchmen, from an idea of their superior prudence and ability," quoting Warton ("History of English Poetry," 1774-81), who also states that Wykeham "is supposed to have recommended himself to Edward III. by rebuilding the Castle of Windsor. This was a recent and notorious instance" (alluding to Wicliffe's Sermon, and see previous note). "But in this appointment," he continues, "the King probably paid a compliment to that prelate's singular talents for business, his activity, circumspection, and management, rather than to any scientific and professed skill in architecture which he might have possessed. It seems to me that he was only supervisor or controller on this occasion." "Mr. Dallaway," adds Hunt, "without mentioning his authority, says the name of Wykeham's superintending architect was William Wynford. Assuming this to be correct, Warton's is a fair inference. So that I have not the merit of originating the suggestion, 'Was Wykeham an architect?' Whereas, 'it is to be lamented,' writes Gwyn, in 1766, 'that Wykeham did not pay more regard to the science to which he owed the greatness of his fortune, by establishing a foundation for the study of his own art, and others that depend upon it. Had he fortunately done this, there is no saying what the consequences might have been: possibly by this it would have been the fashion for ingenious men to come from Rome hither to perfect themselves in the arts, and have bartered Italian for English performances.'

#### DRINKING-FOUNTAIN MOVEMENT.

At Shrewsbury, the Fountain Committee report two models of drinking-fountains, prepared by Mr. Hollins, of Birmingham, at the request of Viscount Newport, M.P., and either of which his lordship has offered to have executed at his cost, and erected in the town;—the one, a stone structure, of a Classic design, containing a centre fountain, and also four drinking-fountains; the other, a mural fountain. The committee unanimously preferred the former one, recommending that it should be erected by the corporation in the Market-square.—At Falmouth, Mr. David Barclay, of Grove-hill, has made arrangements for the erection of a fountain near the Custom House. The fountain is now in course of preparation at Messrs. Freeman's granite works, Penryn.—At the Bradford Council Board recently, it was stated that there had been four or five applications from various gentlemen to erect drinking-fountains, but the Street and Drainage Committee had considered that they could not determine the

sites until they had all the designs before them. It was also stated that two designs—one from the Beaumont Testimonial Committee, and another from the Band of Hope—would be presented to the Street and Drainage Committee. The Beaumont Testimonial Committee have not yet selected a design for the fountain to be erected to commemorate the services rendered to the borough by the late Mr. Alderman Beaumont. Several designs were sent for inspection. A design was forwarded by Mr. E. Milnes. The height of the whole, from the pavement to the extremity of the lamp, is about 26 feet. The style of architecture is Italian Renaissance. Two designs were also sent by Mr. T. C. Hope, one of Gothic architecture, about 27 feet in height. The second is of Italian architecture, height 25 feet. Each of these designs will cost more money than the committee has been able to raise up to this time.

#### THE HULL SURVEYORS.

ACCORDING to the statements made at the meetings of the local Board of Health, the differences between Mr. Marillier, the surveyor, and Mr. Butler, the assistant surveyor, have reached such a pitch that they correspond in writing as strangers, and the business of the town suffers. Some of our correspondents ascribe it to the fact that the assistant surveyor's plan of drainage was accepted in preference to that of the surveyor. A committee has been empowered to inquire into the differences; but the right constitution of the committee is questioned.

#### BASINGSTOKE BUILDING COMPANY. COMPETITION.

DESIGNS having been sent in, in compliance with particulars advertised in the *Builder* by the directors, the premium has been awarded to Mr. G. B. Mussellwhite, of Basingstoke.

The designs submitted by the successful competitor comprehend perspective views of two villas in the so-called Italian style, and one in the Elizabethan style of architecture, together with a "bird's eye" view and block plan giving the houses a south aspect with the frontage to the town; also a block plan giving the houses an east aspect, with the frontage to Reading road. The preference has been given to the latter arrangement.

One of the Italian villas has been selected for erection at a cost not exceeding 1,200*l.*

#### IMPROVED GAS CHANDELLER.

MR. HUGHES, of the Atlas Works, Hatfield-garden, has recently patented improvements in sliding chandeliers for gas, to remedy the defects that exist in chandeliers constructed upon the old principle.

The ordinary mechanical arrangement, by which the body of all sliding chandeliers of the old principle is sustained, and made to slide upon the upper or supply-pipe, is by means of small brass chains, to the end of which are attached the counterpoise or balance weights; these chains, from repeated exposure to a heated atmosphere, containing a portion of carburated hydrogen, become rotten, consequently break, and allow the weight to fall.

The improved counter-balance is in one circular piece (as a coronal); and if one or two chains break, it still remains suspended; and should all the chains break simultaneously (a very unlikely occurrence), it then falls upon the body of the chandelier, and brings into action a valve and stop, which immediately shuts off all escape of gas. Another advantage is also obtained, namely a longer slide, so that the light can be lowered to the table with in the height of any ordinary lamp.

#### MACHINE-MADE NAILS.

THE manufacture of wrought-iron nails by machinery, instead of by hand, was, as has often been the case, stimulated by the continued strikes of the nailmakers. The problem of furnishing the market with machine-made nails, capable of competing with those forged by hand, was first solved by Messrs. Ewbank; and these nails have now become a regular staple of English commerce, and are as punctually quoted in the colonial price-lists as any other article of British export. This success has recently led to the production of another patent process for the accomplishment of the same object, which is now in the hands of Messrs. Halkett & Bates, of Manchester, who are at present supplying the London market, through

their agents, Messrs. Richards & Co, with machine-made nails.

The patent wrought nails claim to be superior to those made by hand in this respect, that the head, being made at the same stroke with the remainder of the nail, is not liable to break off when hammered even into the hardest wood. Another advantage is, that the full count is always found to go to the same weight of nails, they being more regularly and accurately made by machinery than by hand. Not having had large experience of these nails, we simply bring the fact of their manufacture before our readers.

#### THE BRADFORD WATERWORKS.

THE corporation of Bradford (Yorkshire) some time ago purchased the works of the company by which water had been supplied to the town therefore, as well as the privilege of carrying out a scheme for a very large extension of the works, for which the old company had obtained the sanction of Parliament. The scheme was designed by Mr. J. W. Leather, for the water company, and the corporation have retained his services for carrying it out. The corporation have taken power to borrow in the whole a sum of 650,000*l.* They paid 40*l.* for every 20*l.* share of the stock of the original company, and took also the whole of the company's liabilities. The new scheme, with the mains and distributing apparatus, was estimated to cost up to 300,000*l.* The larger reservoirs, tunnels, and other works, were let at the end of 1856, and are now approaching completion, when Bradford will have 10,000,000 gallons of excellent water daily. The engineer's estimate for contract M, recently let, was 13,800*l.* The work was let to Mr. John Metcalf, of Bradford (whose tender was the lowest), for somewhat less than 13,000*l.* There were also tenders from Messrs. Barton & Son, Shipley; Mr. T. Gowing, Ripon; Mr. S. S. Buxton, Hunslet, near Leeds; Messrs. Moulson, Bradford; Mr. Ingram, Laphis, Shipley; and Mr. J. Taylor, Clitheroe. The highest tender was 16,200*l.*; there were, besides the highest and the lowest, one for 13,200*l.*; another, 13,500*l.*; another, 13,586*l.*; another, 14,100*l.*; and another, 14,131*l.*; the average of the whole seven being about 1 per cent. over the engineer's estimate.

#### BISHOP AUCKLAND TOWN-HALL AND MARKET COMPETITION.

We mentioned last week the award of the first premium in this competition. We may add that twenty-three architects competed. The design by Mr. Hill, of Leeds, was second in favour. The secretary states that the Northern Architectural Association (which lately protested against the terms of the competition), "was represented by four or five of the members, among whom was one of the highest officers of the Association. The successful design will not be adopted in its entirety, but will undergo some modifications."

#### CHURCH-BUILDING NEWS.

*St. Ives.*—The following tenders for the erection of new entrance-lobbies to and re-seating the Wesleyan chapel were received:—

	Sents in Deal.	Seats in Oak.
Mr. Skeels, St. Ives	£296 0	.. £41 0
Messrs. Abbott & King, Somersham	322 10	.. 357 10
Messrs. Thackeray & Son, Godmanchester	297 10	.. 336 0
Mr. Sault, St. Ives	269 0	.. 260 0
Mr. Alpress, Broughton	255 0	.. 378 0
Mr. Wheatley, Bluntham	215 0	.. 293 0
Messrs. Smith & Salt, Hemmelford	229 0	.. 259 0
Messrs. Allen & Smith, ditto	196 0	.. 226 0

The lowest tender was accepted, and the contract signed. The work is to be commenced immediately. Mr. Robert Hutchinson, of Huntingdon, is the architect.

*Basford, near Nottingham.*—Last week the church of St. Leodegarius, Old Basford, near Nottingham, was reopened after its restoration. The ground-plan of the church is the same as before, with the addition of a vestry at the east end of the north aisle. The tower, clerestory, north aisle and porch, with the roofs throughout, are new, and built in the Early English style, to correspond with the nave arcades and chancel, the oldest parts of the building remaining. There are low open benches inside, and elbow-stalls in the chancel; and the pulpit is of Caen stone, carved. Mr. Arthur Wilson, of Nottingham, is the architect; Mr. Garland, of Nottingham, the contractor, and the works have been carried out at a total cost of 3,000*l.*

*Kinstone (Staffordshire).*—In consequence of the dilapidated and insecure condition of the parish

church at Kinstone, in the county of Stafford, and of the inadequate accommodation it affords for the wants of the neighbourhood, it is to be taken down and a new church will be erected upon a larger scale. The present building consists of a nave and chancel, probably built in the thirteenth century, to which were added a modern transept and tower about fifty years back. The windows of the chancel on the north and south sides are the only ones in which the original stonework appears, and they will be re-used in the new chancel. The proposed church is to be built in the Early decorated style of Gothic architecture, and is to consist of a nave, north aisle, and chancel, with a tower and spire at the north-east angle of the nave. It is intended to accommodate 300 persons. The Earl of Shrewsbury and Talbot, being the principal proprietor in the parish, is the largest contributor to the funds, and also gives land adjoining the present churchyard for a new site. Mr. D. Brandon is, we believe, the architect. It is also in contemplation to build schools for 250 children, with an attached residence for a school-mistress.

**Gloucester.**—Mr. H. Evans, of Highgrove, is about to place a window in the nave of Gloucester Cathedral, according to the *Chronicle*, in memory of deceased members of his family, making the fourth within a year; and it is anticipated that a fifth will be commenced before the two already decided upon have been completed. It is proposed that the designs of these windows shall represent events which have occurred in the building, and thus illustrate its history; and the new windows will aid this design. The paper named suggests that the two western windows should be converted into memorials of two of the worthies of the diocese—Bishop Warburton, the scholar, and Bishop Hooper, the martyr. Messrs. Bell and Clayton have been selected as the artists of the Evans window.

**Rumney.**—A correspondent of the *Cardiff and Merthyr Guardian* (Mr. E. A. Freeman) says:—"I expressed to you my fear that the repairs of the roof of Rumney Church would lead to the loss of one of the architectural antiquities of the neighborhood. The old roof has now been wholly destroyed. No architect, as far as I know, was called in to examine. An entirely new roof, of the very poorest kind, has been put up: even the old pitch has not been followed; the new one is much lower, and the eastern gable of the nave has been lowered in proportion. Within, the roof is a mere ugly piece of carpenter's work, with two beams, gable-posts, and very thin rafters: without, it is covered with blue slabs. The pews, some of the worst anywhere, and wretched tumble-down things to boot, are now all moved out of the church. If they are put back again, Rumney will become even more a by-word than it is already likely to become on account of the roof."

**Holmer (Hereford).**—The parish church of Holmer, near the city of Hereford, is about to be repaired and freed from the disfigurements which at present mar the general effect and diminish the amount of accommodation within its walls. The tower has been repaired, and a vestry erected at the west end, which has been restored. Mr. J. H. Ewins is the architect, and Messrs. Morgan and Price are the contractors. Tenders will shortly be received for the work of restoration and re-peaving of the whole of the church under the same architect.

#### BLACKBURN UNION WORKHOUSE COMPETITION.

It will be remembered that we reviewed the designs sent in competition for the Blackburn Workhouse. Three architects were selected to compete a second time, and one of the conditions sent to them was that the successful competitor should be appointed to carry out his design; but, it went on to say, at 4l. per cent. commission. Some, if not all the competitors, replied, acknowledging the receipt of letters, conditions, &c.; pointing out the clause as to commission, and expressing conviction that on objection the Guardians would consider the successful competitor, whoever he might be, would, after such a severe competition, be fully entitled to at least the usual commission of 5l. per cent.

Designs were afterwards sent in, and one by Messrs. J. E. and J. D. Oates, of York, architects, was accepted. They have since been called upon to agree to accept 4l. per cent. commission, and that the Guardians shall appoint a clerk of works. They naturally object, and ask 5l. per cent. commission, and that they may nominate a clerk of works for the approval of the Guardians; his salary to be paid by the Guardians over and above the 5l. per cent. The decision is adjourned until

this Saturday. One of the Guardians, it appears, insists that the usual practice amongst architects is, that if 5l. per cent. he paid, the architect out of it pays the clerk of works!

We hope he will believe us when we say he is in error; and that, in conjunction with his brother Guardians, he will agree to pay their architects the fair and customary charge of 5l. per cent. As to the appointment of clerk of the works, Guardians who are wise will leave the responsibility in the hands of their architect.

#### FALL OF RAMSAY TERRACE, EDINBURGH.

ON the 1st inst. the terrace erected by the late Lord Murray, on the slope of the Castle-hill at Ramsay-gardens, and which has been gradually yielding, gave way altogether. It is about three years since the erection of this terrace was commenced. At the east end was erected a lodge, and at the west end the terrace curved outwards; and in the centre of the circle had been placed a pedestal, which was to receive, as soon as ready, a statue, by Mr. Steel, of the poet Allan Ramsay, from whose patronymic the locality derives its name. The terrace was supported by a massive buttressed wall, 30 to 40 feet in height, built on a slight inward angle, while the space between the original slope of the hill and this wall was filled in with an embankment of earth. The foundation of this artificial mound and wall would now appear to have been insufficient. The superstructure is, we are informed, set upon a stratum of clay, which ought to have been built into and not upon. From the opposite point of view, we see the terrace as if it had fallen askew to the westward, the lines of the masonry, which are to a great extent traceable, being broken and twisted, and set on angles that make the vision giddy. Masses of stone have been confusedly hurled into the garden below, while the sloping ground is gaping with chasms, and seems as if upheaved by some volcanic agency. From the top of the fallen mass the scene of ruin is still more disastrous to behold. It must be matter of great regret to the public to witness the destruction of this terrace, which cost the late Lord Murray, we believe, six or seven thousand pounds.

#### REMARKABLE BUILDERS TRIAL IN DUBLIN.

THE action touching the fall of a house in Grafton-street, Dublin, viz., Kempston v. Butler, a builder (alluded to on page 111), after being five days at hearing in the Court of Common Pleas, and before a special jury, resulted in a disagreement,—*six* being for a verdict and *six* against. The main points of consideration were, did the house fall owing to the negligence or incompetency of the contractor? Did he take precautions for necessary shoring, bracing, and strutting—during the progress of the re-building—of adjoining premises? Was he, by the custom of the trade—and without a special contract to that effect—bound to prop up adjoining houses? and, by same alleged custom, did he incur responsibility in falling so to do? Numerous witnesses were examined on both sides. The professional men for the plaintiff were Messrs. Louch, J. S. Butler, J. J. Lyons, and Courtenay, architects; Donnelly, Murphy, and Nolan, builders; and for the defendant, Sir F. Deane, Jacob Owen, Wilkinson, and Carson, architects; Norwood and Leech, builders, besides plaintiff and defendant personally, and various other parties. Plaintiff's witnesses chiefly deposed to the right and responsibility of a contractor undertaking to rebuild a house to shore up effectually adjoining premises, also to the "custom" in the absence of special contract; that the measures adopted by the defendant were insufficient, and that owing to his fault the house fell; that the divisional wall was a party-wall. The witnesses for defendant maintained that there was no custom,—which, however, on cross-examination Mr. Wilkinson admitted,—that the fallen house had been in a dilapidated and insecure state, beyond the power of propping up with any amount of ordinary caution after the lateral support was withdrawn, that it had been tampered with by injudicious alterations; that bad weather was the immediate cause of its fall; that the wall was not a party-wall, and that all that could be done was done by the defendant. The Chief Justice (Molnahan) in summing up remarked, that the evidence was most conflicting; that the jury should consider if the custom had been fully proved; and, if so, had the defendant done all in his power to prevent injury to adjoining houses? and were the precautions such as he should have taken? Was the house

in that state of insecurity as to render *effectual* propping impracticable? After the utter impossibility of the jury agreeing to a verdict had been announced, one of their number (Mr. Alex. Parker) suggested, that as the case involved such serious considerations to both parties, the jury would, by permission of the court, constitute themselves into a committee of arbitration, with a view of effecting some amicable arrangement and prevent further litigation; to which his lordship readily assented, and complimented the juror upon the good taste and judgment displayed by his suggestion. The plaintiff's counsel also assented, but the defendant's dissented, observing that he would stand on his right on the law of the case. Sergeant O'Hagan (now Solicitor General) and Mr. Armstrong, Q.C.s, with Dr. D. C. Haron, were counsel for the plaintiff; and Sergeant Fitzgibbon, Messrs. McDonagh and Breton, Q.C.s, with Messrs. Eham and Osborne, were counsel for defendant.

#### FALL OF A SCHOOL BUILDING IN STOCKPORT.

DURING the prevalence of the high wind on Tuesday last week, a day-school, in connection with the Wesleyans, 84 feet long by 30 feet, was destroyed, killing one child and wounding seven others: 420 children were in the school, and miraculously escaped. At the inquest which was held, on the 1st inst.,—

Mr. James Wilson, of Bath, architect, gave evidence, to the effect that he prepared the plans for the schools, and forwarded them to Government. He estimated the cost to be about 4,000l.; and for that amount, the plans for this building could be well and judiciously carried out. The contract for the school alone was let to Mr. Warburton, of Manchester, for 1,917l. 10s. 8d.: that for the whole work was 2,600l. Saw the building occasionally while it was being erected,—last saw it when it was completed,—before that saw it when the roof was covered in. The committee appointed Mr. Hunt to see the building practically carried out, according to the plan; witness was only applied to for his certificate, for money to be advanced upon the work as it proceeded. Was expected to see that the plans were carried out in an architectural point of view. According to the specification, the walls were to be 18 inches thick, without the buttresses, from the plinth course to the roof. The width of the buttresses, including the wall, was 3 feet at the bottom, and at the top 3 feet 6 inches thick. The walls were to be built of brick, faced with Yorkshire stone. The breadth of stone on the bed of the boundary walls was not stated in the specification. Would think 4 to 6 inches, with binders; would be a fair breadth for a building of that description. The contract stated that the walls were to be properly bonded together, without defining the exact walls, leaving it open to the clerk of the works: the reference is to the inside walls. Those walls, to be properly bonded, were to be so every 10 feet, each course, the wall length. The inner walls to be of brick, filled up with rubble stone. That was the original specification, but by agreement it was to be backed up with brick. There is nothing in the contract to show that the lining should be bonded to the outer wall. The wall was to be 18 inches wide, properly bonded. Have examined the building this morning. The height of the roof, from the eaves to the ridgeing, was to be 26 feet, and the width of the span is 29 feet, by 30 feet long. The length 84 feet, from gable to gable, by 28 feet. There were eleven principals and two binders. The strength of the timber is specified. The collar pieces were to be 9 inches by 5 inches; king post, 9 inches by 3 inches; pullies, 7 inches by 4 inches; common rafters, 4 inches by 2 inches; wall plates, 2 inches by 4 inches; intermediate principals, 9 inches by 3 inches,—to be covered with blue Carnarvon slate. If the walls had been properly bonded together, the timber was sufficiently strong to support a roof covered with 40 tons of slate. Saw the roof when it was put on, and approved of it, after a few suggestions to Warburton, the contractor, had been done. His clerk came over two or three times, and measured the work. Had not heard, until this morning, that the roofing had been nearly blown away on a previous occasion. Made an examination of the building this morning, and am enabled to say that the fall of the chimney, having made an opening in the roof, allowed the gale to be introduced, and acted on the opposite or east side of the roof and wall. Should think the upper part of the easterly wall had swagged a little, causing the roof to be dislodged from the corbels, and thus let it down. The walls, as far as he could say, judging from what was remaining, are substantially built, but not sufficiently bonded. The outside casing has left the inner wall entirely. The separation would be caused by the want of bonding or defective mortar, though the upper portion of the back wall appeared as if they had been carried off separately. The better, as a matter of science, even if they had been properly mortared, or were of strength, could not have resisted the wind after it got in; outside, no gale could have touched it. If it had not been for the opening at the base of the chimney, the building would have resisted the gale.

By the Coroner: The great benefit to the workmen would be to leave out the "ties," because they could get better on with their work, and regularly if one party carried on without the other. There appeared to be want of adhesion in the mortar.

Mr. Marshall said, Mr. Hunt offered his services to superintend; he attended at the commencement of the works, but latterly he, as one of the trustees, appointed Mr. Beeston at 1l. per week for his services, which were returned to Mr. Hunt. But Mr. Hunt was not officially appointed, nor was he considered responsible.

Mr. John Whitaker, builder, said he had examined this building, and found that the walls had not been sufficiently bonded. This wall, as left by the contractor, was not sufficient to resist the fall of the roof, notwithstanding the fall of the chimney. The roof and gale would have thrown a stronger wall over. The weak points in this wall were where the glazed bricks terminated and the others began, which would be from five to six feet from the upper floor.

The mortar has not a sufficient quantity of lime in it, neither is the sand of the specified quality, being loamy. The timbers at the foot of the arches of the roof were not of sufficient strength—that was its weak place.

Examined by Mr. Cobbett.—Am a builder, and practice in Stockport; have done so for five and twenty years,—including my apprenticeship. Do not believe with Mr. Wilson, that the wall would have resisted the wind, if the roof had not pushed it down. The wall was 29 inches thick, and was without buttresses, of any kind.

Other evidence having been heard, the jury retired; and, after an absence of three-quarters of an hour, returned the following verdict:—"Accidental death. The jury cannot separate without expressing, in the strongest terms, their entire disapprobation of the loose manner in which the specifications had been drawn up, and the building details carried out by the contractor."

#### WHY NOT ENGLISH?

AMONGST the extraordinary changes which have taken place during the last half-century, it will be noted that education has been advanced amongst the masses more than formerly; and the practice of reading amongst the industrious and working classes has increased greatly. While this improvement has been going forward, it is observable that amongst the same classes the taste for the cultivation of the dead languages is but little encouraged, and thus many, who read the newspapers and other popular sources of information, where professional Latin and other terms are extensively used, are puzzled.

For instance, the useful reports of the medical officer of health are quite unintelligible to thousands who understand diseases by their English names, who know what consumption is, but not phthisis. A surgery or apothecary's shop presents mysteries which not ten persons in a hundred can fathom. In botany, chemistry, and some sciences, several of those who would study them for the purpose of adding to their general stock of useful information, are beset with the learned terms which might be simplified with advantage to the present generation. On the tombs even of popular personages, it has been the custom to place Latin inscriptions.

The use of the English language is spreading in all directions: might it not be worth while to endeavour to simplify and render more suitable to the living and succeeding generations the learned terms of science?

INQUIRER.

#### BUILDING STONE.

SIR.—The paper of Mr. Burnell, in your last number, on the varieties of stone used in architecture, especially in this metropolis, treats of a matter the importance of which can scarcely be exaggerated, but which requires to be elucidated in a still more searching manner than it would seem, from the portion of Mr. Burnell's paper already printed by you, that gentleman is inclined to employ. The fact of course is, that ornamental architecture is utterly thrown away, with all its cost, when employed upon a material which crumbles away, or peels off, after a few years' exposure to the atmosphere. The superficial durability of the stone employed in any building, but, above all, in one which is designed to be admired, is, or ought to be, the very first consideration with all the parties concerned in the erection of a stone building, whether those who pay or those who are paid for the work. Far better were it to condemn the use of stone altogether, and employ brick coated with plaster or cement, to receive a coat of paint every five or six years, than (as happened to Buckingham Palace, for example) employ stone of so untrustworthy a character as to make it necessary within a few years to resort to plaster and paint to heal its sores and hide its superficial decay.

Should you, as you propose, introduce some comments upon Mr. Burnell's lecture, after completely putting it before your readers, they would, I feel sure, be obliged by your affording some information as to who is responsible for the selection of the stone that has so egregiously failed in the new front of Buckingham Palace and the Houses of Parliament. Why was it supposed necessary to resort to the experimental use, in these important and costly buildings, of a kind of stone which had never been tried in the atmosphere of London before? and that when so many examples are to be met with of the almost perfect resistance to the influence of that atmosphere of the varieties of stone which our forefathers successfully (and as the event has shown) wisely employed, I mean the Portland and Bath stones. How admirably preserved is the Portland stone of St. Paul's, and of Greenwich Hospital! We have indeed "gone farther to fare worse," in going to Yorkshire for a novelty in London building materials. As for the Bath oolite, let any one examine either the highly-chiselled decorations, or

the plain superficies of the numerous beautiful Medieval churches and towers of Somersetshire or Wiltshire, and he will find that from three to six centuries have had scarcely any perceptible effect upon their surfaces. I believe the mistake has arisen from consulting chemists and geologists instead of experience. We cannot remedy the errors already committed; and yet we shall do wisely not to repeat them in our future metropolitan buildings of any pretension to architectural character, but to employ those qualities of stone only which have stood the test of ages, instead of listening to the opinions of closet experimentalists, however scientific. RESTRICTS.

#### RIFLE BUTT.

I BEG to send a suggestion for what I consider a good, cheap, and lasting rifle butt, easily made, and, when damaged, easily repaired.

The framing is made by fixing into the ground unpeeled larch poles, 30 feet high and 5 feet apart: to them fix ties and braces. The face of the butt is made by driving stakes, 8 feet long, 6 inches diameter, into the ground, to form a base, facing and hiding them well together with hazel limbs (not less than 3 inches diameter), similar to wadding; then fill and pun with clay and dry rubbish up to the top of the stakes. Proceed with the second tier in a similar manner, taking care that the lower ends of the second tier of stakes are well bound to the first tier.

In a country where rough timber is cheap, the cost of this butt, 50 feet long, 30 feet high, would be 160*l.*; but, if the volunteers themselves formed working parties some few evenings during the summer, and worked at the punning and filling, &c., only employing a good hedge carpenter to fix the frame and wadding, the cost would be but trifling.

RIFLEMAN.

#### THE "BUILDER'S" LAW NOTES.

**Statute of Limitations.**—Two persons, partners, became jointly indebted, in 1850, to a third person. The partnership was dissolved in 1853. An action was brought in 1859 for the debt, and it was proved that an acknowledgment in writing took place in 1856, before the Statute of Limitations operated. It was held, however, that, as this acknowledgment was only made by one of the two debtors whose partnership had ceased, it was not such an acknowledgment as kept the debt alive, which was accordingly declared, by Vice-Chancellor Kindersley, to be barred by the Statute of Limitations.—*Re Hindmarsh.*

**Lands Clauses Consolidation Act.**—Certain lands in Berkshire were purchased by the Great Western Railway Company; and, at the time of the purchase-money being paid into court, the "uses" of (or legal rights connected with) the land were not the same as they subsequently became. The tenant for life petitioned that the money in court should be invested by the company in accordance with such new rights, and that the company should pay the expense of such investment. Vice-Chancellor Kindersley made an order that the money should be paid out of court for the purpose of being invested, and that the company should pay the costs of the application; but he refused to compel the company to pay the expenses of investment.—*Re De Beauvoir's Trusts.*

**The Winding-up Acts.**—A person held a debenture-note of the Royal Bank of Australia, payable in February, 1850. A winding-up order against that bank was made in the July of that year. The debts were all paid before 1857, and a dividend was made amongst the contributors. The present claimant only came forward with his claim in 1859. It was held by Vice-Chancellor Stuart that he was barred by the Statute of Limitations, as well as by other causes. The manager to be precisely in the same position as an official assignee in bankruptcy. The latter is a trustee in the complete sense of the word; and, notwithstanding lapse of time, he must pay as long as there are assets.—*Re Forrest.*

**Partnership-Debt.**—Two persons carried on business in partnership. One drew out of the partnership cash 2,000*l.* more than the other partner. It was held by Vice-Chancellor Wood that, though this became a debt, yet, in the absence of any agreement, it did not bear interest.—*Rhodes v. Rhodes.*

**Seizure of Goods.**—It has been held by the Court of Exchequer that the County Court Act does not authorize a bailiff under a County Court warrant to distrain and sell the goods of a stranger which are on the premises of defendant.—*Foulget v. Taylor.*

#### Books Received.

*Some Account of the Condition of the Fabric of Llandaff Cathedral, chiefly from 1575 to the present time.* By the Bishop of LLANDAFF. London: Rivingtons. 1860.

It is this, which is a second edition of an account of the cathedral previously published, will be found twelve illustrative plates, showing as well the design of the old parts as the absurdity of the beauty for restoring it in 1736. In earlier volumes of the *Builder*, at the time when an architect was connected with the restorations at Llandaff, whose name, oddly enough, is not once mentioned in the book before us, full particulars of the history and condition of the fabric will be found,\* so that we need not now go into it.

The great object the bishop has in view in the publication of this book is to invite the assistance of the friends of the church in providing an organ, which Llandaff Cathedral has not had for the last 170 years, and which the members of the chapter, it appears, have no means of purchasing for themselves.

It is certainly a reproach that any cathedral should be in such a condition; and, as the bishop and chapter have been doing their best, almost, it may confidently be hoped that when their case is known an organ of proper character will be provided.

One thousand pounds would do what is requisite, and this might easily be raised if a few friends would take the matter up.

#### Miscellanea.

##### ENGLISH ENGINEERS AT CONSTANTINOPLE.

A general strike has taken place amongst the English engineers employed at the Arsenal, and those recently arrived for the service of the new steam corvettes and gunboats. The former, it is said, have consented temporarily to resume work on the understanding that the grievances they complain of—irregularity and delay in payment of their wages—shall receive the immediate attention of the authorities.

##### BATHS AND LAUNDRIES IN MANCHESTER AND SALFORD.

The annual meeting of the Manchester and Salford Baths and Laundries Company was held at the Town-hall, on Wednesday morning, Alderman Neild presided. There are two establishments in connection with the company, one at Greengate and one at Mayfield. On comparison with 1858, the past year showed an increase of 36,432 bathers, and 547 washers. There was an increase in the expenditure, which was partly owing to the repairs necessary in the swimming-bath, and partly to the increase of business. The net profit for the year had been—at Greengate, 233*l.* 9*s.* 9*d.*; at Mayfield, 432*l.* 19*s.* 11*d.*; making a total of 666*l.* 9*s.* 8*d.*, being an increase over the previous year of 250*l.* 9*s.* 6*d.* To this was added a small amount carried over from last year, which left a disposable balance of 702*l.* 12*s.* 3*d.*, from which the directors recommended that a dividend of 3 per cent. on the year be declared to the original shareholders.

##### A NEW CLASS OF OLD IRISH MONUMENTS.

At a recent meeting of the Royal Irish Academy, the Rev. Charles Greaves, D.D., made a statement "of a hitherto undescribed class of ancient Irish monuments," some of which had first attracted his attention while on a tour in Kerry, examining oghams. The first he saw consisted of a portion of rock, denuded from a bog. It was found to be covered with circles and dots. He afterwards saw others in various places. Describing them generally, he says,—"I thought that possibly they might have something to do with what is called the spectacle ornaments found upon Pictish stones, but here there were but two of these circles. Those I have been speaking of were arranged systematically, so as to form a symmetrical ornament. I at last saw the figures had certain geometrical relations; that is to say, that the circles or dots upon them tended to arrange themselves into groups of three in a straight line. At once the perception of this led me to the conclusion that these figures must represent some circular objects geometrically related to one another in their positions; and I could not forget that in Pettie's Essay on Tara, there is a map of the monuments at Tara, similar to these figures. Thus I came to the conclusion that these inscriptions must have been intended to represent groups of what we call forts; that is, the circular earthen structures of our ancestors in this country."

\* See vol. vi. pp. 182 and 211, and afterwards.

**FREE LIBRARY AT BALMORAL.**—A library of 400 volumes, the gift of her Majesty and the Prince Consort, for the benefit of the tenants on the estates of Balmoral, Abergeldie, and Birkhall, has just been opened.

**CAMBRIDGE ARCHITECTURAL SOCIETY.**—The second meeting in the Lent term of this society, was held in the Philosophical Society's Rooms, on the 23rd ult., the Rev. H. R. Luard, in the chair, when the Rev. G. Williams, of King's College, read a paper on "Roman Basilicas." Mr. Williams traced back the history of the Basilica to the original Stoa Basilieos at Athens, which derived its name from the Archon Basilieus, as being the court where he administered justice. The first he remarked was introduced to Rome by the celebrated Marcus Porcius Cato (B.C. 210), from whom the Basilica then erected was named Porcia.

**BRAY'S TRACTION ENGINE.**—The company who purchased Mr. Bray's invention, have forwarded to us a printed report of their first general meeting, with a request that we will aid in correcting an *ex parte* law statement to the prejudice of their engine, which has been largely quoted by our contemporaries. As we refrained from even alluding to the obviously fancy sketch of the special pleader referred to, we have the less occasion to enlarge on this subject; but we may state that the chairman explained at the meeting that "three hundred gallons of water were requisite to work the engine and tender; but Mr. Myers made no provision for keeping up the supply, depending mainly upon the water he found in the ditches and ponds on the road-side. That source, as might have been expected, failed, the summer being unusually dry, and the water, when obtained, was frequently dirty and unfit for use, so that both boiler and cylinders were much damaged, the tubes burnt, and the safety-plug, which was filled in with lead to prevent explosion, was burnt away no less than five times during the journey. But the object of the plaintiff was to evade the claim of the company against him for thus damaging the engine, by setting up a counter claim, as was obvious from a letter on the subject, in which he said he was afraid he should have to "advertise" the engine as a perfect failure." The principle of the wheel of Bray's engine, we may here note, is to put forth the claw, to gain the traction; and that being done, the claw is withdrawn by the eccentric, and a flat surface presented, which acts upon the road like a heavy roller. The printed report contains documents, from which it appears that Bray's engine has given satisfaction to the Woolwich dockyard authorities, and to Messrs. Maudslay, Penn, and others.

**THE NEWSPAPER STAMP.**—Mr. John Gray, a proprietor of the *North British Advertiser*, makes the following practical and excellent suggestions. "Firstly, to accept the Chancellor's proposal, that all newspapers not exceeding four ounces in weight go by post if hearing the common penny stamp; and that all newspapers above four and not exceeding six ounces in weight may be conveyed by post if hearing a three-halfpenny stamp. But, secondly, that it shall be optional for every newspaper proprietor to be furnished with either one-half penny and three-halfpenny adhesive stamps, bearing the name of his own paper, and to be sold to him only; said stamps to convey the paper only, the name of which it bears; it being at the same time rendered illegal, and punishable with fine or imprisonment, for any person whatsoever, except himself and his own servants, to use, or to be found in possession of, one or more of these distinctive stamps in an unholiered state. The general use of these stamps by any newspaper proprietor should not, however, preclude him from using the common penny and three-halfpenny stamp whenever chance or convenience might require him to do so. Under this law every newspaper proprietor would be enabled to protect himself against any loss of stamps by peculation. His stamps would be of value to himself only, precisely as is the distinctive stamp impressed upon his paper now. Temptation would not be presented to office boys or others to steal these stamps; and as they would be required in very large numbers at a time, the printing thereof would create no extra trouble or expense whatever, original type or engraving only excepted." A correspondent of Mr. Gray's paper also suggests what Mr. Gray regards as a good idea, in addition to his own, namely, that "should Government be unwilling to print the name of each newspaper on the stamps, a special newspaper stamp might be issued with a blank in the design, and this could be filled up by the proprietor of the paper printing its title at his own expense;" and that the same stamps might be sold conditionally to the public.

**OUR FORTIFICATIONS.**—The Fortification Commission have finished their labours, and sent in their report. The minister is sitting upon it, and what he will hatch we do not know.

**WANTED, AN ASSISTANT!**—With reference to the notice in our last, of the experience of an assistant under the above heading, we have received several letters complaining of ill treatment under similar circumstances.

**NEW WESTMINSTER BRIDGE OPENED.**—On Thursday, the 1st, the completed half of the proposed new bridge, already fully described in these pages, was quietly opened to the public by the Chief Commissioner of Her Majesty's Works, Mr. Cowper, and the engineer walking over it, and then admitting the crowd who had gathered to look at them.

**SALE OF THE MILTON CLUB HOUSE.**—Messrs. Norton, Hoggart, & Trist, have sold by public auction, at the Mart, the freehold property known as the Milton Club-house, No. 14, Ludgate-hill, with a public-house and two dwelling-houses and shops, in St. Martin's-court, having a frontage of 30 feet to Ludgate-hill, a depth of 108 feet to Little Bridge-street, and occupying an area of about 7,500 square yards. The houses in the rear let at rents amounting to 175*l.* per annum. The property sold, subject to yearly rent charges amounting to 700*l.*, for 8,900*l.*

**BERKELEY HOUSE FOR THE BOARD OF WORKS.**—In reply to Mr. E. James, in the House of Commons, as to the sum paid by the Metropolitan Board of Works for the site of Berkeley House, upon which the board is erecting a building for their own use, and what sum was to be expended by the said board in the construction of such building, Mr. Cowper said that the Metropolitan Board of Works had given 500*l.* for the site, and 799*l.* for the old materials. They had a lease of the ground for ninety-nine years, at 5,000*l.* a year for the first ten years, and 350*l.* for the remainder of the term; and the amount to be spent in the whole on the construction of the building, including all extras, would be 16,000*l.*

**STRIKE AMONGST THE MASONS FOR NINE HOURS.**—Just when the neighbourhood of Huddersfield promises most work a difficulty has arisen between the masters and men. The operatives gave notice six months ago. The notice expired on the 1st of March, and they, sending a second notice to their employers to say they adhered to their purpose, all struck work on that day. The masters met the men by declaring their determination to resist the movement. Yesterday, however, the masters (eighteen in number) issued an announcement that they would give 4*s.* 6*d.* a day instead of 4*s.* The men have not, however, as yet accepted the offer, and thus we are threatened in Huddersfield with a repetition of the disaster which has so injured the metropolis, harming all concerned, paralysing labour, and crippling capital.—*Leeds Mercury.*

**THE PRINCE CONSORT AT THE ROYAL EXCHANGE.**—On January the 3rd, the Prince Consort inspected the fresco decorations in the Royal Exchange, and was met at the entrance to the building by the Lord Mayor and others, members of the committee. Mr. Tite, M.P., the architect of the building, and Mr. Sang, who has executed the late decorations, were also in attendance. His Royal Highness spent about half an hour in examining the various designs. While his Royal Highness and suite were in the quadrangle of the Exchange, Mr. W. G. Rogers, the carver, invited the Prince, in the name of the churchwardens, to inspect the redecorations of St. Michael's Church, Cornhill, which have been lately carried on by Messrs. G. G. Scott and H. Williams. The invitation was accepted, and the Prince went over St. Michael's, and duly examined the carvings there, of which we have already given a description.

**THE LONDON DISTRICT TELEGRAPH.**—The half-yearly meeting of the London District Telegraph Company has just been held. The report stated that of the first call of 1*l.* per share, 10,740*l.* had been paid, leaving only 160*l.* unpaid. The capital paid up amounted to 21,320*l.* The new lines completed during the past half-year comprise extensions to Kingsland, Mile-end, London Docks, Greenwich, Clapham, Camden Town, and Highbury. The length of the line completed consists of two miles under ground, and 10½ miles over house; lines contracted for in progress, but not completed, under ground, ½ mile; over house, 20 miles. In progress by the engineer, 11½ miles over house, making, with 22½ miles previously completed, 67½ miles. The report was adopted, and the directors were authorized to extend the wires of the company beyond the radius of four miles from Charing Cross, and within a radius of 12 miles, for fire and police purposes only.

**ENGLISH PAPER-HANGINGS.**—A deputation of paper-hanging manufacturers, consisting of Messrs. Heywood, Thos. Cooper, H. G. Ashton, R. Watson, Ridley, Whitley, D. Graham, W. Haselden, W. Woollams, W. Cooper, Joseph Albright, Wm. Snape, James Solomans, Henry Lighthour, John Lindsay, and S. M. Hubert, accompanied by Sir J. Duke, had an interview with the Chancellor of the Exchequer last week.

**THE BRITISH MUSEUM.**—In reply to a question by Mr. Joseph Locke in the Commons, as to whether the Natural History Collection is to be removed from the British Museum, and if so to what place, Lord Palmerston replied that although the trustees had decided to remove the Natural History Collection, and retain the library and other departments, no decision had been come to as to the particular place to which the removal should be made; but that Government would consider the matter a little farther before anything was done.

**CLEANSING THE SERPENTINE.**—The contract for engine-house and other buildings, groundwork, and sculpture, required to carry out Mr. Hawkesley's plan for cleansing the Serpentine, has been entrusted, according to a return just published, to Messrs. J. & E. Bird, of Hammersmith. The tenders were called for on 9th November, and five were sent in. Messrs. Bird's was the lowest, the amount being 13,023*l.* The works were commenced on the 28th December last, and are to be completed on 1st May, 1860. Messrs. James Watt & Co. have the contract for the engine and machinery. Meantime, Mr. Cowper, the Chief Commissioner of Works, has proceeded, in the Commons, the nomination of the following select committee on the Serpentine:—Mr. Cowper, Lord J. Manners, Sir J. Shelley, Mr. Blackburn, Sir M. Peto, Mr. Joseph Locke, Mr. Walter, Sir J. Paxton, Lord Fermoy, Mr. Byng, Mr. A. Egerton, Capt. Archdall, Sir F. Smith, Mr. Beach, and Sir M. W. Ridley. Power to send for persons, papers, and records; five to be the quorum. The decision will, we hope, be revoked.

**A STREET GRIEVANCE: DONKEY TRAPS!**—I venture to ask the influence of your journal in behalf of the poor hardworked costermongers' donkeys, whose feet so frequently get caught in the iron traps of the water-mains. Why should the water companies have iron-fanged holes in the pavement of the streets, dangerously placed at almost every corner of the chief thoroughfares, whereby the most excruciating suffering is inflicted on poor animals whose burthen needs no addition? The holes, too, seem made expressly to catch a donkey's hoof without admitting its withdrawal, and the check thus given to the progress of the poor victim is sufficient to cause, if not a broken leg, a sprain that will take some time to cure. There are covers for cellars, and for every other thing which interferes with the traffic: why not, then, covers for the street water-cocks? The expense, surely, can have nothing to do with it. I saw a safe to-day, where, in addition to the strain already endured, the farrier was wrenching off the shoe from a poor donkey whose struggles were most piteous. I trust such cruelty will no longer be permitted, and that the *Builder* will urge the necessity of an immediate remedy. It is time a little science, or common sense, was brought to bear on the ironwork of our street water-cocks, if only for the prevention of cruelty.—J. B.

**COMPENSATION IN PARIS.**—Juries are constantly engaged just now in settling the amount of compensation to be paid to owners and tenants of houses required for the improvement of the streets of Paris. The late proprietor of the Café de Foy, in the Palais Royal, when driven thence, had taken refuge in the Rue Batte. According to the *Morning Star*, M. Foy (as he is called) had amongst his customers many of the leading artists of the day, to whom he had been useful, and they set about rendering his new abode attractive, and installed him in a magnificent Louis Quinze salon—a Swiss chalet smoking-room, and a Chinese summer-house, all beautifully executed by Horace Vernet, Paul Delarocche, and others. When the city of Paris, therefore, came to bid M. Foy and his attractive museum adieu,—a sort of rival Luxembourg, in which he had been distributing his coffee and gloria,—M. Foy refused, naturally, to do so, without a most powerful consideration. The case was referred to the tribunals. The city of Paris offered M. Foy an indemnity of 300,000*fr.* Maitre Freslon, the advocate employed by M. Foy, insisted upon no less than 700,000*fr.*, not, as he observed, for the physical importance of the place, but for the moral and intellectual value of the thing. With such an argument as this what course could possibly be pursued? The 700,000*fr.* were accorded.

ARTISTIC COPYRIGHT.—The Council of the Society of Arts propose to bring the Amendment of the Law of Artistic Copyright before the Legislature, at the earliest possible moment.

A UNION FOR PURCHASE OF BOOKS.—A correspondent, "C. E." referring to the fact, that in consequence of the cost of architectural and engineering works, many of the junior members of the profession are debarred from obtaining a suitable library, suggests that an association be formed on the principal of "Art Unions," for the purchase of architectural and engineering publications, each subscriber of 10s. to have one chance of a prize. The holders of prize tickets to select the works, subject to the approval of the committee.

SAND IN LIEU OF STRAW FOR HORSES' BEDS.—Mr. Small, a veterinary surgeon of considerable experience and successful practice in Ulster, states that in the present scarcity of straw he uses sand for horses' beds in his repository, and further observes that sand is superior to straw, inasmuch as the former article does not retain heat, and also serves horses' hoofs. Mr. Small's alleged successful experiment deserves extended circulation, now that the market price of straw is so high. We should be glad to know the opinion of our local veterinary surgeons on this discovery.—Kilkenny Moderator.

MEMORIAL OF MRS. HEMANS.—It is proposed to erect a stained-glass window in the chancel of the parish church of St. Anne, Dublin, to the memory of the celebrated poetess, Felicia Hemans, whose remains were there buried. The window will represent the leading female characters of the Old and New Testament History, selected with regard to Mrs. Hemans's series of admirable sonnets on that subject, and with the view of illustrating her own writings and character. The execution of the window will be intrusted to first-rate artists. The probable cost will be 250l., and of this sum 40l. have been already promised by a few friends. Subscriptions will be received (among others) by Mrs. S. C. Hall, 27, Ashley-place, Victoria-street, Belgravia. There is also a Dublin committee; and at Edinburgh Messrs. Blackwood & Son, the publishers, will receive subscriptions.

THE ROYAL SOCIETY.—The President of the Royal Society gave his first *soirée* for the season on Saturday last, at Burlington House. All the rooms were thrown open, and an unusually large collection of interesting objects in science and art was exhibited. Among these were the extremely beautiful machine for weaving by electricity, invented by Mr. Bonelli; Mr. H. Bradbury's engraving machines, which were exhibited in action; specimens of the newly-invented process of photo-zincography, by Colonel James, director of the Ordnance survey; models of Mr. Whitworth's guns, and specimens of the actual shot used, explained by Mr. Whitworth; a very interesting series of portraits and relics of Dr. Priestley, including two of his electrical machines; Trevithick's original locomotive engine, exhibited by Mr. Woodcroft; curiosities from Japan, exhibited by Captain Osborn and Dr. McGowan; model of an iron fortress, exhibited by Mr. Hall; and a series of experiments, showing electric discharges *in vacuo* by the voltaic battery, by Mr. Gassiot. The Prince Consort was present.

ACCIDENTS.—A scaffolding has fallen at Oxford-street, Ecclehall-road, Sheffield, at some houses which are being built by Mr. George Seville. The walls were raised to the height of about 24 feet, and the men were going on with their work as usual, when the fastening, connecting two lengths of planks to one of the poles, gave way, precipitating five men, who were standing on them, to the ground. Two of the men, Mr. Seville and a labourer, received no injury beyond a mere shaking.

During the late tremendous storm of wind much damage has been done in various parts of the country, as well as in the metropolis. At Derby, when the storm seemed at its height, the spire of St. Alkmund's church, including the vane and many feet of solid masonry, was blown down, and, crashing through the church below, caused great injury, which will take a considerable sum of money to repair. One of the pinnacles of the Roman Catholic church tower was also injured in a similar manner.—At Nottingham considerable damage was done to the church of the Holy Trinity, portions of which were torn away, and for some time fears were entertained that the spire would be blown down. A pinnacle of St. Stephen's church, Sneiton, near Nottingham, was blown on to the roof, damaging the latter. The roof was torn from St. Anne's chapel-of-ease, Nottingham.

DISCOVERIES IN EGYPT.—Lord Dufferin has been excavating on the banks of the Nile, and we understand that a small temple, with the columns *in situ*, and a considerable number of inscriptions, have rewarded the search.

A MEETING FOR EAST LONDON.—A deputation attended the Chief Commissioner of her Majesty's Works, the Right Hon. W. Cowper, last week, to present a memorial, setting forth the necessity for a public museum and library which should be accessible to the inhabitants of the eastern and south-eastern districts of the metropolis, and soliciting the aid of Government to facilitate the attainment of the objects desired.

FOUNDATIONS OF BUILDINGS ON FIRE.—For several days the singular circumstance was presented of the foundations of a packing-house, &c., at the manufactory of Messrs. Boote, in Waterloo-road, Burslem, being on fire. It seems, says the *Staffordshire Advertiser*, that the building rests on a foundation of rubbish, in which there is an admixture of a kind of cannel coal, and this, there is reason to believe, had taken fire from a flue in the saggar house, which is on a very low level. By means of the fire-plug hose a large quantity of water was turned into the foundations, and the fire appears to be now subdued; but it seems to have extended to the foundations of the adjoining residence, and so injured a pile of building at the rear that it has been deemed requisite to support it with planks. The walls of the packing-house, &c., are also cracked.

TENDERS

For the erection and completion of three mortuary chapels, with lodges, entrance gates, iron railing, boundary fences, &c., at Over Darwen, near Blackburn. Mr. J. Stevens, architect, Manchester. Quantities supplied by the architect:—

Table with 2 columns: Name and Amount. Includes Kay, Darwen (£3,310 0 0), Brown, Stockport (£300 0 0), Howarth & Son, Blackburn (£3,270 0 0), Knowles, Darwen (accepted) (£3,220 0 0).

For building ten houses, for the London and Suburban Mutual Benefit Building Society. Messrs. Hammaek & Lambert, architects. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Jones (£3,614 14 2), Furnival (£3,200 0 0), Heath (£2,925 0 0), Perry (£2,870 0 0), Ennor (£2,867 0 0), Helges (£2,865 0 0), Tolley (£2,857 0 0), Derby (£2,170 0 0), Scott, Bow (£2,170 0 1).

For alterations and additions to the Manor-house, Caterham, Surrey, for Mr. Parbury. Mr. Hahn, architect. Quantities supplied by Mr. B. Roberts:—

Table with 2 columns: Name and Amount. Includes Browne & Robinson (£3,217 0 0), Piper & Sons (£3,190 0 0), King & Burton (£3,155 0 0), Perry (£2,746 0 0), Rider (£2,350 0 0).

For new Catholic church, Brentwood, Essex. Mr. G. R. Blount, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes White, Romford (£2,941 7 8), Roper, Chelmsford (£2,750 11 4), Wood, London (£2,745 0 0), Bird, London (£2,694 0 0), Patman & Fotheringham (£2,659 0 0).

For new chapel and vestries, Ledborough road, Brixton, for the Rev. D. A. Herschel. Mr. W. G. Habersham, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Green (£2,990 0 0), Conder (£2,909 0 0), Patman & Fotheringham (£2,895 0 0), McLennan (£2,835 0 0), Simpson (£2,255 0 0), Evans (£2,250 0 0), Tarrant (£2,100 0 0), Seagrave & Bloomfield (£1,990 0 0).

For new printing-office, Fountain-court, Shoe-lane, for Mr. Thomas Harlid. Messrs. Arding and Bond, architects. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Patman & Fotheringham (£9,440 0 0), Brown & Robinson (£2,419 0 0), Brava (£2,351 0 0), Axford & Co. (£2,223 0 0).

For house at Windsor, for Rev. Mr. Hawrcry. Mr. Street, architect:—

Table with 2 columns: Name and Amount. Includes Lawrence (£2,641 10 0), Holden (£2,384 0 0), Hardy & Soa (£2,360 0 0), Silver (£2,361 0 0), Snowball (£2,360 0 0), Hoils (£2,160 0 0).

For rebuilding No. 14, Minorities. Messrs. Smith & Williams, architects:—

Table with 2 columns: Name and Amount. Includes Patman & Fotheringham (£1,470 0 0), Little (£1,414 0 0), Wilson (£1,434 0 0).

For new rectory-house and offices, North Searle, Notts. Mr. Goddard, architect:—

Table with 2 columns: Name and Amount. Includes Semper, Searle (£1,100 0 0), Walls & Son, Ruseson (£1,007 0 0), Crosby, Coleby (£900 0 0), Reed & Macdonald (£98 0 0), Clapham, Norwell (£84 0 0).

For the erection of house, No. 27, Aldgate, for Mr. James Brown:—

Table with 2 columns: Name and Amount. Includes Ashby & Horner (£1,238 0 0), Ashby & Sons (£1,150 0 0), Broadbent (£848 0 0), Thompson (£1,135 0 0).

For parsonage-house, Sutton Cheney, Leicestershire. Mr. Edward Browning, architect, Stamford:—

Table with 2 columns: Name and Amount. Includes Lawson & Joy (£1,449 10 0), Neal & Hextall (£1,298 0 0), Skelchley & Co. (£1,150 0 0), Broadbent (£1,135 0 0), Harrod (£1,096 6 0), Gutteridge (£1,064 10 0), Cogswell & Day (£1,055 0 0), Harrod (£1,048 0 0), Osborne (£1,028 0 0), Spencer (£991 0 0).

For alterations to No. 59, Crown-street, Finsbury. Mr. Charles Lewis, architect:—

Table with 2 columns: Name and Amount. Includes Brown & Robinson (£298 0 0), Ripper (£299 0 0), Patman & Fotheringham (accd.) (£75 0 0), Faxley (£64 0 0).

For alterations to a shop-front, for Mr. Jesse Jones, No. 273, Pentonville-road. Mr. R. J. Breda, architect:—

Table with 2 columns: Name and Amount. Includes Williams (£160 0 0), Batechelor (£135 0 0), Barnes (£121 6 0), Webber (£118 0 0).

For alterations to the Phoenix Tavern, Smith-street, King's-road, Chelsea. Messrs. Finch Hill & Paraire, architects:—

Table with 2 columns: Name and Amount. Includes Mills (£520 0 0), Purkis (£485 0 0), Turner & Sons (£411 0 0), Jells, Brothers (£402 0 0), Hodges (£377 0 0).

TO CORRESPONDENTS.

P. B.—G. M.—F. R. W.—E. B.—A. Kiffeman (if danger can be proved, the practice can be stopped).—H. B. (Will you send us a plan of cottages built for the sum named?).—H. C.—G. B. M.—W. H. W.—J. M. (we are unable to comply).—A. Clerk.—J. N. P.—W. and R.—J. P. (P.—W.—H. B.—J. W.—J. N. P.—W. C.—J. G. A.—H. M.—G. P.—A Workman.—Ema.—A. J. H. (next week).

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

MR. WILLIAM ELLISON, CONSULTING SURVEYOR, RATE OF STAINSBY ROAD, THE LARK OFFICE, 13, FENCHURCH-BUILDINGS, FENCHURCH STREET, E.C. AND IN BREACHES OF CONTRACT, DISPUTED ACCOUNTS, &c.

SWANSEA UNION.—CLERK OF THE WORKS WANTED.—The Guardians of the above Union hereby give Notice that they will, at the Weekly Meeting of their Board on THURSDAY, the 2nd MARCH Instant, at ELEVEN O'CLOCK in the forenoon, proceed to the APPOINTMENT of a CLERK of the WORKS, to superintend the Building of a New Union Workhouse at Swansea. Salary two guineas per week. Duties to commence immediately. Applications and testimonials to be sent to the Clerk to the Guardians, on or before WEDNESDAY, the 21st Instant.—By order, CHARLES COLLINS, Clerk to the Guardians, 6, Fisher street, Swansea, 1st March, 1860.

THE TOWN OF BURTON-UPON-TRENT

ACT, 1833.—TOWN SURVEYOR WANTED.—The Commissioners under the above Act will, at their monthly meeting, to be held at their Offices, No. 33, High-street, Burton-upon-Trent, on WEDNESDAY, the 4th day of APRIL, 1860, at HALF-PAST-TEN in the forenoon, proceed to the appointment of a TOWN SURVEYOR, who will also be required to undertake the Office of Inspector of Nuisances, Lodging-houses, and Slaughter-houses, and Superintendence of the Fire Brigade and Sewerage Department. Salary, 150l. per annum. The person elected to devote the whole of his time to the service of the Corporation, and to be bound to consent to prepare plans of new works, and additions to, or alterations of, existing works, for the effectual drainage of all houses, buildings, and other premises within the district, and to perform all the duties required by the Town Improvement Clauses Act, 1857, and to take charge of the streets, and of the cleaning, watering, lighting, cleansing, and watering, all the streets, roads, and highways, and of cleansing and repairing all sewers and drains within the said district. Also of carrying out, as far as law requires, the Inspection of Nuisances, Lodging-houses, and Slaughter-houses, Superintendence of the Fire Brigade, and all such orders and regulations as shall from time to time, by the said Commissioners or their successors in office, be found necessary to be made for carrying out the provisions of the said Act, and of the several Acts incorporated therein.—Applications in writing, accompanied by recent testimonials of character and competency, to be delivered to the undersigned, or to the Office of Town Surveyor, on or before THURSDAY, the 29th day of MARCH Instant. Candidates whose Communications will be deemed a disqualification.—By order of the Commissioners, W. M. COXON, Clerk to the Commissioners, Commissioners' Office, St. Hill-street, Burton-on-Trent, March 3, 1860.

A GENTLEMAN, residing within ten miles of London, Land Agent to a nobleman having considerable property in two of the southern counties, has a VACANCY for a FIFELDER.—Address, R. care of Messrs. Warr, 65, High Holborn, W.C.

# The Builder.

VOL. XVIII.—No. 893.

Domestic Architecture.—An Experiment in Scotland.



NOT long ago mention was made in these pages of a house erected in Merchiston-park, near Edinburgh, by Mr. Gowan, and of a paper descriptive and illustrative of the structure, read by that gentleman before the Scottish Architectural Institute. Experiments, founded in reason and intelligently carried out, can scarcely fail to be valuable to the community, whatever the result may be to the individual; and our readers will thank us for placing before them the result of that made by Mr. Gowan. We have engraved a view of the house from a photograph,\* and avail ourselves of the owner's paper to show the ideas that influenced him. Two very valuable, though of course not new, principles are urged,—that the interior should be so arranged as best to meet the requirements of those who are to occupy it; and that the exterior should be designed with a view to the proper application of the materials at hand. He dwells upon the value of designing upon geometrical lines, not only with reference to the production of order and regularity, but as bringing out all the doors, windows, and finishings of one uniform size, and so admitting of their execution by machinery, at a considerable reduction of cost. The stone obtainable in his neighbourhood required the adoption of random masonry, thus using up the waste stone from quarried masses, and then to bind this together light material was used, hewn without much accuracy, to please the eye.

"In the country," says Mr. Gowan, "where small houses suitable for agricultural labourers and others have to be provided, and where economy in the use of material is a chief requisite, it is of the first consequence that the truthful application of the material in the district should be scrupulously attended to; and there is no part of the country where proprietors or others have to go far to find material fit for building purposes."

It is no uncommon thing for an architect or builder to carry stone from a distance, while material equally fitted for the purpose is lying at hand, or, if not seen above ground, should be brought to light by studying the run and lay of the strata in the vicinity.

"I have given my attention for some time to the proper and economical use of materials for building purposes, and I have come to the conclusion that architects and builders have much to learn in the way of using truthfully and economically the material which in almost all places is to be found. When an architect is employed to design a building and furnish specifications, he too often adopts some favourite style of building, and a stereotyped specification, which, not being applicable to the district from which he has to get his material, involves a great and unnecessary expense; and in consequence the building comes to too much money, and, to get it to go on, the accommodation must be curtailed; if cottages be the case, and one or two are built at the increased expense, it has the effect of deterring others from anything of a similar kind. In fact, I have known a proprietor who came from a sale quarry at a distance when stone was good a quality was to be found almost under the site of the building he was erecting."

The writer says he had no desire in design-

ing his house to create a novelty; all he wished to do was to erect a building which, without borrowing from any example, would test, in a practical way, what he could attain by a truthful use of materials worked out on certain geometrical lines. He also wished so to dispose the colour of the materials as best to show the details of the structure. The several objects he endeavoured to secure shall be set forth in his own words:—

1. That the principal rooms of the day portion of the house should be so situated in respect of aspect as to command the best views of the locality and the greatest share of sun-light, and, at the same time, be so placed that they shall all have ready access from a corridor or saloon, which would have the same importance in style as the rooms to which it forms the entrance; and these rooms should have, also, a ready access to and from each other. In the case of the dining-room, the servants' access should be distinct from that of the public.
2. That the kitchen and servants' working apartments have a distinct and separate portion of the building allotted to them, so placed as to give the servants private and ready access to the day and night portions of the house, and also ready access to the principal entrance-door, without having to pass through the corridor or saloon.
3. That the principal sleeping-rooms be of a large size and high in the ceiling, and have easy access from the stair-landing or lobby. I have secured what is desirable in this respect by making the principal bed-rooms enter from a spacious lobby, which is lighted and ventilated by a well-hole up to the roof, which also supplies light and ventilation to the attic rooms.
4. To have the children's sleeping and day rooms placed on one side of the building, and, at the same time, convenient to and distinct from, the chief bed-rooms.
5. To place the closets belonging to each department of the house in such situations as, while admitting plenty of light and thorough ventilation, will secure convenience and privacy."

As the subsoil on which this house is erected was of a very damp and retentive nature, the whole area of the building was drained to a depth of 4 or 5 feet. This was done to prevent, as far as possible, the effect which freestone has, by capillary attraction, of sucking up the moisture from the soil on which the foundation of the building rests; and further, as there was a vacant space of 4 or 5 feet from the surface of the ground to the first-floor level, this space was ventilated by admitting fresh air from the exterior at one point of the building, which found an outlet into a receiving chamber connected with the kitchen flue, which is made of cast iron. To prevent this cold air from finding its way into the rooms, the whole of the deal-floored apartments on the ground-floor were pugged.

He proceeds to show how the external features and outlines of the building are brought out by the semicircle and the angles of 22½ degrees, 45 degrees, and 67½ degrees:—

"The geometrical lines I adopted were 2 feet squares, the building on the whole being multiples of that scale, or aliquot parts of it. The same lines which fix the internal arrangement of the plan were carried up on the face of the building, so that, working on these lines, and admitting only of the necessities of the building for the production of the architectural features, I have succeeded in realizing to some extent the idea I had in my mind's eye before I commenced the erection.

This idea of designing upon squares and fixed angles, although new to me, must have been, I am convinced, known to the master masons who produced the best examples of those styles of architecture which we so much admire. These lines are more observable in the Gothic than in other styles: the more rich and elaborate the design, the easier it is to trace the leading lines of the structure.

From the experience I have had in drawing out the details of this building, I can understand how our old master masons were able to revel in endless design and combination of figures.

Apart altogether from the facility this system gives to the architect in combining the different parts of his design, it leads more effectually than any rule of thumb principle can, into that variety of form and device, so apparent in some of the

more elaborate specimens of the decorative Gothic, and which are so richly delicate, and yet so constructively correct.

As architectural efforts in the shape of design are produced at the present time, it is an easy matter to dispense with such a principle; but we must recollect that the men from whom we borrow had in the beginning to adopt some such fixed rules, and by the aid of modelling or other practical methods to work out what was to them an original design. It may be said that an architect who has a true genius for his profession requires no such aid to guide him in the development of his ideas, and would feel himself trammelled by any such restrictions. But this I deny, because I hold that no science can be perfected unless it rests upon certain fixed principles."

The writer urges that an architect who has this higher genius for his profession should look into the leading principles of his art, and, by the truthful application of material, seek to create a design which would bear undoubted marks of originality on the face of it.

We shall not annoy Mr. Gowan if we do not offer any great admiration of the external appearance of the house he has raised, because he himself does not point to it as anything more than the result of a first experiment:—

"In dressing the stones thus roughly, and by the use of one simple geometrical form of moulding, and without anything in the shape of carving, I have endeavoured to produce a rich effect by the frequent repetition of this moulding wherever such was necessary, and causing it to take new conformations as the respective necessities of the positions required.

Clothing over in this way the framework of the building, and where it would enhance the constructive effect, I have given prominence to certain leading or radical lines of the skeleton. The windows stand out as separate designs, springing from the lower base of the building, and extending to the apex of the tympanum; and while they form integral parts of the skeleton of the building, they contribute to the general effect."

We give the ground-plan of the house: the dining-room is 24 feet by 16 feet; the drawing-room the same size; the business-room 20 feet by 14 feet; the hall 18 feet by 14 feet; and the staircase 12 feet square. Hot water and gas are laid on to the various parts of the house. The water from the roof appears to be brought down by pipes inside the walls; while, impressed with the importance of ventilating the drains,—of preventing what at times necessarily occurs under the ordinary arrangement of drains, the escape of deleterious gases into the house, to the injury of its inhabitants,—a flue is provided, which is carried up as high as the top of the chimney-shaft.

ART, NOT STYLE.\*

Under the heading "Pagan?" the author of the volume that we were noticing last week, first observes that the medley of existing architecture is an expression of our social condition, in which he finds much to admire; and, for example, the pretence, as he regards it, that our system of law is founded in Christianity, though we have admitted "the professed unbeliever to share in the enactment of law," &c. The question is, he says, whether the characteristics of the Italian style are such as render it a true expression of our national life in the future. He calls the Italian nothing more nor less than an extended application of the late Roman,—all the characteristics of it being in the Pantheon,—assertions which only prove his entire ignorance of the styles. Perhaps he will be able to show, should his work come to a second edition, the likeness between the Pantheon and the Farnese Palace, or the Library of St. Mark, or the Strozzi. The statement that the Italian is incapable of verticalism would be more deserving of examination: it may be that the old style does not attain that characteristic, though some have expressed a different opinion; what has been done, however, is not the question, but what may be; and it might be more accurate to say that for the future, any style started from is capable of becoming anything. We showed in a recent article, how serious is the mistake made by writers who, having only knowledge of a limited field of the past, regard this chiefly in an antiquarian point of view, and do not quite reach to the conviction that new art,

\* See p. 169.

\* See page 145, ante.

and not old style, is what is needed for the architecture of the future. But there is a question as to verticality, distinct from that of style,—namely, is the verticality the most appropriate for buildings which are divided into several floors? If not, the argument made to serve for Gothic secular edifices had better not have been used; though it would have been fairly applicable to churches. It has been said by some writers, however, that the Italian domical vaulting system is not less expressive of that which distinguishes the art of a building devoted to religious uses, than is the aspiring character of the Gothic. The gable, therefore, would alone remain to be contributed to the secular building by the Gothic,—assuming advantage in the high-pitched roof to be admitted. The fact of the Elizabethan style shows that some combination of this with features of the Italian style, even with the orders, could be made; and we doubt not, in many cases, a combination will yet be made, and in a manner that will be highly effective. It follows, therefore, that without going back, and without taking either of the courses, the revival of the old Gothic, or creation of the new Gothic, an architect may be perfected that will not violate associations, and will have been corrected and invigorated by the use of what is valuable in the Gothic. All that is stated as to the misuse of three-quarter columns and pilasters deserves consideration: but it can serve no purpose of art to interdict such features in certain cases; or the parallel should be kept up, and the responds carrying arches, and the engaged shafts of the Gothic should be similarly treated. The objection to three-quarter columns, where there are no other columns, is a fair one; where their office is merely subordinate to that of isolated columns, they or pilasters may be consistent with preservation of a general harmony. We perfectly agree that great has been the misuse of the portico, and of columns generally; but not so that the force of the classical architecture, whether columnar or fenestral, has been worked to the extent of being productive of nothing further. The Classic architect is not bound to the “everlasting acanthus-leaf” nor in friezes to festoons, even adopting the antique and Italian models; but the “luxuriant sculpture” which is beginning to be carved in capitals (where a flower or a branch is pitched on, rather than architecturally designed), fills us with apprehension for the success of the effort to educate a class of carvers, and shows that the taste for mere novelty and for copyism of natural forms, has been introduced without the art-study wherein the teaching of Nature, and the practice in the Classic and the best Gothic, are one and alike. Our author not only does not see the superiority of the square abacus in Gothic capitals, but tries to argue against conventional treatment of the foliage. The grotesque sculpture, he remarks, was only used externally until the fifteenth century. In this later time, he says,—“the spire disappears altogether,—forgetting Louth.

In the course of the “Moorish Episode,” when reverting to the subject of naturalistic ornament, in Gothic as contrasted with the conventional of early and late periods, he must be understood as defending what is erroneous in principle. When treating the question of realness, and contrasting the “stalactite” arches and domes of the Moorish with the Gothic vaulted ceiling, he keeps out of sight the fact that the latter was not the actual roof, and that the justification for the one, namely effect, affords the excuse for the other. In all architecture there are features, like the Gothic spire, which are designed for the effect. As regards details, the mind is satisfied if these are only quasi-structural, or if these decorative features and the structure are visibly tied together. Only injury is done to the progress of art, and the growth of public perception of it by the prevalent abuse by modern Gothic architects, of the classic manner of detail. How can we even believe the true perception of art to be existing with those who adopt a course which would be equally applicable to the shafts, arcades, mouldings, and other most cherished features of the Medieval architecture? Truly the dispute that is rife amongst us is the enemy of art,—art which which properly exists irrespective of style. Mr. Scott, see again his lectures, is far in advance of his fellows.

It is curious that after saying, we may see that imitation is implied in the very nature of Italian and other “Pagan” architecture, and without ceasing to be Italian, the author comes afterwards to the discovery that the Italian has had new energy breathed into it. He attributes indeed the improvement to the

Gothic; and no real artist-architect, though calling himself Classic, will dispute the fact. But he thinks that the horizontality, Italian roof-pitch, non-constructural ornamentation, rectangularity and regularity, and so forth, weigh upon the style to prevent further progress. Why, it is the very point of our argument against the revivalists, that our architecture should be neither Medieval nor Italian, unless in name for want of better,—that we should be English, and cannot revert either architecture or associations, but must advance. Every source is open to each architect, and every form that is consistent with use and is harmonious with the lines of other forms. On which groundwork to begin, were there no associations of the present time, honourable and glorious, it would matter little, since each style has value, and what one might lack would become infused into the other; but it matters much when it is considered that there is an existing style in our towns and the majority of our public buildings, and that furniture, costume, and mode of speech prevalent, would be anachronistic and inharmonious with any sort of Medieval.

The question for decision is not, it must be recollected, that which presents itself to either the antiquary or the Anglo-Romanist clergyman, but relates solely to the art. This art in architecture is, we fear, not the better perceived for any exclusive attention that is given to Gothic architecture. It is certainly not so perceived by the laical and clerical amateurs who write on the subject. Witness what is said by Mr. Denison in his lectures on “Church-building:”—“It must be admitted,” he says, “that there has not been a single modern church yet erected, much less any other kind of building calling itself Gothic, which any person of experience could for a moment suppose to have been built in Medieval times.” . . . “It will be time enough for us to begin inventing new styles, or even modifying old ones, when we have learned to design and execute the old ones decently.” We will not affront our readers by supposing they would couple together, as interchangeable ideas, the matter of design and that of mere reproduction. They will observe that the lecturer regarded it as the object in modern church-building and modern Gothic, to produce that which would be mistaken only for the work of Medieval times. We had thought that the church-building had too nearly succeeded in this reproduction, and that the error was one which all the recent efforts of the new school of Gothicists were aimed at overcoming. But, even by the architects, the necessity for art,—for something more than is to be given by authority of examples, or study restricted to those of one school,—has been but recently, if indeed, it is quite yet, admitted. It is perfectly true that the extended and intelligent study of examples which we desiderate, not bounded by England, or merely inclusive of the English provinces of France, Alps, or both sides, and the better knowledge of architectural history, are wanting in more than one class of the profession. We have heard somewhat too much in the course of discussion on the Government offices, of the Banqueting-house, as a standard and a model: we scarcely think that many of those who refer to it, have the perception of the merit which indeed it has as work of art, and the interest which belongs to it in the history of architecture. Had they this perception, they would not quote one building without reference to other examples of the revived Italian, which there are in England as well as on the Continent, equally, and probably in a greater degree, characterized by the element of art. Many such examples, however, are rising about us both in London and the country; and the competition for the Government Offices itself gave the opportunity of seeing that true art, on the classical foundation, was a breathing thing in a school of architecture which was not Gothic. Again, it is perfectly true that there should be but one style for churches and for that one style was to be tolerated for one class of structures and not admitted for the other, betrayed operation of architectural art in their hands. We do not hesitate to say, as we said long before these secular buildings, that the application of Gothic to secular buildings, that there should be but one prevailing style, susceptible of a name; though there should be an infinite number of secondary formations; and that real progress and popular perception and appreciation of art, would be served by such a condition of things.

We do not believe that, given a clean sheet of paper, and denuding the architect of all prejudice, there would be more difficulty in evolving art on either one basis of observation or example,

than on either other. Of the material contributed in the art-work of time, the features were the invention of different periods. The Egyptian massiveness, perspective, and depth of shade, and treatment of lotus-adorned capitals; the Grecian picturesqueness of combination with scenery, exquisite proportion, portico and pediment, horizontalism, and sculpture; the Roman, Romanesque, and Byzantine arcuation and ornament; the Saracenic domes, and surface-work beautiful and varied, and using nature on nature's principle,—art-work, and not the attempt to imitate; the Gothic verticality, “long-drawn aisle and fretted vault,” pinnacle and buttress, enrichment of window-opening, gable, chimney-shafts, spire and tower; the different versions of the Renaissance, of which so much is said on the score of their “impurity,” or transitional character, but in forgetfulness that on the same grounds every work might be called impure, and every style transitional, and that these “transitions” are abounding in materials, and may offer the very lesson which is needed at this juncture; our own Elizabethan and Jacobean versions, uncouth perhaps in details, but suggesting other combinations, which we should be able to make, of the decorative gable, as other forms of Medieval origin, with features Italian and columnar; the Italian of the sixteenth century, different in every city of Italy and every country on this side the Alps, and with fresh forms and features infused into it by each architect who took it in hand,—from every one of these something should be contributed to what may become the architecture of the future. Call the architecture Gothic, may we not have not only the dome, but conventionalized ornament; proportion, which it is futile to contend is a thing not to be attended to; sculpture of the highest class, and whatever there is in architectural art, of feature or quality that can be made harmonious each with each other? Call the architecture Classic, may we not have the lotus-capital; something else than an obelisk or a sham vase on the pedestal of a balustraded parapet as substitute for a statue, the enrichment of the opening, the gable, the chimneys,—Vanbrugh made one application of them; the spire,—Wren showed that something might be done; and the tower,—though so far, this last, if only by the Victoria Tower at Westminster, stands as Gothic, unequalled and alone? The idea, however, of invigorating to this extent one style by another, though without producing discord in lines and forms, seemed scarcely to have occurred to either of the now disputing forces in the professional world, till the question of a Gothic dome was mooted in our pages, and we ourselves suggested that there had yet to be produced for a building of Classical architecture, the spire; that is to say, one not injured like that of St. Bride's, by the recurrence of prominent horizontal lines.

Whether the modified Italian already spoken of is capable of further development, the writer whose book has led to these remarks, seems to decide in the negative, though the question is qualified by the words “without essentially changing its nature,”—a change over which those who both admire the Italian and are artists would not grieve. The tendency now, he says, is towards freedom; and this he will not allow can consist with horizontalism and rectangularity. He concludes that “the Italian has no vitality of progressive growth; that it becomes extinct in the endeavour to give birth to a higher existence.” Surely the writer misunderstands the law of progress;—extinction is an inevitable truth; the giving birth at same time to a higher existence, is the end and highest possible manifestation of vitality. Take the Italian architecture at the author's own estimate, we cannot be brought “back again to the Gothic,” and he artists.

In the last division of the book, which he entitles “Christian?” he comes again to abuse of the Houses of Parliament, which he says “are not a reproduction of English art at all” (the very thing, the reader will observe, which they should not be), saying that “the genius of an original and faithful artist has nowhere breathed upon them,” that they exhibit “the bathos of art,” that the clock tower is the only good feature, and that they are only an instance of the ignorant application of Gothic to civil edifices. His statement of a second source of prejudice, that inconvenience of plan is part of the Gothic, is more to the purpose; and at length he comes to find that the character of reproduction in ecclesiastical edifices is not that which art demands, and to contradict in much besides that he had previously argued. As instance of the pedantry which re-acts on art, he quotes the church of All Saints, Margaret-street. In discussing whether we are to have two distinct

styles, one for churches and the other for a different class of edifices, whilst stating erroneously that we have had no native domestic style except the Gothic, he quite forgets points which excuse the existing difference between church architecture and domestic architecture. He also does not inquire whether the Gothic design for the Canadian Parliament House, which he names, is not due to mere imitation, rather than to the discovery of beauty in the Gothic style.

There is matter to be considered in these questions, as also in the author's condemnation of "the odious unrelieved square top to windows and doors," on which much might be said that is particularly important to right judgment in the general question. But the points that we should desire to treat, for the removal of prejudice and error existing amongst the public, and largely infecting our own profession, are far too numerous for our present space.

**SYMBOLISM AS A SCIENCE.**

In the remarks which I hope to have the honour of reading on Monday evening, before the Institute of British Architects, I have endeavoured to give a scientific character to symbolism in art by tracing it up to its first principles in the theologies of ancient nations, the Chinese, the Indians, the Egyptians, and others.

In this way I have arrived at two principles, or agents in nature, which do not admit of further analysis, LIFE and LIGHT: these I find will furnish, or rather explain, the most recondite symbolism with which we are acquainted.

Of these, LIFE is the most important, and would seem to be the most ancient source of symbolism; first, as *universal life*; and secondly, as *specific or special life*, the life of animals and plants. The first of these, considered in reference to the *sexual system* of nature, will supply the otherwise mysterious symbols of the *equilateral triangle*, the *lingam-yoni*, and the *cruz-anata*; whence we come to the *tau* and the *cross*, the present received symbol of eternal life, and one of the most ancient also. The equilateral triangle is the symbol of all trinities in unity, for the ancients thought much of this arrangement, and had their triads, excepting, it would seem, the Hebrews, though in some places in their Scripture, where it was no longer permitted to put the tetragrammaton, or the most sacred name of four letters, three *jods* disposed in the form of an equilateral triangle take their place, thus combining all that the equilateral triangle in the universally applied sexual system was intended to express, the union of the male unit with the female dual. To us moderns this may seem the merest trifling; it did not so seem to the wise Chinese, to Con-fu-tzee, to Pythagoras, to Dante, and others; but foolish as it may appear, by looking at the early symbolism of the ancients from this bi-sexual point of view, we are enabled to understand the meaning of some things not otherwise easily explained.

That *three* should be the symbolical basis, or source, so to speak, of nature and art, may be only perhaps a corollary from Mr. Hay's "Harmonic Law of Nature," whence, in his theory, "Triangulation," or the triple ratio as applied to buildings, follows as a matter of course.

In the pictorial art three objects are required to produce a picture: one is nothing, two will not suffice, but with three, he it only three dots, or three *jods*, we get a form: there is something for our eye to figure, there is a triangle. In building, three is the prolific element of all construction; it would seem to be the primary element, two uprights, and a cross piece over, the *tri-lithic* system of Stonehenge; two piers, and an architrave above, were what a very great many buildings may be resolved into; by the multiplication of this arrangement we might erect a second Thebes.

The *lingam-yoni*, however varied in its forms, is, in fact, nothing more than a symbolical union of the two sexes, the unit, the male, and the dual or female. The *cruz-anata* is a form of this *lingam-yoni*, with a handle to it. I think it may be shown, also, that the Pyramids of Egypt, which consist of four equilateral triangles, inclined to each other, and meeting at the apex, are symbolical. It is well known that the equilateral triangle, among its other functions, was a symbol of Osiris, and also of Siva; and from what we can gather from the Indian and Egyptian theologies, it would appear that, in some important respects, these personified beings or operations agreed; and I think I shall be able to show that the Pyramids are Osiridian monuments, as well as tombs, and intended to symbolize the resurrection of the dead, and to transmit the memory of that most import-

ant credence among the ancient Egyptians to the latest posterity.

Special life, as in animals and plants, will furnish all the specific symbolism in use among the Egyptians, Persians, Greeks, and others, down to the modern days of Christianity. The lion, the eagle, the ox, the peacock, the dove, &c., will be found to act pretty much the same parts now, under different theories, as they did formerly.

The palm tree, the holm, the lotus, or water-lily, the ivy, &c., still figure in Christian architecture and sculpture. And these animals and plants, which stand for certain things, do so in virtue of their characters, habits, properties, and qualities, which have never changed any more than our human notions of them have altered.

From LIGHT is derived the symbolism furnished by the sun, the titles and glories of celestial personages, divine beings, and temporal rulers, more recently of saints and holy persons. While LIGHT, combined with LIFE, leads us, in an ascending scale, from earth to Heaven, embraces Christian martyrs, and would carry us to the consummation of Dante's beatific vision, amid cherubim and seraphim, and all the shining host, according to the most orthodox dicta of Dionysius, and the modern gloss of Mrs. Jameson.

In our Christian church architecture, by which I mean the architecture of the palmy Middle Ages, when faith and hope were overflowing with zeal in raising up structures symbolical of the spirituality which mounted on high, with spires and pinnacles, and winged buttresses, only still too heavy to rise, and arches pointing upwards, and trifolts, and triangles, and the triple ratio peeping out everywhere,—with a cross for the plan, and the most ancient symbol of nature, now of the blessed Trinity, ruling, governing, and controlling all the members, and most of their details, in these marvellous monuments of Medieval science, and patterns of structural invention,—we have, as in the church on earth, the type and prefigure of the church in Heaven, life and light symbolically and truly combined; and these records in stone of the piety of our forefathers appeal to us, as did the Pyramids to the ancient Egyptians; and we, like them, would seek our final resting-place, where faith has raised its most durable monuments.

H. C. BARLOW, M.D.

**ON BUILDING-STONES—THE CAUSES OF THEIR DECAY, AND THE MEANS OF PREVENTING IT.**

At the close of the paper on Building Stones and the Causes of their Decay, read lately at the Society of Arts, and printed in full in previous numbers of our Journal, —

The Chairman (Mr. Godwin) said the subject introduced by Mr. Barlow's paper was so very important, that he collected so large an amount of information bearing upon it. No one could walk through the thoroughfares of the metropolis, or any other large city, without observing the remarkable effect which the touch of even a very young Time had had upon nearly all our modern buildings. He had no doubt, most persons present could recall to their minds some building or tower which had been refaced, even by the same parties who had originally erected it. It was of the utmost consequence, not only that the public should fully feel the necessity of selecting a good stone in the first instance, but that, if possible, some means of indurating the softer stones, which were driven by economy to use, should, if possible, be discovered. There were a number of points offering themselves in this paper on which he had no doubt they would hear comments. There were texts for many essays, and perhaps there were some opinions to which gentlemen present would take exception. He was not quite certain whether the expression which Mr. Barlow made use of, that the decay of the stone in the Houses of Parliament was very painful, not to say "shameful," was justly justified, because he rather thought Mr. Barlow considered it more easy to distinguish between a good stone and a bad stone than most persons found it in practice to be. In fact his impression was—and it was borne out by the opinions of many practical men—that when a stone was once out of the quarry, it was almost impossible to say whether it was a good stone or a bad one. It would perhaps have been well if Mr. Barlow had referred to the numerous varieties of Bath stone, because that stone, when taken from the softest quarries, stood very well, whilst that from other quarries, not far distant, would not answer for external work in England—certainly not in large towns. Touching Can stone, it was clear that much of it was really good, but the conduct of the stone quarry owners seemed to him to be of a suicidal character. Not many years ago, having occasion to use Can stone in large quantities (although he had not himself recommended it), he visited the quarries in company with Mr. C. H. Smith, and they then made an examination into the condition of the quarries. As many of them knew now, although it was not so well known then, more than one of the beds of that stone were notoriously bad. Stone from these would not stand when exposed externally. Those beds yielded much larger blocks; they were easily worked, and they offered great temptations to builders, and, consequently, this inferior quality was sent to London and other places indiscriminately with good stone. Mr. Smith and himself called together some of the quarry owners, and suggested to them that they should mark all the stone

from the soft beds, so that it might only be employed internally; and, if it was used externally, the fault would be the builders'. Only one firm would promise to do that. The other quarry owners said, "What are we to do about the soft? Some persons think it is the best stone. We must send it wherever they will have it." The announcement that that one firm had made the promise had the effect of increasing their business, but whether they had ceased to carry out that suggestion, or whether the amount of bad stone sent was so much larger than the better qualities, certainly the Can stone which was sent to this country could not be depended upon for external work. He had himself been grievously disappointed with it, and should fear to use it. With regard to Buckingham Palace, where Can stone was used, that was perhaps the most remarkable failure that ever was witnessed. He recollected seeing the new front of the palace about a year or a year and a half after it was finished, and he found many parts in a state of ruin. Large masses of stone were in the habit of falling from the cornices, to the great danger of the sentries below, and the result was the necessity of knocking off vast portions of the decorations, and making them good with cement, painting them several times, with a frequent necessity for repeating that costly process. The late Mr. Thomas Cubitt felt this most acutely; and he (the chairman) alluded to it rather in justice to the memory of that gentleman, who always asserted that he was not to blame in the matter. The circumstance affected him deeply, although he had not proposed the use of the Can stone, and had employed every means to obtain it of good quality; watching processes which had been brought before the public from time to time to harden this and other descriptions of stone, only one or two were now at all spoken of. He had watched with considerable interest the proceedings in Rausome's process, especially in the case of the chapel in Bloomsbury; and he should be delighted to find, when sufficient time had elapsed to enable them to judge properly, that it had the effect which theoretically they so justly look for. He thought he should now best discharge his duty by abstaining from further remarks, and by inviting gentlemen to favour them with their experience upon the subject treated of in the paper.

Professor Ansted, F.R.S., said, as he had taken considerable interest in the subject of building materials, and the decay and preservation of them, he would offer a few remarks. The variations in the Bath stone were, as the chairman had said, very remarkable. He had seen many cases in which that stone was used with success, whilst stone from the same quarry had decayed in other situations almost immediately. Mr. Burnell had remarked that the decay of granite arose from the decomposition of the felspar which it contained. There could be no doubt that those felspars which contained soda generally decomposed, whereas those which contained potash did not. There were, however, exceptional cases, arising from peculiar conditions of hardness. With regard to the causes of decay of limestones, they were, to a great extent, mechanical. Limestones must absorb more or less of water. The water must absorb more or less of water. 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when the materials of the stone or the particles with which the grains of the stone were cemented together, were exposed to the action of the atmosphere. The deleterious atmospheric influences consisted partly of carbonic acid gas and partly of sulphurous acid—ultimately sulphuric acid in a diluted form; and if there were any other substances present in the air which had not yet been sufficiently examined. Those were enough to injure by dissolving the material of which the stone was composed. Then came the question—How was this to be prevented? Kuhlmann's process, although very ingenious, was not a modern one. Kuhlmann believed that, by washing the surface of the stone, or soaking into the substance of the stone a solution of silicate of potash or soda, or of water-glass, as he termed it, a permanent surface could be produced without much difficulty. Robinson believed that by putting in that solution of silicate of potash, he should produce a chemical change in the limestone, and form a silicious carbonate, or perhaps a silicate of lime. As far as the silicate was concerned, it would only be in a granular form. When silicate in this form was produced, it was deposited in detached grains, therefore he feared that little good would result from this process. It was true that it succeeded, by a slow process of change in a dry atmosphere, in obtaining a hard and durable surface; and he thought that perhaps when this process was very carefully adopted—when the material from which the soluble silicate was made was pure, and the operation was carried out in a dry atmosphere, it might be once or twice repeated, so that that method could not be adopted in any building in our own climate. It had been tried in the less humid atmosphere of France and Ireland, and if there were any other world so more rapidly in England, because the climate of the former country was better adapted to help forward the process. Mr. Ransome had reinvented Kuhlmann's manufacture of water-glass. Mr. Ransome had made the same experiments and found them fail, and then it suggested itself to him whether, after all, he could not produce an effectual process, which should be independent of the dryness of the atmosphere, and, by combining the first wash of the soluble glass with a subsequent wash of chloride of calcium, he seemed to have succeeded—theoretically it had been, no doubt, successful. The double decomposition took place in the mortar, and the silicate of lime, the formation of a chloride of sodium and silicate of lime. What was the silicate of lime? They had only to look at the specimens of mortar which they found in the old buildings to see the effect of this silicate of lime deposit. The cause of that peculiar power of the mortar to attach different pieces of stone together, was that the grains of sand and lime in the mortar became coated with a silicate of lime, and the surface to which the mortar was applied was coated in the same way; and this silicate of lime adhered so strongly to substances foreign to it, which it attached to each other, that practically the most perfect junction was effected; and when the mortar was very old the substance of the stones would separate more easily than the mortar. If they could deposit this thin film of silicate of lime, which would do that which was required. In large quantities silicate of lime was not so available as in smaller quantities. There was something in this thin film attaching itself to a foreign body, and it was this silicate of lime which was found which produced the remarkable effect which was found in old mortar. But still to doubt time had something to do with it. The deposit of the thin film of silicate of lime, he imagined, was hardly in the first place, but no doubt this deposit was the whole secret of the success. There could be no doubt but that the silicate of lime was deposited, for all who looked at the specimens of Houses of Parliament which had been washed by Ransome's process, after having been exposed for four winters, would see how the case stood.

Mr. G. H. Smith wished in the first place to correct the statement made in the paper with regard to the expense of the commission which was appointed to report on the best description of stone to be used in the construction of the Houses of Parliament. He was one of the four commissioners appointed, and he was able to state that, instead of the cost being 11,000*l.*, it was under 1,400*l.*, and the commissioners were travelling exactly fifty days whilst occupied in their investigations, and in the specimens of all the descriptions of stones brought under the notice of that commission had been deposited in the geological museums of England, Ireland, and the continent, and the Institute of Architects, he thought the most, and had not been entirely thrown away. With regard to the selection of magnesian limestone for the Houses of Parliament, he believed that if other parties had to consider the same investigation over again, they would come to the same decision; but in this case no person was appointed to exercise a supervision or inspection of the stone as it was delivered from the quarry. They need not, therefore, be surprised that the quarriesmen pushed in all the stone they got; and there was a great temptation to use had stone which they thought would be best to use. The commission to which allusion had been made consisted of Sir Henry De la Beche, Dr. William Smith, Sir Charles Barry, and himself, and they were occasionally assisted in their investigations by Dr. Buckland and Professor Phillips, and Wheatstone. Seeing there was no supervision of the stone as it was delivered for use, his only surprise was that things were not worse than they were. As examples of the same description of stone, he might mention the Museum of Practical Geology, in Jernyn-street, in which there was scarcely a bad stone; also the offices of the Amicable Life Assurance Company, in Fleet-street. The latter building was finished within about seven months after the return of the travelling commission, and in the stone of that structure there was scarcely a trace of decay, indeed, it was sent from the quarry as a specimen of the best to be found there. When the defective state of the stone used in the new buildings in Lincoln's-inn was discovered, he (Mr. Smith), having been at that time sent by the Government to see whether the quarries were being worked well, took the opportunity of inquiring of one of the foremen where the stone used in Lincoln's-inn came from, and he was taken to the quarry. Upon putting his finger upon the stone that was then being quarried, it left an impression, which showed the stone to be in a state of decay, even while in the quarry; and he replied to his inquiry, how that stone came to be in that state, that the builder would not have any other, because it yielded him the best profit. He might mention the case of another building in London, of magnesian limestone, erected by Messrs. Day & Martin, in the Strand, in 1810. It appeared that one of the partners, having an interest in some particular quarry, insisted upon that description of stone being used for the building. It decayed so rapidly that it had to be plastered up in many places, and had been often painted since. Mention had been

made of the decay of granite. He believed that was occasioned by the decomposition of the felspar, and this was done by the action of the atmosphere, and it was which there were the grains of sand, the plates of mica, and the clay which, he thought, indicated the decomposition of the felspar in granite. He considered that the best land stone, he considered as one of the finest in the world, and, owing to the facilities for water carriage, was well situated for the London market and England generally. Previously to the decision being given as to the description of stone for the Houses of Parliament, there was some doubt expressed whether the merchants would be able to supply a sufficient quantity of Portland stone for these buildings, and it happened that, at the same time, Sir Charles Barry was about to build the Reform Club-house in Pall Mall. For this building Portland stone was selected, and as the decision with regard to the Houses of Parliament was then doubtful, the quarry proprietors naturally supplied the best stone for this club, wishing to gain for it a favourable reputation. He did not think there was a bad stone in the whole structure, and though exposed to three different aspects for upwards of twenty years, it had stood perfectly. It seemed to have been a mania, of late years, for architects to use soft stone, and spend large sums of money to preserve soft stone decay, which in the end cost as much as if the best stone was used. With reference to the bedding of stones, allusion had been made to a remark which had fallen from him some years ago, that it did not matter which way the stone was put upon its bed. What he stated was, that sandstones would be sure to decay if they were placed (as he had seen Craigleith stones) edgewise, because that stone would decay away more rapidly, but with regard to oolitic stones, he thought the most experienced in such matters could not say which way the bed was. With reference to the class of sea air, and salts, and alkalis, upon stone, he would not say that it was not injurious to good stone, and bad stone would decay, but it were they were the sea air, and yet that structure existing was as good as new. He thought that the "sapping" of stone, he thought this must come from the brickwork behind, and it was not confined to any one description of stone. In the analysis of the stones examined by the commission before alluded to, as shown by the report of the commissioners, they did not find a trace of any salts in the stones which could produce this action, but efflorescence would come through a stone, however thick it might be, in contact with the sea air, and he was named for preserving it, the great difficulty was to get the preservative material deep enough into the stone to be of use; it was not merely upon the surface, he considered it would require to be carried down, and he considered it did not penetrate deep enough into the stone to be beyond the influence of wet, the stone would come off in sheets. In the commission before alluded to, he had taken care for the preservation of stone from decay, which was accompanied by hosts of certificates of a commendatory character. Trials almost without end had been made upon the stone, and he was satisfied that it was not possible, indeed, until time and weather had operated upon them, it was impossible to say how they would answer. Nature found out means of decay which the most scientific chemist never thought of. He had misgivings that, in the past, in association with eminent chemists, to trace those causes, but, even when they had found out the causes, it was doubtful whether they could find a remedy. As far as his own knowledge and experience went, he preferred to Mr. Ransome appeared to possess an advantage over others.

Mr. Robert Hunt, F.R.S., was desirous of correcting what he considered an error, into which the author of the paper, his friend Professor Ansted, and the last speaker had fallen with respect to the decay of granite. It had been stated, as the opinion of the gentlemen, that the disintegration of the granite was due to the decomposition of felspar. He was prepared to maintain that it was not due to that cause. Passing from that subject, they had entered upon the consideration of the decay of the decomposition of the ordinary sandstone was effected. Let them see what were the conditions. If they went to the old abbey and churches, they found stones which were taken from quarries, and they found the same marks of the tools of the workmen made 800 years ago were still perfect; and yet they found stone from the same quarries, when taken in London, Liverpool, Manchester, and elsewhere, in most cases showing lamentable decay. Let them ask themselves how that arose? There appeared to be one set of circumstances which had been overlooked by those who had been called upon practically to attend to the matter. They must remember that in large towns an atmosphere was produced which was more or less impregnated with gaseous exhalations, and they found the water—the dew and the rain—impregnated with sulphate of ammonia and carbonic acid. Discussion was comparatively of little value; there must be extensive experiments made before they could arrive at the truth. But, seeing that it was the porous condition of the stone which they had to deal with, the great question to be decided was, how they were to prevent that extraordinary porosity? It was true that, theoretically, Kuhlmann's process about ammonia solution, when they placed a stone in a solution of silica, there was a process of substitution by which they got it thoroughly saturated with silica. But this took time, and during that time the silicious solution was frequently washed off. His attention had been called, during the last two or three years, to Ransome's process. It appeared to him more satisfactory than any other, and met with success. There they had a silicate of potash applied to the surface of which had been rendered as clean as possible. The result was absorption. They then applied to the surface of the material, which was to be treated within the stone by two different means, one being the force of capillary attraction, the other of chemical affinity. Chloride of potassium and silicate of lime were the one being soluble in water, and the other remained to fill the pores. The great success of this operation, which, after all, could only be decided after a lapse of years, depended upon the fact that, by filling up the pores with the silicious solution, there was a silicious action going on within the pores of the stone. He was satisfied that they could only come to a correct conclusion upon this question by experiments, which the Institute of Architects would be wise to undertake.

Professor Tennant and Mr. Warrington having spoken, on the motion of the chairman, were voted to Mr. Barry for the paper he had read.

ON THE APPLICATION OF FIXED MATHEMATICAL LAWS FOR THE PRODUCTION OF BEAUTY IN ARCHITECTURE.\*

OF the 15th of April last a paper was read before this Association, entitled "The Harmonic Law of Nature with reference to Architectural Beauty." It was intended to illustrate a theory which professes, by the application of certain so-called geometric laws, to guide invariably architectural beauty, or, at all events, to guard against deformity.

I have much pleasure in complying with some remarks towards the discussion of the subject, which was then left over for a future occasion. Any one professing to guide us to an end so devoutly to be wished as the unflinching production of the beautiful, merits our best thanks, and I purpose now, with all respect, to discuss this theory, although I am free to confess that a careful consideration has brought me to a very decided opinion that it has no foundation in truth.

I shall, for the sake of clearness, first state in order my objections to the theory, and then I shall enlarge a little on each objection.

First, then, I propose to consider what proof is offered of the assumed existence in the human mind of a mathematical faculty or principle of harmony, as it is called, which would be the foundation of every scientific and external nature of the ratios which govern musical harmony.

Secondly, I will show that the musical ratios are inapplicable to form for the production of the beautiful, from a consideration of the physical properties of the objects of sight and hearing.

Thirdly, I will show, in a third place, that the musical ratios are inapplicable to form, for the purpose of producing the beautiful, from the fact that if they could be so applied, beauty would be found only at certain points or coincidences of instances. Such an objection implies that the external nature of the ratios which govern musical harmony.

In the fourth place, I will ask you to consider whether—granting, for the sake of argument, that proportions can affect the eye mechanically, as musical sounds do the ear—there is any reason to suppose that the proportions of the figures as the basis of the harmony, than the angles of imaginary diagonal lines.

In the fifth place, I will show that the proportions of the Parts of Beauty do not furnish any satisfactory evidence in support of this theory, give the most direct and conclusive evidence against it.

It is to be learned, through the eye, to judge of distance and magnitude, and to be sensible of the laws of perspective, and through the musical ear to appreciate the beauty of sweet sounds, in total ignorance of the theory of vibrations, and of the laws of musical harmony. A mathematician, a mathematician, a mathematician, and the author of this theory choose to call it by such a name, though with other men it passes under the familiar name of instinct. Such an objection implies that man and other animals have been furnished with original capacities wisely and beneficently adapted to the world in which they have been placed, and that these become perverted, and do not march along on an ascending evidence in support of this theory, give the most direct and conclusive evidence against it.

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But these geometrical laws which regulate the machinery of nature, which are the basis of the beauty that is perceived by the eye; in fact, the whole theory is founded on a total misapprehension of the nature of beauty, and of the faculties to which it addresses itself. In the intelligent or intellectual perception of the operation of the laws of nature there is a beauty of the very highest order, as revealing to us the physical means by which God has created the world, and the laws of the material, and does not concern itself with the form or proportions of visible objects, except in so far as they may be types which the mind can decipher. I use the word "types" to denote those forms which are the basis of the beauty that is perceived by the eye; in fact, the whole theory is founded on a total misapprehension of the nature of beauty, and of the faculties to which it addresses itself.

During the Middle Ages speculations such as those on which I have been commenting were not only in vogue, but in great favour. Did your time permit, many amusing examples might be given: they seem to have attracted the attention, and drawn down the condemnation, of Galileo, in a passage of admirable power. It seems so much to the point, in considering a theory founded entirely on these exploded notions, the beauty of the harmonic ratios, they understand not, or rather do not care, to quote it. The fallacious nature of these speculations, in numbers and proportions, and has expressed his sentiments concerning them very unequivocally—

"He that views the common appearance to be the mistake of those who persevere in making their knowledge and apprehension the measure of an apprehension and knowledge of God, as if that alone were perfect which they understand to be so. But on the contrary, we serve that nature has other sides of perfection which we cannot comprehend, and rather seem disposed to class among imperfections. For instance, among the relations of three numbers, there appear to us most perfect, which exist between numbers nearly related to each other, as the double, the triple, the proportion of three to two, &c.; those appear less perfect which exist between numbers remote from each other, as 7 to 11, 13 to 17, 17 to 19, &c.; and most imperfect of all do those

\* From a paper read by Mr. Thomas Purdie at the Architectural Association, mentioned in our last number.

appear which exist between incommensurable quantities which by us are nameless and inexplicable. Consequently, if the task had been given to a man of establishing and ordering the rapid motions of the heavenly bodies according to the laws of perfect proportions, I doubt not that he would have arranged them according to the former rational proportions; but, on the contrary, God, with no regard to our imaginary symmetries, has ordered them in proportions which are irrefragable and irrational, and altogether inappreciable by our intellect. A man ignorant of geometry may, perhaps, lament that the circumference of a circle does not happen to be exactly three times the diameter, or some other assignable proportion to it; rather than such that we have not yet been able to explain what the ratio between them is, but one who has more understanding will know that if they were other than they are, thousands of admirable conclusions would have been lost, and that none of the other properties of the circle would have been true; the surface of the sphere would not be quadruple of a great circle, nor the cylinder be to the sphere as three to two; in short, no part of geometry would be true, and as it now is. If one of our most celebrated architects had had to distribute this vast temple of fixed stars through the great vault of heaven, I believe he would have disposed them with beautiful arrangements of squares, hexagons, and octagons; he would have dispersed the larger ones among the smaller, and the less, so as to correspond exactly with each other, and then he would have had continued admirable proportions. God, on the contrary, has shaken them out from his hand as if by chance, and we are, therefore, not to think he has scattered them upon earth, without any regularity, symmetry, or elegance.

I propose now to show, in the third place, that the musical ratios are inapplicable to form, for the purpose of proportion. It is evident from the fact that if they could be so applied, beauties would be found only at certain points of coincidence, and deformity at all the intermediate stages.

In the 1<sup>st</sup> paper read to the Association in illustration of this, I find the following passage:—"That the eye is capable of appreciating the exact subdivision of spaces, just as the ear is capable of appreciating the exact subdivision of sounds, and that it seems to be the precise meaning of the phrase, it contains an obvious fallacy. Adopting the words of the passage itself, and employing them in the sense which, I presume, they are intended to express, I find that the eye is capable of appreciating the exact subdivision of spaces," in the same sense, or in the same degree, as "the ear is capable of appreciating the exact division of intervals of time."

Every one knows that in music the ear receives pleasure only from one class of sounds, and feels every departure from these, however slight, to be a positive pain. On the other hand, our taste for visual beauty is so varied and capricious, as to include objects the most opposite qualities. Not only so, but that which seemed beautiful a few years or months ago, seems now devoid of every quality which could render it pleasing. At all times the eye may recognize the objects as exceedingly beautiful, without feeling any slight departure from its proportions to have a jarring effect—the proportions may be considered as being destroyed—the beauty being destroyed—there may be great beauties, and the greatest beauty and positive ugliness, but the musical ear admits of no modification in the pitch of the notes: the instant a musical chord ceases to be a chord, it becomes a discord.

I propose to show, in the fifth place, that the proportions of the Parthenon, which are much relied on as conclusive evidence in support of this theory, give the most conclusive evidence against it.

I do not intend under this head to enter on the general question, as to what was the law, if any, by which the Greeks adorned themselves in arranging the proportions of their temples. That is a question which I have already treated by the measurement of such examples of Grecian architecture as have descended to our times, and by the light which they afford on the subject.

I may, however, remark in passing, that the notion of the Greeks having acted on any such general law, seems at least highly improbable for three reasons.

First, the dimensions of ancient Grecian architecture still in existence differ very much from each other in their general proportions as well as in their details. The Doric column varies from 4 diameters to the length—the proportion found in the temple at Corinth—to 6½; its upper diameter from 7 to 8 1/2ths of its under diameter; the height of the capital, in terms of the lower diameter, from 37 to 56-10ths. In Athens, the height of the columns is generally 5 diameters; in Selinus, from 5 to 5 3/4; at Egina and Agrigentin, 4. The anulets differ in different examples. The entablature ranges from 1½ to more than 2 diameters, and the angle of the pediment varies from 12° to 14°. These variations occur in the Doric alone, which is known to vary less than any of the other orders. If we fail, therefore, in discovering the operation of a fixed law from the proportions of this order, we are not likely to find it from those of the Corinthian or Ionic.

Second, that the Greeks, in common with the Gothic architects (and, I believe, modern architects follow the same rule) modified the details according to the height or width of the building. A striking example of this principle appears in the details of the Parthenon and of the Temple of Theseus. The first was situated on a height, and, as generally seen by a spectator, the vertical lines were to be much more elevated than in the other, which was situated on a plain. Accordingly, we find, in the Parthenon, the cornices, moldings, and general details, have less projection and greater thickness than those of the temple of Theseus; and, I believe, the same principle will be found universally applied, not merely in Grecian, but in all good architecture.

Third, the notion against the notion of the ancient Greeks having acted on any such principle is the silence of all contemporary authors on the subject. Neither the works of Plato, when treating on the subject of beauty, nor of Aristotle, who was himself a sculptor, contains one word to countenance such an idea. On the contrary, the doctrines they teach as to the nature of beauty seem to differ but little from those which are taught by the best writers and thinkers of the present day. It seems, therefore, to be pretty well proved, from negative evidence alone, that the Greeks had no other aids in the erection of their temples than those which are available to the modern architect. But at this point, I must to those whose inclinations lead them to its investigation, and return to the question before us.

It is scarcely necessary to say that, although the proportions of the Parthenon had coincided exactly with those which this theory would establish, they would have afforded a very insufficient basis for such a superstructure. The fact is notorious that proportions must vary indefinitely, according to the purpose of the erection, the position of the building, and the material employed. If iron had been the material which had come most readily to the hand of man for the construction of his edifices, Greek architecture would have been impossible. If for four thousand years mankind had used iron alone for architectural purposes, or even as the skeleton of edifices, our ideas of beauty would have been associated with such forms of construction as must have led us to consider a Parthenon, erected for the first time in our days, as altogether monstrous.

Besides, there is no unanimity among men of taste in allotting to the Parthenon among works of art the high position which this theory assigns it. One great authority could be named who condemns Grecian art as altogether base and depraved. Very many prefer Gothic to all other styles of architecture. I myself cannot see why the comparatively heavy Doric should be preferred to the more light and graceful Ionic, or to the Corinthian of the Chæric monument. But this theory has not even the slight support which the proportions of the Parthenon might have afforded. On the contrary, such evidence as they give is conclusive against its truth.

Substantially the same results are obtained by the angles which the theory prescribes, and compare them with the actual proportions of the building itself.

1st. To obtain the height of the colonnade to the top of the abacus, we are instructed, on a base supplied by the length of the uppermost step, to employ a diagonal line forming an angle of one-fifth, as it is styled, or in other words 38°. But this angle so employed gives a height of 22.92 feet only, the actual measured height being 34.25 feet, leaving a difference of nearly 1 foot 4 inches between the two.

2nd. The angle columns have a diameter, from file to file, of 6.82. To find the proportions of these we are directed to use a line forming with the perpendicular an angle of one-ninth, in other words of 10°, which gives a height of 6.94, being 1.94, or nearly 2 feet more than the measured height. It will thus be observed that the different heights are obtained for the colonnade, the one actually 3 feet 3 inches more than the other.

3rd. The average diameter of the six centre columns, from file to file, is 6.97, and a diagonal line forming an angle of 9° with the vertical line, is given to find its proportions. But this angle gives a height of 39.42, being 6.45 feet more than the measured height, or 61 feet more than the height measured by the angle given for the colonnade itself. A Doric portico of any one of the three heights here given would present a sufficiently strange appearance. I fear it must be left to the author of this theory to explain how the three are to be combined in one, or how any one of them is to represent the portico of the Parthenon.

4th. The angle given for the intercolumniation is one of 15° with the vertical line, which gives a width of 9.77—being 1 foot 4 inches more than the measured width, which is 7.84.

The author of the theory does not give us an angle by which to find the proportions of the ground-plan. Taking the length of the building, as measured by Mr. Penrose, at 288.14—the breadth at 101.34, its diagonal forms angles of 19° 23' 33", and of 70° 36' 27" with its sides. These angles do not bear a simple ratio to an angle of 90°, and are therefore not recognized by this theory.

Now, it would not have been surprising if, in applying a theory of this kind to a building, some coincidences should have been discovered. As I have already shown, the system gives certain points where its supposed harmonies are found. These points occur at minute intervals, and every part of a building must have one point, or another near it. By adopting, therefore, the nearest, either above or below, an apparent coincidence might be made out. Nothing less than absolute exactness could meet the requirements of such a case. But the coincidences here are so glaring as to admit of no explanation or apology.

It will be observed that, by a very slight change in the angle given for finding the form of such details as the columns, they may acquire absurd proportions. The slightest alteration in the angle makes a very great difference in the height of a narrow object—a fact which of itself shows in a strong light the great improbability of the Greeks having worked by any such system, in finding the proportions of their edifices.

I have applied this theory precisely in the mode prescribed by its author, and have founded an objection on the method, notwithstanding that it is arbitrary and inconsistent in the extreme. In fact, before drawing the diagonal lines in the elevation of the Parthenon, rectangles are assumed to exist, which have no existence at all, and the whole form of the building is changed. Under the treatment to which it is subjected, the entasis of the column entirely disappears, and imaginary diagonal lines are drawn to imaginary vertical ones, and among these imaginary proportions the supposed harmony is to be found.

In conclusion,—The theory we have been considering has been brought before the public in a great variety of ways. It has been discussed in papers read to many of the literary and scientific societies of Great Britain. In these papers the method of teaching in our drawing-academies has been condemned, the copying of the ancient models has been denounced as ruinous to art, and the adoption of the principles of this theory has been recommended as the fitting substitute. It seemed to me, therefore, that a service would be rendered to the cause of art and of truth if we could ascertain whether these "first principles, or teachable laws of beauty," as they are called, were built on a solid foundation.

After a full and I trust a candid examination, I have come to the conclusion that, instead of a well-founded theory, we have a fanciful and untenable hypothesis, without the slightest basis either of facts or philosophy.

CAMP HOSPITALS A HUNDRED YEARS AGO.

WE are going to gossip to the length of a column or two about a famous physician of the eighteenth century,—rather, to tell the exact truth, we are going to use that hundred-year-old worthy as a peg on which to hang some desultory chat,—and we cannot better introduce a notice of him and his work than by a quotation from a still more famous physician of the seventeenth century. "Non occides," says Sir Thomas Browne, "is the commandment of God, yet scarce observed by any man; for I perceive every man is his own atropos, and lends a hand to cut the thread of his own days. Cain was not therefore the first murderer, but Adam, who brought in death." There are irreligious people who may say that it is irrelevant to suggest such solemn, and, indeed, awful thoughts, when one is only going to talk about ventilation, ague, and fever, and such common things; but, indeed, if the thought has been suggested to us that we deal too lightly with the sixth commandment, when, through neglect or indifference, sickness is not warded off, and death is not prevented, we owe the suggestion, just at present, to the good and eloquent Parson Lot, than whom no one does more, in these days, to teach a true, because an informed and enlightened reverence, and whose sanitary lectures and addresses, now first presented to us, in a collected form, by Mr. Parker, we counsel all readers to study. It is a passage in the address delivered at Bristol, that has sent us back to the *Religio Medici* to seek for a sentence which Mr. Kingsley himself would not scorn to put in the place of honour at the head of one of his sanitary discourses; and if such solemn words can ever be fitly used on this subject, it is surely most fitting that they should be used to introduce the first and the greatest British sanitarian, Sydenham, the father of English medicine, had done something for the sanitation of certain special diseases; but it was reserved for Sir John Pringle to be the first to lay down general principles, and to go back, in the spirit of the philosophy of observation, from the discourses to their particular causes. In many respects he was a remarkable man. A hundred years ago, sanitarians were not ashamed of being physicians. There was then no arbitrary and pernicious division between the art of preventing and the art of treating. They made a campaign in the Low Countries, or they accompanied the fleet to the West Indies and the Spanish Main, and then they came back, enriched by a novel experience, to practise in Jermy-street or Pall-mall. Now-a-days, they are called commissioners, and write blue-books. Then, they believed in logic and inductive philosophy. Now, they believe in statistics. When Pringle accompanied Lord Stair to the Low Countries and Germany, and was present with George II. at the victory of Dettingen, he was, at the same time, professor of moral philosophy at Edinburgh. After his return to London, he became president of the Royal Society. And, what is still more honourable to his memory, considering the way in which it came about, he, not long afterwards, vacated that chair. Some discussions about the then infant science of electricity had arisen in which the king had adopted the side of error. Pringle was obliged to bint that the laws of nature would not bend even to the command of a king, and it was intimated to him that no one who cultivated science in so democratic a fashion, could be permitted to occupy the chair of Newton, whereupon he resigned. Another great medical philosopher now gracefully fills that chair. How strange it would seem if, in our happier days, Sir Benjamin Brodie were to become the victim of such another instance of royal folly!

When recalling attention, the other day, to Dr. Brocklesby's little work, and glancing some extracts from it, we pointed out that he offered us the record of three distinct, successive experiences. Pringle's Notes of the Campaigns of 1742-3-4, and of that of 1745 in Scotland, do not admit of such a precise division. They are very pleasant reading, and present some amusing and interesting pieces of information. It is amusing to read of the gift of flannel underwaistcoats, presented by the good Quakers of Lichfield to the Duke of Cumberland's army; and it is interesting to read of the many broadsword wounds of the head, which were treated after the battle of Culloden. Interesting, too, is it to see how he scouted the idea of injury from the ripe fruits of the country; and that he was careful to remark, that the autumnal diseases arose from quite other

\* See "Science of Beauty."  
\* The Builder, February 4, 1860.

causes than the free use of these. Reading what he says, one's mind is carried back to the camps around Varna, when death was popularly supposed to lurk in magnificent melons and figs; whereas, in fact, it was blown about with every breath of wind from a pestilential marshy lake, or from the decay of milk, pulsed vegetation. And again, one thinks of the march across the valley of the Beibce, of an exhausted and plague-stricken army, a march which more resembled a procession of Bacchus and Silenus than that of a reduced army in the close neighbourhood of an enemy; with mules decked with vine-leaves, shakos and gun-buckets filled with grapes, and every havresack gaping with rich fruit. One remembers how loudly and terribly foolish generals shouted to see men, already marked with scurvy, obeying a true instinct in gorging themselves with fruit; and one cannot help thinking it a pity that a little of Pringle's old-fashioned sense is not more generally diffused now.

The main practical interest of the book centres on two prominent points; the sanitary condition of the hospitals, and the sanitary condition of the countries in which the campaigns were made. That is to say, we are invited to consider the condition which nature presented, and the condition established by art; a condition preventable, and a condition non-preventable. Both were exceedingly bad. To specify the results, we must attempt to generalize. It is a very broad generalization, but one sufficiently accurate for present purposes to say that the products of vegetable decay cause diseases of a periodic or intermittent character; and that the products of animal decay, in which must be included those caused by overcrowding, induce diseases of a continued or non-intermittent character.

Thus, when the troops were influenced only by the flat, humid, marshy, raw country which was the scene of their tedious activity, they suffered from ague and remittent fevers. When they were pent up in the close-packed garrison towns of the "cockpit of Europe," or huddled together in villages on their line of march, or, still worse, when they were crowded into transports, then there appeared the devastating jail fever, or typhus, which Pringle, from the experience here and at the Savoy prison, and other places, was the first to distinguish and describe with sufficient accuracy. The course of disease seems to have been, every year, uniformly the same. In the summer and autumn the troops were marched and counter-marched in a country such as that watered by the "lazy Scheldt," which was flat, intersected by canals and ditches, without hills to direct the wind in streams on the lower grounds, with occasional forests which arrested it and made it stagnant; or they were in a country which was all sand, with much water immediately below it. Add to this that the well water became speedily putrid, so as to be scarcely potable; then appeared the intermittents and remittents. This was most noticeable, as has frequently been observed, under similar circumstances since, where there was an estuary near, in which fresh and salt water intermingled. In winter, the troops were huddled into cantonments, inactive, and with their systems impregnated with miasmata. Then there came the fevers of continued type, and the intensity and urgency of the disease were in exact proportion to the degree of overcrowding. How truly here does a saying of the late M. Baudens apply, which he used when speaking of his experience of typhus in the Crimea:—"On pourrait le faire naître et mourir à volonté." There is another observation which has been frequently confirmed by Indian experience, which we must give in Pringle's own words:—"In marshy grounds, intense and continued heats, even without rain, occasion the greatest moisture by the exhalation which they raise and support in the atmosphere; whereas frequent showers during the hot season cool the air, check the rise of the vapours, dilute and refresh the corrupted water, and precipitate the putrid and noxious effluvia. But if heavy rains fall in the beginning of summer, and are followed by great and uninterrupted heats, the water stagnating in the lower grounds, and corrupting there, furnishes matter for more exhalation, and thereby makes the season more sickly and the diseases more fatal."

Take up any sanitary book you please; read, for instance, what may be called the first and the last sanitary books that have been published, this book of Pringle's, and Mr. Kingsley's recently collected addresses, and you will find, in a very different dress, according to the period, in Pringle's rotund, Johnsonian periods, in the sharp, incisive sentences with which Mr. Kingsley lays precept upon precept,—in all you will find but one text

preached from, which, indeed, contains the sum and the substance, the beginning and the end of all sanitary teaching.—*That which is dead, and that which has been thrown off as effete or dead by the living organism must be removed from the neighbourhood of the living.* Much has yet to be done in the way of proving the application of this proposition to particular circumstances and conditions of disease. The method of connection between the cause and the result has yet, in many cases, to be ascertained. An immense deal remains to be done in the way of applying the principle. But we know enough to be able to say that the proposition is true and irrefragable, and that, looked at with the eye of understanding, it will be found to comprehend all. Pringle and his contemporaries saw it as through a glass darkly, and made much effort in groping their way to a clearer light. Much has been done since that time; much is doing now. It would seem as if the work of the future were for the chemist, the engineer, and the architect, rather than for the medical theorist.

It would be unpardonable in a notice of Sir John Pringle, to omit mention of the question of ventilation,—the subject of all others about which people seem most apt to grow dogmatical,—the subject of all others about which it is most unsafe to dogmatize. Here is a passage which will show how much he was in advance of some even in the present day,—of some who seem placed in positions of obstruction, solely to clog the wheels of improvement, and to be on the watch for the purpose of repelling and hindering the slightest advance. "With regard to preserving the purity of the air, the best rule is to admit so few patients into each ward, that to those unacquainted with the danger of bad air, there may appear room to take double or triple the number. It will also be found a good expedient, when the ceilings are low, to remove some part of them, and to open the garret-story to the tiles. Constant experience evinces that in a few days the air will be corrupted in close and crowded wards; and what makes it hard to remedy the evil, is the difficulty of convincing either the nurses or the sick themselves of the necessity of opening the doors or windows at any time for air. I have generally found those rooms the most healthful when by broken windows and other defects, the air could not be excluded." Let us say a word or two, while space lasts, on this question,—not on the grounds of exceptional difficulty. If you want a "frightful example," you cannot do better than take the case of the military hospitals, built on the unfortunate corridor principle, which are so universally to be met with. The construction is deplorably bad. What requires to be done is to make the best of them. You will generally find, in them, oblong wards, much over-crowded, with a window over the door, a fireplace, and one window. In most you will also find ventilators, erected by a recent royal commission, which consist of gratings intended for entrance of air, and a box shaft for exit, both, of course, communicating with the external atmosphere. These are supposed to be beyond the control of the patients by means of locks and keys; but soldiers, like love, laugh at locksmiths, and, in fact, do obtain complete control of the ventilators. Further, it is easy to discover that the gratings admit but a very slight current. As to the aperture of exit, strange as it may seem, nature is stronger than a royal commission! Nature has decreed that cold air shall descend; and, in point of fact, these shafts do pour down a cataract of cold air on the head of the luckless tenant of the nearest bed. Under these unhappy circumstances, one will probably, first of all, remove the door-window, leaving a simple *fenestra*. But, unfortunately, in the corridor there are water-closets, and these have no exterior ventilation, and the consequence is, that your *fenestra* causes an interchange, not of pure air with foul air, but of foul air with foul air, of sewer air with air poisoned with the exhalations from skin and lungs. There is but one thing to be done,—to open the window; that is the only channel through which pure air can be procured. All that seems necessary to improve the atmosphere very materially, at least, is to fix the window so that it shall be open from the top to the extent of two or three inches, or, what would be better, but more expensive, to have louvred or perforated panes. Even with the windows thus open, and with the ventilators open, there is not a perceptible current in the ward. But a proposal to open a window would be a terribly bold one, and it evokes many old-fashioned prejudices. What one has to accomplish is to overcome these prejudices, and to demonstrate that the right way of ventilating and

warming a ward is to have a good fire, plenty of blankets, and—an open window.

We have been speaking of the rebellion of "Forty-five," and we have been speaking of ill-ventilated hospitals. It is a very natural transition to speak of a particular, well-known hospital which, in a striking way, illustrates both the systems on which a hospital may be constructed. When the men of Sir John Cope's division were wounded at Prestonpans were sent to Edinburgh, they were admitted into the spacious, lofty wards, with cross windows and thorough ventilation of the infirmary just then erected, by Lord Provost Drummond, on what is essentially the pavilion principle. It is melancholy to reflect that should such an occasion ever again require such an admission in that neighbourhood, the wounded would be placed in a building erected within the last few years on the corridor principle, and with that principle applied in an elaborately bad way. Low-lying, in the midst of a filthy and populous neighbourhood, with every sin of omission and commission in its plan, the new Edinburgh hospital seems to have been contrived for the production of hospital diseases, and it fulfils that object.

This paper was commenced with an apt quotation from Sir Thomas Browne: we cannot do better than conclude it with another from the same well-stocked armory. "There are two books from whence I collect my divinity; besides that written one of God, another of his servant Nature, that universal and public manuscript that lies expanded into the eyes of all." C.W.M.

#### THE ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting of the members of this society was held on Wednesday last, in the Rooms of the Royal Institute of British Architects, 9, Conduit-street. The chair was taken by the President, Mr. Sydney Smirke, R.A.

Mr. John Turner, honorary secretary, read the minutes of the last meeting, which were confirmed.

Mr. Maïr (referring to a paragraph in the report in relation to the limited measure of support awarded to the society from members in the provinces), expressed his regret that such was the case, and inquired what means had been taken to bring the claims of the society under the notice of the profession, residing out of the metropolis.

Mr. Turner said that every member of the society was furnished with a copy of the report, and that a number of copies were forwarded to all the corresponding members.

Mr. Turner then read the report of the council, detailing the operations of the society during the year 1859. It congratulated the society upon having arrived at the tenth year of its existence, and observed that the course of sound practical benevolence rarely, if ever, failed in this country, but from the incompetence of its promoters. The council expressed the deep regret they entertained at the loss they had sustained by the decease of the society's late noble patron (Earl de Grey), as well as of several warm friends, subscribers, and donors to its funds. It was, however, with great satisfaction that they announced the addition of many new annual subscribers, besides several kind donors. On the other hand, it was necessary to state that the applications for relief advanced at an accelerated rate. Ten of these cases, all undoubtedly deserving cases, had been relieved during the past year, and it was painful to observe among the recipients those hearing the names of men who had already attained honourable distinction in the profession, but who had stopped in their career by sickness or death, before they had had time to reap the fruits of their talent and labour. These were the cases, which it was the peculiar province of the society to relieve. The mere uneducated pretender and the dishonest practitioner were alike held to be unworthy of their sympathy. There was no doubt that the members of the profession were annually increasing largely in number, and the claims on the funds would as certainly increase. The members were therefore urgently entreated to use their best endeavours to promote the extension of the society, by obtaining new members, and by making its objects more extensively known among their professional friends in the provinces. The council also took the liberty of suggesting for the consideration of those of their brethren who were blest with prosperity, that, according to the rules of the society, they were bound to invest all donations in the public funds; therefore, every donor would, according to the amount of his gift, be, *pro tanto*, adding to the permanent yearly income of this truly useful

society. It was the pleasant duty of the council to report that the Royal Institute of British Architects had again testified its approval of any sympathy for the society, by granting the use of its new and commodious apartments as its place of meeting.

The Chairman in moving the adoption of the report, said that in doing so he could not claim attention on the score that it contained any large amount of statistical information. It was a difficult and delicate matter in the administration of funds of this kind, to give details without giving publicity to that which might occasion pain to individuals; but the financial statement would throw some light upon the subject. In the past year they had added the new subscribers to their list of subscribers, but still their income was far below what they might reasonably expect, regard being had to the work they had to do, the status of the profession, and the great number of practitioners. The list contained nearly 230 members, and yet it was a subject for regret that the number should be so limited, when it was borne in mind that there were in London alone, 500 gentlemen practising as architects or surveyors. He suggested that they might make a great and important move, if each individual member would evince his anxiety for the welfare of the society by making a compact with himself to obtain the accession of at least one new member. He found on looking at the balance-sheet of the Artists' General Benevolent Institution, that it had received seventy cases in one year. It was true that the society included all members of the fine arts, indiscriminately, and that it was forty or fifty years old, while the Architects' Benevolent Society had been but ten years in existence; still it was impossible not to admit that the latter society might effect a much larger measure of good if it was better supported by the profession. He begged to move, in conclusion, that the report be received and adopted.

Mr. Mocatta seconded the motion, and observed that, regard being had to the fact that the society had been in existence ten years, there was certainly a want of *esprit de corps* among the members of the profession. He regretted that the architects in the provinces had not come forward with greater alacrity and in greater numbers to support the society.

Mr. Mair said he could not understand upon what principle the society was not better supported in the provinces, but he had no doubt that, if gentlemen would exert themselves among their friends and connections, many new subscribers might be obtained. He had himself written to eight gentlemen, and inclosed them copies of the rules, &c. To seven of these letters he had received answers. One gentleman said he would subscribe next year; six had sent their names and small donations to the fund, and one had taken no notice of the application. Now if each gentleman who felt an interest in the society would ask a friend to join it, the society would soon be placed in a position to increase its usefulness and to carry out still further the benevolent designs of the founders. He assured the meeting that many of the cases which came before the board were of an extremely painful character, and that the council would often be glad to give an extra 5*l.* note if their funds would admit of it.

The Chairman said he had himself endeavoured to excite the benevolence of his professional friends. He had addressed about forty letters to gentlemen whom he had reason to believe would be willing to assist the society, and the applications had produced ten additional subscribers. Thirty, however, were silent; but he hoped, upon reflection, they would come forward and aid in a work which had so many claims upon the consideration of the profession.

The motion for the adoption of the report was then put and agreed to.

Mr. Turner read the balance-sheet, which showed that the receipts of the society, including a balance carried forward from the previous year of 18*l.* 13*s.* 8*d.*, amounted to 417*l.* 13*s.* 9*d.* Of this sum 24*l.* 3*s.*, had been received for subscriptions in arrear, 140*l.* 13*s.* for subscriptions due and paid in 1859, 43*l.* 11*s.* 6*d.* in donations, and 26*l.* 10*s.* 7*d.* from dividends. The principal items of expenditure during the year were advertisements 9*l.* 12*s.* 8*d.*, stationary and printing 10*l.* 4*s.* 3*d.*, collector's commission 9*l.* 14*s.* 9*d.*, gifts to applicants 185*l.*, cash invested in the funds 37*l.* 16*s.*, leaving a balance of 147*l.* 8*s.* 11*d.* The amount of stock belonging to the society on the 31st. of December last, was 904*l.* 9*s.* 6*d.*, and the arrears of subscriptions, in respect of the years 1857, 1858, and 1859, were 51*l.* 9*s.*

On the motion of Mr. Mayhew, seconded by Mr. Mair, the statement of accounts was received and adopted.

The following gentlemen were, on the motion of Mr. C. C. Nelson, appointed the council for the ensuing year.—Mr. W. A. Boulnois, Mr. R. C. Hussey, Mr. William Moseley, Mr. R. L. Roumieu, and Mr. George Wiles.

The various other officers of the society were also elected, and, on the motion of Mr. Mocatta, seconded by Mr. Moseley, the best thanks of the meeting were given to the president and the council for their continued exertions on behalf of the society.

Thanks were also passed to Mr. Tite, M.P., the treasurer, who was prevented by business from taking part in the proceedings.

A vote of thanks to Mr. Smirke for presiding terminated the proceedings.

PROGRESS OF RAILWAYS IN SPAIN.

SOME weeks ago the opening for public traffic of the Seville and Jerez railway was announced to take place shortly; but, though numerous trains have transported war appliances, wounded soldiers, and railway materials, the day was not fixed for the opening when our correspondent wrote. This is owing to the very bad state of the weather for the last two months. Throughout Andalusia, circulation has been so impeded, that the principal towns are completely cut off from all communication with each other, and the Seville and Cordova line resembles an island surrounded by a sea of mud. So the *Madrid Railway Gazette* reports.

Most active steps are being taken for the speedy construction of the line from the sea coast to Tetuan, in Morocco, lately taken by the Spanish troops. Don Mariano Elna, government officer of the province of Seville, has already arrived at the camp in the Tetuan valley, in charge of railway materials, &c. The line is to be nine kilometres in length.

At the close of the year 1859, the following was the state of railways in Spain, with their annual receipts:—

	Kilometres in length.	Receipts 1859. Reals vellon.
Madrid to Alicante .....	482	44,228,893
Madrid to Saragossa .....	87	2,129,729
Cordova and Seville ....	131	4,259,146
Valencia and Almansa ...	138	6,439,425
Alar and Santander, ....	91	9,540,572
Barcelona to Saragossa ..	37	2,905,860
Barcelona to Martorell ...	27	2,083,765
Barcelona to Arenys ....	36	4,185,787
Barcelona to Gironelles ..	294	2,742,056
Jerez to Trocadero .....	273	3,717,408
Langres and Gijon .....	39	—
Tarragona .....	14	761,198
Totals .....	1,169	81,991,444

The Langres and Gijon line, in 1858, received 1,832,071 reals vellon (*l.* = 96 reals vellon).

Five locomotives, of the most improved workmanship and solidity, have arrived at Santander from Havre, on board the French vessel *Salamandre*, for the Northern Spanish railway.

On the 2nd February, the first gas lighting was inaugurated in the flourishing city of Jerez. Much praise is given to the Spanish "*Compañia de Credito*" for this enterprising work.

The works of the fourth, fifth, and sixth sections of the Alcazar de San Juan and Ciudad-Real portion of the Madrid and Saragossa railway have been advertised for contract, tenders being received up to the 15th February. The total estimate for the three sections is 5,850,000 reals vellon, or about 58,500*l.*

In 1860, according to the laws of the different concessions, the following railways are to be opened for public service:—Granollers to Santa Coloma; Valladolid to Burgos; Duenna to Alar; Arenys de Mar to Santa Coloma; Avila to Valladolid; and Burgos to Vittoria. In 1861 are to be completed the sections, Madrid to Saragossa; Saragossa to Barcelona; Madrid to Avila; and Mouthlauch to Reus. In 1863 are to be finished the Tudela and Bilbao; Saragossa and Alasasia; and Vittoria to Iruan, at the French frontier.

Taking as a standard of comparison the velocities of the trains on the Valencia and Alicante railways, and their fares, we have the following results for calculating a voyage from Madrid to the French Frontier.

Madrid to Valladolid in 6 hours, at a cost of 98 reals first class, and 44 third class; Madrid to Burgos in 11 hours, for 145 reals first class, and 66 third; from Madrid to Iruu, in 10 hours, at a cost of 253 reals first class, and 114 third class. The distances are as follows.—Madrid to Valladolid, 215 kilometres; Valladolid to Burgos, 150

kilometres; Burgos to Iruu, 269. Total, Madrid to Iruu, 534 kilometres.

When we consider that the distance from Bayonne to Paris (776 kilometres) is accomplished in 17½ hours, deducting the long stoppage at Bordeaux, and the Paris and Calais train runs over 354 kilometres in 7 hours, we must conclude that the distance between Madrid and Iruu can be performed in 12 hours. In the above calculations, 96 reals may be taken as *l.*

The following authorizations have been granted by the Spanish Government for various works, &c. To D. José Blazquez, a term of eight months to make necessary surveys for a line of railway, from La Roda to another point on the Madrid and Almansa Railway, terminating in the Hinajeros coal-fields. To D. Sebastian Gonzalez y de la Fuente, for surveys to be made for the following lines. A line starting from a point in Madrid called Red de San Luis, by the Calle de Puencarral, and La Fuente Castellana, passing through the promenade of Recoletos, the Salon del Prado, Puerta de Atocha, Portillo de Embayadores, the road which leads from the Puente de Toledo to the Puerta de San Vicente, and terminating in the Puerta de Hierro. Another railway is to start from a convenient point in the interior of the city, and terminate at the Puente de Toledo. A third line is to start from the Plaza de Santo Domingo, passing by the Calle Ancha de San Bernardo, and ending at the above-mentioned Puente Castellana. A fourth railway is to join the Puerta del Sol with the Venta del Espiritu Santo. Lastly, another line from the Puerta de San Vicente to the Ermita de San Isidro del Campo.

To D. Juan Llanos and D. Juan Manuel Fernandez Vitorcs, authority has been given to complete plans for the water supply of Valladolid, from the rivers Duero and Pisuerga.

To D. Miguel Montalvo y Collantes, to make surveys for a railway from the town of Logroson to Villanueva, or some other town on the Ciudad-Real and Badajoz Railway. Time allowed, a year.

To Don Vicente Sanchez Garcia, for surveys, to be completed in a year, also, for a line from near Granollers to the coal basins of Sarroca and Ogasa, at San Juan de las Abadesas.

MONUMENT TO THE LATE SIR JAMES M'GRIGOR, BART.

AN obelisk to the memory of the late Sir James M'Grigor has just been erected in Aberdeen. It stands in the centre of the Quadrangle of Marischal College, within the venerable walls of which building the deceased baronet was educated. The height of it is 72 feet, and the material of which it is composed is polished granite. The latter was brought chiefly from quarries near Peterhead. The shaft of the obelisk is 48 feet in length, and the plinth from which the shaft rises consists of two stones, weighing each five tons. The stones of the base vary from two to four tons, while those of the pedestal are rather larger. In the pedestal, which, like the remainder of the structure, is composed of red granite, a slab of grey granite, from the Cairnrigg quarry, near Peterhead, has been introduced, for the purpose of containing the following inscription:—

"This obelisk is erected to the memory of Sir James M'Grigor, bart, M.D., K.C.B., F.R.S., &c., for thirty-six years Director-General of the Army Medical Department, and several times Lord Rector of Marischal College, Aberdeen.

He was born in Strathspey, North Britain, on the 9th of April, A.D. 1771.

He entered the army as surgeon of the Connaught Rangers in 1793, and served the two following years in the campaign of Holland.

He was afterwards medical chief in the expedition against the island of Grenada; in the expedition under Sir David Baird, from Bombay through the deserts of Thebes and Suez to Alexandria; and also in the Walcheren expedition.

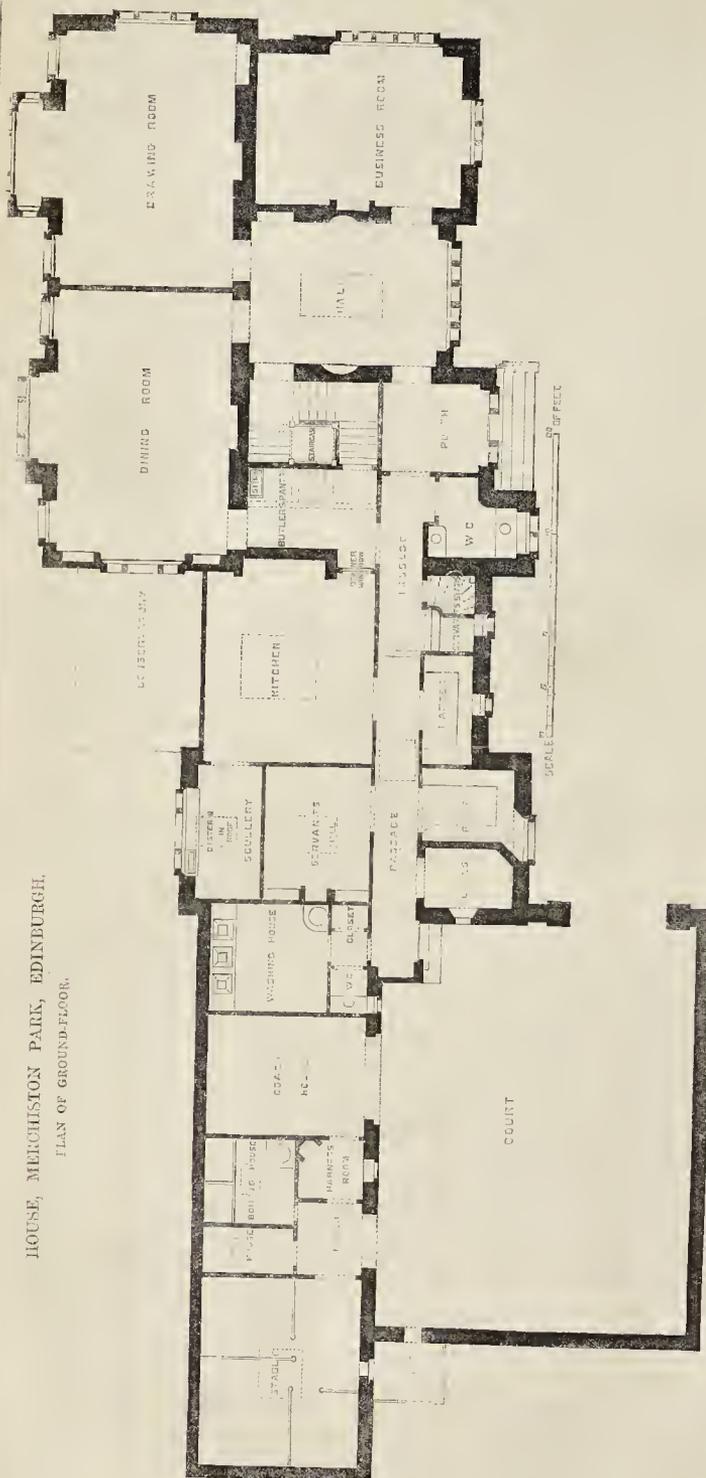
He was chief of the medical department of the army under the Duke of Wellington in the Peninsula War, from the siege of Ciudad Rodrigo, in the year 1811, to the final battle of Toulouse, in 1814.

He was favourably mentioned in the despatches of all the generals under whom he held these responsible posts, and was repeatedly noticed in those of the Duke of Wellington, who, on the 26th of July, 1814, referring to the manner in which Mr. M'Grigor had conducted the department under his direction, wrote thus:—"I consider him one of the most industrious, able, and successful public servants I have ever met with."

In the course of fifty-seven years of active service, he was exposed to the vicissitudes of war and climate, besides encountering shipwreck and other dangers at sea, yet he lived to attain a tranquil and happy old age.

He died in London, on the 2nd of April, A.D. 1858. This memorial is erected near the place of his education and the scenes of his youth.

The base of the obelisk is surrounded by a platform of grey-coloured granite, from the neighbourhood of Aberdeen.



HOUSE, MERCHISTON PARK, EDINBURGH.  
PLAN OF GROUND-FLOOR.

THE WESTMINSTER BELL.

Dr. PERCY, of the Government School of Mines, has made his report to the Board of Works, dated March 7, the day before Mr. Cowper told the House of Commons "that he could not state the precise cause of the cracking of the Great Bell, but that either the hammer must have been too heavy for the tenacity of the bell, or the bell too little for the hammer (laughter)," which was the effect of the previous report on the bell, by Professor Tyndall. Dr. Percy confines himself to the question of the composition, and gives the following analyses, which we designate thus for distinctness:—

*Tm* is a piece cut from one of the upper "wires" or rings on Mr. Mears's bell. *Bm*, from one of the lower wires, just above the sound-how, up to which the largest crack extends. *Tw* is from the top of Messrs. Warner's former bell. *Bw*, from the bottom of it; and *D* is the composition prescribed by the contract.

	Copper.	Tin.	Specific Gravity.
<i>Tm</i>	76.01	23.89	8.32
<i>Bm</i>	74	25.98	8.8
<i>D</i>	75.86	24.13	8.8
<i>Tw</i>	75.31	24.37	8.847
<i>Bw</i>	75.07	24.7	8.869

In other words, the metal on the outside of Mr. Mears's bell has nearly 2 per cent. more tin, and 2 per cent. less copper than the prescribed composition; and there is a difference of composition between the top and the bottom equal to 37 lbs. of copper to every 1 cwt. of tin.

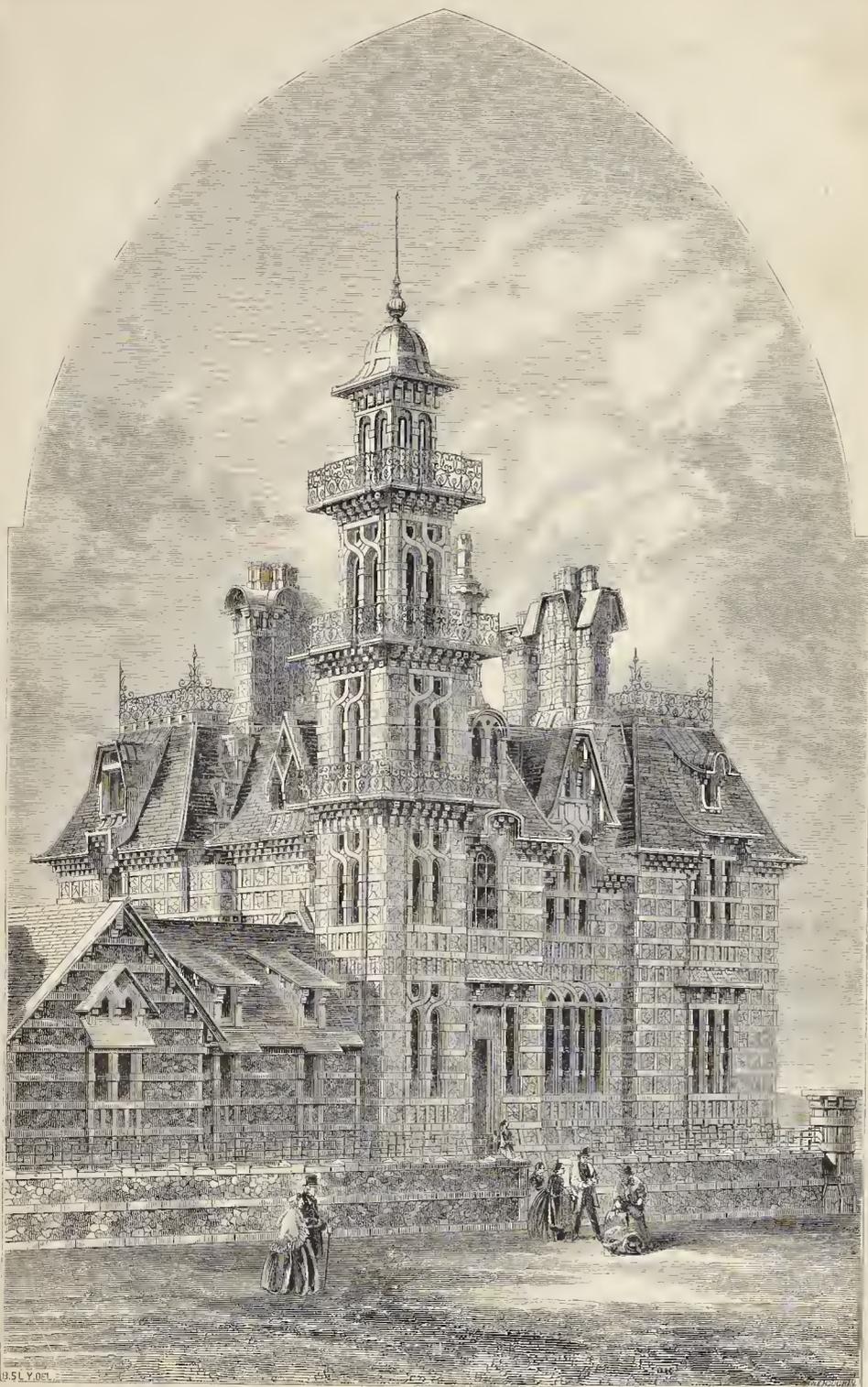
In Messrs. Warner's bell there was no material deviation from the prescribed composition, and the bell was homogeneous; although it appears to have had an internal defect of a different kind, a sort of natural crack or non-junction of the metal, which was found when it was broken up, and a piece of it was lately exhibited at the Institution of Civil Engineers. The difference of specific gravity is also to be noticed.

MANCHESTER SCHOOL OF ART.

At the annual meeting held on the 1st instant, Mr. R. N. Philips in the chair, the secretary stated that the subscriptions had gradually fallen off from 357*l.*, in 1852, to 240*l.*, in 1859. No effort had been made to replace them when they had fallen off from the death or removal of subscribers, but it was now essential that this should be done.

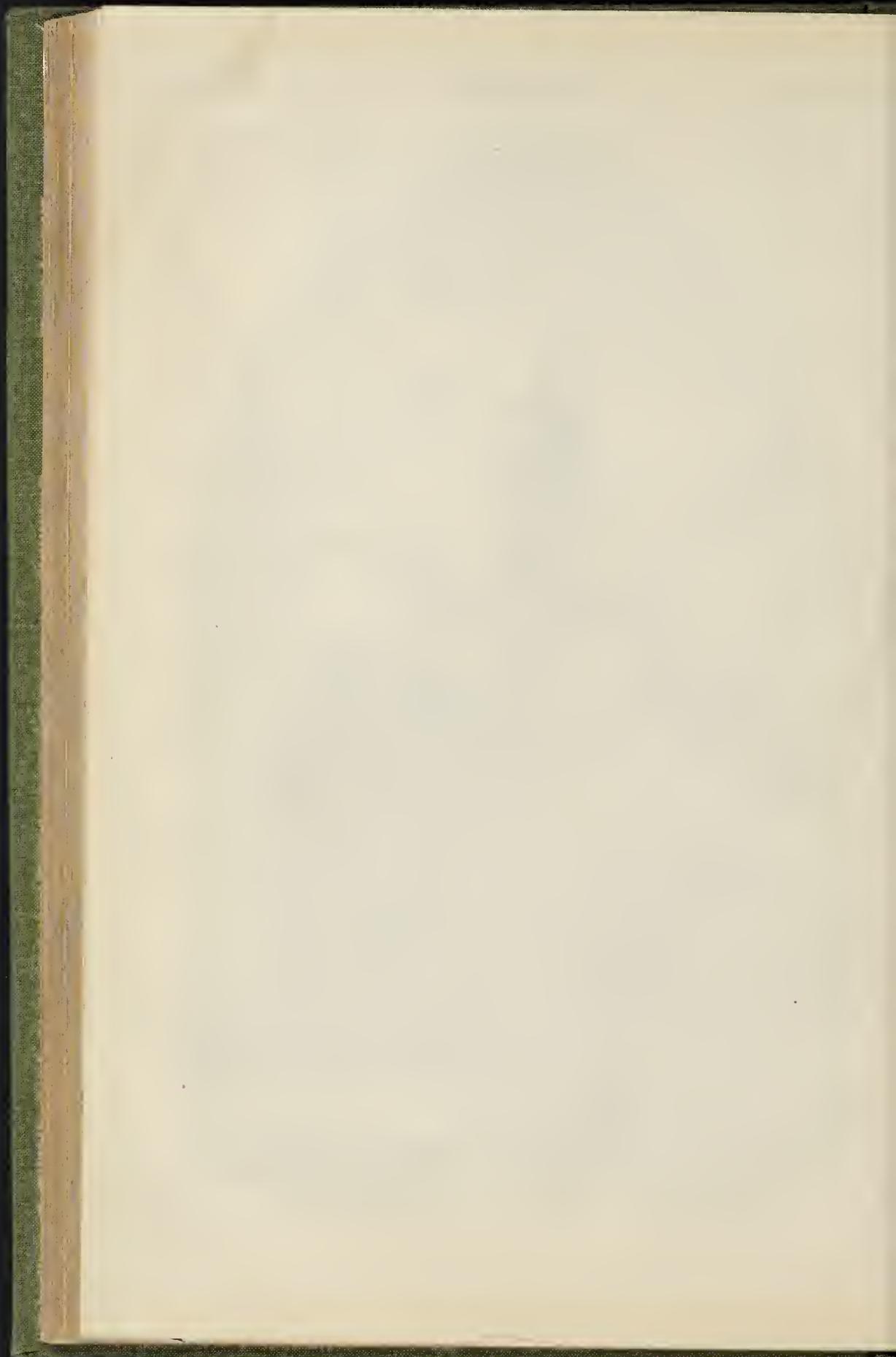
The report of the head master showed that the total number of prizes awarded in 1859 was 483. In 1859, the total was 476—a diminution of seven, which was only explainable upon the supposition that, as these examinations became more familiar to the schools, a much higher test was applied to the efforts of the pupils, as the work in 1859 was greatly in advance of the previous year. What were called slate examinations had been instituted. The parochial schools, receiving instructions in drawing, were visited once a year by the head master, and tested by drawings on a slate. A prize was awarded to one in every twenty of those who executed the best work: 416 prizes had been awarded in this way; and, adding this number to the total of the School of Art examinations, the grand total of prizes, awarded to the Manchester School of Art, for 1859, was 922. It was worthy of notice that the number competing at these slate examinations amounted to the large aggregate of 9,037 children in public schools.

SOCIETY OF ARTS. — Wednesday, March 14th, Sir Thomas Phillips, F.G.S., chairman of the Council, in the chair, the paper read was "On the Art-Treatment of Granitic Surfaces," by Mr. John Bell, sculptor.



DOMESTIC ARCHITECTURE. HOUSE, MERCHISTON PARK, NEAR EDINBURGH.\*

[\* See p. 161.



## FRENCH PORTALS.\*

EVERYBODY knows how odious it is to make comparisons, more especially when the said comparison is not to the advantage of the individual whom you may happen to be addressing. Now, if we compare the ancient and modern state of the arts, in no one respect do we make a worse show than in our sculpture and in our coining. It is not so much in the mechanical and technical processes that we fail, for the muscles and bones are generally in their right places, and the drapery, such as it is, is for the most part studied from nature; but it is in the total want of interest in the subject. We see that the artist has taken a model and copied some hap-hazard attitude, and, when the work was finished, has been obliged to cudgel his brains for a title. If it is a female figure, he adds a bird, and calls it "Innocence;" or else he provides chains, and the composition forthwith becomes a slave; while a male figure is turned out as "Ajax defying the Lightning," by the addition of a helmet and spear. But, by whatever name the work is called, very few care about it, for it tells no story, and comes home to no hearts. Why is this? Simply because the sculptor is obliged by circumstances to work for individuals instead of for the public, and where by any chance he has a public work to do, it is for the most part totally unconnected with architecture; for the employment both of painting and sculpture, but especially the latter, without architecture is very like wearing jewels without their setting; and we shall, moreover, find in all the best periods of sculpture, that the art was intimately connected with architecture, and, in fact, was part of the architect's design. Indeed, I am afraid that until this order of things is re-established, we can never hope to see a revival of the art in question.

In the meanwhile the sculptors will probably still go on studying from the objectionable Venus de Medicis, and the still more objectionable Apollo Belvidere, and will still produce such things as we see congregated at the Brompton Museum, and in our public squares, all the while lamenting that they have no opportunity of showing what they can do, and forgetting that their real mission is to make looks of stone to instruct their fellow-citizens, and not to fill the so-called sculpture gallery of rich manufacturers, or the stair-cases of large houses, or to make ridiculous busts of respectable nineteenth-century people, with nothing round their necks, and a toga on their shoulders. Were our buildings properly decorated, there would be employment, doubtless, for twice or three times the actual number of painters and sculptors; and these latter gentlemen would experience the pleasure of hearing their public works praised, instead of seeing every person with any taste turn his head away whenever he passes a new statue. All know how much sculpture was employed in their buildings by the Greeks,—those thirteenth-century artists of antiquity,—and how their architecture is, in fact, but little more than the bones which were afterwards clothed with sculpture. The buildings of the thirteenth century were far too vast for this to be the case with them; but there were almost always parts in every edifice where sculpture was employed with so lavish a hand, that the architecture becomes almost an accessory. One of these parts was the altar and its dossal; others were the portals, those great hooks of living stone where the whole history of man and his redemption, and his future state, were written, in such characters that the most ignorant could read and the most learned be instructed. To such an extent was this instruction carried, that many portals, such as that erected at Notre Dame, by Guillaume de Paris, that of the Ste. Chapelle, and those built by Nicholas Flamme, were supposed to have a hidden reference to the preparation of the great talisman of the Middle Ages, viz., the philosopher's stone; and thus a science forbidden by the ordinances of the Church was taught to those who could read the characters on the very threshold of the Church itself. So much was this the case, that in the sixteenth century, and probably long before, the portals of sundry churches had become the common evening rendezvous of the numerous adepts engaged in the great work.

In the present day the very name of the philosopher's stone is sufficient to call up a smile, but perhaps it might be as well to recollect that our modern chemists, like learned and modest men as they are for the most part, have pronounced the transmutation of one metal to another not to be

an impossibility; they only deny that it has ever been done. On the other hand, viewing the numerous accounts we have of metallic transmutations, and making a very liberal allowance for both self and willful deceptions, there would remain as much evidence in their favour as there is regarding any ordinary historical event.

But to return to our portals. We had better first see how the architect prepared the skeleton, and then how the sculptor clothed it with flesh. Probably, one of the most curious portals we have existing, is that of St. Trophimus, at Arles; it is exactly the thing an ancient Roman sculptor would have drawn had he been asked to design a portal in his own style, after having once had (if such a thing were possible) a sight of a thirteenth-century one. It is, in fact, the converse of the classic sketches of Wilars de Houcouc. At the same time must be confessed that the *ensemble* far surpasses anything the Romans ever did in architecture, for their works were works of engineers and not of architects. Nearly all the parts of the Pagan orders can be found in the portal at Arles, but all transmuted into other forms. Thus the pedestals of the columns are changed into lions, while the caps are historiated with figures. The mouldings of the entablature disappear, and its surface is occupied by a continuous procession of figures, while the recesses between the columns become shallow panels of ornament, and act as a diaper to throw up the statues. Altogether it is a most charming composition, and appears to me a far preferable development of the Roman style than that popular commercial style called the modern Italian.

There were four systems adopted in the arrangement of the jambs of the great doorways of the Middle Ages, all of which are good, and all of which succeeded each other. 1. The columns are placed in nooks formed in the jamb. 2. The jamb is formed by one large splay, and the columns placed in front of it. Sometimes the wall of the splay is likewise cut away, and another row of columns and small arches are seen behind. Of course, the tops of these smaller arches do not reach above the necking of the great columns. Great variety was got in both these arrangements by alternating the sizes of the columns, as at Amiens, or working the angles of the nooks into smaller columns and carving them as in the west doorway of Chartres, or putting foliage in the chamfered angles, as at Rouen.

The third plan was to leave the splayed jambs without any columns at all, simply putting a row of figures, standing on a continuous pedestal, and surmounted by a series of canopies. This occurs at Noyen; and the only objection to it, is that the arch moulds must spring from a continuous frieze instead of columns.

A fourth variety occurred when art began to wane in the fourteenth century; then the great columns disappear altogether, and the jamb becomes a series of hollow nooks, into each of which is placed a pedestal figure and canopy. See the *portal de la calande*, Rouen, and those at Cologne.

But in almost all the earlier works one great point was well attended to, viz., obtaining a good reveal before beginning the splay of the jamb. There was indeed often space enough for two or more figures in this reveal. The artist, having chosen which system to go upon, arranged the other parts thus: first of all there was a plinth or dado. The dado is variously decorated. Sometimes it has an arcade, as at Bourges. At Paris this arcade is hollowed out so as to form a sort of niche for any one resting on the seat, which almost invariably occurred in every portal. At the side-door at Troyes there is a double arcade, i.e., one beyond the other. The dado was often divided into two or more parts; thus, at Rheims, the upper part is filled with a representation of drapery, doubtless suggested by some one of the numerous Roman works remaining in that city. At Amiens the upper part is occupied by small subjects in compound quatrefoils, and the lower is diapered. The order was of course this: the highest part was assigned to figures, if there were any, or else to diaper if there were none; and if there was no diaper, mouldings would be above and splays below.

We now come to the column and figure. The column had often the usual base and cap, but the shaft contained, in addition, a pedestal, a figure, and a canopy. Underneath the pedestal was often a little group, illustrative of the personage above. Sometimes the canopy on the shaft is omitted, and the capital of the column has its apex developed into a canopy, as at Rheims, and at the west door at Chartres. At Chartres we see the beginning of the fashion, as the tabernacle work is very small, and springs from under-side of abacus.

At Rheims, on the contrary, it hangs down a great deal.

The mouldings of the arches are generally exceedingly simple, and may be described as a series of large hollows occurring over each column. Now, if these hollows were vacant, the pillar would appear to support nothing; but they are filled with figures and tabernacles, the tabernacle of the figure below serving as the pedestal to the figure above. In good work these tabernacles are exceedingly simple.

But the great object of the sculptor's care was the tympanum, which occupied all the space confined by the arch moulds, and euded at different levels in different buildings; it was supported in the middle by the centre shaft of the doorway, which generally contained the image of the divinity or saint to whom the portal was dedicated.

The composition of the tympanum of course differed in almost every work; but the general practice was to divide it into two or more horizontal compartments by means of foliated strings, or by narrow tabernacle work, or by a series of angles issuing from clouds. The top compartment was almost always left very much larger than the others, as in it was represented the principal event of the story; and if it was a question of the Last Judgment, the figure of Our Lord was also enlarged.

As to the gable over the arches, it is sometimes occupied with a plain three-foil, as at Amiens; or by a small niche, as at Chartres; or occasionally by a most elaborate composition, as at Rheims. This latter is, however, rather an exceptional case inasmuch as the tympana are occupied by glazed tracery, and I suspect the architect found that, if he put sculpture in them, the work would look overcrowded. He therefore put the subjects up in the gables of the portals, supporting the figures by a series of projecting stones, which are carved to represent earth or clouds, and covering them by means of a series of tabernacles attached to the outer mould of the pediment. Even as it is, the work looks slightly overdone.

However, there is no doubt that both the pediment and tympanum occasionally received figures at Chalons-sur-Marne, and at Strashourg.

Such is the general arrangement of the French portals; but of course every portal had something in it different from the others: thus the figures front of them, or there was a distinct series of tabernacles above the caps of the pillars, as at Paris, or the figures were confined to the tympanum.

In England we appear to have followed the steps of the French at some distance. Our west doorways were always very small compared with the size of the building, the English architects preferring to make niches all over the front of the building, and to put their figures in them; in fact, it is nothing more than the genus of the Perpendicular style, which afterwards took so fatal a root, and spoilt all our buildings of the fifteenth century. The most considerable approach to a foreign portal is, or rather was, to be found at Westminster, where we find so many French features; but even there the figures must have been very small, and the tympana of the side doors simply consisted of a diaper. What was exactly in that of the great doorway is rather doubtful, inasmuch as it has been restored by Sir Christopher Wren, with a series of circles containing quatrefoils, the one in the centre having the arms of Westminster playfully inserted.

It is sincerely to be hoped that the dean and chapter may hand over this doorway to the care of my friend Mr. Scott, and let him do as he likes with it. There is no old work to be destroyed, and should the work be delayed a few years longer, a restoration will not take place at all, for by that time we shall probably be so far advanced that we shall put in our own notions and our own work in every instance where we now restore, thereby imitating the good artists of every age.

One other celebrated door is that on the south side of Lincoln Cathedral; but there the columns are very small and thin, while the French idea of one arcade behind another is rendered by a rather meaningless row of arches and pediments, running in front of the columns, and having no connection with the general composition, and supporting nothing whatever.

Exeter has a series of arches placed in front of the doors, and Peterborough must be considered as a compound of the portal and narthex, carried up to an extravagant height.

The sculpture of the French portals was as different in the arrangement of its subjects as can possibly be imagined. It is true that the same subjects were common to nearly every cathedral, but they were arranged in the most different

\* Read by Mr. William Burges at the Architectural Photographic Association.

manner. Thus, a very common subject for the principal west door was our Lord in Glory, or the Last Judgment, which, by the way, is only the former subject extended. Now this at Rheims gives way to the Coronation of the Virgin, because the cathedral is dedicated to her; but probably the best way will be to point out the various classes of subjects and their usual places. The tympana generally had scenes from the Last Judgment, or the life of our Lord, or the Blessed Virgin, or the life of the saint to whom the portal was dedicated, the northern portal of a west front being generally assigned to the local saints. The pediments contain a single subject. At Rheims they are respectively the coronation of the Blessed Virgin, the Crucifixion, and the Last Judgment. At Strasbourg we find Solomon's throne supported by the lions mentioned in Scripture.

If the portal was divided in two by a centre shaft, that shaft contained a great statue of the personage to whom the portal was dedicated. At Rheims, it is the Blessed Virgin; at Amiens, our Lord. Over the head of the Virgin, at Paris, and in the Portal St. Honoré, at Amiens, the tabernacle assumes the form of a little edifice containing a box. This is the symbolical fœderis arca, or ark of the covenant, a type of the adler and bslitsk beneath his feet. The statue on the central shaft does not stand on a bracket, like the other statues at the side, but rests upon a pedestal going right down to the ground, and although agreeing in its general divisions with those of the base, is so arranged as to contain certain subjects on its sides; these of course refer to the statue above, either in a direct or indirect manner.

The side statues have generally some relation with the principal statue: thus, at Rheims they represent the various events in the life of the Virgin, such as the Presentation in the Temple, the Salutation, the Annunciation, &c.; the statue of our Lady being repeated several times.

Often they are the ancestors of our Lord, such as David, Solomon, Bathsheba, &c., or types of some such as Melchisedec or Jonah, or the prophets who have prophesied respecting the great scheme of human redemption; or, if it were the northwest doorway, the local saints.

At Strasbourg, we find the wise and foolish virgins, and in the now destroyed church of the Cemetery of the Innocents, the three *vifs* and three *morts*.

Nothing can be more various than the subjects of the voussours; sometimes we find the whole of the heavenly hierarchy in the concentric rings, the nine orders of angels being the nearest to the tympanum, and then going on through apostles, confessors, martyrs, &c.; sometimes the days of creation; sometimes histories of the types of our Lord, or the Blessed Virgin; sometimes the virtues and their corresponding vices; or the Tree of Jesse, &c. The smaller and flatter surfaces, such as the jambs of the doorways, or soffits of arches, or quatrefoils in plinths, received such subjects as the virtues and vices, the signs of the zodiac, the labours of the year, the good and bad tree, besides other subjects.

One or two things are specially to be remembered. 1st. That all the sculptures are in very high relief, and, indeed, for the most part very nearly detached from the ground. 2nd. That they are cut square, like Greek work, and have not got the edges rounded off; and, thirdly, that they are placed together, so that the whole effect is that of forms drawn by shadow upon a light ground. This last has not been attended to in the new tympanum of the south portal of Cologne. The consequence is, that although the individual figures are most exquisitely designed, the whole affair looks poor and meagre in the extreme.

The variations in drapery of the Medieval figures, and, indeed, the general change of style, offers a very curious parallel with the same things in Greek art.

Thus, first of all the figures are straight, and have very little action, and the drapery is represented by an infinite number of small folds. This we see equally in the western doorway of Chartres and the preëphidian Venus or Minerva, still preserved in the Acropolis.

Afterwards the figures get more action, and the folds become less confused, but still evidently formed of a light material. See the Early thirteenth century sculptures at Chartres and Amiens. Afterwards the folds become much larger, the dress is evidently of a different material, and the figures have a very considerable action, as at Rheims and Strasbourg; both these later stages are, I believe, to be found in the Athenian marbles.

It is very much to be wished that the nineteenth century would take the same views, with regard to painting and sculpture, which the Classic and Middle Ages took of them; there would then be work for twice the number of artists, and more work would be done both better and more expeditiously. At present our efforts would appear to be confined to decorating pediments of buildings utterly unsuitable to our minds; it is of no use to say that we care as little for the portico as for the Britannia, Commerce, Neptune, Amphitrite, and other monstrousities which are placed above it; all the new and rising school ask for its permission to the same thing for our national religion and history that the competent persons and people of taste insist upon doing for a foreign and effete mythology. Let us, at all events, be allowed to put the great truths of our religion, and the parables of our Lord into living stone; and when we have once begun to do so, there will be very little complaint, either concerning the work or the talents of our sculptors; for depend upon it that there is plenty of the latter to be found, if it is only called for in the right direction.

#### EDINBURGH SOCIETY OF ENGINEERS.

This society met at 57, North-bridge, on the 5th of March, Mr. A. Wilson, president, in the chair. Mr. F. J. Thomson read a paper on "Waterworks," or the supply of pure water to towns. The principal points treated of in the paper were, the different systems of supply by wells, gravitation, and pumping; the rainfall of districts; descriptions of the various wells and aqueducts of the ancients down to the modern works of the Croton river at New York, and the Loch Katrine works at Glasgow, as specimens of the combination of aqueducts of stone and iron, tunnels and siphons. The water-supply of Edinburgh was also referred to as an example of the exclusive use of iron piping, the supply being brought from the collecting reservoir in the Pentlands, a distance of 8½ miles, by means of iron pipes, varying from 24 to 36 inches in diameter, laid underground, and rising up to the reservoir on the Castle rock, a height of more than 200 feet above the surrounding valley.

In the discussion which followed, the chief points taken up were, our inferiority to the Romans in the supply of pure water to towns; artesian wells; oxidation of iron pipes; pumping-engines, &c. The paper to be read on 19th of March is on "Boilers and Boiler Explosions," by Mr. R. Davis.

#### THE STONE OF THE HOUSES OF PARLIAMENT.

In the House on Friday Mr. Wise asked the First Commissioner of Works whether any report had recently been made on the condition of the stone-work of the Houses of Parliament, and what had been done with the 7,292 voted last session for the purpose of indurating the external stonework. Mr. Wise said the commission reported that the Bolsover stone combined the requisites of durability, economy of conversion, beauty of colour, and other qualities; but the contract entered into for the supply of the material was cancelled, and a new quarry opened belonging to the late Duke of Leeds, the stone obtained from which, was in the estimation of experienced builders, of an inferior description. He referred to Mr. C. H. Smith's charge, that proper supervision had not been exercised over the delivery of the stone, and the question was, who was responsible for so serious a neglect? The consequence of this was, that they now found inferior material had been used, and large sums, in addition to the enormous outlay already incurred, would be required to preserve these buildings from a decay which ought to have been foreseen and guarded against. At the bottom of that state of affairs, he believed, the modern system of contracts, which gave great profit to the few and inflicted great injury on the many, and increasing disruption of the surface of the stone, especially on the terrace front. The decomposition was not confined to the plain face of the stone, but extended to the sills, bases, capitals, plinths, and the stonework above and below all these. He should be glad to know from the Chief Commissioner of Works what remedy he proposed to adopt for this state of things. We had not yet done with building; we were to have a new Foreign-office and other public buildings, and he hoped that Her Majesty's Government would consider this great stone question, and would not leave a stone unturned until they had arrived at a satisfactory conclusion in regard to it.

Mr. W. Cowper, in course of reply, said that what was supposed to be the best stone that England could produce had been found not to combine those exact proportions of carbonate of lime and carbonate of magnesia which were expected to make it indurately. On the contrary, the action of the weather upon it had been such, that on the river front, not merely on the carved portions, but on many of the plain surfaces where the water did not impinge, the decay was advancing most rapidly. The only thing which could now be done was to find some composition which would render the stone impervious to moisture, and would, in fact, have the same effect upon it as paint had upon wood and iron. There were several patented compositions which professed to attain that object, and two of them,—one patented by Mr. Rausome, and the other by Mr. Sordelmy,—were now being tried upon the river front. As far as ordinary investigation could form a guide, they seemed to promise very fairly; but he had thought it desirable to ask Mr. Faraday and Sir R. Murchison to examine and report upon these experiments, and he trusted that their labours would be more successful than were those of the commission which sat sixteen years ago, to which the hon. gentleman referred. He did not think it right to expend any of the money which had last year been voted by Parliament, until it had been shown that this operation was successful in excluding moisture and preventing decay of the stone.

#### THE HARTLEY INSTITUTE COMPETITION, SOUTHAMPTON.

At the last meeting of the Town Council, it was moved and seconded:—

"That advertisements be inserted in the same papers in which the Corporation advertised for the plans for the Hartley Institution, requesting the architects to withdraw their plans, and to return them, accompanied by estimates and contractor's name, with the names of two sureties for the due completion of the contracts for the specified sum; and that should the Council deem it advisable to submit any or all the plans to the same or another London architect, they reserve to themselves the right of final selection."

After long discussion, the following amendment was carried, by twenty to seven:—

"That the matter be referred back to the Council of the Hartley Institution, with instructions to select, after further consultation with Professor Donaldson, not less than six designs for ultimate selection by the Council, regard being especially had, among other things, to the modification and alteration of such plans which may be necessary, in order to bring their cost within the sum limited by the scheme; and that they also prepare a tabular statement of the various arrangements, and report on the responsibility of merit in such designs, and also any defect or omission in the same, and suggest any improvement which in their judgment may be judiciously made."

#### LECTURES ON ARCHITECTURE.

##### OXFORD ARCHITECTURAL SOCIETY.

On Tuesday, February 28, Mr. Parker read his fourth lecture on "The History of Architecture in England," relating to the period of transition from the Norman to the Gothic style. He began by recapitulating the chief points in the history of the twelfth century, and showing the progress which prepared the way for the greater change of style which was a natural development from what had gone before. It was not the invention of any one mind, nor an importation from any foreign country, but the gradual work of many minds, and of more than one generation, assisted by hints and ideas, taken from many different sources and different countries, with which the people had the opportunity of friendly intercourse. The history of the change is more clearly traced at Canterbury than in any other building, with the help of the contemporary records of Edmer and Gervase, translated and applied by Professor Willis. The coronation chair of Canterbury, but not the coronation, is so much in advance of the work of William of Sens, that the chief merit belongs to the pupil, who had greatly improved upon his master. The cathedral of Sens closely resembles the choir of Canterbury, but the latter is more than a century before they had these in the same. He showed by drawings of the two (kindly lent by Mr. Scott for the occasion) that Sens is later than Canterbury, and believed that the choir of Canterbury was finished after the fire in 1184, the year that Canterbury was finished. Other buildings in France were in advance of Sens, such as the south transept of Soissons, probably building at the same time, and respecting the hall and chapel of Angers, built by Henry II., who frequently held his court there while this work was going on; and to these meetings the leading men of the north and south in friendly intercourse. 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The coronation chair of Canterbury, but not the coronation, is so much in advance of the work of William of Sens, that the chief merit belongs to the pupil, who had greatly improved upon his master. The cathedral of Sens closely resembles the choir of Canterbury, but the latter is more than a century before they had these in the same. He showed by drawings of the two (kindly lent by Mr. Scott for the occasion) that Sens is later than Canterbury, and believed that the choir of Canterbury was finished after the fire in 1184, the year that Canterbury was finished. Other buildings in France were in advance of Sens, such as the south transept of Soissons, probably building at the same time, and respecting the hall and chapel of Angers, built by Henry II., who frequently held his court there while this work was going on; and to these meetings the leading men of the north and south in friendly intercourse. The history of the change is more clearly traced at Canterbury than in any other building, with the help of the contemporary records of Edmer and Gervase, translated and applied by

The change of style had begun at an earlier period, and although the general use of the pointed arch was a matter of fashion, its introduction was primarily owing to the necessities of vaulting. It is recorded that three Greek models from Byzantium were present at the foundation of St. Bartholomew's, Smithfield, and they were probably consulted by the founder as to the plan of the church. The vaulting of the aisles is peculiar, and the vaulting of the central space seems to have been part of the original design, though not carried out by the founder: if so, it is the earliest instance in England of this idea being formed. The round churches of the Templars had probably some influence in giving new ideas. Balthams and St. Cross have pointed arches before 1150. Considerable stress was laid on the use of the chisel not being applied to stone carving before 1120, according to Gervase, verified by an examination of the work at Canterbury, and in all the early Norman churches in England, compared with those of later date. After the completion of Canterbury, in 1184, the progress of the new style was very rapid. The Hall at Oakham and the Galilee at Durham are good examples of late transition about the same date. Before 1200 the Early English Gothic was fully established. In most parts of the continent it was later, but the stamp of each century, and especially of the thirteenth, is distinctly visible everywhere, even where the round arch was continued. A number of drawings and engravings, photographs, casts, and models were employed to illustrate the subject.

#### CHURCH-BUILDING NEWS.

**Hatfield (Stiffell).**—The new stone reredos which has been erected in this church has lately received the addition of "The Lord's Prayer," "Decelegue," and "The Apostles' Creed," in polychrome, by Mr. A. Sprague, of London. The work is wrought on five tablets, the centre panel, containing a quatrefoil design, being the monogram of the Saviour.

**Goodrich (Herefordshire).**—Colonel Myrick and other gentlemen offered to undertake the complete restoration of Goodrich Church, provided the parish would raise by loan and place at the disposal of the promoters and churchwardens the sum of 500*l.* towards the expenses, and would also consent to the execution of all works in accordance with its architectural design and with ecclesiastical usage, and more particularly to the following works: 1. The pulling down of the gallery and pews, and the substitution of appropriate seats in lieu thereof. 2. The taking up and re-laying of the floor. 3. The restoration of the chancel. 4. The erection of a comely and decent pulpit and reading-desk near the line of separation between the nave and the chancel. 5. The restoration of the windows. 6. The removal of the ceilings and plaster. 7. The elevation and removal of the nave to its original pitch. 8. The thorough reparation of the wall and roofs. 9. The building of a vestry-room. 10. Efficient means of warmth, ventilation, and drainage. A vestry meeting, however, according to the *Hereford Times*, rejected this offer, which would have cost the gentlemen making it 1,000*l.* and consequently it has been withdrawn.

**Liverpool.**—St. Aidin's Church, Victoria-road, Liverpool, has been consecrated. The church is built of red sandstone, the style being old English, and cost 3,500*l.*, exclusive of endowment. The length is about 100 feet, breadth, 51. The chancel is laid with ornamental tiles. At the west end there is a gallery calculated to hold about 100 persons. The church contains 900 sittings, one-half free. Mr. A. H. Holme was the architect, and Messrs. Holme & Nichol the builders.—A general vestry meeting of the parishioners of Liverpool has sanctioned the borrowing of 75,000*l.* at 4 per cent. interest, from the Economic Insurance Company, for the purchasing and laying out of a new local cemetery. The principle of redemption over a period of forty years was such that the rate of interest was virtually during the whole period, a little over 5 per cent. per annum. The Burial Board have agreed as to a circular for the guidance of parties sending in plans and specifications for the laying out of the new cemetery. The circular directed that thirty acres of ground should be appropriated to members of the Church of England, fifteen acres to Roman Catholics, and fifteen acres to Protestant Dissenters; the reserve of twenty-eight acres to be so situated in relation to these three divisions that any one or all of them may be enlarged therefrom. The sites of designs for the chapels are to be shown on the plans, the designs for the chapels and lodges to be the subject of future competition. It was resolved that the name of the cemetery be "The Liverpool Cemetery, Anfield-park, Walton."

**Sale, near Manchester.**—The chief stone of a new Wesleyan Chapel has been laid here. The new edifice is being built from a design by Messrs. Pennington & Bridgen, of Manchester; and the contractor is Mr. Robert Neill, also of this city. The building is Italian in style, and will be of brick and stone. There will be an attached lionie portico and open vestibule. The entrance to the galleries will be by staircases at each side. At the

pulpit end of the chapel there will be a deep recess, with Ionic order and pilasters, with a large semicircular window over, which it is intended ultimately to fill with stained glass. At the rear of the chapel schools will be erected. The cost of the erection is estimated at 2,196*l.*

**York.**—Towards the cost of widening Little Blake-street, and thus throwing open the west front of York Cathedral, the Dean has subscribed the sum of 1,000*l.*

**Wakefield.**—A contract has been entered into for the taking down of the old spire of the parish church, and the erection of a new spire.

**Bradford.**—The first of the ten new churches which it is proposed to build at Bradford has been consecrated by the Bishop of Ripon. The church is situated at Girlington, a new and rather populous suburb of Bradford, overlooking the Thornton valley. The church, dedicated to St. Philip, is built from the designs of Messrs. Mallinson & Henley, of Bradford, and has cost about 1,400*l.* The style of architecture is the Decorated, which prevailed about the time of Edward III. The church will accommodate about 600 worshippers. The pews and roof are open.—The church of St. John the Evangelist, Tong-street, has been consecrated. The edifice, which is of a simple character, is of the Geometric Decorated style of architecture, about A.D. 1270. It is of transeptal form, having its western gable surmounted with a bell-turret. The windows at the east and west ends of the church are similar, of three lights, carrying three three-foiled circles. The centre lower light is five-foiled, the side ones three-foiled. The windows in the transepts consist of three lights each, carrying a five-foiled circle in the head. The roof forms one continuous unbroken line, and is of blue slate. The porch is built to carry a tower. The nave is lighted north and south with two windows of two lights, three-foiled. The woodwork of the roof is open, and of deal, stained. The pewing, pulpit, and reading-desk are also of stained deal. The accommodation is for 500 persons, and the cost of erection has been about 1,100*l.* Two hundred and fifty of the sittings are free. The architects were Messrs. Mallinson & Healey. There have also been built here within the last two or three years a parsonage and school, and schoolmaster's house.

**Whitwell.**—The new church, which is being built here (from the designs of Mr. G. E. Street, London, and superintended by Mr. John Chick) at the expense of Sir Edmund and Lady Lechmere, is so far advanced as to admit of a peal of six bells in the tower, the opening of which took place on the 31st of January. The York ringers were engaged for the occasion. The bells were cast by Messrs. Warner, of Loudon, and hung under the superintendence of Mr. Boswell, bellhanger to the firm. The bells are said to be sweet and musical, and have been heard at a distance of five miles. The weight of the tenor is about 13 cwt., note G. Four bells are also being cast by the same firm for the new church in course of erection at Howsham, at the expense of Mrs. Chohnley, from the same architect's designs, also superintended by Mr. Chick. Mr. John Shaftoe was the contractor for both.

**Middleton.**—The foundation-stone of a building at Middleton, near Leeds, intended for a Wesleyan chapel and schools, has just been laid. The building will be 45 feet long by 30 feet wide. The centre will be used as a Sunday school, and will accommodate upwards of 100 scholars. With pews placed down each side it will altogether hold 250 persons. The architect is Mr. George Smith, of Leeds, and the cost of the building and land is estimated at about 400*l.*

#### PROVINCIAL NEWS.

**Lowestoft.**—The new townhall at Lowestoft has been formally opened. The style of architecture adopted is the Italian. The facade towards the High-street consists of a rusticated basement,—a first-floor, containing two semicircular windows, with caps and bases and entablature,—and an attic above with two circular windows, giving light and ventilation to the gallery in the hall. The whole is terminated by a projecting cornice formed of moulded brick modillions, and having in its frieze a design composed of Maw's encaustic tiles. At the angle of the building, towards the south, is a campanile, containing in its lower story the entrance to the hall and various parts of the edifice; on the first-floor, a staircase to the gallery of the ball, and above that the clock and bell chambers. The great hall is 68 feet long, 26 feet wide, and 26 feet high. The sides are panelled out by means of pilasters, and have windows with semicircular heads. The west end contains a large window,

above a platform, filled in with painted glass. At the east end is a gallery, carried on iron columns and girders. The ceiling is segmented, and the room is surmounted with a cornice. The rooms on the ground-floor are appropriated respectively as a waiting-room, town surveyor's office, lower hall (25 feet square), mechanics' library, retiring-room, and store-room. The whole of the works have been carried out from the designs and under the superintendence of Mr. J. L. Clemence, architect, by the following tradesmen:—Bricklayers' work, Mr. John Newson; carpenters' and joiners' work, Mr. Swatman; smiths' work, Mr. Skyles; plumber, Mr. Turner; gas-fittings, Mr. Park; and the carving of the town arms, by Mr. Toulie, of London. The hall was recast by Messrs. Warner, of London. The three painted-glass windows in the room have been presented by Sir S. Morton Peto, bart., M.P. The large window, which cost Sir Morton 700 guineas, is intended to commemorate the union of France and England during the Crimean war,—as Sir Morton Peto owes his baronetcy to the circumstance of having rendered great services in the Crimea, in the formation of a railway from Balaklava to Sebastopol. In the centre compartment is a representation of the tournament of the Field of the Cloth of Gold, being the celebrated interview between Francis I. of France and Henry VIII. of England (a parallel alliance to that of the Crimea). Sir Richard Jernegan, one of the lords of the manor of Somerleyton and Lowestoft, greatly distinguished himself both at tilt tournament and barrier on the occasion, as we are told by Hall, the historian. Dexter and sinister to this incident are the effigies of St. Denis of France and St. George of England: in base are the respective shields of both nations and the national flags intertwined; and the compartment, which is of an architectural character, is surmounted by the medallions of "Victoria and Albert," and "Napoleon and Eugenie," supported by angels, and surmounted by laurel and other emblems of peace and plenty; and crowning the whole composition is the figure of Peace holding a crown over the heads of the allied sovereigns. The whole is surrounded by a bordering of the rose and fleur-de-lis alternated. The designs and cartoons for the windows were made by Mr. John Thomas, and the window was executed by Mr. James Ballantine, of Edinburgh. This window was at the Paris Exhibition of 1855. The two smaller windows contain, respectively, the arms of Sir Morton Peto, bart., as lord of the manor, and the arms of the town of Lowestoft. The windows were illuminated at the inauguration of the hall.

**Spalding (Lincolnshire).**—At a recent meeting of the local Improvement Commissioners, the chairman, in allusion to the Corn Exchange building, said, that since their last meeting a fire had occurred upon the premises, happily to no great extent, but it had disclosed a state of things reflecting great discredit either upon their architect or their builder. The fire occurred in what was called the news-room, and originated under the hearthstone, boards having been placed under the stone, which was cracked, and they had become charred and ignited. After that warning, he suggested that the other hearthstones should be taken up, to see whether they were in the same state. It was remarked that all the other hearthstones were cracked.

**Southampton.**—The interior of the building in Carlton-place, heretofore known as the Riding School, has undergone a transformation, according to the *Hampshire Independent*, the owner having determined on converting it into an assembly-room or music-hall, for literary, musical, and other entertainments. The decorations of the hall were entrusted to Mr. C. Vaughan. The ceiling has been drawn out in panels of colours, to harmonize with those of the carved beams and the projecting columns between the windows. Cartoons are to be placed beneath the windows: these consist of views of the town and neighbourhood, and other sketches.

**Wolverhampton.**—The borough surveyor, at the request of the local Sewerage Committee, is about to prepare plans for severing the borough, by which the existing drains are, as far as possible, to be rendered available, the object being to make the sewers low enough to drain cellars, without making provision for discharging the contents of waterclosets. This proposition is understood to obtain the support of those who opposed former plans.

**Bridgwater.**—The chimney over Messrs. Heal & Cook's brewery, High-street, was blown down during a late gale, the masonry falling upon the roof of the malthouse and shed, and doing considerable damage. A workman who was standing near at the time received a severe blow on the

head from a brick. The chimney was about 20 feet high.

**Halifax.**—Mr. William Atkinson, a superintendent of works under Messrs. Lockwood & Mawson, architects, has been appointed inspector of works, under the Halifax corporation, of the new storage and service reservoir, at Pellon.

#### THE "BUILDER'S" FIRE, AND MODE OF HEATING HOUSES.

OBSERVING a letter in your paper respecting the *Builder's* fire, arranged by placing sheet-iron above the bottom bars, and lighting the fire at the top, I am induced to point out another mode of economizing coals.

I have, for years, materially reduced the consumption of coals in the fire-places in my house, by putting fire-clay over the bottom bars. It is introduced in a moist state, and can be carried to any extent in reason which the operator can desire, and moulded in any form he may prefer. I have it placed in a sloping form, like the roof of a house, in which shape it fills up the bottom and back of the fire, where it cannot be seen when the coals are in the grate. By this contrivance, a very small quantity of coals is made to produce, apparently, a large fire, and the mass of clay becomes red-hot, and throws a great heat into the room. The consumption of coals will be found to be much lessened by this practice, and the clay, when once put in, will last for years.

I may observe here that much heat from fire-places is often very needlessly lost by placing the grate far back in the chimney. I had a fire-place in which the grate stood in a deep recess in the chimney, merely, as it turned out, to save the trouble of cutting the front iron of the grate, to reduce it to the size required for placing it in front.

While on the subject of the mode of warming houses, I wish to state some ideas that have occurred to me, as to a mode of economizing fuel in houses. This may not be thought inappropriate now, when we are reminded that the supply of coal is limited in amount, and when it may rise in price from the increased exportation.

In most houses the kitchen fire is a large one, and always lighted during the day. May not the heat from this fire be made to warm the whole house? I think it might, by very simple means. A large chamber should be left, at the back of the kitchen fire, lined with fire-brick, to retain the heat. To this a pipe should lead from without, so as to admit the external air; then pipes, made of iron or earthenware, should be laid on to either of the passages or rooms desired to be heated; such pipes to be fitted with taps, so as to allow of being opened or closed at pleasure. Might not, in this way, a sufficient current of pure heated air be led on to any part of the house, and be allowed to flow, or be turned off at pleasure? Of course, in the summer, it would not be required. On the other hand, if laid on, in the winter, to passages and rooms not in use, the inmates, of delicate health, might be protected from much illness, by keeping up an even temperature throughout the house. A. B.

\*\* Modifications of such an arrangement as that described are not uncommon.

#### PUMPS FOR SEWAGE.

**SIR,**—On reading the description of the pumping machinery in the *Builder* of the 18th ult., and the plan of pumps intended to be fixed for the raising of the sewage from the main drainage on the south side of the Thames, at Deptford-ereck, it appears to me the mode will be very expensive. According to my long experience as practical engineer in pumps, I think the more simple the construction of pumps the better, by doing away with all unnecessary friction and raising the water at the cheapest rate. In 1855 my pumps were recommended to Mr. T. Jackson, by the Inspector General of Fortifications, at the Board of Ordnance, for raising the sewage from the deep tunnel sewer, on the north side of the Thames, from a shaft 80 feet deep. The description of my invention is as follows:—A non-suction gravity force pump, made with three open working barrels, as simple as possible, three plunger rods attached to the crank axle of the fly-wheel of the steam-engine, with rods at the lower end, work through the top of the plunger, which hangs on the end of the rod; thus opening and shutting the passage through the plunger that will swallow any descending substance of its own gravity that is not larger than the opening, which may be made 50 feet smper. It will then be

rammed up the rising main or hydrant a considerable height, to prevent the many noxious gases that rise from the sewage from affecting the public. These pumps can be made of gigantic power, and do not require the use of leathers, that are always wearing out; they are to be made of iron, gun-metal, steel, and all working facings, to be lined with a metal that is incombustible, and not likely to be out of order, thus doing away with all stuffing-boxes, slings, a number of complicated valves, and friction, in exhausting the column of air, air vessels, and all impediments to the raising of water. Sir, I beg pardon for intrusion.

JOHN WILSON.

#### BISHOP AUCKLAND TOWN HALL AND MARKET COMPETITION.

**SIR,**—In your notice of the above, in last week's *Builder*, you say that "the secretary states the Northern Architectural Association (which lately protested against the terms of the competition) was represented by five of the members, among whom was one of the highest officers of the association."

I beg to say that the secretary is in error in making this statement, as I am in a position most distinctly to deny that any officer of the association sent in a design; and, moreover, that the two or three (not four or five) members of the Northern Architectural Association who did send in designs did so without being fully aware of the nature of the protest. That only two or three, out of a society numbering upwards of thirty members, should respond to the invitation, to offer designs for a public building in their own more immediate locality, goes rather to show the general unamity of the profession in the North, on the matter in question, than otherwise.

THOMAS OLIVER, Hon. Sec.

#### COTTAGE IMPROVEMENT.

I AM glad the subject of "Cottage Improvement" is likely to be again ventilated in your valuable columns, especially at this time when cottages paying 6l. rent are about to be admitted to the privilege of the franchise. I need not advert to this subject in a sanitary point of view, this matter having been so often and so ably set forth. All must agree that the larger proportion of cottages in this country are so small and inconvenient, that it is impossible to preserve in them the common decencies of life. How often we find a man and his wife, and several children, some fourteen and fifteen years of age, sleeping in one room, and oftentimes in one bed; some at the foot, others at the top; or some members of the family sleeping in the living-room, where cooking, washing, and eating are performed. I have seen several instances where there is but one sleeping-room in a cottage in which from six to eight or nine persons rest at night. Education must be in a great measure useless where the children return home to such wretched hovels; where vice, disease, and death are too often found associated in one small apartment. An impression seems generally to prevail that "money spent in building cottages for the poor is a bad investment." I know by personal experience of suitable sites left for years unoccupied rather than that cottages (although in urgent demand) should be erected thereon. I was lately requested to look over some cottages with a view to their repair: they had been lately occupied, but I imagine the poor inmates had died off. More wretched hovels could scarcely be imagined: they were surrounded with stagnant water. One room below (in each) was paved with flint, and one room above approached by rotten steps. The roofs and windows were full of holes; no ceilings,—consequently the floors were rotten and unsafe, from being constantly saturated with wet. I strongly advised the removal of these hovels, and suitable cottages to be erected in their stead. I was at once met with the universal answer, "It does not pay." My object in addressing you is to endeavour to show the utter fallacy of this conclusion.

Sir George Nicholls justly observes, "It is not a highly ornamental cottage that the labourer needs. What he really requires is a habitation sufficiently roomy and substantial for the comfortable accommodation of his family." Landed proprietors and others generally have the means in their own hands of obtaining the weekly rents, and I am prepared to show that suitable cottages can be erected to realize a remunerating profit for the capital employed for such truly benevolent purposes. Taking an average of sites and localities, a double cottage, each one containing two living-rooms, with oven, wood-house, pantry, and three bed-rooms, can be built for 140l., the interest of which at 5 per cent. would be 7l., adding 1l. for in-

\* This is a smaller sum than our own experience would justify assertion. We shall be glad to have our correspondent's plan and specifications, as we hope before long to give a selection of examples. —E.

surance and annual repairs: in all, 8l.; or 4l. per annum for each cottage; being about 1s. 6d. a week for each family, instead of 2s. or more per week now so often paid for one single room!

How often do we find the absence of home comforts driving the artisan and labourer to seek the excitement of the ale-house; thus engendering those habits of intemperance unhappily so prevalent around us. Nothing can be plainer, that under these circumstances it will be impossible to carry into effect lessons concerning morality, cleanliness, and personal respect, if the domestic habits be such as we too often find them, and the natural result of cramming the sexes promiscuously together in one common sleeping apartment may be easily imagined. HENRY BARNES.

#### THE GREAT CHIMNEY AT GLASGOW.

**MR. DUNCAN MACFARLANE**, of Glasgow, C.E. and Architect, has published a description of the colossal chimney recently completed at Messrs. Townsend's Chemical Works, Crawford-street, Port Dundas. It is described as being not only the largest structure of the kind, but the loftiest building in the world, excepting the Great Pyramid of Ghizel, the spire of Strasburg Cathedral, and that of St. Stephen's, Vienna. It is circular on plan.

Total height from foundation.....	468 feet.
Height above ground level of ground.....	454 "
Outside diameter at level of ground.....	32 "
Outside diameter at top.....	14 "
Thickness at level of ground.....	7 bricks.
Thickness at top.....	13 "

In a report on its probable stability, Mr. W. J. Macquorn Rankine said, "From previous experiments on the strength of the bricks used in the chimney, I consider that their average resistance to crushing is 90 tons per square foot. I calculate that, at the level of the ground, the pressure on the bricks arising from the weight of the chimney will be about 9 tons per square foot, or  $\frac{1}{10}$  of the crushing pressure. I consider that, in violent storms, the pressure on the bricks at the leeward side of the chimney may sometimes be increased to be about 15 tons per square foot, or  $\frac{1}{6}$  of the crushing force. On these grounds, I am of opinion that the chimney, if executed as designed, will be safe against injury by crushing of the bricks." On the 9th September, 1859, however, after a hurried construction, a violent storm swayed it from the perpendicular, the deflection produced extending to 7 feet 9 inches. On the 21st of the same month, and subsequent days, it was restored to the perpendicular by twelve separate sawcuts, as recommended by Mr. D. Macfarlane, architect, who afterwards reported, as did Mr. Rankine, that it was then perfectly safe. The highest cut was 128 feet from the top, and the least distance between any two cuts was 12 feet.

#### THE ARCHITECTURAL MUSEUM.

OFFERED PRIZES TO ART-STUDENTS AND ARTISAN-WORKMEN. 1861.

**Prizes for Modelling in Clay.**—The Council of the Architectural Museum offers three prizes of 5l., 3l., and 2l. (given by Mr. S. C. Hull) as first, second, and third prizes, for the competitors who shall show themselves most successful in designing and executing a model for a circular or a vessel-shaped medalion, to be executed in stone, of the head of the late Duke of Wellington, enclosed in a border of foliage or mouldings of the First or Middle-Pointed styles. The medalion, including the border, to be not more than 1 foot 6 inches, nor less than 1 foot 3 inches, in its largest diameter, and to be executed in high relief.

**Prizes for Metal-Work.**—The Council offers two prizes of 5l., 3l., and 2l., as first and second prizes for the best specimens of a key, either Medieval or Renaissance in style, hammered, pierced, or punched, and not filed, and not more than 12 nor less than 8 inches in length, with an ornamental handle. Each specimen must be designed by the competitor.

**Prizes for Wood-Carving.**—The Council offers two prizes of 5l., 3l., and 2l., (given by Mr. S. C. Hull), as first and second prizes for the best specimens of a carved oak panel, for one side of the binding of a Church Bible. Each panel must be designed by the competitor, and be 1 foot by 8 inches in size.

**Prize for Cartoon for Painted Glass.**—The Council offers a prize of 3l., 3s. for the most meritorious cartoon of a trophy-hall for painted glass, supposed to surmount a figure. The cartoon to be original in design, First or Middle-Pointed in style, in chalk without colour, and on paper, 2 feet 6 inches by 1 foot 8 inches in size.

**Prize for Coloured Decoration.**—The Committee of the Ecclesiastical Society of London offers through the Council of the Architectural Museum a prize of 5l., 3s. for the competitor who shall show himself most successful in colouring, according to his own judgment, a cast of a group of figures from the great hollow moulding in an arch of the Porte Rouge, Notre Dame, Paris. Mr. Beresford Hope will give 3l., 3s. in one or more extra prizes, any work being deserving of such reward. This being a special prize, of same cast for competitive colouration is proposed to all competitors. The candidate may adopt that medium for applying his colours which he is expected to treat the panel as if forming a portion of an architectural composition, and not as a cabinet piece. The original is in stone. Casts

from this panel will be supplied, on application to the honorary secretary of the Architectural Museum, at 55, each, of the Museum, or by payment of 2s. extra for packing and case. Duplicate casts will be allowed. The Committee of the Ecclesiological Society will itself adjudicate.

DECISIONS UNDER METROPOLITAN BUILDING ACT.

STAIRCASE, PUBLIC BUILDING.—FEES.

At the Wandsworth police-court, on the 29th ult., Mr. George Myers, builder, of Lambeth, appeared to a summons at the instance of Mr. A. J. Hiscocks, district surveyor, to show cause why he had not complied with a "notice of irregularity," served on him, directing him to build a stone staircase instead of a wooden one, at the Royal Victoria Patriotic Asylum, on Wandsworth common.

The case was heard by Mr. Ingham, who made an order for it to be done within the space of two months, and to pay the costs and expenses. A summons for fees was also heard at the same time for three separate buildings on the same premises, of one story in height, and ten squares in area. The objection urged was, that the fees were not rightly charged. Firstly, that they were only additional buildings to the main building, and should only be charged as half fees. Secondly, that one story buildings, not exceeding four squares, were to be charged 15s. and not 30s., and therefore that the charge for one-story buildings, which do exceed four squares, should be 15s., with 2s. 6d. for every additional square.

Mr. Ingham decided, as to the first objection, that it was absurd to say they should be charged only at half fees, as they were distinct and separate buildings; and as to the second objection, the lowest scale of fee appeared to be limited to buildings within four squares; and, when exceeding the four squares, the higher scale of fee was to be paid. The fees were rightly charged, and must be paid, with costs.

It was stated that Mr. Myers did not raise the objection, but acted under orders from the architect of the building.

THE PROGRESS OF BIRMINGHAM.

For the first time during the last eight years, building operations in Birmingham show a tendency towards increase on previous years, as appears from the following return, quoted in the local *Journal* :—

Houses Erected.			
1852	.....	3,000	
1853	.....	2,764	
1854	.....	2,219	
1855	.....	1,253	
1856	.....	893	
1857	.....	612	
1858	.....	605	
1859	.....	689	

Over-speculation is thought to have had something to do with this, and a depressed state of trade is partially involved in it; but the principal cause, it is said, is the growing desire to build in the suburbs, and beyond the limits of the borough. In fact, on several sides of the town, pretty large towns—such as Handsworth or Harborne, and away by Aston—are rising into existence; and in almost every direction workshops, manufactories, and dwellings, which are not included in the borough surveyor's return, are either erected or in course of erection. The details for the last three years are as under:—

Houses	.....	1857	1858	1859
Churches	.....	612	695	689
Chapels	.....	1	0	1
Schools	.....	1	2	4
Manufactories	.....	7	4	7
Warehouses	.....	16	5	12
Workshops	.....	26	24	32
New Shop Fronts	.....	54	46	23
Stables	.....	0	8	6
Malshouses	.....	0	0	2
Miscellaneous	.....	21	3	0
Alterations and additions	.....	29	23	43

Books Received.

*The Pilgrim in the Holy Land; or, Palestine, Past and Present.* By the Rev. H. S. OSBORN, A.M. London: James Hogg & Sons.

MR. OSBORN is an American "pilgrim," being professor of natural science in Roanoke College, Salem, U.S. The present cheap and handsome little volume is a condensed reprint of his recently published work on Palestine. The narrative, it appears, has only been divested of such portions as are more immediately interesting to the man of science and the Biblical scholar, or references to parts of the tour unconnected with the main subject. The substance of a large volume, published in America, at a high price, is thus brought into an accessible form. A variety of views from photographs and good drawings also illustrates the new volume. The hallowed associations of the Holy Land naturally sway every Christian imagination, and more especially, if we mistake not, that of many of our American cousins, who even regard "the old country" itself in which their forefathers dwelt as a place for pilgrimage. It was to be suspected, therefore, that Professor Osborn might be even too enthusiastic in his

reversion for many questionable antiquities with which Palestine is studded. So far from this being the case, however, an intelligent discrimination and moderation seem to be observed throughout; and we find little here of that thick and thin excrement which many doubtful memorials of sacred history sometimes receive from "pilgrims" to the Holy Land. The narrative is well and pleasantly indited, and is likely to become popular.

Miscellaneous.

THE WORTHING SURVEYORSHIP.—The Local Board of Health have reappointed Mr. Charles Hyde surveyor to the board. There were twenty-three applicants for the office.

PROPOSED BRIDGE ACROSS THE MERSEY.—The Board of Admiralty have presented to Parliament a report against the plan of constructing a railway bridge across the river Mersey, near Curdley, between Warrington and Runcorn, which forms part of the London and North-Western Railway Bill, No. 3. The line of road which at present crosses the Mersey lowest down the river is that of the London and North-Western Railway Company, near Warrington, about seven miles above Runcorn. The Admiralty state that the line of railway now proposed is to cross the river Mersey about four miles below the present crossing of the main line, with a headway of only 18 feet above high-water mark. They recommend the constructing of a lofty bridge over the Mersey at Runcorn. On this subject the report says: "It has, however, been pointed out to their lordships, that if another crossing of the Mersey be required it might be effected at a site near Runcorn, where the banks of the river are high, and where a railway bridge might cross without the necessity of opening spans."

GAS COMPANIES.—In the United Kingdom 911 cities and towns are furnished with gas. Of these ninety-five are supplied by municipal corporations or private individuals, and 896 by trading companies. In Scotland 143 towns are lighted without, and eight with, special Acts of Parliament. In Ireland fifty-two towns are lighted without, and four towns with, special Acts of Parliament. In England 533 towns are lighted without, and 150 with, Acts of Parliament. The sum expended by the 896 gas companies in England, Ireland, and Scotland, amounts to 25,041,309*l.*, and by the private individuals and corporations on the remaining ninety-five gas works to 2,114,505*l.*, being a total of 27,155,814*l.* A ton of English gas coal will yield 9,000 cubic feet of gas, 14 cwt. of coke, ten gallons of tar, and ten gallons of ammoniacal liquor, while the light from each ton is equal to 320*lbs.* of sperm candles. A ton of Scotch coal will yield 11,500 cubic feet of gas, 10 cwt. of coke, 14 gallons of tar, and 14 gallons of ammoniacal liquor, while the light is equal to 820*lbs.* of sperm candles; and a ton of Boghead cannel (the Torbane mineral) will give, when manufactured into gas, light equal to 1,950*lbs.* of sperm candles. The quantity of gas manufactured annually exceeds twenty-five thousand millions of cubic feet.—*Platt's Statistics of Gas Lighting.*

STAINED GLASS WINDOWS.—At the last meeting but one of the Liverpool Architectural Society, Mr. Frank Howard made some observations as to the applicability of stained glass windows to the buildings in which they were erected. He was desirous of having an architectural opinion as to how far figures represented either on glass or in sculpture were to be reduced to an architectural character, as if they were built in bricks and mortar. He should like to know the opinion of the architectural profession as to whether the character of the subjects delineated on stained glass windows should accord in style with the structures in which they were placed; and he therefore asked for criticisms of a cartoon which he had prepared, and which he maintained was suited to an ecclesiastical edifice without reference to the style of architecture in which that building might be erected. He referred to the most severe style of architecture, the Parthenon, admitting of the most life-like sculpture, the Elgin marbles, the Eleazar crosses of the most graceful statues, the sepulchral monuments down to the time of Edward III., the most exquisite angels, supporting the heads of the knights and ladies thereof. He might also refer to the paintings on the walls of St. Stephen's Chapel, called the "Painted Chamber," and the general freedom admitted in Gothic ornament; and asked why the designer of stained glass should be limited to a greater degree of stiffness and less living character than was required in any other instance.

DAMAGE TO THE SOUTH-WESTERN NEW STATION.—The new railway station attached to the terminus in the Waterloo-road was partially destroyed by the gale of the 7th. The workmen engaged in the erection of the new station (in Vine-street) which is intended as the terminus of the new Leovill and Exeter line now in course of construction, had been obliged to suspend labour, and most of them had left the works. About half an hour afterwards a tremendous crash was heard, and it was discovered that the whole of the framing, which had been erected only about a week, had come down, carrying away with it in its fall four or five lofty portions of the brickwork: it was at first feared that the arches upon which it was erected were also coming down.

PROPOSED ART GALLERY FOR MANCHESTER.—Touching the proposition to erect an Art Gallery in that city, a meeting was held on Monday to consider the ways and means. The idea is to raise a sum of 100,000*l.* for the erection and maintenance of a free institution which shall be furnished by private donations of works of art, and by the loan of such pictures, marbles, &c., as can be obtained from the Government. The great landowners of the county, including Lord Derby, Lord Ellesmere, Lord Wilton, and Lord Egerton of Tatton, have promised their support for the institution, which has been inaugurated by Mr. Thos. Fairbairn, who at the meeting read the following laconic letter from a friend whose name he did not disclose:—"My dear Tom,—I have read your letter, and I am going to do it. Put me down 1,000*l.* for the honour and glory of my native town."

THE GLASGOW ARCHITECTURAL SOCIETY.—An extraordinary meeting of this society was held on Monday before last, in the Scottish Exhibition-rooms, Bath-street, Mr. T. C. Gregory in the chair. The minutes of last meeting having been read, and several new members elected, Mr. Salmon, president of the society, after a speech of considerable length, moved, "That a committee of the Architectural Society be appointed to examine and report upon the stained glass which has recently been fitted up in the great west window of the cathedral of Glasgow, as to its merits as a work of art, and also to its suitability in design, character, and colour with the building; and also as to the manner which they may consider best for making it, and the other windows when they are put in, a means of professional study and instruction, if found worthy of such a high position." The motion having been seconded, a lengthened discussion followed. An amendment was moved that, in the present state of our information on the subject, Mr. Salmon's motion is premature. The motion was carried; after which the following gentlemen were appointed as the committee:—Messrs. Charles Wilson, James Graham, John Burnet, Alex. Thomson, James Boucher, Thomas Gildart, Alex. Watt, Campbell T. Bowie, David Haire, John Honeyman, Thos. McGuffie, and James Salmon.

THE DUDLEY ASYLUM FOR THE BLIND.—The new "Earl of Dudley," late Lord Ward, has inaugurated his new earldom by the building of an asylum for those persons who may lose their sight while employed in his collieries. Over the cavity of the chief stone was placed the following inscription, engraved on a brass plate:—"The corner stone of this building, erected for the collecting together under one roof, and for the comfort and consolation of those who have lost their eyesight in the working of the Dudley limestone caverns, was laid by the Earl of Dudley, Dudley Castle, William Baron Ward, of Birmingham, the 28th day of February, 1860. Richard Smith, mine agent of the Dudley estate, to whose suggestion the institution owes its origin. William Bourne, architect; J. Hartland, W. Walker, builders. *Dindimus capti qui bene capit habet.*" The institution is intended to accommodate 26 families, each family being furnished with a suite of five rooms and out-houses. There will also be an infants', boys', and girls' school, capable of accommodating together about 150 children. A school-master's residence will be attached to the school, and at a little distance a chapel and minister's house will be erected. A laundry, sickward, and conveniences for a surgeon, form part of the scheme. The block of buildings occupies three sides of a quadrangle, and the whole is enclosed by a low wall and ornamental palisades, the entrance being through an iron gateway, to which is attached a porter's lodge. In the centre of the east side is a tower, in which is constructed a large tank for supplying water. The material of the various buildings is red and white sandstone, supplied from his lordship's quarries, and the style is Early Decorated Gothic.

**LIVERPOOL ARCHITECTURAL SOCIETY.**—At the fortnightly meeting of this society, held on Wednesday evening, the 7th, the chair was occupied by the president, Mr. H. P. Horner. A letter was received from Mr. McGowen, clerk to the Health Committee, acknowledging the receipt of the society's communication on the proposed by-laws, and expressing the readiness of the committee to do all they could to meet the wishes of the society, consistent with the interests of the public. The paper for the month was read by Mr. J. Justen, being a continuation of his paper "On the Romanesque of Germany," illustrated with diagrams and plates.

**NEW BAPTIST CHAPEL AT OLDHAM.**—The Baptist church and congregation worshipping in Manchester street, Oldham, under the pastoral care of the Revs. John Birt and J. W. Ashworth, are about to erect a new chapel in King-street. Several architects were invited to submit designs in competition, and the committee have selected the design of Mr. H. J. Panll, of Burnley, who was the architect for the new college at Rawdon. The chapel will be in brick, with stone dressings, and the front will face Union-street. It is designed to accommodate 1,000 persons, and the works are to be commenced forthwith.

**FIGURE WEAVING BY ELECTRICITY.**—This remarkable invention is attracting increased attention. A long description of its peculiarities was given to the Society of Arts, by Mr. Le Neve Foster, the secretary, and from the discussion which followed it appears that practical men, though differing as to details, view it as one which will effect a great change. The inventor claims the following as the results of his invention:—1st. The great facility with which, in a very short time, and with precision, reductions of the pattern may be obtained on the fabric by means of the varying velocity with which the pattern may be passed under the teeth. 2nd. That without changing the mounting of the loom or the pattern, fabrics thinner or thicker can be produced by changing the number of the weft, and making a corresponding change in the movement of the pattern. 3rd. The loom and its mounting remain unchanged, the design may be changed in a few minutes by the substitution of another metallised paper having a different pattern. 4. The power of getting rid of any part of the design, if required, and of modifying the pattern. M. Bonelli gives calculations by way of comparison between the old and the new systems, showing an immense saving of expense by means of his invention.

**FALMOUTH DOCKS.**—The chief trusts of the new docks for Falmouth has just been laid. "The works now actually in progress," says the *Cornish Telegraph*, "comprise a breakwater running out from Bar Point (1,100 feet in length) in a north-easterly direction, defending the harbour within from the sea. This breakwater is to have a white light at its end. Call this the eastern end. From the point leave a wide channel for entrance and you get to a northern breakwater, 1,520 feet long, with a white light also at its extremity. Thus, on each side the channel leading to the basin, is a white light. These breakwaters, with walls on the land side and on the western side, enclose an area of forty-two acres, with a uniform depth of 18 feet at low-water spring tides. On the land or Pendennis end of the 1,100-feet breakwater there will be transit sheds, workshops, and stores; and stretching along the south side of the harbour (its most sheltered side) will be a gridiron, 400 feet by 60 feet, and five graving docks from the west, or Falmouth side, towards the east, or St. Anthony Point side. An entrance, 80 feet wide, conducts into a floating dock of fourteen acres, which lies on the west or Falmouth side of the tidal harbour. This is to be 700 feet from west to east, and 880 feet from north to south, with transit sheds on its northern and southern sides, and a jetty running out from the middle of the south end, dividing the floating dock for half its length of 880 feet into halves. The total length of the works from east to west is 2,200 feet."

**ALL SAINTS' CHURCH, NOTTING-HILL.**—Sir: A few weeks ago it was stated in your columns that this church would be opened in the course of a few months. At that time there was some probability of the consecration taking place at an early date. We regret, however, to state that the negotiations then pending have from some cause or other since been broken off, and it is more than probable that, owing to the indifference of the inhabitants of the locality on this matter in particular and on church matters generally, All Saints' will not be finished at an early date, unless the West London Protestant Institute takes the matter in hand.—  
A and B.

**WORKMEN'S INSTITUTE.**—On Thursday evening, the 8th, a lecture was delivered at 34, York-road, Lambeth, in connection with the Workmen's Institute and Benefit Clubs, by the Rev. E. Monro (incumbent of Harrow Weald, Middlesex), on "The Life of John Howard, with the Present and Past of our Prisons in England." Mr. St. Ledger Glyn occupied the chair.

**RASCALS AMONG THE READERS.**—A remarkable trial has just been concluded, in Leipzig, says the *Morning Herald*, namely, that of a Dr. Lindner, professor in the university of that town, who has been convicted of the crime of stealing and mutilating some of the books and MSS. in the public library. The sentence passed upon him is a severe one, but not disproportionate to the aggravated nature of his crime—six years imprisonment, with hard labour! Let the delinquents in the British Museum Reading-room take warning in time by this example, since the law in this country is quite as severe as that of Saxony with respect to such offences.

**THE PUBLIC INSTITUTIONS OF THE METROPOLIS.**—The select committee appointed by the House of Commons to inquire into the best means of throwing open the public institutions of the metropolis to the working classes, and extending their usefulness, have met. Sir J. Trevelyan was in the chair. Sir Roderick Murchison was called. He spoke of the advantages which the delivery of gratuitous lectures to the working classes, by the professors connected with the Geological Institution in Jernyn-street had produced. Professor Huxley gave similar evidence to that of Sir R. Murchison. Dr. Gray, of the Natural History Department of the British Museum, was next examined. He recommended the opening of a Museum of National Duplicates in the east end of London. Mr. J. Whitmore, machinist, gave evidence as to the desirability of opening the public institutions in the evening, with illustrated lectures of a simple and popular kind.

**THE AMERICAN OIL SPRINGS.**—An exceedingly plentiful and profitable spring of petroleum, or "rock oil," as it has been called, has been got by artesian boring, as a venture, in Oil Creek, Philadelphia. Under a lease in May last, a Mr. Drake commenced sinking an artesian well for salt, oil, or anything which might turn up. Boring through 47 feet of gravel and 22 feet of shale rocks, with occasional small apertures in it, he struck, in August, a large opening, not yet explored as to depth or area, but filled with coal oil, somewhat mixed with both water and gas. A small pump on hand brought up from 100 to 500 gallons of oil a day. An explosion soon blew it up. One of three times its size and power was put in its place, and during the first four days threw up 5,000 gallons of oil; 1,250 gallons per day, or one gallon per minute for twenty hours fifty minutes per day. The oil, as raised, was worth 80 cents a gallon, which produced the large income of 1,800 dollars per day for four successive days, and so the matter goes on, yielding about one gallon per minute during working time. A large company, called the "Consolidated Rock Oil Company," with a capital of 1,000,000 dollars, has been formed in New York, to buy and work the oil lands.

TENDERS

For alterations and additions to the Town Hall, Salford. Mr. James Evans, Borough Surveyor. Quantities supplied by Mr. Thomas Taylor, Manchester:—

Bramall, Edwards, & Foster	£ 5,175 0 0
Howdon	5,097 0 0
Parry	5,814 0 0
Dalton	5,838 0 0
Statham & Co.	5,790 0 0
Fairclough	5,740 0 0
Sutcliffe & Co.	5,625 0 0
Bramall (Samuel)	5,538 0 0
* Accepted in consequence of allowing a larger sum for old materials.	
For mansion house, Cheswick, near Berwick-on-Tweed. First-estimates for carcass. Mr. P. R. Wilson, architect, Alnwick:—	
J. & W. Wilson, Newcastle	£3,400 0 0
J. Bryson, Suttill Stn.	3,314 0 0
Russell & Fairbairn, Berwick (accepted)	3,138 0 0
Chamberlain & Renton, Tweedmouth	3,121 0 0
G. & W. Craik, Tweedmouth	2,433 0 0

For enlargement of Ranby House, Notts. Mr. Goddard, architect, Lincoln:—

Liller & Son, Retford	£1,125 0 0
Young, Lincoln	1,100 0 0
Fox, Lincoln	910 0 0

For villas at Thorpe, near Norwich, for Mr. G. Clapham. Mr. John Daymond Ellis, architect, Norwich:—

R. W. Leyton	£1,625 15 0
J. W. Lacey	1,618 0 0
Simms & Foyson	1,600 0 0
Plummer & Bloom	965 0 0
Thos. Brooks	961 0 0
James Worman (accepted)	898 0 0

For the erection of two houses in Cradle court, Red-Cross-street. Messrs. Wigg, Son, & Oliver, architects. Quantities not supplied:—

Mustoe	£399 0 0
Ring & Stanger	875 0 0
Pritchard	815 0 0
Henshaw	619 0 0
Scott	759 10 0

For farm-house at Puteham, near Tring, for the Rev. James Williams. Mr. Frederick Gotto, architect:—

Geo. Cooper, Aylesbury	£679 18 0
James Andrews, Tring	617 0 0
Messrs. Hanover, Tring	905 13 0
Edwin Smith, Tring	545 0 0

For alterations and repairs to No. 61, Red Cross street, Essex, for Mr. Kenneth Mackenzie. Mr. J. H. Rowley, architect:—

Davey	£195 0 0
Milson	199 0 0
Estall	188 0 0
Burrows	186 0 0
Bird	180 0 0
Salter (accepted)	175 0 0

For the re-instatement of Park House, Backhurst Hill, Essex, for Mr. Kenneth Mackenzie. Mr. J. H. Rowley, architect:—

Davey	£195 0 0
Milson	199 0 0
Estall	188 0 0
Burrows	186 0 0
Bird	180 0 0
Salter (accepted)	175 0 0

For constructing a Swiss rifle butt for the 16th rifle corps (Middlesex), Whitton Dean:—

Peckham	148 10 0
Perman	145 0 0
Hill	142 10 0
Beauchamp	141 9 0
Hancompton	137 17 0
Whit	131 7 0
Baker	125 0 0
Sims	115 0 0
Estall	106 4 0
Taylor	101 0 0
Burchett	99 17 0
Edlis	99 17 0
Brandsen	99 0 0

For rifle butts, &c. for 5th company Warwickshire Volunteer Rifle Corps (Warwick and Leamington). Mr. T. Robinson, architect:—

Quantity	per yard	Estimate for work if commenced immediately.		Reduction allowed for delay of two months.	
		s. d.	£ s. d.	£ s. d.	£ s. d.
Wilson	25	0	1,320 0 0	0	39 0 0
Dutton	12	0	1,100 0 0	0	50 0 0
Orton & Child	8	0	950 0 0	0	23 0 0
W. Green	6	0	935 0 0	0	17 0 0
W. Grove	15	0	930 0 0	0	131 0 0
Hardwick & Son	8	0	880 0 0	0	—
C. & G. Hart	10	0	840 0 0	0	20 0 0
Ballard	7	0	835 15 0	0	—
Smith	25	0	805 0 0	0	25 0 0
Gascoyne	19	0	783 0 0	0	10 0 0
Taylor	7	0	740 8 2	0	—
Clark	7	0	745 0 0	0	—

TO CORRESPONDENTS.

F. M.—Bishop of E.—E. T. B.—Mr. P.—R. E. (Buck.)—F. H. B.—H. B.—Bishop of R.—W. B.—W. B.—E. T. B.—The Editor.—E. M.—Sir C. M. G.—Observer.—Voice from the Bench.—C. and D.—H. C. (mother would answer).

**ERRATA.**—In quotation as to Smeane from "Memorial of Workers," p. 143, read:—"the hall" for "the streets"; for "the Government" read "the King's exchequer"; helped by Sir Charles Barry, have special notice.

**NOTICE.**—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

Just published, price 6d. or 1s. in boards, **MEMORIALS OF WORKERS:** the Past to encourage the Present. By GEORGE GODWIN. Author of "Seven Sermons on the Bridges," &c. "Memorial of Workers" is a meritorious address, and is well-timed by the author, especially to encourage every man who is toiling to improve himself, and to benefit others. "Zetland" is a valuable tract, and Mr. Godwin's little volume, small as it is, will worthily take its place in that class of practical literature to which it belongs.—*Illustrated Review.* "Such information is contained in a very narrow compass"—*Critic.* "Look like this put into the hands of a youth with any aspiring impulses could not fail to do good: its influence on any reader would be no glazing only—a great thing."—*Christian Advocate.* London: H. K. BAYLY, 7, and at the Office of "The Builder," 1, York-street.

**MR. WILLIAM ELLISON,** CONSULTING SURVEYOR, late of STAINSVAY, has taken Office at 33, FENCHURCH BUILDINGS, & FENCHURCH STREET, E.C. Where he continues to receive BUILDERS. On BRACKLES & CONCRETE, DISPUTED ACCOUNTS, &c.

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# The Builder.

VOL. XVIII.—No. 894.

The Serpentine Question.

ITNESSES before the Parliamentary Committee continue to confirm the correctness of the views on this subject which have been expressed in this Journal, and we may hope there is still a chance of rescuing the fine piece of water in Hyde Park, known as the Serpentine, from the goodly experiment of continual filtration, and continual return of the purified liquid to its dirty bed, again to take up a dose of filth, to be again eliminated; the process bearing a not very remote resemblance to the task of the daughters of King Dauidas.

The inquiry is most simple—how first to purify a piece of

stagnant and fetid water, and next how to keep it supplied with a perennial flow.

We have before given free expression as to the best modes of dealing with the matter; and we have done it in the way that might occur to the agrestic proprietor of a ten-acre piece of ornamental water. We said, first clear it out—cut drains in the mud—leave it one or two months, say from September or October to December, to dry or drain off,—then wheel away or utilize the mud; and when you have formed the basin at the desired level, pour in your supply of fresh spring-water, if possible; if not, then such stream-water as the locality most conveniently offers.

A correspondent, "T. S.W.," who has overlooked the fact that the suggestion has been already made in our pages, says:—

"It is very well known that exposure on the surface of the soil to the action of sun and wind very rapidly purifies all offensive matter, so that on walking through a field which has been dressed with even the most unsavoury kinds of compost, it is found in an incredibly short space of time to have become quite free from unpleasant odour. My plan, then, is this. Let the whole of the water be at once drawn off, and if in parts it is below the level of the outlet, then pump out the remainder by a hose and portable steam-engine, and take the necessary means to divert into the sewers whatever water would otherwise find its way into the head of the Serpentine at Bayswater. Having got rid of the water, let the mud lie still and get dry during the summer. About the end of next autumn the mud will have become sufficiently hard and dry to remove—not to cover up only, as has been proposed, to ooze out again at some future time."

He then goes on to urge that this consolidated mud should be spread over the surface of parts of the Park, and says:—

"This I would do, not by the tedious process of wheeling in barrows or carts, but having first dug down to the firm bottom for a sufficient space, I would then lay down a line of rails on longitudinal sleepers, which sleepers should themselves run by means of small wheels on other short transverse wooden sleepers, to be taken up and laid one beyond the other as the work proceeds. On these rails should run two or more lines of ballast-waggons, drawn by the requisite number of locomotives, and the work might be accomplished in a very short time. Having thus dug out all the mud, the banks of the lake at each side are to be cut away and thrown into the middle, until the whole

is brought to a uniform depth, sloping from almost nothing at the edge to 5 or 6 feet in the middle. The sides are not to be cut away in a straight line, but so as to preserve the clumps of trees, which should be allowed to remain on promontories or islands, wherever they occur."

Going back to our previous observation, the reason wherefore we prefer spring-water is that being harder, it is less liable to feel and favour the germination of aquatic vegetation; and that being heavier, its tendency is to form a lower current, and thus assure a more thorough confluence with the hoarded pool; but, above all, on account of its greater freedom from organic matter, such as a continuous supply must, as in cases of natural lakes, preserve the purity of the basin; water-springs *de profundis* being in part the cause.

How many lochs are there in Scotland, Ireland, and Wales, receiving scarcely the tribute of a 6-inch bore, that continue always pellucid and wholesome? But, then, they are deep. Yes; and their very depth preserves them.

It is impossible to discover whether there are springs in the Serpentine or any other lake until it be drained off; or unless such springs be powerful enough to gurgitate at the surface. Swimmers may suppose that when they get into cold water, such change of temperature is occasioned by springs; whereas deep water being less influenced by solar heat, will have a lower temperature.

Many are the suggestions made as to the mode of supply: some advising the purchased tribute of a company; others, a conduit from the Thames; the Colne being also pointed to as a suitable source; and whilst the majority seem rather to prefer the well at Duck Island, as having been proven to be sufficient in quantity; and of quality, so far as the observation and opinion of ordinary inquirers extend, not to be excelled. The abstruse and unaccountable analysis of chemists has, however, involved this latter point in an extricable mystery,—some accounting it pure, others as containing one or two grains of organic matter to the gallon; and one professor reporting it as unfit for use, because of a suspected infiltration of Westminster sewage. Now viewing the fact, that this well is sunk through the close and deep gravel bed of the London basin; that it is far removed from sewers, and that the filtering medium, unlike the beds of water companies' reservoirs, is of great extent; but, above all, that the element is intensely cold and of crystal clearness; no person other than an alchemist would condemn it.

It would appear that the natural supply which can be had on the spot is the best; more particularly as it is by far the cheapest, and also because it is under Governmental control.

As to the preparation of the bottom, the regulation of its depth, and the formation of the lake, these points have been treated just according to the taste or philanthropic feelings of the various consults. There is, however, but one proper mode of adjustment, and that, as we have ventured to pronounce before, is to preserve a good depth in the centre—say 10 feet at the west end, inclining to 5 feet at the east end; and to maintain this channel full 30 feet wide below bridge, and 20 feet above. From this centre channel the slope ought to be graduated to 18 inches, or 2 feet at the borders.

For the bottom, when once relieved of the mud, and supplied with 1,000,000 gallons daily, there can be no occasion for other material than clean gravel, unless, from philanthropic views, the Chief Commissioner should direct that the portion set apart for bathers (and this need not exceed one-third of the length of the south side) should be laid in concrete throughout; and here it may be observed that, in order to provide for the safety of the millions who bathe in these waters, the shallows might be extended, so as to reach 60 yards from the shore of ingress. The water is 150 yards wide at this part, and a slight deviation of the central channel at this part could be of no moment, for there would remain scope enough to graduate the opposite side, and, if precaution were thought requisite, why not moor boys, ornamental if you like, to demarcate

the greater depths? Three or four on each side of the deeps would suffice to admonish both swimmers and skaters.

Assuming that the quality and quantity of spring water from Duck Island are all that need be wished, then comes the question of assuring a confluence and commixture throughout the lake; and it would appear from a letter lately published in the *Times*, by Mr. Chester, that St. James's reservoir is little benefited, since "the clear water is suffered to escape quite near the point at which it is delivered at Buckingham Palace end!" Now, in the works executed by Messrs. Easton & Amos, ample provision was made for directing the outflow to any desired side, or at the Horse Guards end of the canal, so that advantage might be taken of every current of wind to drive the scum and surface impurities to leeward. Penstocks, with pipes and stopcocks, were arranged for this purpose; but on the secession of Sir B. Hall, a new administration and altered management left these provisions in disuse.

As a matter of course, a drain was cut nearly round the lake, tending towards the main sewer of the parade, this part of the plan having originated from Mr. Mann. The main pipe was laid down under the concrete bottom throughout the whole length of water to supply the canal, and also as the first step of a system to be afterwards extended to the round pond, thence to the Serpentine, and after feeding the Hyde-park cascade, to return through St. James's-park. Such was the plan of Lord Llanover. It would have given us a living current of pure water, and an incessant cascade. A double quantity of water could be had from springs, at less cost than that supplied by water companies.

The suspended plan for daily filtration of the Serpentine bath, could not add one gallon to the supply, whilst it must cause loss by evaporation just in proportion to the sun's heat, and, consequently, in proportion to the public requirement for refreshing streams: the filtering works would cost as much as those for the supply of well-water, and the appearance of the Park be greatly interfered with.

With respect to the formation of islands, in order to get rid of the mud, that is wholly a matter of fancy: if one island were necessary as a depository for the contentment of mud that now seethes beneath the waters, in an artistic point of view, there can be no objection to it; on the contrary, such a disposition might be rendered excessively pleasing and ornamental. Men of Atlantic ideas might be offended; but ladies and amateurs of varied landscape, would feast upon the friendly isles, more particularly if judiciously shrubbed and purpled with rhododendrons.

It has been objected that dirty people crowd in here to make ablution; that lepers dare to congregate with the multitude in their lustrations. Well, if so, and it seems to be attested, the greater is the necessity for enlarged space. It is the only pool free of access to the metropolis, the river being no longer endurable. What a boon to the public would these *balnea* present: none but Easterns, or Furks, with whom ablution is religion, can appreciate it.

But for the speculative island, such a depository for the mud is not necessary, however large may be the quantity *in situ*, or even, although it amounted to the conjectural estimate of 160,000 cubic yards; the form of the present Serpentine is unpicturesque, at least at one point, and that is, at its western base, which is nearly flat or square; and here it measures 165 yards across. The form of the whole lake is exactly that of a Tyrolean powder-horn; broadest at the flat base, upon which it stands: the pool was made stagnant with a similar base.

To give a landscape finish to this portion it is only necessary to fill in the angles; and here abundant space is afforded for the storage of all the mud deposited throughout the expanse. Let the present sluices and overfall remain, and from them on either hand, form the bank in a wavy or segmental line, so as to imitate the fashion of a natural lake. Nature, ever free, forms no acute angles, save only in crystallization. Here there is room for more than the mud of the



Serpentine; but if it be requisite to extract gravel from beds in the Park, then let those chasms be filled in with the waste which it is so desirable to get rid of.

One plan of disposing of the mud has been mooted,—to dry, and burn it! Well, this is ingenious; but any one who has observed the process of combustion of clays in the suburbs—at Camden-town, at Islington, and elsewhere,—who has been obliged to breathe the surcharged ferid atmosphere, by day and night, and that for many months,—may pronounce at once as to what would be the excitement of Kotten-row, or the Drive—not to speak of the residences near Prince's Gate, nor of Knightsbridge. Although a legion of navigators were employed in collecting the ooze, and in hastening its desiccation, four months must elapse before the dried residuum could be reduced to ballast. But crotchets such as these must dissipate themselves, and hardly need confutation.

In a picturesque aspect, few pieces of water are more effective than the Serpentine—the forest mass of Kensington Gardens; the park glades and timber, and even the bridge, soften and improve it: distance, too, lends its enchantment, and the heights of Sydenham, as well as the old Cathedral and St. Stephen's towers, bestow an unwonted richness, which even the grotesque caricature of the giant horse cannot destroy. It only remains that *blemishes be removed*; and that the landscape gardener (and there is one upon the committee) step in, to give a tone and character to the whole. If the marginal bounds of roadways can be diversified with unbragous and floral walks, such as Kensington Garden or the Park borders, what cannot be effected where nature and art are concurrent in the elements of beauty?

The value of the Parks to all classes of the population is inappreciable: they feed the health, improve the morals, and elevate the taste of the whole community. Therefore the subject is of national importance; and the treatment of those plans under consideration, which offer the most obvious security for a good, wholesome, and perennial supply of water, and for the purification of pestilential pools, must be preferred. High engineering competitors are engaged in the conflict for election; but he who has exemplified his capabilities by works of this nature already accomplished, must be accredited.

In the lucid evidence of Mr. Page, he stated that in the railway works at Paddington, which are less than half a mile distant from the Bayswater end of the Serpentine, a spring was tapped, which now fills a 6-inch bore. If such be the case, and that it is thought better to draw from that higher source, then the engineers who produced the Trafalgar fountains, and the increased supply of 2,000,000 gallons daily to the St. James's Canal, can surely find any quantity desired in the Paddington basin.

#### SYMBOLISM IN REFERENCE TO ART.\*

The earliest architecture with which we are acquainted is that of tombs and temples; and the earliest sculptures and paintings are found associated with them.

This art, taking its origin from a sacred source, and having an especial reference to sacred things, partook of their representative character, and became essentially symbolical.

Symbolical representations of things sacred were coeval with religion itself as a system of doctrine appealing to sense, and have accompanied its transmission to ourselves from the earliest known period of monumental history.

Egyptian tombs and statues exhibit religious symbols still in use among Christians. Similar forms with corresponding meanings, though under different names, are found among the Indians; and are seen on the monuments of the Assyrians, the Etruscans, and Greeks.

The Hebrews borrowed much of their early religious symbolism from the Egyptians, their later from the Babylonians, and through them this symbolical imagery, both verbal and objective, has descended to ourselves.

The Egyptian priests were great proficient in symbolism, and so were the Chaldeans, and so

\* Read by Dr. Barlow, at the Royal Institute of British Architects, on Monday evening last. Report of proceedings will be given hereafter.

were Moses and the Prophets, and the Jewish doctors generally,—and so were many of the early fathers of the Church, especially the Greek fathers.

Philo of Alexandria was very learned in symbolism, and the Evangelist St. John has made much use of it.

The early Christian architects, sculptors, and painters drank deep of symbolical lore, and reproduced it in their works.

Their successors Nicola Pisano, and his scholars; Giotto the painter, and his pupils; artists in Italy and in Germany; the Van Eycks, Albert Dürer and his followers, and the great masters of the Italian schools down to the time of Raffaello and Titian inclusive, were all, more or less, influenced by symbolism and its principles.

There are certain associations of ideas, and conceived correspondences between things intellectual, or pertaining to the inner life, the life of the soul, and objective existences in nature, of which mankind have in all ages perceived the relation, and felt the analogy. This, in fact, is the origin of SYMBOLISM, and in this is the secret of its agreement among nations.

All primitive language is figurative, and more or less symbolical; and so were the earliest written characters. All ancient religious writings, including the Bible, relate sacred things symbolically; and mythologies may be thus explained.

All sacred mysteries and rites were symbolical, and had a meaning, taught to the initiated only, which it was held infamous to divulge. In modern times masonry has its minor mysteries and its multitude of symbols, and its secrets are carefully confined to the craft; nor is Christianity entirely without them. But symbolism is not limited to the expression, by natural or other forms, of the same essential ideas common to most, if not to all ancient religions; and indicative in them of one and the same origin: it enters fundamentally into the very principles which should regulate the practice of art, and especially of architecture, bringing into one harmonious whole its forms, proportions, dimensions, and decorations.

It is not merely that certain natural objects, as the sun, the moon, luminous ether, fire, &c.; certain animals, as the lion, the ox, the eagle, the peacock, the dove, &c.; certain trees and plants, as the palm-tree, the oak, the sycamore-tree, the horn, the lotus, and the lily, play pretty much the same parts in all religious systems, in virtue of that established relation between mind and matter, or the soul and nature, which never changes; nor that in dogmatic theology certain conventional figures are put to signify certain specific things, and thus come to influence architecture and her sister arts; but that the very designs of sacred edifices—their forms, arrangements, and ornamentation,—all have their origin in a significant symbolism, and were conceived and carried out in accordance with it.

Thus, besides the use of symbols in art for the expression of a specific meaning, either natural or conventional, there is the application of symbolical principles; and there is also a third sort of symbolism of a more general and æsthetic character, which appeals to our sensibility and to our understanding, and takes a wider range than either of the former—a symbolism as universal as reason, and that is conversant with higher aspirations of human nature than verbal doctrines and dogmas.

The noblest efforts of the Greeks, both in architecture and in sculpture, are in this latter sense symbolical, though no especial recouite meaning be conveyed by signs and marks.

The Greeks, who spiritualized art, transforming its elements or primitive forms, which they borrowed from Egypt and Assyria, into new creations, and infusing into whatever they touched their own subtle and refined intelligence, produced in their buildings and in their sculpture outward and symbolical expressions of an inward and divine beauty. They sought in their temples to set forth their intimate convictions of the required canons of architectural form and proportion, so as to produce grandeur, dignity, gracefulness, beauty, and harmony, according to the purposes required,—qualities in which all their best examples partake in a certain degree, with especial illustrations of one or more of them.

The proportions of the Greek orders and their general symbolical æsthetic characters may, I think, have been suggested by consideration of that most perfect of all well-proportioned forms, the human figure, which is also the most admirable example of constructive skill with which our great teacher Nature has furnished us. Thus we may recognize in the Doric order the symbolism of manly dignity and strength; in the Ionic, that of maiden grace and modesty;

and in the Corinthian, of matured womanly beauty and regal grandeur. The introduction of Caryatides in Ionic architecture shows that the association of the female figure was considered in character with the columns.

In their sculpture the Greeks exhibited still more evidently the symbolical principle on which they wrought. They sought to impress on their sculptured figures an ideal character and form more than human. They did not, like the Egyptians, adopt symbolical animals to express their meaning, but, with a full conviction of the dignity of human nature, and of its relation to the divine, they sought to set forth what they felt after the most perfect pattern.

The art of the Greeks was the offspring of a highly-cultivated intelligence, which saw the divinity that is in nature in everything around, and felt his influence working in themselves. In this respect the Greeks were an inspired people, and their works declare it. The grand, the beautiful, and the true, are words of deep import in art. The Greeks were the first to show what these words mean.

Emblems, symbols, types, all have this in common: they are the representatives of something else for which they stand. Emblems and symbols often differ only in their mode of application: thus the *zalm-branch* is an emblem of Victory, but taken in a Christian sense it is a symbol, significant of the victory of our faith, and is given to all Christian martyrs who have thus overcome death. The anchor may be a mere emblem of hope, but when it is put for the hope of a Christian it becomes a symbol. So, also, the equilateral triangle may be nothing more than the emblem of three united in one; but as significant of the doctrine of the Trinity, it is a symbol of the highest order.

A symbol is of the highest order when it expresses a religious dogma or philosophical doctrine, but of the lowest when it is put for a received fact, either real or legendary. Thus the anchor, as a symbol of St. Clement, is of the lowest order; and so are all those particular symbols of saints by which they are distinguished from one another: as the sword of St. Paul, the keys of St. Peter, the knife of St. Bartholomew, the tower of St. Barbara, &c.

Types are different both from emblems and symbols, and have a sort of antecedent parallelism to the objects for which they stand: thus Moses is regarded as the type of Christ; the manna which fell in the wilderness, as the type of the true bread of life that came down from heaven; the water from the rock in the wilderness, as typical of the water of life from Christ, the living fountain; and so of other types.

The earliest Christian sculptors and painters were very partial to the employment of types, but their successors seem to have preferred symbols.

It is difficult in a few words to give an adequate definition of the meaning of the word *symbolism* that shall comprise the use of symbols, symbolical treatment, and the application of symbolical principles in design; perhaps it may be called an outward expression in art of an inward sense, meaning, and purpose. The first of the series of drawings to illustrate the history of Christian sculpture, up to the time of Nicola Pisano, is taken from the very interesting early Christian urn in the Campo Santo, at Pisa, described by Ciampini. Many types are here introduced: there is the sacrifice of Abraham, the passage of the Red Sea, Moses striking the rock, the gathering manna in the wilderness, Daniel between the lions, and other subjects.

In the second we have the Saviour within an ornamental oval frame between the symbols of the four Evangelists. It is in the Campo Santo, at Pisa. In the third, a drawing of the funions urn of the Baptist in his chapel in the cathedral church of Genoa, we have subject and symbolism mixed up together, as was the constant practice of sculptors at that period, about the eleventh century. This urn is of Byzantine, or rather Alexandrine work. I call this style *Greco-Christian*, in contradistinction to the style of the first of this series, which is *Roman-Christian*. We cannot fail to recognize Roman and even Etruscan motives in this, while Greek motives are evident in the other. There is the head of Jupiter, within the equilateral triangle, between two lions, &c.

In the fourth we have a very symbolical nativity, from the bronze door of the Duomo at Pisa, date 1206. The fifth is a nativity nearer to the time of Nicola Pisano. It is from the Duomo at Siena, and much might be said about it.

Many of the subjects of Christian art, as the Nativity, the Baptism, the miracles, the Cruci-

fixion, would appear to have been originally almost entirely symbolical; they next became conventional, and lastly pictorial, in the ordinary sense of the word, losing almost entirely their religious character. This was especially the case with the most frequent representation in religious life—the Virgin and Child,—which at first was a symbol only, introduced after the condemnation of the Nestorians at the council of Ephesus, 431, as an evidence of holding the orthodox faith. (See "Legends of the Madonna," p. 22.) The dogma of the Mother of God was of Egyptian origin; it was brought in, along with the worship of the Madonna, by Cyril and his monks of Alexandria, in the fifth century. The earliest representations of the Madonna and Child have quite a *Greco-Egyptian* character, and there can be little doubt that Isis nursing Horus was the origin of them all. The Chinese also recognize this old pagan notion in *Tien-hou*, the Queen of Heaven, nursing her infant Son, who is usually represented holding a lotus-bud as the symbol of the new birth. The pictures of the Madonna and Child, commonly called Byzantine, I have long thought to have more correctly named *Alexandrine*. At Alexandria there was an established school for their production from an early period. The very colour of the flesh in these holy pictures is sufficient to establish their maternity: the Madonna, if not "comely," is at least nearly "black."

A complete history of religious symbolism should embrace all the religions of antiquity no less than the Christian, and would require as thorough a knowledge of their tenets as of our own, to explain satisfactorily its influence in regulating the practice of art.

The broadest basis on which to raise a superstructure of religious symbolism in art, not peculiarly Christian, will be found, I think, in the universally received doctrines of LIFE and LIGHT.

That mysterious agent, the vivifying power of nature, the vital energy in man and in all living things, has in some systems been regarded as the divine productive power, or principle itself, and having received deification, became the object of religious worship.

We have an evidence of this in the ancient religion of India, and in the veneration of the mystical symbols, the *Lingam* and *Yoni*,—a worship which would appear to have made the tour of the globe, and to have left traces of its existence where we might least expect to find any.

The sexual principle which rules the animal kingdom, and was long suspected to rule the vegetable kingdom also, before the fact was shown, and had even been extended to the stars; in Milton's words,—

"Communicating male and female light,  
Which two great sexes animate the world,"—

this principle came to be symbolically set forth as the foundation of a religious creed; but in a conventional way, that divested it of any indecency.

One form, and that the most prevalent, by which the sexual origin of all things was indicated, was the *equilateral triangle*. M. Guignaut, in his "Religions of Antiquity," a translation, with additions, from Creuzer's "Symbolik," has the following passage from the popular myths of the Hindus: "Sur la montagne d'or, Caïlusa, habite le dieu Siva. Là est une plateforme sur laquelle se trouve une table carrée, enrichie de neuf pierres précieuses, et au milieu le lotus, ou *Padma*, portant dans son sein le triangle, origine et source de toutes choses. De ce triangle sort le *Lingam*, Dieu éternel, qui en fait son éternelle demeure."

In the Hindu mythology, Siva is described as "the father and master of nature, everywhere distributing life under thousands of varied forms which he renovates incessantly."

In the Hindu Trimurti, or Trinity, consisting of Brahma, Vishnou, and Siva, the latter is the recognized deity, or principle of reproduction from dissolution, one of whose forms, or symbols, was fire, and who has been represented by it.

In India, all conical rocks are regarded with veneration as *Lingam* symbols of Siva, and caves and caverns are considered to be significant of the *Yoni*, or the womb of nature, out of which all things were produced.

Obelisks were *lingam* signals; pyramids, which consisted of four equilateral triangles inclined to each other, and meeting in an apex, combined the *lingam* with the *Yoni*. The former was the vivifying principle, the latter the producing principle. They were symbolized by a short, straight line, surmounted in the centre by another straight line at right angles to it, like a  $\perp$  square; also by a boat-shaped symbol with a mast, in which the boat was put for the world, the mast for the vivify-

ing power, making it productive: this became the mystical boat of Isis, which Bryant and his followers mistook for the ark of Noah. A third form is a triple mount. Amulets of these shapes are still worn, I believe, by the Sivaits.

The  $\Gamma$  square symbol, with a handle attached to it, became the *crux-ansata*, the symbol of eternal life among the Egyptians.

The *lingam-yoni* symbol of life, reversed, becomes the famous *tau*, or cross, which was the symbol of life among the Greeks, as  $\Theta$  was of death, being the initial letter of *θάνατος* (death).\*

The earliest form in which this letter *tau* occurs is that of a cross, and such was the meaning of *tau* in our ancient customs. In the primitive Hebrew, Numidian, and Greek alphabets, it was represented both as a diagonal and as a rectangular cross. In the later Greek alphabet it was the rectangular *lingam-yoni* symbol reversed ( $\Gamma$ ).

The *tau*, or cross, is believed to have been the mark which the children of Israel made on the door-posts of their houses, by order of Moses, that in the destruction of the first-born of the land of Egypt, the angel of death might see it, and pass over them.† It is also supposed to be the mark of salvation, spoken of by the Prophet Ezekiel (ch. ix. 4), to be set on the foreheads of the men who were not to be slain.

We often see this symbol on Etruscan ornamental borders; there are several such in the museum of the Vatican, occurring as the *tau* and as the *lingam-yoni*, that is, alternately upright and reversed.

As all the objects in this Etruscan museum were taken from tombs, it is probable that this also had a sacred meaning.

Sir Gardner Wilkinson has remarked that he cannot precisely determine the origin of the *tau*, or *crux-ansata*, among the Egyptians. Now, I think, there can scarcely be a doubt but that the *crux-ansata* was derived from the *lingam-yoni*, with a handle attached to it. The Coptic Christians still use it for the Cross of Christ.

The crescent moon was also supposed to symbolize the female principle; the sun, the male: something of this doctrine may occasionally be seen in Christian churches. In Santa Sabina, at Rome, over the arches of the nave, and frequently repeated, in green and red porphyry, or their imitation, is a symbol which may be explained on this supposition: there is the sun in the embraces of the crescent moon, and a little cross is stuck over them, perhaps to sanctify their union, and they are placed on a stem which rests on the triple mount, sometimes called the *monti chigiani*, because a similar device, surmounted by a star, constituted the stemma, or arms of Alexander VII.

Kieker in his "Prodromus Coptus sive Egyptiacus" p. 246, has some learned remarks on this subject, to show that the union of the sun and moon had reference to Osiris and Isis; and the Gorman Ewald, in his "Emblemata Sacra," vol. i. p. 40, has a dissertation to the effect, that the moon was a symbol of the church. If this be so, we can understand the meaning of the sun thus embraced by it, although the crescent moon would rather suggest the boat of St. Peter, itself symbolical of the church, and used in this sense both by poets and painters: thus Dante causes St. Peter to exclaim,—

"O navicella mia com' mal se' carca!"—*Purg.* xxxii. 129.

But this very suspicious-looking symbol, so full of profound Pagan meaning, would after all seem to be a very innocent thing, and merely meant to signify the Virgin Mary, among whose many symbols were those of the *sun* and *moon*, according to the mystical sense of the 9th verse of the 6th Canticle:—"Que est ista, qua progreditur quasi aurora consurgens, pulchra ut luna, electa ut sol!" ("Who is she that looketh forth as the morning, fair as the moon, clear as the sun?") At least this is the most Christian sense in which the symbol can be received. The sun-crowned figures of the Virgin Mary are, however, mostly taken from the woman seen by St. John in Heaven "clothed with the sun, and the moon under her feet, and upon her head a crown of twelve stars;" (Rev. xii. 1.) Such Petrarcha has described the Virgin Queen of Heaven in his exquisite hymn—"Vergine bella che di sol vestita," &c.

A triple mount supporting a cross would be significant of Calvary.

The Buddhists of India and of China had a cross

\* See Stephens and others. Visconti, Mus. Pio. Clem. vol. ii. p. 37.

† Compare Ezekiel ix. 4, 6, with Exodus xii. 7, 13. See Didron and other authorities. Of the wonderful influence of the cross, as a sign of power, and its exercise, see Durandus, Didron, &c.

of this sort in use among them, most probably from the earliest known epoch of their religion.

The remarkable conformity between the religious inscriptions and forms of the Buddhists in China and those of the Roman Catholic Church, has often been noticed. A recent writer (Journal Asiatique, 5th series, tom viii. August, 1856), remarks that it would seem as if the latter had served as a model to the former; but this can hardly be so, for Buddhism existed in India previously to the Christian era, and it is not probable, admitting the existence of Christian missionaries in China during the third or fourth century, that the Buddhists then for the first time copied their institutions and usages.

The Kelts, who were a more ancient people than the Greeks, were also well acquainted with the use and meaning of the cross. Our Druids were accustomed in their religious usages, as is well known, to construct a cross from the noblest oak they could find, and over the top of it to write the word *Thau*, for the supreme God, which was the sound of the Greek *Tau*, in the Hebrew alphabet, whence it was derived. This word *Thau* was precisely the same in sound as the Scandinavian *Thor*, the mighty one, the Jupiter Tonans of the northern mythology, who with *Oden* (Mars), and *Balder* (Apollo), constituted the Scandinavian Trinity, as *Thau*, Hesus, and Belinus, corresponding deities, did that of the ancient Britons.

There can be no doubt that our Druidical circles had a symbolical meaning, and were in accordance with Oriental usages of very early times. Their *tri-lithic* details were also in all probability symbolical, and are suggestive of the *Tim*, two uprights supporting a cross-piece over, which was the most simple constructive form in stoue.

Among the Chinese, that wise and wonderful people, the barbarians, so called, of the nineteenth century, who have contrived to preserve their antiquity and their institutions from the prehistoric period to the present, from the days of Noah, by some regarded as the founder of their empire, to our own, the sexual system of nature, if it did not take its origin, was at least adopted from the most remote time. The celestial principle was male, the terrestrial female; they were called the *Yang* and the *Yin*, the active and the passive. The Heaven was *yang*, and the earth *yin*, the sun *yang*, and the moon *yin*, and independent of these principles nothing was believed to exist. Numbers also had their genders: one and every odd number was masculine, two and every even number feminine.

But we must not suppose that the Chinese, though they may, symbolically, have worshipped the Host of Heaven, believing the stars to be material deities radiating male and female light, did not, like other nations, in process of time, arrive at the abstract notion of an intelligence higher than the visible heavens, and greater than any power that might be lodged in the stars. The transition, in fact, was marked by the name which they gave to this Being, as "*Shang-teen* 'Supreme Heaven,' or one higher than the sky, *Avang-teen*, 'august heaven;' 'te 'God,' and *Shang-te* 'Supreme God.'" (See "Morison's 'Chinese Dictionary,' Chrs. 100,095 and 95,432; Thornton's "History of China," vol. i. p. 52.) After this came the religion of the *Tao-tee*, or the sect of Reason, whose principles M. Klaproth refers to the earliest historical traditions of the Chinese. *Tao*, in the early Chinese language, signified intelligence and the Supreme Reason: it does so still, though it also corresponds with the *Λογος*, or Word.

The Buddhists in China, were originally called the *Tao-jia*,\* which corresponded with the meaning of *Buddha*, enlightened, learned, from the verb *Buddh*, to know. (See an article on Buddhism, in the "Revue des Deux Mondes," March 1, 1860.) The Buddhists were the reformers, or rationalists, and worshipped the *intellectual light*.

In India the Buddhists had also been the reformers, and for a considerable time their religion prevailed over that of the Brahmans, until they were expelled by the latter, and took refuge in China and Ceylon. It has, however, been the opinion of many who have given much attention to this subject, that certain notions, if not institutions, similar to those of the Buddhists, existed in India anterior to Brahminism.

The correspondence in form and arrangement between the Buddhist cavern temples, the *Chaitya* caves, and our early Christian churches, has been

\* The word *jin* means man, people possibly we may trace the word in the *Ginn* of the Arabs, an intermediate class of beings between angels and men, who correspond with "the little people," or "fairies" of our Saxon forefathers.

a frequent subject of remark; and what is still more remarkable is the evidence that these excavations are in imitation of structural edifices of which no traces have hitherto been found. I think this is in favour of the high antiquity of Buddhist principles. The earliest of these caves, according to our best European authority, are those at Bahar, the *Lomas Rishka cave*, and the *Sat Gurhka cave*.

They consist of a body or nave, connected with a head or sanctuary by a neck or passage, and have a singular resemblance to the plan of a French church, said to be at Blanc, and dedicated to S. Genitor (see the fifth volume of the *Eccelestologist*, in a paper on "Lychnosopes, or Vulne Windows").

Mr. Ferguson considers these, caves in the syenitic granite of Bahar, as the germs of what are found so fully developed at Ajunta and Ellora. I would suggest that their forms and situation have reference to that very early Oriental doctrine of *regeneration* which, like the lingam, has gone the round of the globe.

Over the daghopa (or shrine) in the Buddhist temple caves is placed a structure called the *Tee*. It received the umbrella of state, symbolical of the royal presence, and analogs to the royal canopy, the *baldachino*, in some metropolitan Catholic churches. The meaning of the name given to this structure may possibly be explained by that of the Chinese word *TE*, already alluded to as expressing a sovereign lord or ruler, or one who judges the world.

Two thousand years before the birth of Christ, *Osiris* was universally worshipped in Egypt as the saviour of souls (Rougé); he was also regarded as the incarnation of the goodness of the Deity, and as the giver of life. *Osiris* corresponded to *Siva* in the Indian theology, and one of his symbols was the equilateral triangle (see Paterson in "Asiatic Researches," vol. iii.), the same was a symbol of *Siva* (Iliad). *Isis*, the sister and wife of *Osiris*, corresponded to *Parvati*, the sister and wife of *Siva*.

*Parvati*, like *Isis*, was the universal mother, the goddess of a thousand names, veiling herself in every living form.

In Egypt, the resurrection from the dead, or the re-creation of the body, was an established article of faith, and always had been: the ritual of the dead, the monuments, and paintings on tombs, and designs on sarcophagi, show this: there is a collateral Biblical evidence, taken in conjunction with other matters, which may prove it to have been so, and we have the assertion of St. Augustine that it was so. The statement will be found in his 361st sermon, on "The Resurrection of the Dead." The words, "Egyptiisoli erudunt resurrectionem," &c. are quoted in vol. iii., "Dei Ilii Funebri," by Rossellini, who was of opinion that the extraordinary care taken by the Egyptians of the bodies of the dead had reference to this received dogma. The Pyramids of Egypt, which were, as their forms indicate, Osiridian monuments, as well as tombs, were, I think, intended to attest the firm belief in this fact, and to transmit its memorial to the latest posterity.

Possibly the moderns have not been able to comprehend the meaning of these monuments, from not having considered them from an Egyptian point of view.

It has been remarked that it is singular the Hebrews, in their sacred books, take no notice of these creations; but the Hebrew books make no mention either of the resurrection from the dead; it is only in the book of Job, an Arab in all probability, that there is any reference to this; and there it is so fully and perfectly expressed, that even among ourselves we could not enunciate it with more sincerity and certainty: it looks like some stupendous fact that has come down to us from a much earlier revelation than any which we now possess; it stands out from the Hebrew Scriptures as the unexpected attestation of an immense truth, the greatest of all truths; nor could it have received a more appropriate and durable memorial than that of the great Pyramids on the plain of Memphis.

The religion of the Hindus was, in all probability, originally a nature worship, and nothing more.

The Indian Trinity was simply a personification of the three great operations of nature manifested in *creating, preserving, and transforming*.

The Chinese had a similar formula; but in the Chinese language, as in many others, words have a double meaning—material and intellectual, physical and metaphysical; and what the people received in one way—like the *gentes grossa* of all countries—the learned understood in another. But the Egyptians were more advanced in religion,

and recognized a *Saviour* in *Osiris*, who was the type of the regenerated soul, and of the resuscitated body, through whom and in whose name every Egyptian hoped to obtain a blessed immortality in heaven.

The transmigration of the soul, as received by the Egyptians, appears to have been one through the heavenly mansions, passing from glory to glory. The *Heron*, which was a symbol of *Osiris*, was also a symbol of the first transformation of the soul in his paradise. (M. Rougé.)

The deceased, on admission to the heavenly state, was supposed to be born again, and to commence a new life, cleansed from all the impurities of earth. To die was only to assume a new form, and, as nothing was annihilated, dissolution was merely the forerunner of reproduction: such was the prevalent idea among the Egyptians. (See Wilkinson.) Now, this was precisely what was meant by *Siva* and his operations, and which was symbolically set forth by the equilateral triangle, and monumentally by the pyramid. Since *Siva* and *Osiris* were in this sense identical, can we doubt, then, that the Egyptians, by their sepulchral pyramids intended to signify the same thing, that the soul of the deceased had ascended on high, while his body remained below, protected from the injuries of time, at some future period to be reanimated by its spiritual partner. The great number of tombs about the Pyramids would seem to strengthen this exposition of their meaning.

The Greeks believed the soul to be a particle of divine etherial fire,—at least this was the doctrine of Heraclitus, to whom Plato and others were subsequently much indebted,—which particle on being released from the body, sought to return again to the sphere from whence it had descended, and they regarded the pyramid as a symbol of the soul. The pyramid was, in fact, the form assigned by Plato to the particles themselves of elemental fire; and fire, from the days of Moses to our own, has been held symbolical of the divine presence: hence in the name which the Greeks gave to this geometrical figure, *πυραμς*, from *πυρ*, fire, we may perceive that they recognized in it a sacred symbolical meaning.

*Osiris* was also the judge before whom the soul appeared on its separation from the body. Representations are frequent of this final trial, in which the actions of the deceased are weighed in the divine balance. The scene transpires in the Hall of Ameniti, or Hades. *Osiris* is seated on his throne, *Horus* and *Anubis* superintend the process, and *Thoth*, the recorder, or, as his legend denotes, "the Lord of the Divine Writings," inscribes the result on his tablet for presentation to *Osiris*. In one scale is a vase containing the actions, or the heart, of the deceased; in the other, a figure, or the symbol, of truth, an ostrich feather. If the individual, on being thus weighed, was found wanting, which rarely happened, he was sent back again to earth in a degraded form; if not, after a purgation by flame, he was admitted to the celestial abodes; but if incorrigibly bad, was condemned to eternal fire.\*

A similar representation is occasionally met with in Christian churches, where, in place of the Egyptian ministers, we have Michael the Archangel and the Devil, who is introduced among the *dramatic persons*, artfully endeavouring to deceive him.

There is a very elaborate and interesting example of this over the portal of the cathedral of Autun dedicated to St. Lazare: M. du Sommerard, in his great work, "Les Arts du Moyen Age," has given a plate of it (Plate xxi., Part iii.), and M. de Caumont has also given a representation of it in his "Abécédaire," p. 146, 2d edition.

The lizard, which a Satanic assistant is about to toss into the scale, to weigh it down in his master's favour, is a symbol of sin, and reminds one of the crocodile, which with the Egyptians had this signification.

A fresco of the same subject is said to exist on the south side of the chancel wall of Preston Church, Sussex; in this the sinner is saved by the timely intervention of the Virgin Mary.

The fundamental religious doctrine of the Egyptians, teaching the Deity, was *His unity*—when this unity became active it received different names, and these operations being personified, in objective forms, gave rise to the popular gods of the Egyptians.†

In the formation of these figures, mostly human bodies with the heads of various animals, as that of the *ibis*, for *Thoth*, to whom that bird was

sacred; that of the *shakal*, for *Ammbis*; of the *sparrow-hawk*, for *Horus*, of whom these were symbols; it is obvious that they were purely ideal representations, and that it was never intended that they should be taken for realities—they were symbolical figures, and nothing more. But Moses, who followed the Egyptian learning in many things, very wisely prohibited all images; had he not done so, the Hebrews might have had as many gods as their neighbours, for the Deity received from them, also, many names, according to his various operations.

The primitive temples of the Egyptians were in harmony with the monotheistic character of their early religion, and consisted of a small quadrangular chamber, or sanctuary, containing the sacred image and the altar; it was entered by the priests only, the people assisting without the entrance in front. Subsequently, a porch was added, and the inner chamber then became the *adytum*.

When triads were introduced, instead of one inner chamber there were three, and the ante-room, or porch, which had been in part thrown open by the substitution of columns, with a low screen between them, instead of the wall, was replaced by a transverse corridor: an avenue of sphinxes, composed of a lion's body and a human head, the symbol of force combined with intelligence, led from the temple to the *pylon*, or gateway of the enclosure, which was planted with trees, and became the "sacred grove," or *temenos*, in imitation of man's primeval places of worship, and possibly in accordance with a universal primitive tradition. The direction of these temples was usually east and west,—according to Dr. Kitto, at least more frequently than not.

To these elements of a complete temple additional halls and avenues might be added, as we know that they were, from time to time, by thekings, the symbolical derivation of whose authority was set forth over the principal portico in the winged sun with the Eurus, the symbol of the supreme ruler.

This general arrangement was very like that adopted by Moses for the Tabernacle in the wilderness. There was the oblong inclosure, in length about twice its breadth, the entrance to which was from the east; and at the western extremity of this sacred court was the sanctuary, in length three times its breadth, which was only ten cubits, or 30 feet; the interior was divided unequally into an antechamber, two-thirds of the length, called the *holy*, the front of which had only a curtain and no boarding, as on the sides and back; and an inner chamber, or *adytum*, called the *holy of holies*, separated from the former by a drapery, called the *inner veil*, made of the richest materials of blue, and purple, and scarlet, embroidered with figures of cherubim. The curtains for the sanctuary were also of blue, and purple, and scarlet, in which we may recognize the Egyptian taste for colour in architecture, with which the Sydenham court has made us all familiar.

It is not my intention to show the correspondence between "the ark of the covenant," the "cherubim," and other matters touching the Hebrew ritual and rites, with similar symbols and usages among the Egyptians: what Selden and others intimated long ago has now been satisfactorily proved, and can no longer be doubted: the correspondence shows that Moses deemed the profound symbolical lore of the Egyptian priests, by whom he had been carefully educated, their forms, dresses, processions, with the sacred ark, and all the pomp and circumstances of the sacerdotal order, not unworthy of imitation in the religious services and ceremonies of the Jews. The general arrangement of the Egyptian temple was followed by the Greeks, and to a certain extent by the Romans, and from the Romans passed into Medieval Europe, and so has descended to ourselves, modified by elements derived from the far East, and by a symbolism of earlier origin. The state ceremonies of the Latin church retain much of the ancient Oriental pomp; nor can we, I think without the high functions enacted in St. Peter's at Rome without being struck by their resemblance to what we see on Egyptian monuments of the triumphal bearing of the pontifical king. It has always appeared to me, in contemplating the architecture of different countries, that there is a certain analogy between the prevalent forms therein used and those of their alphabetic characters. Architecture is undoubtedly the expression of the intelligence, science, mode of thinking, and imagination of a people; but I think it is also more: it is in a manner symbolical of themselves, their habits, customs, &c.—and that quite as much, if not more so, than their literature and their language. Some very discriminating persons can determine the characters of people from

\* See a plate of this in Wilkinson's second series, plate 56. See also "The Egyptians in the Time of the Pharaohs," p. 139. See Rougé, Rossellini, Lepsius, and others.

† Wilkinson's "Popular Account of the Ancient Egyptians," vol. 1, pp. 227-8; Spineti's Lectures, &c.

their handwriting; the characters of nations may be distinguished by their architecture, to which their alphabetic forms hold a certain analogous relation. This is a subject I cannot now go into, but it must occur to every one that in the straight-lined Greek letters, avoiding all curves, we have a characteristic of Greek architecture; while in the B's and C's and swelling D's of the Romans we recognize the introduction of those rounded forms, the arch and the entablature, and, if I may so say, a certain heaviness, eluminess, and want of taste, which the Greeks carefully avoided. In the angular Gothic characters of the German race we see the type of their architecture; and in the flowing, fanciful, curved, and interlacing letters of the Arabs, not only may we discern the florid style of their literature, but the highly imaginative character of their architecture also. The Egyptian architecture would, I think, indicate a people of grand ideas and of confirmed religious convictions. In the series of Egyptian orders symbolism is obvious. The papyrus plant, no longer indigenous, was an emblem of Lower Egypt. Here architecture and the arts first flourished in that recently formed alluvial tract of land, for the civilization of Egypt ascended the Nile. The papyrus column is the earliest distinctive Egyptian order we can now recognize; the square pillar and the polygonal or fluted shaft have no especial Egyptian character in their forms, though they might have had in their ornamentation. To a people so symbolically disposed as were the Egyptians, and among whom the equilateral triangle was a sacred conventional sign, the triangular form of the stem of the papyrus may have recommended it to their special notice, and we find the imitation of this plant, or of four such plants bound together, the earliest of the symbolical series of orders. The capital represents the flower in the bud. In the next, the fourth of Sir Gardner Wilkinson's arrangement, we have what he calls the full-blown papyrus capital. In the following we have the palm-tree capital. At one time the palm-tree was the sacred tree in the Paradise of Osiris, and the palm-tree, surmounted by an ostrich feather, was significant of Lower Egypt, or the happy West. It occurs in this sense in the zodiac of Dendera.

The other orders are those with the Isis-headed capital; the fall-blown lotus-headed capital, sometimes surmounted by the head of Isis and her symbol; the Osiris order; and that with the Typhonian monster; the symbolical meaning of these no one can doubt.

This Typhonian monster was, however, I suspect, a somewhat Greek and satirical version of *Seth*, the evil principle, in contradistinction to *Osiris*, the good principle. Seth appears to have been considered by the ancient Egyptians as Satan was by John—one who could present himself among the sons of God, and be rejected along with them,—a very different personage from the *Diabolus* of modern times, whom the middle ages metamorphosed into a very discreditible being, with whom it was best to have nothing to do. The *Typhon* of the Greeks probably holds the same relation to *Seth* as the scorpion of the monks does to the *Satan* of Scripture. The symbol of *sin* among the Egyptians was the gigantic snake *Apophis*.

The lotus plant was as sacred with the Egyptians as with the Indians. According to Kongs, it was the symbol of the new birth; but Lepsius considers that it was the symbol of inexhaustible life; Rossellini regarded it as symbolical of the female principle among the Buddhists. The bodies of the saints are reproduced from the lotus, pure and holy; it may therefore be held symbolical of the womb of Nature, and, in a spiritual sense, of regeneration.

No plant was so great a favourite with the Egyptians as was this.\*

### ICNOGRAPHIC DISTRIBUTION.

#### THE ALTERATIONS AT THE JUNIOR UNITED SERVICE CLUB.

WERE houses to be built with the due regard to health and comfort, the planning of an ordinary house would be a test of professional skill such as is not in any similar degree afforded in the case of the greater number of public buildings. In town-houses, of course, the difficulty of providing for a variety of matters of convenience is greatest; and the means of getting sufficient light and ventilation to back rooms and to the basement, have to be the subject of careful study. Many of the recently-built first-class residences in London are

creditable works in these respects: we may allude to four or five houses that have just been completed, close by St. Paul's Church, Knightsbridge.

The means by which difficulties of lighting are overcome or moderated, are now generally made subservient to internal effect. In some details of decoration there is less to admire; and ready-made plaster enrichments that are both poor in design and badly cast, are constantly to be seen even in a cornice which otherwise is well designed and would be suited to the room. Much improvement also has to be made in chimney-pieces. Most of the marble chimney-pieces, and the pier-glasses over them, considered separately, one from the other, are very inferior to those features in the seventeenth century, which grouped together and were executed generally only in carved wood; whilst harmony and architectonic character pertain to the latter, in place of the discord between the manufacturer's and upholsterer's work of the other. The French still manage these parts of an interior better than we do,—simply because they regard them together, or in an architectural point of view. The same short-coming in art-manufacture as at present, is observable in houses of the class we speak of, where colour is introduced in glass: with this exception, however, recent improvements in the manufacture and application of glass have had a more important connection with the improved planning and decorative character of the interiors of houses, even than that which is commonly attributed to them. Not only is the ornamental uncoloured glass, much of it, in very good taste; but the use of large sheets, whilst subservient to the principal object, admission of light, enlarges the resources for effect. Dust-collecting small panes are no longer used in skylights and lanterns; and double frames of glass are not required—at least decoratively: the large sheet of each division of the bars or frame, with a pattern upon it, as generally treated, being in every respect decorative in force and expression, and readily kept clean.

We did not intend, however, now to dwell upon the domestic architecture of modern London, further than was necessary to gain some illustration of the niceties in planning, with reference to the two separate objects for attention, convenience, and taste. Of buildings requiring the technical skill, probably the London Club-house may be taken as first,—combining as it must, the convenience of the mansion or hotel, with decoration, and much besides that belongs to the public edifice. It is to be hoped that some day, there may be undertaken by one competent to the task, a critical examination of the structures of the class, with the view to a demonstration of the comparative advantages of particular features in plans, such as position of the kitchen, and to the advancement of professional attainments in this matter of icnographic distribution.

Some alterations now in progress at the Junior United Service Club, in Regent-street, serve to illustrate the difficulties alluded to. We gave a representation of the exterior of the building, and a plan of the ground-floor, in our volume for 1857. The plan will assist comprehension of the nature and extent of the present works. These, however, relate in great part to the offices of the basement; and in the floors above, if we except the smoking and billiard rooms, scarcely affect the arrangement of the principal part of the house, or towards Charles-street and Regent-street. In the parts in question, however, the alterations extend to a large quantity of work, and make great difference in the plan. The whole plan of the building as erected takes the form of the letter (reversed) J; the longer dimensions being next Charles-street and St. Alban's-place respectively. It will be seen that the original arrangement, however defective it has been deemed, involved a considerable amount of ingenuity in contrivance. The main defects discovered were in the basement, which, besides being inadequately lighted, was found inconvenient in the general distribution, and wanting as regards the kitchen, in ventilation. That portion of the plan which is next to Regent-street, and in which in the basement are the baths, has not been touched, unless for ordinary repairs and painter's work. Next St. Alban's-place, or east, the whole of the basement, and in the floors above, the portion of the plan at the top of the figure (J), or north of the position of the members' coffee-room, have been altered,—the arrangement of the smoking-rooms having been found to interfere with the communications, and otherwise inconvenient.

Provision had been made in the plan now being displaced, with a view to the ventilation of the

kitchen; and the supply of air was intended to be obtained by communication with a descending shaft at one corner of the building. But there were two channels for ventilation joining into that which communicated with the shaft; and the channel, not that to the kitchen, was subject to the action of a greater extracting force than what operated at the kitchen, so that the whole current went in the direction of the bath-rooms, and not in that in which it was expected to travel equally with the other. The kitchen, moreover, was not large enough; the principal roasting-grate and the stoves were too near together; and great complaints were made on the part of the denizens of the lower regions. Again, it was found that the position of the men-servants' dressing-rooms next to the servants' hall, at the south, gave certain facilities for pecculation; whilst the *boucherie* and larder, which should have been near the cook's room, south, were north, on the opposite side of the kitchen. The circular staircase, for the service, was found inconvenient; wine brought into the building had to be taken a circuitous route to the cellar; and the closeness of a steam-boiler to the latter was injurious to the wine. Therefore, in the alterations, greater space has been given to the kitchen, and the stoves are placed farther from the range and from one another: some additional space has been got in the vaults under St. Alban's-place, and in the area thereat—the light to the kitchen being at the same time increased; the *boucherie* is now at the south, where it can be well ventilated; and the larders adjoin it; whilst the servants' rooms are to the north: the butler's pantry has been enlarged; a staircase has been constructed; the wine can be taken by a shorter course; and the steam-boiler has been removed to the base of a large ventilating shaft, which contains some of the principal flues—iron pipes. Inlet openings for fresh air have been provided in the floor of the kitchen, in several places, communicating with the front area; whilst apertures near the ceiling, and under the hood of the roasting-grate, into the large ventilating shaft, will, it is expected, afford sufficient means of escape. The ventilating arrangements are being carried into effect with the assistance of Messrs. Haden, of Trowbridge; and Mr. Adams, of the Haymarket, manages the alterations in the kitchen fittings.

In the ground-floor, the space along the northern extremity of the plan, formerly appropriated to the smoking-room, has been converted into a still room and bar, and housekeeper's room; whilst the smoking-room is removed to the first floor, and is turned north and south. On this first floor, to gain space for the different arrangement of the smoking and billiard rooms, the lantern-light over the visitors' coffee-room has been dispensed with; and a borrowed light is provided at the end, next the waiter's serving-room. The alteration in this respect of course is a loss. There are now on the first floor, besides the principal rooms, the smoking-room, billiard-room, and "smoking billiard-room," adjacent to which are a bar and various other adjuncts. To the conveniences of one description, with mechanical contrivance for flushing, however, so many objections on the score of offensiveness have been made, at the clubs where they are introduced, that the members of the Junior United Service have decided to have nothing of the particular kind. The works in the first floor also include arrangements for the ventilation of the smoking-rooms, and widened passages.

Appearances are already to be observed in the lead of the flats, which would suggest that modes of preparing for laying, and dressing, in some respects different, might be adopted with advantage in similar cases. The boarding is placed transversely to the direction of the sheets, whereby the tendency is for hollows to be formed for retention of water rather than channels for delivery of it. Also in the rolls, by sawing the lower ends off square, instead of rounding them, the lead has to be stretched in the dressing more than is desirable; and thus, as noticeable in this case, it is either left cracked or soon gives way. The love of making a neat job is not too general: therefore it is to be regretted that it should lead at any time to defects. The best features decoratively in the original building, are those of the staircase,—in particular the caryatid figures, which, rather grouped with the piers than themselves supporting the arches, afford all the addition which sculpture gives to architecture, and without the objection which not unreasonably is made to the reputed best examples of caryatids. The pattern of the halustrade also has both novelty and good taste.

\* To be continued.

LIGHT, ITS INFLUENCE ON THE PROPER ARRANGEMENT IN THE PLANS OF BUILDINGS.\*

The chief beauty of a building consists in the proper adaptation of all its parts for the use and purpose for which it is designed. Plans may be arranged with due regard to proportion and harmony of parts, with all the scientific knowledge of the properties and value of building materials, yet fitness of purpose cannot be obtained unless the subject of light is carefully considered, and thoroughly considered, and the quantity as well as quality of light necessary for the purpose included be provided.

Both the internal and external proportions of all buildings are dependent for their beauty and fitness on the amount of light which they receive, and the amount of shade, and great has been the influence it has exercised on the buildings and architecture of all nations, as well as upon the minds and habits of their inhabitants. How different is the treatment required for tropical climates to that of our northern countries, and how often have errors been committed by the thoughtless in transplanting the building designs of one country to that of another, the result showing that different degrees of sunlight power can produce from the same edifice an impression of beauty and delight in the one instance, and many of gloom in the other. Would the Parthenon receive the same influence upon the mind it seen in our own climate surrounded with the London atmosphere as when viewed in all its simplicity and grandeur at Athens? or again, would our northern Gothic cathedrals and palaces, with their crisp and playful details, harmonise with the sunny land of Egypt? We might indeed obtain the dim, religious light effect in the interior for the same cathedrals, but the brilliant exterior be viewed with equal pleasure in the one country as in the other? How many otherwise beautiful buildings have we not seen marred, and in some instances ruined, by this subject, some parts possessing too great a glare, so as to distract attention, and others too much shade, rendering them gloomy, inconvenient, and unhealthy.

Let us proceed with an equal arrangement of the edifices of our own country, and the influence light has upon the general health of man.

In how few buildings do we find all the apartments, halls, corridors, passages, stairs, and other parts properly and efficiently lighted for the purposes intended.

It may be easy, and we often have to resort to artificial and borrowed light to overcome an apparent defect, but this is only a poor substitute, - in fact, a shadow, and is either great liability of principle or mental application in the art of designing with truth.

We must not suppose that the action of light upon the general health of man is immaterial, for the result of the investigations on the subject has proved that a close and intimate connection exists between it and the performances of the higher functions of the animal and vegetable existence.

Plant a seed, for instance, in a dark cellar, giving it every advantage but that of light: what is the consequence? It takes root and grows, but the seedling is weak and throws out, are they vigorous, and possessed of that healthy green colour, the effect of the existence of the healthy juices? No: pale and sickly, the plant droops, grows ill, but never arriving at fruiting maturity. As with vegetable so with animal life.

The natives of the deep dark forests of North America attest this by their inability to live as much as the blanched plants of the parisher. That the very nature of the life evolved by plants is altered by the absence of light is known to almost every one. That small animals are often perceptibly affected by its absence, is also well ascertained. It is known that if tadpoles are nourished with proper food, and exposed to the constantly renewed contact of water, so that their beneficial respiration may be maintained, but are entirely deprived of light, their growth continues, but their metamorphosis into air-breathing animals is arrested, and they remain in the form of large tadpoles.

It is also noted that persons who live in caves and cellars, or in very dark and narrow streets, are apt to produce deformed children, and that men who work in mines are liable to disease and decay, and that the more simple closeness of the air would be likely to produce it. In many of our large towns are dark cellars, rooms, alleys, and lanes, in which the direct rays of the sun never enter, and which are inhabited by the poor, who grow pale and sickly, their young stunted and deformed. An instance of the value of sunlight, Dyphtren, a celebrated continental physician, mentions the case of a French lady, whose disease baffled the skill of the most eminent medical men. This lady resided in a dark room, in which the sun never shone, in one of the narrow streets of Paris. After a careful examination he was led to refer her complaint to the absence of light, and caused her to be removed to a more cheerful situation: the change was attended with the most beneficial results: all her complaints vanished.

It is remarkable that Lavoisier, writing in the last century, should have placed light as an agent of health even before pure air. In fact, where you can obtain abundance of light, it is also generally possible to obtain a constant change of fresh air.

If we look to the principles, at present so strongly advocated, for the construction of medical hospitals, we find that they consist in giving the largest possible amount of external wall space to the wards, whereby both sunlight and fresh air can be admitted with the utmost facilities and to the largest extent. For examples I allude to the so-called "Pavilion plan," with windows facing each other on the opposite side walls, as adopted in the hospital at Bordeaux, the Lariboisiere and Beaujon hospitals at Paris, St. John's at Brussels, the new hospital at Malines, and many others.

I remember reading, some short time since, evidence in reference to one of our military barracks, in which strong and convincing proof was afforded that the soldiers, whose day-rooms and dormitories were exposed solely to the north light, the eye removed from any sun influence, were affected with illness and decline to a very considerable proportion beyond those inhabiting the same barracks, but dwelling in rooms having a more southerly aspect.

These several instances have been brought forward, not as means of many people to listen to and see one or more persons, that the light they are each acquainted with several that have come under your own inspection.

In churches where a large amount of light is not required, coloured or stained glass windows, and without necessarily staining, the amount of light unaltered: a question whether the light might not be more equally diffused if the light from the windows were brighter and cheerfulness the southern should never be omitted. Care should be taken in designing any building for the purpose of a school, or for any other public or private persons, that the light they are each acquainted with several that have come under your own inspection.

where no sun enters: the shading also of rooms, by large trees, suffered to grow too near our houses, is an evil much to be deplored.

In our domestic buildings, windows should be arranged according to the purposes for which the rooms are to be used, whether to be used for morning or evening, winter or summer, with some reference also to the direction of the winds, to encourage the admission of the most healthful breezes, and to avoid, as far as possible, those of an opposite quality. Let us place the morning or breakfast-room towards the east; the drawing-room, south; and the dining-room, west. To commence with and follow the sun day, by this arrangement, the sun in the autumn and spring months, supercedes for a time the necessity of large fires from the general warmth it gives to the entire apartments, as well as promoting ventilation, rendering them wholesome and agreeable.

I need scarcely suggest that the eills of all windows should not be more than 2 feet 6 inches, or 3 feet high above the floor level, and that to all dwelling-rooms, to lights or skylights should be avoided, if possible. On the northern sides of dwellings should be placed all those rooms for the storage of provisions and other articles requiring to be kept in a cool and equal temperature, free from sun influence; but care must always be taken to provide for a free current of air, so as to prevent the rooms becoming damp and unwholesome. On the upper floors the bath-rooms, water closets, and other rooms may have the same aspect, but on no account let the bed-rooms receive light only from the north side. If it be asserted that it is necessary in all dwellings there should be some saloons or sitting-rooms having a southern aspect, in summer use, or to take refuge in during the hot season of the year, I should say, however tempting such apartments may appear, by all means avoid them, for in an substantial buildings, that is, with moderate thick walls, an equal as well as a more beneficial amount of coolness can be obtained by a judicious arrangement of ventilation and blinds. In the former case you render yourself liable to receive a damp chill, while in the latter you can produce a cool, vivifying, fresh atmosphere.

In the lighting of halls and galleries for the display of paintings and coloured pictures, the northern aspect is considered the best, as being the most equal in its light power, and more free from colour: the sunshine, as it is called, varying either the colours yellow, blue, or red in proportion to its intensity, and the effect of the sun is constantly varying in its intensity, would interfere with the due appreciation of the delicate tints in the paintings. In such a case, the most judicious arrangement for these purposes the light is admitted from the top of the gallery, either a horizontal or vertical shaft, that is the more essential in a picture-gallery that the window or source of light by which the picture is seen and the picture itself, should both come within the range of vision at the same time. Where a light is allowed to pass through a horizontal opening care must be taken to equalize the rays of light by the introduction of ground glass or neutral medium.

A custom prevails amongst the sellers of Manchester goods and other coloured fabrics, to partially line the windows and west windows of their sale-rooms with blue paper, so as to produce a neutral grey effect. It will be remembered that light, with very rare exceptions, is compound or heterogeneous, producing two or all of the primary colours, - red, yellow, and blue, and when them in such ratio that the eye perceives a neutral medium, reflected or transmitted, they neutralize each other, and produce white or neutral grey (which is merely a shade of white) of a predominant colour, and light producing them in such ratio is often called bright. In the northern aspect, the same as we obtain from the northern aspect, in 10 parts of white light there appear to be about 1 part of yellow, 22 of red, and 1 of blue, and the intensity, or nearly as 3 - 5 - 8. When only two of the primary colours occur - yellow and red, yellow and blue, or red and blue - they form secondary colours, orange, green, purple, and white, which they occur in the medium in which they are produced by white light, they form perfect or normal secondaries. Perhaps it may not be too didactic to mention that in ordinary artificial light, such as is produced by gas, &c., the rays of red and yellow occur nearly in the same ratio in which they occur in the white light; and as there is an excess of them over the rays producing blue, all the rays of the medium produce white light is to interpose a transparent medium of such depth of blue as to absorb that excess, allowing such a portion of them to pass as is necessary to neutralize the rays producing blue, all of which have been allowed to pass.

It is questionable what effect light passed through coloured glass or other mediums might have on the health of animals; but in reference to plants, botanists sometimes use for glazing their conservatories glass having a slight green shade, upon the impression that it tends to arrest the decomposing effect of the red rays, but with what success I have never ascertained.

Many beautiful effects are to be produced in our buildings by the judicious use of coloured light, not only variegated, as that passing through painted or stained windows of several colours, but also with masses of monochrome. I can instance to you the Chapel of the Invalides, at Paris, where, to the best of my recollection, a cool grey light is admitted from the windows in the drum of the dome, whilst over the high altar is thrown a rich sun light from the orange-coloured windows at each side; and at the rear is the white light of the large ball.

I can also refer you to an instance nearer home, viz., the monument to Princess Charlotte, in St. George's Hall, Windsor. The recess in which this monument is placed having on one side a purple-tinted window, casting a cool shade, whilst the other side is lit up with a golden light from the yellow glass of a corresponding window - the effect is quite magical.

Many other examples might be produced, but it is more probable that you are each acquainted with several that have come under your own inspection.

In churches where a large amount of light is not required, coloured or stained glass windows, and without necessarily staining, the amount of light unaltered: a question whether the light might not be more equally diffused if the light from the windows were brighter and cheerfulness the southern should never be omitted. Care should be taken in designing any building for the purpose of a school, or for any other public or private persons, that the light they are each acquainted with several that have come under your own inspection.

for lectures, concerts, and in theatres, where strong lights are required, they are carefully removed above the general eye line, or so shaded as not to interfere between the audience and the operators.

For example, in churches and large halls, lighted from the roof, I could refer you to many which might be studied with considerable advantage - St. Stephen's, Wallbrook; Madeleine, at Paris; Pantheon, at Rome; the interior of the churches in British Association and most others are familiar to most of you; but I still advocate the introduction of side lights as at St. Stephen's, Wallbrook, as an additional means of light and ventilation, and as in the Pantheon, at Leicester-square.

We must not overlook one very important duty which we may be called upon to perform, - that is to lay out new districts for building purposes, - nor forget that we not only have to arrange the roads and streets to the best advantage, to obtain the best views, the best drainage, and the largest pecuniary returns to the owner of the soil, but that each house, whether detached or otherwise, shall have ample share of air and sunshine, to avoid placing one side of a street always in shade, and the other monopolising the whole of the sunlight. This duty is too often forgotten, neglected, or evaded, causing an irreparable loss both to health to the occupiers, and interest to the owners.

With the Building Acts, local and metropolitan, of the present century, it is not at all likely that the same errors will be committed, by allowing of narrow courts and streets to be erected often without other means of access, than small arched openings at either end, and with our improved medical health laws, and the more judiciously regulated, and more healthy have become hotbeds of disease and vice. Nor can we ever suppose that the tax upon light and air, called the window tax, will agree to be proposed or admitted, in any form, in 1860, to say the least, and it is not likely to have an extensive clipping of the coin of the realm. This general clipping of the coin having necessitated its re-coining, a new reduction of the amount of tax has been proposed, having existed only seven years, and it expired only in 1851, having been continued for a space of 155 years. Every one has some experience of the injurious effects of this tax, and it is not likely to be continued during the present time. In the houses of the nobility lights in passages and corridors had been blocked up to avoid excess of taxation. In the houses of the middle classes, staircases, passages, and water closets, and other parts, have been completely deprived of all external light for the same reason; in fact, it to a great extent prevented the introduction of the best light, and the best air, and, however, scarcely wonder at the disinclination of the Government to repeal it, when we find that for one year, say 1847-8, it produced £,911,742, upon 435,143 houses.

It is not necessary to allude to the superficial area of the light surface required for the necessary proportion of light to any room, due consideration must be given to the medium through which the light passes, as it is well known that a certain proportion of light is absorbed in its passage through different kinds of glass or materials usually employed, such as rough plate, fluted, embossed, ground, coloured, and other glass: the light surface area of the medium used, and the proportion to the absorbing properties of the medium used.

The strength of the light in a given space depends upon the intensity of the light, the distance and the angle of the incidence of the light, and the nature of the medium of the shaft through which the light must pass: touching the last, other things being equal, that room is the best lighted into which the light falls through the shallowest shaft.

Mr. Hesketh, in a paper on the Admission of Day-light into Buildings, read at the Institute, in 1852, observes that in forming an estimate of the light to be derived in any place, variability in the sources of light must not be taken into consideration, but provision must be made, especially in our climate, for sufficiency under ordinary unfavourable circumstances. For this reason, a southern aspect must be treated as a northern, and the zenith as the horizon. The hemisphere of the sky will therefore be considered as an equable source of light.

Professor Leslie, in a lecture at the Royal Academy, used to state that a skylight yielded four times the light of a window of the same area, but upon what authority he has not stated, and it is not likely that such a statement should be given in favour of skylights, in consideration of the light falling at angles of incidence more favourable to the reflection and due diffusion of light in the apartment, as a skylight produces a more direct light, and ought to guide in either instance as previously mentioned.

In the measurement and proper distribution of light, several rules have been laid down by various authors, but scarcely any of a satisfactory nature. Falstaff, in a lecture that it appears to him proper, in conformity to the doctrine of Vitruvius, to divide the height of the side of the room into 3 parts, and to give to the height of the window two parts, and to the width one of these parts, less 1-6th. In another part he states that the window space should not be wider than 1-4th the width of the room, nor narrower than 1-8th, and that the height of each width should be 1-8th more than three times its width, but there does not appear to be any rule or suggestion for the number of windows in the side of a room, or the width of window opening in proportion to length of room.

Mr. James Morris, who in 1734 published his "Lectures on Architecture," &c., observes - "Let the magnitude of the room be given. Multiply the length and breadth of the room together, and that product multiply by the height, and the square root of that sum will be the superficial contents in feet of the light space required."

In alluding to the effect of light in a room, it is found that the distance at which light passes into a room after admission, though it makes no difference as to quantity (because exactly as the intensity of the light diminishes, so the area of the surface lighted increases, viz., as the area of the distance of the opening is the same, when it falls, yet in practice a room is found much better lighted when the light passes far into a room than when only to a short distance. This effect is caused, perhaps, first by the rays of light passing in parallel to the surface by a slight alteration in their form, and thus, if a room be partially lighted, they adapt themselves to the steeper partial light, and the other parts appear more gloomy; or could be improved, should the light be more uniformly sent long as compared with its width, windows of the same collective area at the narrow ends will light it much more effectually than if the same area of light were admitted from the eye level, a very good illustration is the ball-room at Windsor Castle, which is 90 feet long, 34 feet wide, and 32 feet high. This room is lighted from the

\* Read by Mr. Capez, at Architectural Association, as elsewhere mentioned.

northern narrower side by a window nearly occupying the width, and is supplied by an abundance of light; but, had the same quantity of light been admitted from either of the long sides of the room, so many masses of shadow would have been introduced through the interposition of piers that its effect would have differed most widely from the airy aspect it now bears. This leads me to remark that no pier ought to exist, if possible, in the centre of the side to the room from which the light enters, as nothing more contributes to gloom and dark shadow.

I had wished to have obtained some statistics with reference to the superficial amount of window surface to the cubic contents of some well-known building, but it appears, so far as I can ascertain, that there are scarcely any published statements connected with this matter, and, consequently, being unable to make the necessary measurements for myself, I cannot found any new theory for determining the proper amount of light space required for different proportioned rooms, or to judge upon the relative merits of Morris's or Gwilt's rates for the distribution of light. Any information, therefore, that you can offer will be a valuable addition to a subject upon which very little has been given for our aid. The following may be found interesting:—Paulsen, exclusive of side chapels, proportion of area to light surface, 3,309 to 1; British Museum reading-room, 212 to 1; Panopticon, Leicester-square, 385 to 1; but deduct, say 25 per cent. for stained and coloured glass, 113 to 1; Sheepshanks Gallery, Braunton, 56 to 1.

These buildings show so wide a difference in their proportions of cubic contents to light space, that I have preferred Mr. Morris's rule, and have placed the result in the following, side by side with that suggested by Gwilt, and the actual amounts in these buildings:—

	Cubic contents.	Actual light, or glass area.	Required by Morris's rule.	Required by Gwilt's rule.
	Feet.	Feet.	Feet.	Feet.
Pantheon . . . . .	1,889,870	472	1,374	18,898
British Museum Reading-room . . . . .	1,175,000	5,209	1,684	11,750
Panopticon . . . . .	500,000	1,369	....	....
Allowing 25 per cent. for stained and coloured glass, 175 to 1			707	5,000

From which you can draw your own conclusions. It is in this paper I have been unable to inform you of anything with which you were not previously acquainted, I trust that it will tend to fix an impression more firmly in your minds of the necessity of giving due importance in all your designs to the subject of light in all its bearings.

THE ART-TREATMENT OF GRANITIC SURFACES.

At the Society of Arts on Wednesday, March 14th, a paper on this subject was read by Mr. John Bell, sculptor. In the course of it he said:—

Although granite has occasionally been worked in this country locally, it did not come largely into use in our national and large structures until within the last hundred years, old Westminster, and Southwark and London bridges, by the Romans, being nearly the earliest of these public works in which it was the main material. The style of workmanship adopted in these cases has been in blocks, large, simple, and massive; and whether in connection with large engineering works, other public structures, or pedestals for public statues, this appears the treatment proper for it. The Egyptians treated it in the same manner, but with this difference, that they also added, to the broad surfaces thus attained, a variety of decorated and illustrative incised ornament.

This has not been our practice up to the present day, but it appears to me that we might adopt it with advantage; that is, not of course by copying the Egyptian figures and hieroglyphics, but by only following occasionally that incised method of sculpture which may surely be held as proper for British granite as for Egyptian, and the illustration of this idea forms the main object of this paper.

The hardness of this class of material is one of the considerations that render the vast architectural and sculptural works relieved by the ancient Egyptians so great a marvel. Although modern research has told us so much about Ancient Egypt, and its greatly by the lamp of that invaluable Rosetta stone in the British Museum, has so well deciphered the hieroglyphic writing, that an invitation to dinner and a reply might well pass between two "savans" in that character,—although we have found out so much about the history and manners and even domestic customs of ancient Egypt, we do not know how she worked her granite.

The use of emery powder, and of the drill and wheel, has been suggested as having aided in cutting the incised work on granite, and any one who has witnessed the rapid manner in which this process cuts our hardest glass, hardly to be scratched even by anything but a diamond, will acknowledge the unexpected power of this process.

It has also been conjectured that emery powder was used in sawing Egyptian granite. No doubt it was in polishing it, of which we have many representations. This, however, does not

assist us much, as to the more general fashioning of the great granitic structures of Egypt. One element of workmanship the ancient Egyptians possessed in profusion, under their despotic system, namely, that of labour and time.

In our own country machinery has been applied to turning granite pillars, to working mouldings, and to polishing, but not as yet, I believe, to cutting decorations. Were there, however, sufficient encouragement for this class of work, we should no doubt soon see the strong arm of steam fashioning granite into art forms as readily as arresting our larger operations in planing iron like wood, and rifling steel guns. As it is, however, modern times have never as yet reached to the achievements of ancient Egypt, either in the works of granite or the decoration of its surface.

The Egyptian, besides his other obligations to the Nile, was also greatly indebted to it for his art, as thus it was chiefly from the flowers and plants with which it abounded that he drew his more prevalent types of architecture. Of course I do not suggest that all the Egyptian art-forms were floral. The pyramid, for instance, is not floral, nor the obelisk. The temple, also, in itself is not a floral form; but no one can regard its façade, and view its more decorative architectural parts, as the capitals of the columns, without perceiving that they are floral forms. The shafts, also, are bundles of stems bound together, and the bases have the character of roots. The two great types from which most of these and their decorations arose are the papyrus and the lotus.

Most of my hearers are probably well aware of the usual treatment of relieve, or relief, in sculpture, as in the Greek and Roman relievi in the British Museum, and as usually practised in the present day. This consists of a flat surface or background, from which the sculptured figures project more or less. This has been the practice of this class of art among most nations, but it was not the practice of the Egyptians. Their figures in relieve did not project, but were rather impressed, being tacked in, as it were, round the edges, into the surface, the highest part of the figures being only level with the surrounding plain face into which they were cut, and this is called incised relieve, in contradistinction to projecting relieve.

I am, however, only of course, suggesting the use of this kind of relieve, occasionally, in addition to that which is the general practice, and this only in reference to certain features of architecture wherein an unbroken general line of contour is desirable. Also, as regards material, in reference to granite, metal, and such hard stones as would retain the sharp lines of the bounding incision. I conceive, however, that on a large scale, it is suitable to granite surface specially, and this probably also more for the introduction of cubsens and floral decoration than for any elaborate treatment of the human figure. For instance, I conceive it might occasionally be well introduced on the granite pedestals of our public statues, as calculated to give them interest, and as relieving the surface without disturbing their simplicity. In consequence, I am myself using it cautiously, and in small degree, on the sides of the granite pedestal of the Guards' memorial, in Waterloo-place. On each of the two sides of this, in incised ornament, are being worked, besides the names Alam, Inkermann, Sebastopol, a pair of bayonets crossed, a wreath, and three stars, according to the outline you see on the walls, which is a working drawing, full size. Of course this is but a small instalment of this method, but I hope it will meet with favour.

The whole gist of what I would suggest amounts to this, that whereas we have now for the last 100 years begun to use our native granite largely in public structures, yet we have not (except in some isolated instances, in which the Egyptian architectural style and details have been followed in the decorations themselves—which is not what I suggest—as well as the method of incising) applied this facile method nationally; that is, using the method, but applying it to forms and decorations of our own time and country. I conceive that it might be well if we did, and that in that case it would open up a fine fresh field for design.

The modes of working the granite in all the British quarries are, I believe, much alike. Holes are drilled, or jumped, as it is called, into the rock; these are supplied with gunpowder and fired, and thus the great masses are blasted out, which are afterwards split into blocks with gear consisting of steel wedges, and "feathers" as they are called. This block, in which you see these inserted, is partially split, the crack being started. They are afterwards fashioned with a large hammer, called a muckle, and pitching tool, and various picks, points, and chisels, such as you see

on the table. If a fine surface is required, it is axed.

When holes are to be made, they are frequently, as I have said, jumped. The tool with which this is done consists of a long bar, thick in the centre to hold by, with a chisel edge at either end. It is used thus, by being raised and let fall with a jumping motion, whence its name; and, being turned partially after each blow, thus wins its way through the hardest block. Polishing, when required, is now done greatly by steam. This process much enhances the appearance of most granite, but is, from the hardness of the material, necessarily costly. In a general way the cost of polishing may be set down as an addition of one-half the previous price. Thus, if a column costs 20*l.* fine axed, it will cost 30*l.* or something more, polished.

With reference to the use of granite for drinking-fountains and the adoption of incised floral ornament, Mr. Bell said, it is a fact, which affords a pleasant proof of the influence of the agreeable in art over the mind, that people will stop and drink at an agreeable-looking drinking-fountain, who would not think of refreshing themselves at a pump with an iron handle. Observation has fully tested this. Especially, therefore, does the making these features of public utility pleasing, as well as enduring, appear an appropriate subject of art. If they are to be made enduring, we may allow that no materials are better than granite and bard marble. Also, as they are, especially during the summer months, in much use, that kind of decoration which is least likely to be injured by the touch is that which may be thought frequently appropriate. And the incised decoration which we have been considering has this advantage, that there is nothing to knock off, it being protected by being sunk. It also leaves the outer surface so as to be easily polished.

I am not saying, by any means, that these are the sole materials suitable for drinking-fountains. On the contrary, there are cases and situations where metal or other materials are preferable, and perhaps essential. Nor am I saying that incised ornament is the only kind of decoration suitable for such purposes. Quite the contrary: I only suggest it as one of the suitable methods. In whatever way, however, these objects of utility and social benefit are designed, it is important that they be designed suitably in each case in reference to their site, and so as to enhance and never to detract from the surrounding features already existing, especially as, for public utility, they naturally occupy prominent situations.

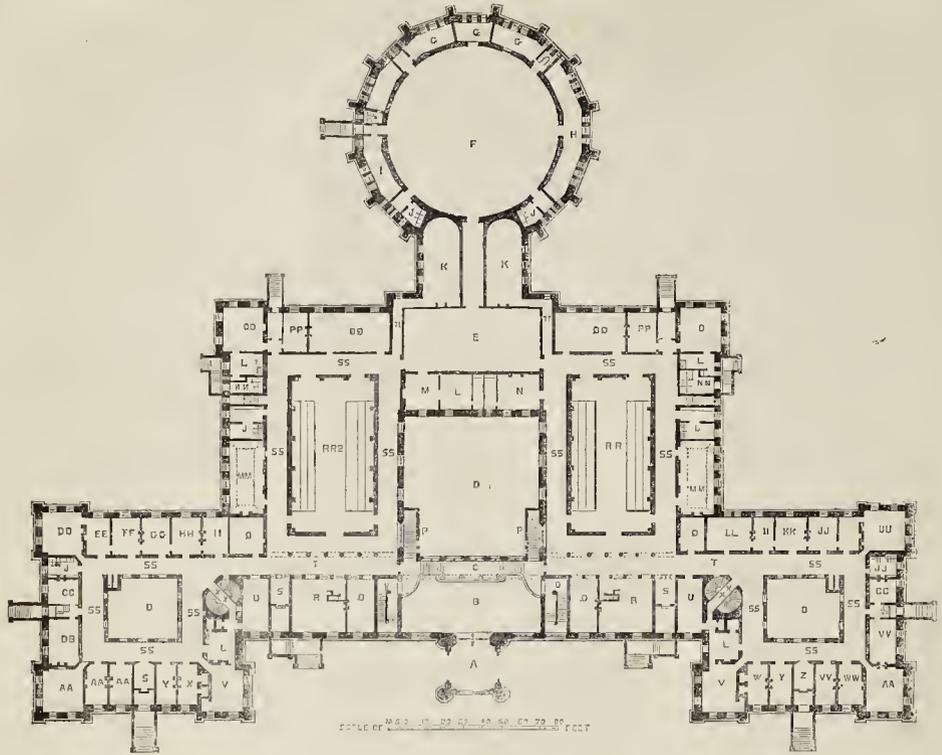
In accordance also with the impression that in all cases, when possible, decoration should tell some true tale;—and in this respect, in the way of art suggestion, it is pleasant to know that our Flora is quite as graceful as that of any other country; old England being quite as fruitful in such suitable natural types as old Egypt;—there are our beautiful ferns, with their feather-like fronds, easily traced on the granite or marble, so many of which delight in the margins of pure water. There is the Phyllitis, or hart's tongue fern, either the plain or the fingered, which loves to hang from rocks which distil hot water. "Les rochers qui pleurent," as the French have it—the rocks which weep.

Then there is our well-loved forget-me-not, the *Myosotis palustris*, which delights in the sides of brooks. This, however, cannot be said of the iris, *fleur de luce*, or white flag, which loves the shade of willows.

Of all the British plants, however, of which the names, even as casually repeated, transport us, in imagination, to charming country haunts, none are so inviting, perhaps, for the present purpose as the beautiful white and yellow water-lilies of our waters—the *Nymphaea Alba*, or white nymph, and the *Nymphaea Lutea*, the yellow or golden lily:—

Oh, Thames of many waters!  
See on thy placid breast reclines  
The fairest of thy petal'd daughters,  
That pure white nymph that melts and binds,  
In rapt five forms, her flowers and leaves,  
In flukes upon her glass-y bed;  
And with her gold hair'd sister weaves  
A chaplet for thy head.

As regards, however, the whole question of floral decoration, I trust I shall not be misunderstood. No one would take exception more than myself to direct "natural ornament," as it is called, forming the staple of art-decoration at all times. On the contrary, I only conceive it may occasionally be used with effect, and that the incised method we have been considering to-night affords one agreeable opportunity for the introduction of it in certain cases, on the surface of granite and other hard stones.



PROPOSED PARLIAMENT BUILDINGS, OTTAWA, CANADA.—Ground Plan.

NEW PARLIAMENT BUILDINGS,  
OTTAWA, CANADA.

In our last volume\* we gave a view and some particulars of the selected design by Messrs. Fuller & Jones, for the proposed Parliament buildings in Ottawa, the new capital of Canada. A commencement has been made, and we now add to the former illustration a plan of the principal floor.

It will have been seen that the intended visit to Canada of the Prince of Wales, on the occasion of the opening of the Great Victoria-bridge, called in the despatch "the gigantic work which is a fitting type of the successful industry of the people," has been officially announced to the Colonial Assembly.

REFERENCES.

- A. Carriage Porch.
- B. Public Hall.
- C. Landing.
- D. Open Court.
- E. Picture Gallery.
- F. Library.
- G. Retiring-room.
- H. Map-room.
- I. Unpacking-room.
- J. Lavatory.
- K. Smoking-room.
- L. Dressing-room.
- M. Chaplain's room.
- N. Governor - General's room.
- O. Public Staircase.
- P. Stairs to Gallery.
- Q. Telegraph.
- R. Post-office.
- S. Members' Entrance.
- T. Members' Lobby.
- U. Chief Clerk of House.
- V. Assistant Clerk.
- W. Junior Clerk.
- X. Accountant.
- Y. Messenger.
- Z. Entrance to Offices.
- AA. Committee.
- BB. Sergeant-at-Arms.
- CC. Apartments.
- DD. Routine and Records.
- EE. Journals.
- FF. Junior Clerks.
- GG. Extra Writers.
- HH. Chief Office Clerk.
- II. Stationery.
- JJ. Deputy Assist. Clerk.
- KK. Assistant Clerk.
- LL. Council Conference-room.
- MM. Wardrobes.
- NN. Reporters' Entrance.
- OO. Speaker's Office.
- PP. Secretary.
- QQ. Reading-room.
- RR. Legislative Council.
- RR2. Legislative Assembly.
- SS. Corridor.
- TT. Passage.
- UU. French Translators.
- VV. English Journal.
- WW. French Journal.
- XX. Committees' Staircase.
- YY. Usher of Black Rod.

**GAS.**—The price of gas at Uxbridge is to be reduced to 3s. per 1,000 cubic feet. The *Windsor Express* wishes he had the same thing to say of gas at Windsor.

\* Vol. XVII. p. 395.

AN AMERICAN LANDSCAPE.

THEY who know the aspect of nature in the autumn in England only, have no notion of the glorious garb she elsewhere puts on at that time. In America, the woods are all ablaze. America's own poet, a great one, has sung the glories of the season —

"There is a beautiful spirit breathing now  
Its mellow richness on the cluster'd trees,  
And from a beaker full of richest dyes,  
Pouring new glory on the autumn woods,  
And dipping in warm light the pillar'd clouds."  
The gentle wind, a sweet and passionate wooer,  
Kisses the blushing leaf and stirs up life  
Within the solemn woods of ash deep crimson'd,  
And silver beech, and maple yellow-leaved,  
Where autumn, like a faint old man, sits down  
By the wayside—a weary."

Mr. J. F. Cropsey, of Kensington-gate, one of the best of the American landscape painters, has just now completed a large picture, which conveys truthfully the aspect of "Autumn on the Hudson River," and this, therefore, is the title he gives to it. The scene depicted is about sixty miles from New York City, and in the neighbourhood of the West Point. Close by lives Mr. N. P. Willis, and did live Washington Irving,—genialist of sketchers. The sun, on the descent, has flooded the river with light on the horizon. In the foreground on either side, and elsewhere, are trees of great richness, showing the Indian summer,—the singular maple, hemlock, scarlet oak, and birch. On the left is a pool of water amongst the stems; and near it a party of sportsmen, who have been shooting blue jays, repose beneath a tree. In the middle distance is seen Cornwall. The sky is finely painted, and the whole picture is pervaded with a delicious calm, soothing to tired minds, notwithstanding the startling brilliancy of some of the foliage, showing how—

— "When the silver habit of the clouds  
Comes down upon the autumn sun, and with  
A sober gladness the old year takes up  
His bright inheritance of golden fairs,  
A pony and pegasus fill the splendid scene."

Mr. Cropsey's picture should take its place in one of our collections as a truthful and charming

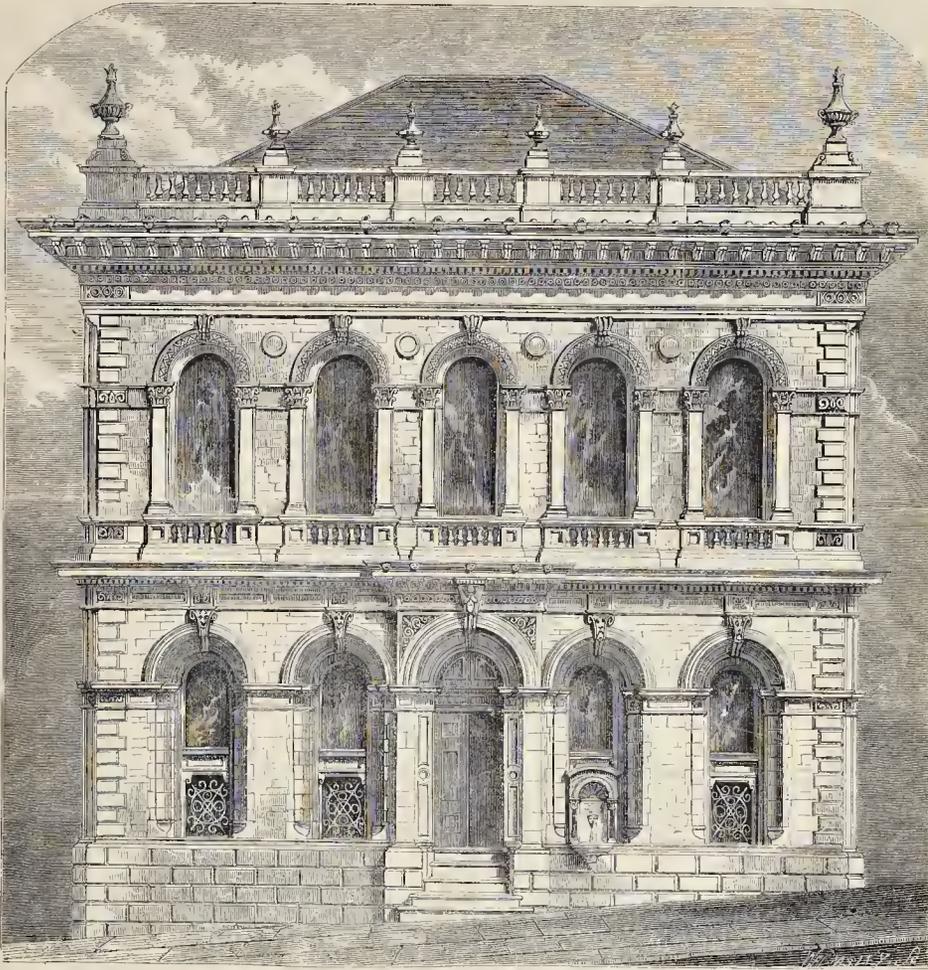
transcript of Transatlantic Nature, and, moreover, it would make an admirable engraving.

THE FRENCH AND FLEMISH GALLERY.

ALTHOUGH the collection of pictures by artists of the French and Flemish schools, now exhibiting in Pall Mall, had the advantage, on the private-view day, of contrast with the Portland gallery, and, undoubtedly, contains several most admirable pictures, it does not give a very lofty notion of the condition of art abroad. There are specimens of good drawing, plenty of grace, and examples of clever manipulation, but we find little to touch the feelings or elevate the thoughts. We can, nevertheless, promise visitors a pleasant hour there. Edouard Dubufe has two excellent pictures, 90 and 91, "the Departure of the Consort," and "the Return of the Soldier." Meissonier, the minute, in 170, "Rembrandt in his Study," gives greater breadth of effect, so to speak, in the small face, than usual, though 500*l.* is a large sum to ask for it. His pupil Ruiperez does credit to his teaching, in 206, "Vandermeer showing his first Picture to a Commoisseur." Of Rosa Bonheur there are two small works.—No. 26, "Mare and Foal," the landscape very low in tone, exhibits the artist's power, but the mare is an ugly animal, in an ugly position. Edouard Frère's "Boys Sliding," 101, though wanting in fun and life, has much beauty; and Henrietta Browne's "Sister of Mercy writing," 48; Plassan's "Prayer," 196; Dubasty's "Naturalist," 84; his "Young Beggar," 85; Trayer's "Housekeeper," 229; and some others, are satisfactory and charming productions.

INSTITUTION OF THE FINE ARTS;  
PORTLAND GALLERY.

THE thirteenth exhibition of "The Institution of the Fine Arts" consists of 483 pictures and drawings and one piece of sculpture. The collection, as a whole, is not a good one. Some of the pictures, indeed, are atrocious. Mr. R. S. Lauder exhibits several of high intention, such as "The Breaking of Bread" (232), "Christ denied by Peter" (263); but they fail to touch us. One of



TEMPERANCE HALL, TEMPLE STREET, BIRMINGHAM.—MR. YEOVILLE THOMASON, ARCHITECT.

the pictures, of a quite different class, that most pleased us was 95, "The Dover Straits from the French Cliffs," by H. W. B. Davis. Messrs. Williams & Percy have several of their always pleasing but too mannered landscapes; Mr. James Peel sends several of the best things he has yet exhibited; and Mr. H. B. Gray some of the most agreeable in the gallery. "Too Clever by Half" (61), by Mr. Robinson; "The Little Messenger" (78), by J. S. Cavell; "Evening" (80), by B. W. Leader; "The Lost Friend" (287), by J. A. Fitzgerald; and 292, "Controversy," by Jas. Hayllar, are amongst the most satisfactory. Mr. J. G. Naish, in 261, "Angling for Rock Fish," suggests more than one *hook*.

Amongst the water-colour artists, Mrs. Elizabeth Murray holds sway; see "The Irresistible Beggar" (218), for proof. Miss Florence Claxton's water-colour drawing, "The Choice of Paris" (178), though a caricature, displays much cleverness, and is one of the very few works in the collection which offers something to be found out.

**REDUCTION IN THE PRICE OF COPPER.**—The price of manufactured copper has been reduced one half-penny per pound. The present price is, tough cake or ingot, 112 $\frac{1}{2}$ ; best selected, 115 $\frac{1}{2}$  per ton. There will be a reduction of a half-penny per pound in wire, tube, and sheets. Brass wire, tube, and sheets, will be reduced a farthing per pound.

#### THE TEMPERANCE SOCIETY'S HALL, BIRMINGHAM.

THIS building, for the meetings of the Temperance Society, erected mainly by the instrumentality of the late Joseph Sturge, is situate in Temple-street, Birmingham. The plan of the hall may be described to be a square with half an ellipsis attached to the platform end, necessitated by the boundaries of the site. The extreme length is 70 feet, and it is 48 feet wide by 35 feet high, and has seats, exclusive of the platform, for about 800 persons. There are galleries on three sides, of three rows of seats only, it having been a requirement of the building committee that the area of the floor should be free of impediments of any kind. The end gallery being continued over the entrance lobbies, &c., the platform is so arranged as to be available as an orchestra, and, following the outline of the main wall, is therefore elliptical in plan. The walls are divided by pilasters into a series of panels, supporting a coved and panelled ceiling. The ground of each ceiling panel is filled in with diaphanous glass, to admit the light. The acoustical effect of the elliptical plan of the platform is pronounced by those who have had occasion to address an audience therefrom to be excellent, both as regards the audience and the speaker, the voice being distinctly heard in all parts of the building without any undue exertion on the part of the speaker.

Externally the building is of white Rugby brick,

with dressings of Bath stone and Portland cement. The height is 50 feet from the pavement to the balustrade. The fountain, shown on the right side of the entrance, was the gift of the late mayor, Sir John Ratcliffe. It is executed of Darley Dale stone, the columns being of polished Aberdeen granite.

The whole was executed, from the designs and under the superintendence of Mr. Yeoville Thomason, by Mr. Job Browning, at a cost of 2,300 $\frac{1}{2}$ .

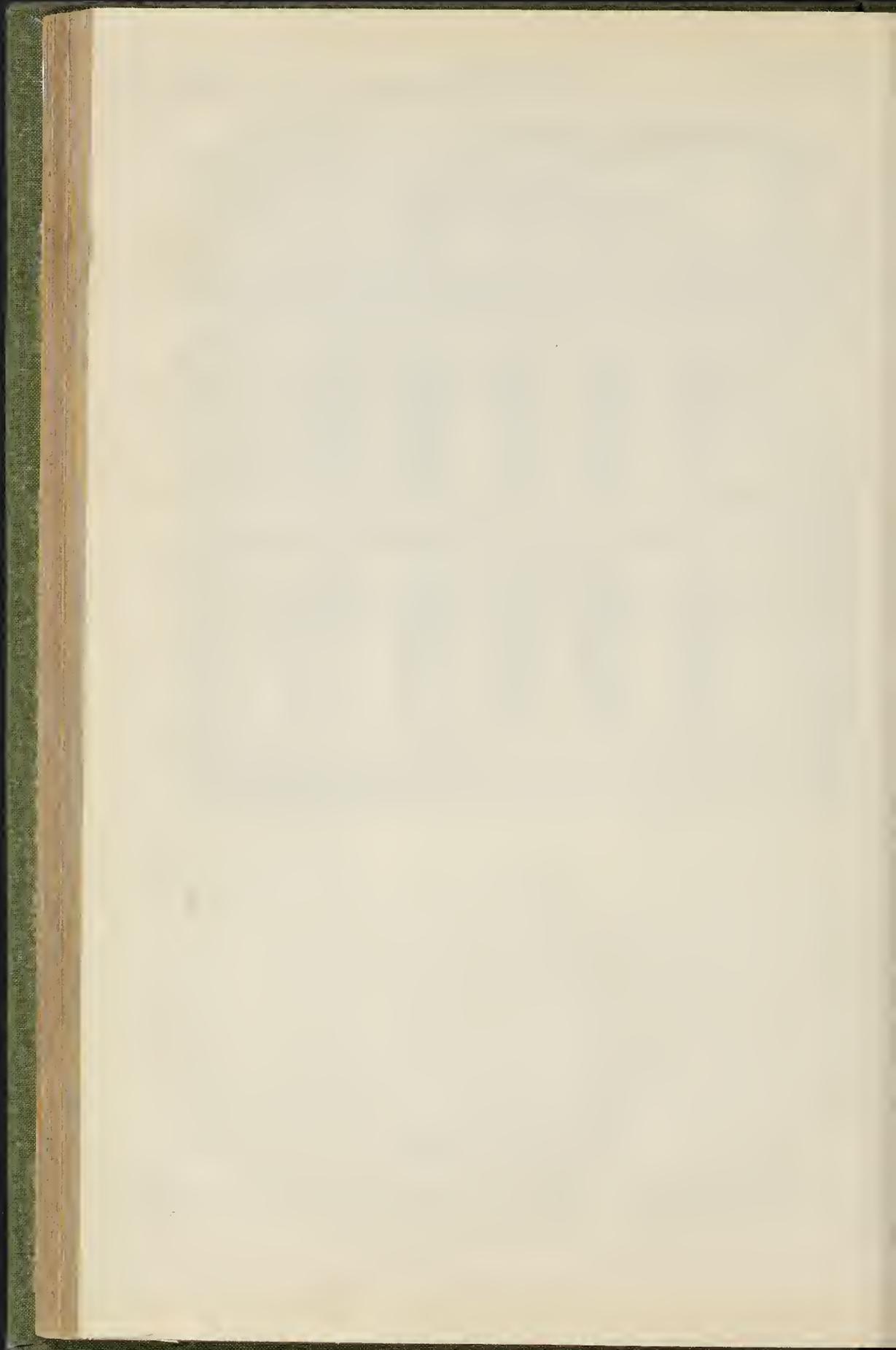
#### THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of this Society was held, on Friday night, the 16th, in the rooms, 9, Conduit-street; Mr. C. H. F. Lewes in the chair.

Mr. S. C. Capes read a paper on "Light: its Influence on the proper Arrangements in the Plans of Buildings," which we give elsewhere.

An interesting discussion ensued on the properties of light, and the respective advantages afforded by a sky light and side window in the construction of buildings, in which the chairman, Mr. Herring, Mr. Pugh, and Mr. Capes, took part.

The Chairman announced that Mr. C. F. Hayward would read, on the next night of meeting, a paper on "Modernism in Art," and the Society, having passed a vote of thanks to Mr. Capes for his able paper, then separated.



LECTURES ON ARCHITECTURE.  
OXFORD ARCHITECTURAL SOCIETY.

On Tuesday, March 6, Mr. Parker read his fifth lecture, comprising the Early English style of the thirteenth century. He gave an account of the principal buildings of the time of King John and Henry II., both ecclesiastical and secular, and the choir of Lincoln, the work of St. Hugh, of Burgundy, to whom he also attributed the north aisle of St. Giles's and the Chapter-house, Oxford, showing the similarity of the mouldings and other details to the choir of Winchester, the work of Bishop Geoffrey de Lucy, and the Gallie Porch, at Ely, of Bishop Eustace, at the same period, agree also in their architectural details. Salisbury Cathedral, the type of the style, was more fully described, and its exact history given by extracts from the account left by the contemporary Dean Wanda, which also showed the customs of the time, and the manner in which the money was collected, which was, in fact, by public subscription, and amounted to about half a million of our money. Each of the members of the Chapter gave a fourth part of his income for seven years, and many noblemen and others pledged themselves to annual gifts for the same time. It was begun in 1220, and the choir completed in five years, the nave not until 1268. Nearly all the persons who were assembled at the opening of the choir were kindred spirits, each of them being engaged in building elsewhere, at the same time, or shortly after.—Bishop Joceline at Wells, the finest work of the day, and the sculpture of it unrivalled in Europe at that time.

Ralph Neville, at Chichester, built the vault and clerestory. William of York, Provost of Bevelley, was most probably the builder of that magnificent choir. Westminster Abbey was chiefly built at the expense of King Henry III., and differs from the fabric relics lately found in the Record Office. The Italian workmen employed there on the shrine of Edward the Confessor were the first to give to the thirteenth century the style of their work is exactly the same as Roman work of the thirteenth century, and the English people did not like it, and did not follow it.

The transepts of York he considered as the work of Archbishop Walter Gray, who was buried there. Skelton Church, Yorkshire, is said by tradition to be built of the stone that was left, and an entry on that archbishop's tomb seems to confirm this.

The Presbytery of Lincoln, built between 1256 and 1282, is the latest and richest specimen of pure early English. Of secular buildings mentioned were, the hall of the Countess, and the hall of the Countess, the hall towers of Windsor Castle, with a vaulted chamber, having a central pillar; similar towers and a chamber at Somerton Castle, Lincolnshire; the Bishop's Palace at Wells, with its vaulted hall, and a series of windows, with detached shafts; and St. Bravel's Castle, Gloucestershire.

On Tuesday, March 13, Mr. Parker gave his sixth and concluding lecture, comprising the fourteenth and fifteenth centuries. He enumerated the noted examples of each reign, briefly described their architectural character, and exhibited engravings or photographs, both of general views and of details, such as windows, doors, and mouldings, showing the gradual change of style and the decline of the art. He considered the reign of Edward I. as the period of the highest perfection, but that for a century afterwards there were hardly any falling off. The characteristics of the decorated style of the Edwardian period is window tracery; geometrical under Edward I.; reticulated or net-like under Edward II.; flowing under Edward III.; gradually changing into the perpendicular style under Richard II. Many examples of the transition from the decorated to the perpendicular were shown. He also mentioned that in the time of Edward III. the earlier forms of tracery were used along with the latter.

The characteristic ornaments of the Edwardian period are the ball flower, the four leaved flower, and the scroll moulding. The ball flower was introduced into England by the French, and used most abundantly under Edward III., but it had been used long before in the English Provinces of France, and came to us from them. Its origin he was inclined to attribute to the small round rosettes used on French tapestries, similar to those now commonly used on the Continent on horse collars.

The Edwardian castles and the houses of the period were referred to almost as often as the churches, and it was pointed out that the style of architecture took place simultaneously in all. The chief features of the fourteenth century were compared with those of the thirteenth and of the fifteenth; and the buildings in Oxford and the neighbourhood were especially used to illustrate all the points mentioned. The distinction between ecclesiastical and domestic windows was pointed out. The windows of halls are frequently mistaken for those of chapels or churches; on the exterior there is no distinction, but inside of all domestic windows, whether of halls or other chambers, there are always two seats facing each other, formed in the sill of the window, side ways to the light.

The Perpendicular style began in the latter part of the reign of Edward III., but was chiefly introduced under Richard II. The earliest example known of this transition is Eddington Church, in Wiltshire, where William of Wykeham was clerk of the works to Bishop Edington, the founder of that church. The new style was then introduced into Winchester Cathedral, first under Bishop Edington, and afterwards carried on by Wykeham himself, who also adopted it in his colleges at Winchester and Oxford. The roof of Westminster Hall is of the same period. These fine characteristics are peculiar to England, and a very remarkable feature. The fine tracery building of the fifteenth century is also peculiar to England; the most celebrated examples of it were mentioned, such as King's College Chapel, Cambridge; Henry VII.'s Chapel, Westminster; St. George's Chapel, Windsor; the Cloisters of Gloucester; and in Oxford, the Divinity School and Wolsey's vaults over the choir of the cathedral, and over the lay windows of Christ Church Hall, Church Hall.

Gothic architecture had greatly declined, but still was grand even in its last stage. Bath Abbey Church is still a very fine building.

At this time the science of architecture retrograded three or four hundred years, and the Roman buildings which had been badly copied in the eleventh and twelfth centuries, were again badly copied in the sixteenth and seventeenth. This retrograde had made no progress, even in its own style: the finest buildings of the revived Roman style are still those of Italy in the fifteenth century.

A comparison of the buildings of the three last centuries—the sixteenth, seventeenth, and eighteenth, with those of the three previous, the thirteenth, fourteenth, and fifteenth, will show which style has the most

real life in it. The Gothic style had obtained so firm a hold in England on the affections of the people that it was very difficult to supersede it. The mixed buildings of the Elizabethan and Jacobean periods have more of the Gothic elements of flexibility and reality than of the stiffness and formality and regularity of the Classical. The dome is not properly a Classical feature—it is Byzantine, and belongs to the Gothic quite as much as to the Classical. The Gothic dome of St. Peter's is one of the grandest buildings in the world. The Classical facade of St. Peter's, at Rome, and St. Paul's, in London, are only masks to conceal the real construction. The lecturer asserted that the Gothic is the only style in which the real construction is displayed and made ornamental, and this must always give it a superiority in principle over every other style.

## KYLÖE.

The church of Kylöe, which is commandingly situate on one of the finest sites on the border, overlooking Lindisfarne and the adjacent coast, is to be forthwith enlarged and restored. It is a prominent feature of the landscape, seen from the railway between Deale and Berwick, besides doing double duty as a landmark at sea. Kylöe, mentioned in the old writings as Kyllhove, and sometimes Kyal, was one of the chapelries into which the monks of Lindisfarne subdivided their parish of Holy Island. A church was built there by them as early as A.D. 1145, which interesting relic was ruthlessly pulled down in the last century, and a square box-like structure erected in its stead. In the restorations now about to be commenced, an entirely new chancel will be built, and new windows, porch, and roof placed to the body of the church; in addition, a new lantern will be erected on the upper part of the tower. The plans and designs have received the approbation of the Dean and Chapter of Durham, who have made a grant towards the sum necessary to carry them into effect. The Squire of Haggerstone has also made a grant for the same purpose. It is understood that the new chancel will be decorated by a lady, under the direction of the architect, Mr. F. R. Wilson, Alwrick.

NEW NOTES ON CHIBBURN, NEAR  
WARKSWORTH.

At a meeting of the Society of Antiquaries, at Newcastle-upon-Tyne, on March 7, Mr. F. R. Wilson, of Alwrick, laid before them a delineation of the buildings at Chibburn, known formerly, it is believed, as the hospital of St. John de Chibburn. In some notes accompanying the drawings, Mr. Wilson said all mention of Chibburn, in any of the works on Northumberland, is bare and scanty; and more than once incorrect. McKenzie merely says, "Chibburn is a very old strong building which has been moated round; and the rivulet which passes it could easily be diverted into the ditch in times of danger." Hodgson goes so far as to say, "it is a massive, old-fashioned stone building, with a chimney like a huge buttress projecting from its south gable. I see no ground to believe that the building now occupied as a barn here was ever a chapel belonging to the Established Church, either in papal times, or since the Reformation, as some have supposed." But in Turner's valuable book on "Domestic Architecture," the subject is treated at greater length. Finding that the conclusions drawn in this more modern and important notice are not quite correct, and knowing also that the opinions expressed in it are likely to be consulted for ultimate decision in any contested point, I deemed it would not be uninteresting to the society to hear the evidence of the stones themselves.

The passage referred to is as follows:—But the preceptory of the Hospitaliers at Chibburn, existing now almost as it was left by the brethren, affords too curious and interesting an instance to be passed over.

The building formed a hollow square into which there was no gateway, and in all probability all the entrances to the building were from the courtyard. The principal dwelling-house, which was at the west end, is still almost perfect. It is a long, low building of two stories, having external chimneys at the south end, and others in the centre. The windows on the second-floor were built with corbels, probably to attack assailants who were beneath.

The ceiling of the ground-floor is of oak, moulded, upon which are laid narrow oak planks, having their under sides smoothed and a reed ornament on them, so as not to require plaster. The south side was formed by the chapel, which is of excellent ashlar work. At the east end is the great window; and the chapel has this peculiarity,—there is an upper floor of about two-thirds its length from the west still remaining, with the fireplace at the proper level. This has

clearly been part of the original plan, and is a good example of the domestic chapel as described in previous chapters, and it communicated with the dwelling. There is a similar instance of this in a chapel within the keep at Warkworth Castle. The east and north sides are missing. They doubtless contained the inferior dwelling-rooms, stables, &c."

That part of the building called in the foregoing account "the principal dwelling-house," instead of being part of the fourteenth-century edifice, as conjectured, is clearly indicated by the character of the masonry to be post-reformation work.

The story of Chibburn is thus told by its stones. The hospital, situated a seven-mile stage from Warkworth, on the road between Holy Island and Durham,—a welcome sight, no doubt, to many a weary pilgrim,—was in decay when the dwelling-house now standing was erected. But the remains of the chapel were in such preservation as permitted additional accommodation to be obtained by throwing a floor across it, and converting both stories into chambers. A fireplace above stairs, and another below stairs, were inserted for the convenience of this arrangement; and the original windows, now inconveniently situated with regard to height, for both stories, were filled up for the sake of strength and snugness, and others made in more suitable positions.

The present state and prospects of the buildings are most lamentable, and needful of the Society's attention. A few years ago they were used as a kind of farmstead, which occupancy, rough as it was, afforded some protection. But now the farm buildings are removed to a great distance, and the sole occupant of the dwelling-house is a herd. The chapel, dismantled of its oak for the benefit of the new farm buildings, is floorless, roofless, and uncared for, save by the bats, jackdaws, and starlings. The ancient roads are obliterated, and there is every reason to fear that this quaint old place which should be sacred to the memory of the Hospitaliers, and subsequently to that of the dowager ladies of the house of Widdington, who made it their pleasant home in Elizabethan times, will as completely disappear, to meet the exigencies of additional cow-hyrc requirements.

## AMERICAN INSTITUTE OF ARCHITECTS.

The American Institute gave their annual dinner on Wednesday, 22nd of February. Mr. Richard Upjohn presided, and there were present, amongst others, Messrs. R. M. Upjohn, Hunt, Vaux, Mould, Warner, Rich, Diaper, Auchmuty, Hamilton, Petersen, Dudley, and others. The *New York Architects' and Mechanics' Journal* gives a report of papers read and speeches delivered. The prevailing sentiment of the meeting was, in the words of Mr. Renwick, who sent a communication,—“Let us then, having formed this association, render friendly assistance to each other: let us defend each other's reputation as our own; and, throwing aside that jealousy which is too often engendered among those in the pursuit of the same art or science, let us hasten to crown the victor in a fair and honourable competition. Let us, in a word, to use the language of a great and inspired man, 'be kindly affectioned one to another, in brotherly love.' For by so doing we will gain each other's good will, the respect of the world, and may humbly hope to obtain the approbation of our Master, the Great Architect of all."

Such kindly sentiments will suit either side of the Atlantic. We shake hands with our brethren across the great Water.

## YORK CATHEDRAL.

The magnificent subscription of the Dean of York, mentioned in last week's *Builder*, gives hope of an inestimable boon being conferred on the admirers of Medieval Art. York Cathedral, justly regarded as our king's minster, is unquestionably the grandest production of the Middle Ages in this country, whatever detrimental comparisons may be made with Westminster Abbey, Lincoln, and others, in some particulars; and, if we do not allow the soaring heights and the more delicate finish of the French cathedrals to absorb every other consideration, it may fairly contend for the supremacy throughout the whole sphere of Gothic architecture. At Beauvais, the choir only can be put in competition; and Amiens, though one-third loftier in its roof throughout, is beaten by the superior length and the sublimer and higher centre of York, to say nothing of its variety, the peculiar richness of its sculptured walls, its windows, and other features. Yet this magnificent edifice, in

which we, as Englishmen, have so much reason to pride ourselves, has had half its glory veiled from our view by surrounding obstruction: no part of the exterior has been seen to advantage for many centuries, if perhaps we except that imposing centre tower, as seen from the north-west. What an acquisition, not to York only, but to the nation, would it be if the south-east view of the old building could be shown as at Lincoln! It is to be hoped, however, that the effort to widen the western approach will be rightly appreciated, and made effectually successful. No doubt the ecclesiastics and citizens of York will do their part; but, unaided, they may feel that to do justice to the Minister is out of the question: the public therefore should be awakened to make a national effort for the full recovery of this our greatest æsthetic treasure. Were the matter duly brought before the public, and smothered by the leaders of the profession, a sum sufficient for anything might possibly be raised. At all events it is hoped that, before the limits of the improvements are decided, the scheme and the commencement of the subscription will be given to the public as a challenge for ampler support. Should the display of the west front alone engage attention, it will be well to bear in mind that it comprises the most elegant window in the world, set as a jewel in the midst of univalued ornamentation expressly adapted for it; and according to the years in which it has been in a manner entombed should be the pleasure to be realized by the completeness of its disclosure.

#### CONDITION OF WAREHOUSES.

At a recent meeting of the Manchester Statistical Society, a paper, entitled "A Model Warehouse," was read by Mr. John Robertson. He gave a lengthened description of the internal, social, and other arrangements of an extensive warehouse belonging to Mr. Adams, of Nottingham; after which he described the awful state of some of the warehouses, in Manchester, used as manufacturing warehouses, principally old dwelling houses, the rooms of which, never having been altered, are ill adapted for their present purpose. They are also insufficiently ventilated, and occupied by such a large number of hands (especially where females are employed) that the cubic space allowed for each person is too limited to admit a sufficient supply of air to keep them in moderate health. Mr. Robertson dwelt upon the injurious effects of the system of irregular and late hours which at present prevails in the shipping houses generally, and mentioned some instances where such a practice had been discontinued, in consequence of the merchant or employer feeling satisfied that, in an economical point of view, his business was less efficiently conducted than if carried on during the usual daily office hours. A conversation followed, in the course of which the speakers urged the necessity of ventilation being considered when buildings are designed, the architects feeling it as much their duty to provide the shafts for ventilation, as it is to arrange fireplaces and chimneys for heating, soot-ways for drainage, gas pipes for light, and services for water. The importance of gas as a motive agent in ventilating was spoken of, and many of the improvements in the new warehouses of Manchester were described.

#### SLAVERY AMONG THE BLEACHERS AND DYERS.

SOME time ago attention was drawn in our columns to the shocking overwork, especially among young children, girls as well as boys, in bleaching and dyeing works. We are glad to observe that a forcible "Appeal to the Women of the United Kingdom, by Women," on this subject, has been published by Houlston & Wright, of Paternoster-row. In this small pamphlet some of the Blue-book evidence is quoted, which proves but too clearly the fact, that a most merciless and heart-rending system of overworking children prevails amongst these "bleachers, dyers, and finishers," or butchers, killers, and finishers, as they ought to be called. We hear much in this country of negro-slavery in America; but the negro's treatment, as a system, is enviable by comparison: let us pluck the beam out of our own eye that we may see all the more clearly how to take the mote out of our neighbour's. Mr. Crook, M.P. for Bolton, has succeeded in bringing a bill on the subject of the poor bleaching and dyeing children into Parliament, and in the printed "Appeal" a "plan of operation" is suggested, with the view of aiding in the attempt to overcome the selfish and mercenary interests which will be brought to bear upon the Legislature to induce them to dis-

believe the evidence of their own blue-books, and to throw out the Bill for the amendment of such a crying evil. In a form of appeal, similar to a form of petition, both proposed to be addressed to members of Parliament, it is narrated that a vast number of women and young children employed in bleaching, dyeing, and finishing works throughout the United Kingdom, are in the habit of working, for many months in succession, at the rate of seventeen and eighteen hours a day, not infrequently increased (even in the case of children of ten years old, nine years old, and younger) to twenty hours, four-and-twenty hours, or more, and even four days and nights in succession, and "in a temperature exceeding by some twenty or thirty degrees the general temperature of an Indian summer;"—the memorialists, therefore, "most earnestly implore, as women, as wives, as mothers, that your Honourable House will take these terrible wrongs into consideration at the very earliest opportunity."

#### COMPETITIONS.

*New Congregational Church, Staley Bridge.*—From the designs submitted for New Congregational Church, Staley Bridge, that by Messrs. Poulton & Woodman, architects, Reading, has been selected.

*New Congregational Church and Schools, Charlton-road, Manchester.*—For the New Congregational Church and Schools, Charlton-road, Manchester, a design by the same architects has been selected.

*Design for Villas.*—In reply to advertisement in *The Builder*, "J. R.," a correspondent, says, upwards of one hundred designs were received, and that of Mr. John Giles, of Lincoln's-Inn-Fields, was finally selected; the second premium was awarded to Mr. James Tolley. The works are to proceed at once under the direction of Mr. Giles.

#### DRINKING-FOUNTAINS.

*Bradford.*—A design, prepared by Mr. E. Milnes, for a public drinking fountain, to commemorate services rendered to the borough of Bradford by Mr. Alderman Bennett, has been accepted. The design consists of a basement of two octagonal steps (the lowest about 13½ feet across), and a granite curb or plinth, moulded and forming the outer rim of a small reservoir for dogs. From this plinth spring four arched buttresses, supporting the fountain proper, which has four sides with niches, three of which have carved shells, the lower ones receiving the water from pipes in grotesque masks. At each angle of the fountain is a detached shaft of polished granite with moulded plinth and carved capital, from which springs a semicircular archivolte. Above the four arches thus formed the fountain becomes octagonal. The height of the whole, from the pavement to the extremity of the lamp, is about 26 feet. The style of architecture is Italian renaissance.

*Langrivation of a Drinking-Fountain at Bath.*—The public drinking-fountain, near the end of Fountain-buildings, at the entrance to Lansdown-road, has been publicly inaugurated. The structure is in the Early Pointed style, and has been erected from the designs of Mr. C. Phipps, of this city, architect. Its form is that of a trefoil arch, with marble basins on each side for the public, surmounted by the exhortation "Be thankful," a large pennant basin in the centre for horses, and a small trough at the base for dogs. The structure is mainly of Combe Down stone, with pillars of Devonshire marble. Colour has been used in various parts, and, encircling the arch in front, is the accompanying inscription in Miltonic tiles—"Let thy fountains be dispersed abroad, and rivers of water in thy streets." A plate at the back states by whom it was erected, together with the name of the architect. The mason's work has been executed by Mr. I. J. Treasure, the metal apex and spouts by Mr. Colley, and the plumbing by Mr. Trewolla. The local *Gazette*, in reporting the proceedings at the inauguration, remarks that "the horse, in a state of nature, drinks from rivers or ponds, the surface of which is on a level with or below his feet; the water is sucked up slowly, that every part of the throat may be lubricated as the useful liquid passes into the stomach;" and he is of opinion that "ponies and donkeys can never drink with enjoyment, if at all, from the newly-erected fountain. The Longhorns, from Devonshire," he remarks, "will smell the water, and long for the refreshment they are panting for; but, alas! the lips of cattle can never reach the coveted luxury."

#### PROVINCIAL NEWS.

*Worcester.*—Mr. Hardwick, of London, according to the local *Herald*, is preparing plans for the erection of lodgings at the Beauchamp's almshouse for thirty-two almshouse, with chaplain's house, board-room, matron's house, porter's lodge, and the necessary offices. If the advowson of the hamlet of Newland be obtained, the chapel of the almshouses will become the parish church of Newland, and the old structure, which is little more than a patchwork of timber and plaster, will be pulled down. The chapel or church will be close to the almshouses, and connected with them by a covered passage or cloister.

*Liverpool.*—The new workhouse for Toxteth-park is now so far completed that it has been occupied by paupers from the West Derby workhouse. The site of the new workhouse is in Smithdown-lane, immediately beyond the new cemetery. It is calculated for the accommodation of about 700 paupers. Except a clock-tower, it presents no architectural feature calling for special notice. The architect, remarks the *Journal*, has very wisely eschewed the pet idea of the Poor-law Board as to the construction of such establishments, so that the place, in all its arrangements, has less of the prison about it and more of the home. It is, in brief, a plain brick building, stone dressed, two stories high, with wings on each side, and with the clock-tower in the centre. Somewhat removed from the public road, it presents a frontage towards the cemetery of 428 feet, and runs back to a depth of not less than 358 feet. The two wings project forward about 35 feet; and, unlike most modern workhouses, the schools, washhouses, baths, workshops, and other conveniences are all detached, in the respective yards at the rear. The tower, which is square, and about 120 feet in height, is of an ornamental character. Beneath is the main entrance, together with the private apartments of the governor and the offices belonging to his department; whilst, behind these, again, shooting out in a straight line to the eastward, and serving to separate the building into two divisions, are the kitchens, store-rooms, dining-hall, bakery, and engine-house. All to the south of this range forms the middle portion of the building: the north is the fumble part of the house. The comfort of the inmates has been so far considered that in wet weather they can approach the hill by means of an interior corridor. In a like spirit, covered play-sheds have been provided in the children's yards. The cooking is done by steam; but the place is warmed by open fires in every ward. The whole of the building may be said to be completed with the exception of the hospital and a few interior fittings. This is situated 10 yards from the main building of the south end, and is quite detached from the other portions of the house. The guardians have secured a good deal of land in the immediate vicinity, and about four acres of this will be immediately brought into cultivation by the youths in the establishment, and the able-bodied men. Nearly the whole of the yards attached to the establishment will also be laid out, more or less, as gardens, and it is contemplated to offer prizes to the lads for the neatest kept plots. Mr. Culshaw is the architect, and Mr. Newton is in charge as clerk of the works. The original contractors for the building were Messrs. Kilpin & Montgomery, but after the disastrous fire at their premises they were obliged to relinquish the contract, and Messrs. Holme and Nicol are completing the brickwork and joinery. Mr. William Thornton is the mason: Messrs. Knight & Son, of Renshaw-street, have done the plumbing, painting, and glazing; Messrs. Callaghan & Arowsmith, the slating and plastering; and Mr. William Tyson, of Waverley, is the contractor for the interior fittings. The cost of the building, as per the original contract, was to have been 2,126½; but it is believed that the actual cost will exceed that amount.

*Manchester.*—The plans for the enlargement of the Post office in Brown-street, by adding to it that portion of the building now occupied by the corporation as the City Court, with its annexed offices, &c., have been fully determined upon. The money-order office will be removed from King-street to Brown-street. Amongst the improvements will be the opening a passage to the box-office into Barnes-street; the provision of a lobby for the private box-renters; the removal of windows and the substitution of open counters, as in banks; while considerable improvements will be made in the general appearance of the offices both within and without. The front to Brown-street will be considerably altered for the better, and extended to the Clarence Hotel. The designs have been prepared in London; and the alterations will

he superintended by an architect from the Board of Works.

**Edinburgh.**—The Scottish Widows' Fund Insurance Institution purchased lately the new building in St. Andrew's-square, erected by the Western Bank. Since then the business has been removed into the new premises, which have undergone a complete interior renovation. According to plans prepared by Mr. David Bryce, architect, every accommodation has been provided for the various offices of the establishment. The decorative department, according to the *Edinburgh Post*, is of a good character, without attempts at gaudy demonstration. The second story is gilded in cinnamon colour, and the main-door floor in green relieved with burnished gold. The designs and colouring were under the superintendence of Messrs. Macfarlane and Wallace.

#### STAINED GLASS.

**Cranbrook, Kent.**—Messrs. O'Connor have recently completed a four-light window to be set up in the church at Cranbrook, "in memory of Betsey, wife of Thomas Webster," the Royal Academician, and in which they have been aided with the advice of Mr. Horsley, A.R.A. Each light contains a large single figure, Faith and Charity (or Love) in the centre two, and St. Paul and St. John as representing these virtues, outside. The borders and filling in are from designs in the church. The figures are very well painted, and the whole work, when in its place, will doubtless have an excellent effect. The shields for the inscriptions are the least satisfactory part of it.

**London.**—Messrs. Lavers and Barrard are fixing the east window of St. Sepulchre's, Snow-hill.

**Rochester.**—Messrs. Clayton & Bell have just fixed, in the large triplet lancet-windows of the lower range in the north transept of Rochester Cathedral, a stained-glass memorial of the late venerable Archdeacon Walker King, M.A., 32 years archdeacon of the diocese of Rochester. The central lancet contains a canopied and crowned figure of our Lord habited in Kingly jewelled vestments. Beneath this figure, which is to a very large scale, is a subject in which is shown the trial of St. Stephen at the moment of the saint's ecstatic vision of our Lord. In the side lights are figures respectively of Saints Stephen and Philip the Deacon, and in the predellas beneath, the subjects of the Ordination of St. Philip and Stoning of St. Stephen.

#### CHURCH-BUILDING NEWS.

**Newcastle-under-Lyme.**—The foundation stone of a new Wesleyan chapel has been laid at Newcastle by Sir John Radcliffe, P.S.A., of Birmingham. The style of the new building will be Gothic, with some Continental features. The material will be red brick, with blue introduced into the arches and strings, and with stone dressings. The interior will be divided into nave and aisles, with iron columns and arches of coloured bricks. The sittings will consist of pews, accommodating 1,100 persons. The dimensions of the structure are to be 88 feet by 50 feet, the central ceiling being 45 feet from the floor line. The estimated cost of the building is 2,400*l.* The architect is Mr. H. Fuller, of Manchester; the builder, Mr. E. Matthews, of Hanley.

**Wednesfield Heath.**—The building recently erected as a chapel, to supply the rapidly increasing wants of the Methodist congregation at Wednesfield Heath, has been formally opened for divine worship. The edifice has been erected by Mr. Palmer, at a cost of about 1,150*l.*, from designs furnished by Mr. Billake, architect. The exterior of the edifice is of brick, stone being sparingly used. The plan is cruciform in outline, though the transepts have but a slight projection beyond the side walls. The roof interiorly is open, framed and ceiled between the rafters, all the carpenters' and joiners' work throughout being stained and varnished. The arrangement of the seating is central, the space adjoining the side walls being divided and approached from aisles continuing the entire length of the chapel, and will accommodate about 600, of which 250 sittings will be free. Future galleries have been considered. A west gallery, capable of holding 200 children, is built over the main entrance. There are three vestries provided at the rear of the chapel, giving collectively about 625 superficial feet of class and vestry room. The building is lighted from a central triple-light window in the main gallery, two triple-light windows in the transept, and two small windows in the body of the chapel. The organ (by Messrs. Whieldon & Roberts, of Manchester) has been erected at a cost of 200*l.*

**Stirling.**—Funds are being raised for the restoration of the High Church, embracing two places of worship. The pile was reared in the fifteenth century, in Gothic architecture, the eastern portion having been constructed by James Beaton, archbishop of Glasgow, and uncle of the Cardinal James VI, the first Protestant Sovereign of Scotland, was baptized in the choir, when a discourse was preached to the lords of the congregation by John Knox. The restoration of the transept has been entrusted to Mr. Roched, of Glasgow, the architect of the Wallace monument.

**Kirkcubbin.**—The parish church of Kirkcubbin, one of the most ancient of the ecclesiastical edifices of Scotland, and possessing a specimen of the Norman style of architecture, has just been renovated in the interior, and improved. The walls have been painted, and all the woodwork stained. A more convenient site has also been provided for the pulpit, which is new, in the Norman style. It occupies the centre of a raised platform, in front of which is a railing corresponding to the style of the pulpit. Immediately behind the pulpit is a large window, and on either side a circular one, all filled with stained glass. The expense of these improvements has been provided for by the resident heritors, aided by subscriptions from the Earl of Hopetoun as the principal proprietor, and others. The work has been executed according to designs prepared by Mr. David Rhind, architect.

#### FALL OF THURSTON TOWER AND PART OF THE CHURCH.

The *Bury Post* announces the total destruction of the fine tower of the above church, with a large portion of the roof and arches of the edifice, which took place shortly before midnight on Sunday last. At that hour the inmates of a cottage adjoining the churchyard were alarmed by a sudden crackling noise, and almost immediately after by the loud crash of the steeple falling almost perpendicularly, but with a slight inclination to the west, bringing down at the same time the roof of the nave and aisles to the extent of 35 feet, with three pillars and arches on one side and two on the other, and burying in the ruins the peal of five bells, shattering the pews and the great door, and much injuring the organ (nearly a new one), which had been placed at the west end of the north aisle, close to the tower. The cost of rebuilding has been roughly estimated at 1,000*l.*

The tower was 75 feet high, built of rubble, the lower part of the fourteenth century, like the church; the part above the church probably two centuries later. It had a doorway in the west front, with a small decorated window in the ringers' loft over it, and four perpendicular windows in the belfry. In the year 1857, some serious fissures having been for some time observed in the upper part of the tower, Mr. Johnson, architect, of that town, was consulted; and, under his direction, the fissures were closed and the walls secured by iron ties; the west entrance, which had been bricked up, was re-opened; the faces of the angle-brutresses, which had been fractured, were restored; and other repairs were done to the tower and church roof, at a total cost of 600*l.* or upwards. A contract was recently made with Mr. Thomas Farrow for the execution of the repairs, the commencement of which was fixed for—just thirty hours too late.

#### CITY OF ELY WATERWORKS.

Mr. LEE, the superintending inspector of the General Board of Health, in 1850, recommended the water-supply of this city to be taken from gathering grounds: the local Board ignored this sound advice, and derived the supply from the muddy river Ouse: the engine and pumps being too small and badly contrived, the supply has for some time past been very deficient. After large sums of money had been uselessly spent in experiments and alterations, and considerable ill-feeling had been engendered between the Board and the rate-payers, it was at last deemed advisable to consult a qualified engineer, and Mr. Joseph Glyn, C.E., was called in to suggest a remedy. Under his direction, a new hoiler and engine have been recently erected, at a cost of 1,000*l.* It now appears that the filter-beds are also too small; for, when the engine has been working six or eight hours, the filtered water is used up, and the river-water, in its normal condition, is pumped into the mains, or the steam is blown off till next day.

The present surveyor, Mr. Latham (who has been but recently appointed), has recommended the purchase of two acres of land from the Rail-

way Company, for the construction of proper filtering beds. As this land is valuable for mercantile purposes, there is little doubt but that the company will ask a "fancy" price for it.

The original estimate of the consumption of coals was 90 tons per annum: the actual consumption is nearly 300 tons: this, it is alleged, is owing to the absence of any smoke-consuming arrangement, as evidenced by its nuisance to the neighbourhood, and to the small size of the engine chimney, which originally had a flue 2 feet 3 inches square; but the inside lining was soon burned out, and replaced with firebricks, so as to contract the aperture to little more than 1 foot square: it has, therefore, been in contemplation to take down the chimney, but the gale of Tuesday, the 6th, saved the board this expense, for it carried away the whole of the stalk that was above the eaves of the engine-house (15 feet in height): in its fall it broke in the roof of the hoiler-house and the roof and walls of the hotel stables adjoining.

As something may always be learned from an accident, we give the following particulars of the chimney. It was 60 feet high, of perforated bricks, one brick thick, square on plan, the flue 2 feet 3 inches square. The sides were built quite perpendicular, without any batter inside or outside, and capped with a heavy brick cornice to give it the so-called appearance of an Italian campanile. A side and end were hounded into the walls of the hoiler-house, and, from the unequal settlement thus caused in the work, the chimney had for some time been 9½ inches out of the perpendicular.

It was constructed without a scaffold, but was carried up from the inside, the materials being hoisted by the pole and cross-bar known as the "Devonport column derrick." The vibration caused by this contrivance jurred and disturbed the key of the mortar in the new brickwork, and tended very much to make the chimney permanently unsafe. It has been proposed that a site be purchased, and a new chimney constructed thereon, of the following dimensions:—90 feet high, 9 feet 6 inches square at the base, changing to a circle, 7 feet 6 inches exterior diameter, which will regularly taper to the top, with a circular flue, 3 feet diameter, at the base, which will expand a little as it ascends, so that the diameter of the flue at the top will be about 3 feet 9 inches. The damage, new chimney, and incidental expenses, are estimated at nearly 300*l.*

It is a question, however, if Ely can be really furnished with an unlimited supply of potable water so cheaply or well as by laying a main along the railway, to the upper green sand formation of the waterworks at Cambridge.

VIATOR.

#### THE "BED-WAY" OF BUILDING-STONE.

It has long been the custom to attribute the decay of stones to a careless indifference in placing them in a building without regarding their natural bed; and, therefore, to suppose that, if thus fixed, with their bed exposed to atmospheric influences, they will rapidly decay. We are told that "even unpractised eyes can detect the bedding of the majority of London building-stones," and that "a good workman will hardly ever be mistaken in his judgment." Now I do not wish to characterize myself either as a good or bad workman, although during many years of my early life I was daily occupied as an operative stonemason; and it will probably be admitted that I have, since then, had considerable experience in all matters relating to building-stone; but when a specimen of good Anston, Portland, Bath, or Caen stone has been removed from the rock, I cannot yet discover any means of detecting which way it lay in the quarry. I make this statement generally; at the same time admitting there are many exceptions. If this precaution is so very important, and the "bed-way" of a stone is so easily determined, how is it that during so long a discussion amongst architects and others, and after page after page being printed, about the decay of stone, some practised individual, who feels himself confident to point out the bed-way, does not explain his mode of detection, and show a few simple rules, to instruct those who are less learned in such matters? If this subject is all important, what a valuable lesson would be given to the architectural profession, and more especially to clerks of works, if some learned gentleman, experienced mason, or other person with "practised eyes" would collect a few young or old students, at a building in progress, such as Montague House, at Whitehall, recently commenced for the Duke of Buccleuch, and give a lesson where blocks of stone might be observed fresh from the quarry; others being worked by

the masons, and many just fixed in the building. This would afford a good practical opportunity for the instructor to explain to the inexperienced his means of detection, and enable them to avoid such mistakes in future works.

The foregoing remarks have no reference whatever to sandstones.

C. H. SMITH.

#### COTTAGE IMPROVEMENT.

I CONSIDER we shall be only avoiding the material question of how to improve the labourers' cottages, if we admit the hyperbole that landowners will be benefited by losing sunk capital, but having a better class of labourers. I fear greatly you will hardly convince the British landlord of the force of this theory. However, suppose landlords do build cottages for all the labourers on their own farms,—may, more, build cottages for all their tenants and labourers,—there still remains a large proportion totally unprovided for, independently of some landlords being unable to erect cottages without a fair per-centage. I quite agree 4*l.* a year, or 1*s.* 6*d.* per week, is a fair rent; but, like you, I am very sceptical that a double cottage can be built for 140*l.*: nor do I think a proprietor would rest satisfied with a smaller per-centage than 7 per cent.

With the great talent that pervades your columns every week, I feel sure many will come forward on so Christian a mission; and I believe such combined talent would meet every point, and save the peasant and satisfy the landlord.

That our architects may, and will, is the sincere prayer of

NEMO.

P.S. The Lands Improvement Company charge 6*1* per cent.

#### REPORT OF SUB-COMMITTEE OF THE CENTRAL ASSOCIATION OF MASTER BUILDERS ON BENEFIT SOCIETIES.

The following is appended to the report read at the meeting of the Central Association, reported in a recent number:—

"Your committee beg to report that, on examining the details of management and the objects of existing institutions of a similar nature, they find that each branch of the building trade has a society, and that in some a benefit fund is attached thereto.

The masons have a trade fund to meet the expenses of strikes and minor objects, a sick fund, and an accident fund, the latter being obtained by levies.

The bricklayers have a society to provide for payments when on strike, and an accident and burial fund.

The joiners have societies with similar objects. The plasterers have an accident and burial society.

The smiths, plumbers, and painters have societies which have trade and benefit objects combined. The labourers have also an accident and burial society.

None of these, however, are pure and simple benefit and sick clubs, where the savings of the workmen are certain to realize them aid in sickness, and a provision for the contingencies of old age.

Some workmen belong to various provident societies, such as the Odd Fellows, the Foresters, &c.; but were it not for the private sick-clubs attached to the establishments of employers, the majority would be without provision against illness and its consequent calamities. Being principally in large firms where private sick-clubs are adopted, and these only providing for the men while in such employ, it is evident that the workmen require a thoroughly sound provident club, whose rules may be in accordance with the wishes and requirements of the workmen, whilst the subscriptions should be the lowest that may be compatible with securing, with certainty, the stipulated benefits. Were the committee to encourage and assist such a society, we believe that it would be fully appreciated by great numbers of their workmen, and enable them to derive the benefits they seek for themselves and their families without becoming, as they now must do, members of trade societies.

We beg leave, therefore, after mature consideration, to recommend to the committee the recently established Workmen's Institute. The promoters of this undertaking, adopting many of our suggestions, have originated also a benefit club, which will be opened in a few days. They have given this subject great consideration: able advisers have been consulted; they have studied the rules of existing societies, and have taken opinions

of the workmen themselves, and embodied many of them in their rules, which have been certified by Mr. Tidd Pratt, the registrar of friendly societies in England.

One important feature the promoters have in view, is to obtain a guarantee fund through the subscriptions of those who desire the welfare of the working man; and as the principal offices have been undertaken by gentlemen distinguished for their public and commercial eminence, and in whom, it is believed, the workmen would have the fullest confidence, your committee anticipate that this would assure the men (who will themselves take part in the arrangement) of the soundness and security of this benefit society; and if the interest of the guarantee fund was also appropriated in cases of accident or sudden distress, much good would be done to the working classes, and kind feelings engendered between the employed and their employers.

THOS. PIERCE,  
CHARLES LUCAS,  
JOSEPH RIGBY,  
GEORGE SMITH,  
G. PLUCKNETT,  
Sub-Committee on  
Benefit Societies.

January 10, 1860.

#### Books Received.

*A Comparative View of the Human and Animal Frame.* By B. WATERHOUSE HAWKINS, F.L.S. London: Chapman & Hall. 1860.

MR. HAWKINS is popularly known as the builder of the big beasts at the Crystal Palace, or at least as the architectural restorer of their outward forms from their remaining skeletons. His purpose in the present volume is to give a comparative view of the variations in form of the bony skeleton or framework of those animals most frequently required by the artist, designer, or ornamentist.

English art-students cannot be expected to obtain that facility in design which was so evident in the ornamental works of our Continental neighbours at the Exhibition of 1851, without a more intimate knowledge of animal form than can be obtained in London while we are without a collection of animal skeletons accessible to the mere artistic student; and yet we have a national collection of them which few know anything about, as they are at present almost impossibly buried in the crypt of the British Museum, where, from want of space, they lie almost useless, awaiting better accommodation.

In addressing the art-student through the medium of his eye, by presenting to him pictures in lieu of words, the author's desire "is to impress him with a strong sense of the unity of design and oneness of plan upon which all animals are constructed,—a unity always so apparent and important to the naturalist when comparing and collating any one of the great classes of the animal kingdom." It has also been his endeavour to show, by repetition of forms, as he has most successfully done, "that one primary pattern was created and fixed by the Almighty Architect in the beginning, and persistently adhered to through all time to the present day; and so perfect," he adds, "was this classic pattern (designed in foreknowledge by omniscient wisdom) that slight modifications of secondary parts, fit and adapt the whole to all the changing circumstances that have been, or may become, specific conditions of life to the various groups of beings which constitute subdivisions of the animal kingdom." Slight indeed are these modifications! The lengthening out of a little bone an inch or two here, the drawing in of another there, a third a little away, and the drawing of some well-known genus of animals, is forthwith changed into the form of some other of a totally different class. And this process of change is one which actually goes on in the embryotic development of all animals, the human inclusive, whose forms progress through fishy, reptilian, and mammalian typical forms, till the creature transcends and is born as it were beyond them all. The idea of born monkeys being developable into human beings is an absurd one, inconsistent with all the known laws of animal nature, unwise though the wonderful plan of the whole be; but here are facts which no one can gainsay. It does not appear to be Mr. Hawkins's idea that different species, or genera of animals, were brought into existence by different and special or successive acts of creation; and, indeed, he speaks of "the apparent extremes of external difference," all untravellingly subscribing "a unity of plan, without any evidence of a necessity (either for the continuous succession of new creations or for the opposite grotesque theory of development." His

ideas on the subject, however, are not here traceable at all, to any extent, and neither do we propose to enter on it. But there is one very curious fact to which we may just advert for a moment while we think of it. Few are aware, we dare say, that the doctrine of Lamarck and the "Vestiges" is as old as the time of Plato and the ancient Egyptians; yet the fact is easily proved. Let us first of all just glance at what the "Vestiges" theory comprises. In the first place it comprises the idea of a progression from lower to higher animal forms, not ending, probably upwards, even with man, but ascending to some god-like shape not yet "developed." Thus the author speaks of "preparations for, and causes of, the possible development of higher types of humanity," the mundane economy being "very well as a portion of some greater phenomenon, the rest of which has yet to be evolved," the present system being "but a part of a whole, a stage in a Great Progress," and "the Redress is in reserve." Again, the "Vestiges" doctrine comprises retrogression as well as progression: thus the author speaks of certain facts indicating "an unequivocal retrogression towards the type of the lower animals," adding that "we see nature alike willing to go back and to go forward." Keeping these points in view, and also what is said generally of man—of "the adult Caucasian, the highest point yet attained in the animal scale,"—that "his organization passes through conditions generally resembling a worm, a fish, a reptile, a bird, and the lower mammalia, before it attains its specific maturity,"—let us now turn to the ancient books ascribed to Hermes Trismegistus, which the sages of the Thebais, of Egypt, possessed, and which Plato not only speaks of having seen, but appears to have been indebted to for some of his ideas in relation to the hermaphroditic, or twofold nature of man, human and divine. An English translation, of old date, of some of these small books, exists in the National Library, and it is from one of these, on "Regeneration," that we quote:—

"They which are of creeping things [worms] are changed into those of watery things; and those of things living in the water to those of things living upon the land, and dry ones, and are changed into men and human souls, that by hold of immortality, and are changed into daemons [genii, not 'devils']. And so they go on into the spheres or region of the fixed gods, . . . . And this is the most perfect glory of the soul. But the soul, entering into the body of man—for from one soul of the universe are all these souls,—if it continue evil [if it do not progress into the region of the fixed gods, and there abide], shall neither lose immortality, nor be partaker of the Good; but, being drawn back the same way, it returneth into creeping things. And this is the condemnation of an evil soul. And the wickedness of a soul is its ignorance."

Here is much more than a mere disjointed trace of an ancient doctrine of metempsychosis, more vast in its comprehensiveness than any other we have ever yet seen or heard of.

To return to Mr. Hawkins's volume, we cannot conclude without expressing our opinion of it as a highly instructive and suggestive work, and especially useful to art students.

#### Miscellaneous.

SEWERS AND THE UNDER-GROUND RAILWAY.—We hear talk of some great mistake in the level of the sewers, now being diverted in St. Pancras, for the Under-ground Railway. It is stated that, after a large expenditure, the new sewer will require to be lowered six feet, and that the works are stopped.

INSTANTANEOUS DECOMPOSITION OF FIRE-DAMP.—The recent explosions of fire-damp in Northumberland and Yorkshire have naturally reawakened the anxiety to discover an effectual preventive of these fearful calamities. A series of experiments has of late been gone into for proving the efficiency of the process invented by Mr. A. Wall for instantaneously decomposing fire-damp. *The Mining Journal*, speaking of these experiments, says,—"The crude fire-damp was forced through a screen of lut 4 inches in thickness, and although no further provision whatever was made for rendering the explosive gas incombustible, it would not ignite on the outer side of the screen, nearly the whole having apparently been decomposed. If this discovery can be applied on a large scale with equal facility, its success both as a preventive of explosions, and in a commercial point of view, will doubtless be complete; and we understand that Mr. Wall is about to conclude an arrangement with a large coal-master, for applying his screens in one of his mines. It is not, of course, to be supposed that Mr. Wall hopes to remove the necessity for adequate ventilation, but he confidently expects to be enabled to prevent explosions under any circumstances."

**ELECTRO-TELEGRAPHIC PROGRESS.**—The first private telegram from India and England, *via* the Red Sea route, was received at Lloyd's, dated Calcutta, March 10, reducing the communication between the chief presidency of India and the capital of England to a period of six days. The line is laid from Kurrachee to Alexandria, and when the entire line has been laid, the period of communication will be reduced to two days.

**A NEW LINE OF TELEGRAPH.**—As some time since intimated, has been projected, to proceed from Scotland and Denmark, *via* the Faroe Islands, Iceland, Greenland, and Labrador, to Canada and the United States, and which will consist of comparatively short links of submarine cables, the longest part submerged not exceeding 450 miles. The route has been recently surveyed by Colonel Schaffner, who lately gave evidence, at great length, upon the subject, before a committee of the House of Commons. An exclusive concession, for 100 years, has been granted to the promoters by the Danish Government, and the requisite caution money of 100,000 dollars was remitted to the Danish minister of Finance at Copenhagen, by Messrs. Croskey & Co., who are interested in the concession.

**THE RUINED CHURCH IN DOVER CASTLE.**—It is stated that the ruined church in Dover Castle, the condition of which we brought prominently before the public some months ago, is about to be restored by the Government under the direction of Mr. Scott. Every part of the old work, it is said, will be carefully preserved and shown as far as is practicable, a new roof will be put on, and the church restored to use for divine service as a chapel for the garrison.

**BRICKMAKING IN ADELAIDE.**—In the last "Summary for England," the *South Australian Register* speaks of the progress of brickmaking in the colony, and gives a description of the most extensive and the longest established of its brick-yards,—those of Messrs. Cox, Brothers, of Norwood. These brickyards are situate on seven and a half acres of ground which lie between the north end of Sydenham-road and Osmond-terrace. Here the whole process of converting the natural soil of the ground into hard bricks has been for the last ten years actively carried on, so that many of the best buildings in Adelaide may be said to have been dug out of Norwood—a city sprung from its own suburbs. On entering Messrs. Cox's yard, the first thing which arrests the attention is a yawning chasm, in the midst of which the first process of brickmaking is going on. In this valley, which is 20 feet in depth, and half an acre in extent, churches, chapels, and dwelling-houses beyond number have no doubt taken their origin, and fresh material for other structures is still being raised from the same spot. On the seven and a half acres of land there are two pug-mills, four moulding-sheds, and drying-ground enough for 150,000 bricks at once. It is estimated that the land need not use would give stuff enough for 100,000 bricks a week, over a period of ten years. The next largest brickyards in the colony are those of Mr. Combs and Mr. Drury, at Bowden, and of Mr. Westrop, at Stoney.

**THE PROPOSED NEW PUBLIC OFFICES AT LIVERPOOL.**—The plans for those projected buildings, prepared by Mr. Newlands, are not yet fully decided on, their further consideration having been adjourned for a month. They are intended to concentrate and to afford accommodation for the transaction of all business connected with the municipality. Dale-street has been selected as the site. The buildings will be erected after the Romanesque-Italian style of architecture, and the façade will consist of a colonnade, 120 feet long, with wings of 50 feet each. The base of the entire building will occupy a space of 250 feet square. The plan, as well as the skyline of each of the four fronts, is broken by two quadrangular towers, rising to the height of 80 feet from the ground. Each of these towers contains an entrance-hall and staircase, and, taken in connection, the four may be said to afford access for the working or every-day purposes of the different departments. On the top of each tower is placed a large cistern or water-tank, capable of containing many thousand gallons of water. The council chamber is approached by an inner vestibule, to which access is obtained by the colonnade surrounding the courtyard. The exact details of arrangement in the council chamber have not yet been fully determined on, but it is to be an oblong parallelogram of large dimensions. All the principal corridors are 14 feet wide and 20 feet high, being arranged so as to afford ready access to the numerous offices which open from them. The minor corridors are all 10 feet wide, and, like the principal ones, 20 feet high.

**TOWN-HALL OF YPRES.**—The *Athenæum* says the restoration of the old beautiful town-hall of Ypres, formerly the capital of West Flanders, is now complete. The pictorial ornaments of the stately building, the statues of thirty-one sovereigns who bore the title of Counts of Flanders, from Baldwin Ironarm to Charles V., have been replaced in the façade.

**CURIOS DISCOVERY.**—At Carlow, some workmen were lately employed on the estate of John de Montmorency, esq., of Knockleer Castle, county Kildare, in removing the remains of an old castle in the demesne, when they came upon a walled chamber containing the skeleton of a man, in perfect preservation, in a recumbent position. In his hand, says the *Carlow Sentinel*, was a sword with a handsome jewelled hilt, and beside him was a breastplate and helmet, together with a drinking-cup. A box was found near him, containing some coins of the reign of King John, a small cross, and some parchments, with writing not yet deciphered.

**THE GLASGOW CATHEDRAL WINDOWS.**—The new Chief Commissioner of Works, the Hon. W. F. Cowper, it appears, has refused to permit Mr. Houldsworth's window to be put up in its allotted place, although the late Chief Commissioner, Lord John Manners, had sanctioned the design, which was prepared by Mr. James Ballantine, by whom, also, the window was executed, for the late Mr. Houldsworth. The present Mr. Houldsworth had also "offered to remove the window, if, after it was placed, the Government, or any other competent party, found it mar the general harmony of the decorations, or destroy the sequence of illustration." The refusal of Mr. Cowper is attributed, by the *Citizen*, to the influence of the local "Munich party" among the committee.

**CORRUGATED PAPER ROOFING.**—Last week, while speaking, in the Commons, on the paper duty, the Chancellor of the Exchequer read the inventor's account of this substance, in which he said,—"Nearly four years ago, I took out a patent for the application to various purposes of corrugated sheets of *papier mâché* or other analogous material; one of the chief purposes being house-building. By this process we might literally live in paper houses. I take the liberty to send you a specimen of the material, in order that you may be able to judge of the great strength it acquires by the process of corrugation. It can be made perfectly unflammable; it is quite impervious to moisture; it is uninflamed by temperature; it is a non-conductor of heat, and therefore perfectly free from the disadvantages of iron; and, on account of its lightness and extreme portability, is admirably adapted for emigrant houses and for military huts. Yet simply and solely in consequence of existing excise regulations, I am unable to manufacture it. If those excise regulations were removed, there are hundreds of thousands of tons of raw material now considered perfectly useless which could be utilized in the manufacture of these fibrous sheets."

**ACCIDENTS.**—While two men were engaged in hoisting up a stone, weighing about five and a-half tons, at the Plymco railway-bridge, suddenly the beam-railway came down, burying the unfortunate men underneath. They were extricated as soon as possible, and conveyed to St. George's Hospital, where they shortly expired. The inquest jury returned a verdict, "That the two deceased men had come by their death through the breaking down of the machinery, caused by the accidental jerking or surging of the chain."—Two men have also been killed by falling from a scaffolding erected in the large hall of the Corn Exchange at Northampton, in consequence of the breaking of one of the bearers which supported the plank on which they were standing while engaged in the repairs which the Exchange is now undergoing. A verdict of "Accidental death" was returned, the foreman stating the jury wished to add to their verdict a recommendation to Mr. Banks that he would have all the scaffolding and planks examined, or would substitute poles, as recommended by Mr. Pideock.

—A young woman has been killed by the fall of a shop floor at Tontine-street, St. Helens. The floor was loaded with forty sacks of corn. It appeared that a previous tenant had removed a pillar from the centre of the shop, and a pillar placed there would most likely have prevented the accident. As it was, a large cross beam had been mapped in two about the middle, and this was the principal support of the flooring, the cross beams being only just placed in the walls, and being a slight stay for such a building. The jury viewed the premises, and after hearing the evidence returned a verdict of "Accidental death."

**THE LATE MR. LAPIDGE.**—We announce with regret the death of Mr. Edward Lapidge, architect. Mr. Lapidge was the county surveyor for Surrey. Amongst the candidates already in the field for this office we hear of Mr. Heskeith, Mr. Barry, and Mr. Lett.

**BARCELONA.**—On the 3rd instant the first trial took place of the new machinery for the cleansing of Barcelona port, in presence of the district engineer, the civil governor of the province, the provincial deputation, and the Chamber of Commerce, with many engineers; and the result was highly satisfactory. In 1857 the Government contracted with the firm of Hodgson, in England, for a complete dredging-machine, with accompanying lighters, &c. The dredge-boat had a machine of 50-horse power, and can raise 120 tons of mud or sand per hour. A steam tug of equal force, and twenty lighters containing each fifty tons, are provided: all the above are in wrought-iron, and of the best construction.

**ECCLESIOLOGICAL SOCIETY.**—A committee meeting was held at Arklow House, on Thursday, March 1, Mr. Beresford Hope, the president, in the chair; when numerous architects, about a dozen, submitted to the committee their designs for various new buildings and restorations. The Rev. G. Williams spoke of the unsatisfactory decision of the judges in the competition for the new Town-hall at Cambridge; and the committee agreed to publish the protest of the Cambridge Architectural Society on the subject. Mr. W. Slater spoke of the bardship of the interference of the Ecclesiastical Commissioners in all architectural works in Ireland.

**MULTUM IN PARVO.**—A firm not a hundred miles from Sunderland represent themselves as "Builders, joiners, contractors, architects, surveyors, and valuers, house and estate agents," with "workshops," "offices," and "residence." They likewise furnish funerals, and do the following:—house and ship work; monumental stones, tombs, and tablets; marble chimney-pieces and ball slabs; stoves and kitchen ranges; all descriptions of stoneware pipes, sinks, &c.; Roman and Portland cements; bothouses and vineries fitted up complete; *plans and estimates* prepared for buildings and alterations; repairs, in town and country, punctually executed on the most reasonable terms; inventories and valuations made under probate of wills, &c.; arbitration cases settled with promptitude; and fire insurances effected. These are the men who need no diploma.—A. B.

**PUBLIC IMPROVEMENTS.**—The following are among the chief provisions of a bill brought in by Mr. Slaney and Mr. Cowper.—1. It shall be lawful for the ratepayers of any parish maintaining its own poor, the population of which exceeds persons, to purchase or lease lands, and to accept gifts, grants, and devises of land, for the purpose of forming any public walk, exercise or playground, and to levy rates for maintaining the same, and for removal of any nuisances or obstruction to the free use and enjoyment thereof, and for improving any open walk or footpath, or placing convenient seats or shelters from rain, and for other purposes of a similar nature. 4. It shall be lawful for the ratepayers in meeting ascribed to rate such parish to a separate rate, to be called the "Parish Improvement Rate;" provided that such rate be agreed to by at least a majority of the ratepayers. 5. Provided always, that previous to any such rate being imposed a sum in amount not less than at least one-half of the estimated cost of such proposed improvement shall have been raised, given, or collected by private subscription or donation.

**CAMBRIDGE ARCHITECTURAL SOCIETY.**—On the 8th instant, Mr. C. H. Cooper in the chair, Mr. Pawcett read a few notes on the churches of Basingbourne, Abington Pigotts, and Guilden Morden, explaining some curious parts about them. Mr. J. W. Clark then read a paper on the history of All Saints' Church. He spoke strongly against the proposed removal instead of restoration of the church, on historical grounds. A church of the same name had stood there for eight centuries. There is a tradition that it belonged to the Priory of St. Albans in 1007. At any rate it was given in 1180 to the nuns of Greencroft, by Sturmi, of Cambridge. No part of the existing building is very ancient. The tower is Early Perpendicular; and the nave later in the same style. The chancel was rebuilt in 1726. In conclusion, he urged that if the church is to go, all care should be taken to make the new one as good as possible. He spoke in favour of brick, a material easily obtainable here; instancing the churches of Italy and north Germany, where brick is proved to be susceptible of very fine treatment, and was used because placed by nature ready to the builders' hands.

NEW ASSEMBLY-ROOM AT DARTFORD.—A new and commodious public assembly-room has been recently erected by Mr. Bray, adjoining the Bull Hotel. The room is approached from the Corn Exchange, being 60 feet long by 25 feet wide, and 30 feet in height. The architect is Mr. Bray, of Chelmsford, father of the proprietor.

METROPOLITAN BOARD OF WORKS.—At the weekly meeting of the Board, tenders for the construction of the pumping-works, Earl Outlet, were examined, when the tender of Mr. Aird, of 8,566*l.* was accepted. Mr. Doultou moved a resolution to the effect that previously to taking a credit for 20,000*l.* to defray the cost of perchloride of iron, for the purpose of deodorizing the Thames, during the hot summer months, a report from Doctors Hoffman, Frankland, and Miller, be obtained, as to the expediency of using that chemical in preference to lime. After a long conversation, the motion was put and carried by a majority of 21 to 2.

ENGINEERS AND THEIR RISKS.—We have heard with great pain of the death of Mr. Wilker Croude, a very young engineer, who was one of an exploring party in Brazil, with a view to the extension of the Bahia railway. We published two letters from him in our last volume, to show the difficulties engineers sometimes encounter, and regret much the further verification of this in his untimely death. He was grandson of Mr. Vignoles, engineer-in-chief of the Bahia railway, and of the Tudela and Bilbao line; and, as a young man of great promise and most kindly disposition, is much regretted by his colleagues, and those who knew him.

THE NORWICH CITY SURVEYORSHIP.—A special meeting of the town council was held on Wednesday, for the purpose of electing a surveyor for the city, in the room of Mr. E. Finest, resigned. On the 1st inst. the names of fifty-five candidates were laid before the paving committee; various names were then voted out, and the remaining names were submitted to the council in the order in which the committee considered they were entitled by their merits to stand, viz.:—1. Mr. Barry; 2. Mr. Parfitt; 3. Mr. Matthews. The committee in their report also recommended the council to make the appointment during pleasure, and that the salary of 350*l.* per annum be paid—150*l.* by the municipal council, and 200*l.* by the Board of Health. The report was received by the council, and on the motion of Mr. J. O. Taylor, seconded by Mr. Youngs, Mr. Thomas D. Barry was unanimously elected to the office.

LIGHTHOUSE ILLUMINATION.—We have already alluded to the quarrel between these gentlemen as to the illumination of light-houses. An "Answer to Sir D. Brewster's Reply to Messrs. Stevenson's Pamphlet on Sir D. Brewster's Memorial to the Treasury, by D. and T. Stevenson, Engineers to the Commissioners of Northern Light-houses, &c." has been published by Blackwood & Sons, of Paternoster-row. The subject has become too much broken up into separate points and questions for us to be able to enter into any further detail as to it, but the following relates to one of the chief points in the misunderstanding. In the Edinburgh Transactions for 1827, according to the "Answer" now published, Sir D. Brewster, "says, 'In revolving lights, where two or more lenses are combined, this light may be very advantageously employed; but in fixed lights, or in lights where only one lens is to be used, it requires to be combined with smaller lenses, and with plain and spherical mirrors, in order to enable us to throw into the parallel beam all or most of the rays which flow from the lamp. The contrivance which occurred to me for this purpose, and which I published in 1812, has been recently adopted in the new system of illumination introduced into the French light-houses.' These extracts state absolutely that Sir D. Brewster, in his article in 1812, made suggestions for lighthouse illumination. Whereas that article contains no suggestion for illumination of any kind. Sir David now, indeed, admits that it contains no such suggestion; but, unfortunately, this admission has come too late, as the statements we have quoted, as well as others made in his 'Memorial to the Treasury' and elsewhere, to the same effect, have misled many authors. \* \* \* The same misstatement misled Mr. T. Stevenson. On discovering this mistake, he communicated to Sir D. Brewster his determination to correct it, and it is this exposure of an error into which many people have fallen that has given rise to Sir David Brewster's unfounded attacks, and to the present controversy. Sir David did not correct Mr. T. Stevenson's error any more than he did that of Lord Brougham, but specially thanked him for the manner in which he had spoken of his labours."

TENDERS

For erecting a boys' school and twenty-four almshouses at the Elm, Tottenham, for the Worshipful Company of Drapers; Mr. Herbert Williams, architect. Quantities supplied by Mr. W. T. Randall:—

Table with 2 columns: Name and Amount. Includes Barmley & Sons (£21,498 0 0), Ashby & Horner (20,615 0 0), Lucas, Brothers (20,190 0 0), Wm. Hill (19,757 0 0), G. & R. Ashby (19,719 0 0), Piper & Sons (19,450 0 0), J. Wilson (17,561 0 0).

For works to be done in the erection of wash-houses, work-rooms, &c. in Silver-street, Wood-street, for Messrs. Vyse & Sons, Messrs. Tiltot & Clambourian, architects:—

Table with 2 columns: Name and Amount. Includes Lucas, Brothers (£15,731 0 0), Cahill & Co. (15,650 0 0), Holland & Hannen (15,128 0 0), Piper & Son (13,973 0 0), Jay (accepted) (13,731 0 0).

For Industrial Training Schools, Portsea Island Union; Mr. George Nake, architect:—

Table with 2 columns: Name and Amount. Includes Gosler (£10,500 0 0), Dushby (9,795 0 0), Light & Roberts (9,599 0 0), Rogers & Booth (9,119 0 0), Absalom (9,188 0 0), Hodges (9,180 0 0), Chinnock (8,688 0 0), Backhurst (8,700 0 0), King & Sons (accepted) (8,650 0 0).

For a central hall and wing, for the male prisoners, Nottingham Borough Gaol, from the plans of Messrs. Wood & Son, architects:—

Table with 2 columns: Name and Amount. Includes Willmott (£10,300 0 0), Acton (10,160 0 0), Wright (10,119 0 0), Fish (9,770 0 0), Ferguson (9,725 10 0), Bennett (9,495 0 0), Evans, Brothers (8,987 0 0), Halloway (8,940 10 0), Ward, Ansell, & Co. (8,737 0 0).

For the erection of ten houses at Basford, for Mr. S. Smith; Mr. R. C. Sutton, architect:—

Table with 2 columns: Name and Amount. Includes Cargill (£2,798 0 0), Bennett (2,460 0 0), Claremont (2,195 0 0), Haw & Wool (2,599 10 0), Baker (2,095 0 0), Bececk (2,000 0 0).

For house and stabling, at Eastbourne, for Mr. Robert Colgate; Mr. Henry Curry, architect. Quantities not supplied:—

Table with 2 columns: Name and Amount. Includes King (£2,385 0 0), Crocy (2,350 0 0), Downs (2,306 0 0), Pearless (2,075 0 0).

For new buildings and chimney-shafts, at the Grange, Bermondsey, for Mr. Walter Smith; Mr. Geo. Elkington, architect:—

Table with 2 columns: Name and Amount. Includes Brown (£2,780 0 0), Wood & Hunt (2,705 0 0), J. J. & F. Coleman (2,745 0 0), Martin (2,389 0 0), Wells (accepted) (2,279 0 0).

For building parsonage-house, for St. Matthew's, City-road; Mr. B. White, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Macey (£2,159 0 0), Butterbony (1,530 0 0), Rutkin (1,893 0 0), Harding (1,837 0 0), Stevenson (1,754 0 0).

For alterations and additions to the Crystal Palace Hotel, Sydenham; Messrs. Morpue & Green, architects. Quantities by Mr. Bloomfield:—

Table with 2 columns: Name and Amount. Includes Hockin (£1,340 0 0), Adams (1,215 0 0), Littlejohn (1,150 0 0), Wells (1,135 0 0).

For building a warehouse, offices, and stables, for Mr. Houghton, Bunhill-row, St. Luke's, Mr. Hammond, architect. Quantities by Mr. Brombridge:—

Table with 2 columns: Name and Amount. Includes Jay (£1,395 0 0), Lawrence & Sons (1,342 0 0), Maers (1,330 0 0), Hockin (1,312 0 0), Maers (1,295 0 0), Ashby & Sons (1,295 0 0), Gutteridge (1,199 0 0), Stephenson (1,094 0 0).

For works to be done in rebuilding premises in Queen's Head-passages, Newgate-street, for Messrs. Faudel & Phillips; Messrs. Tilt & Chamberlain, architects:—

Table with 2 columns: Name and Amount. Includes Jay (£1,170 0 0), Browne & Robinson (1,162 0 0), Conier (1,131 0 0), Willis (1,029 0 0), Cannon (940 0 0), Rider (accepted) (868 0 0).

For new Congregational Chapel and School, at Milton-next-Sittingbourne, Kent; Poulton & Wood, architects. The old materials of present chapel are calculated to belong in each case to the contractors:—

Table with 2 columns: Name and Amount. Includes Clother (£1,385 6 2), Neaker & Hodgkin (1,265 11 0), Bowes (1,212 3 0), Spler (1,207 0 0), Wood (1,184 18 0), Wond (1,183 2 0), Bennett (1,167 0 0), Alderman & Jones (1,157 0 0), Strubsole (1,127 5 0), Young & Co. (1,080 11 0), Jennings (1,062 6 3), Naylor (accepted) (1,055 0 0).

For Armoury, Sheen-common, for the Richmond Volunteer Rifle Corps; Mr. W. Hudson, architect:—

Table with 2 columns: Name and Amount. Includes Goodale (£1,170 0 0), Bowling (1,100 0 0), Nicholson & Son (1,097 0 0), Long (1,049 0 0), Sims (1,040 0 0), Aviss & Son (1,022 0 0), Adamson & Son (999 0 0), Sweet (964 0 0).

New tower and spire to parish church of Morcton-in-Marsh, Gloucestershire; Messrs. Poulton & Woodman, architects, Reading. The old materials of the present tower are calculated to belong in each case to the contractor:—

Table with 2 columns: Name and Amount. Includes Grove (£290 6 6), Clarke (913 0 0), Beavers (852 0 0), Young & Co. (775 0 0), Gill (735 13 5).

For building a new chancel and other works for the parish church of St. Clement, Ipswich; Mr. F. Barnes, architect:—

Table with 2 columns: Name and Amount. Includes Ringham (£665 0 0), Whight (652 0 0), Bell (625 0 0), Chisnall (625 0 0), Godbolt & Sons (620 0 0), H. B. Smith (606 0 0), Worswick & Morley (598 0 0).

For building a National School at Bramford, near Ipswich; Mr. F. Barnes, architect:—

Table with 2 columns: Name and Amount. Includes Worswick & Morley (£753 10 0), Whight (753 0 0), Bell (725 0 0), Luff (697 0 0), H. B. Smith (665 0 0), Elliott (663 0 0), Gilring (638 0 0).

For a cottage, to be erected at Old Ford, Bow; Mr. J. H. Rowley, architect:—

Table with 2 columns: Name and Amount. Includes Page (£290 0 0), Webb (247 0 0), Goodman (195 0 0), Waterson (195 0 0).

For alterations and repairs at the Old Baptist Chapel, Guildford; Mr. H. Peak, architect:—

Table with 2 columns: Name and Amount. Includes Strudwick (£194 15 0), Mrs. W. Mason & Son (188 16 0), C. Smith (177 18 0), Lee & Sons (175 0 0), Pearce (173 10 0), Stables (165 0 0), Bristow (163 0 0).

Accepted for new buildings at Aldershot, for Mr. Thomas Taunton; Mr. Peak, architect:—

Table with 2 columns: Name and Amount. Includes James Smith (£1,360 0 0).

For new music-room, and alterations at No. 61, High-street, Guildford; Mr. Peak, architect:—

Table with 2 columns: Name and Amount. Includes Lee & Sons (£276 0 0), Strudwick (215 0 0).

For the erection of new class-rooms, at the Congregational Chapel, Sherborne, Dorset; Messrs. Haggart & Pocklington, architects:—

Table with 2 columns: Name and Amount. Includes Down (£173 10 0), Stegales (154 8 0), Sarell (150 0 0), Guppy (accepted) (140 0 0).

For carpenter's and joiner's work to a house at Reading, for Mr. Staveley; Mr. Joseph Morris, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Woodroff (£265 10 0), Matthews (350 0 0), Sheppard (345 0 0), Laker (343 10 0).

For practice range, markers butts, and ricochet butts, for the Norwich Volunteer Corps; Messrs. Benest & Newson, and J. D. Ellis, architects:—

Table with 4 columns: Name, Ra, ge., Ricochet Butts, Total. Includes Ling & Ball (£208 0 0, £160 0 0, £368 0 0), Bachel (190 0 0, 99 19 0, 289 19 0), Sexton (198 14 0, 78 0 0, 276 14 0).

TO CORRESPONDENTS.

G. D. P. (it probably depends on the nature of the case. Was a good used?)—Captain Reader.—P. H. B.—Capt. T. W. O. (consult patent agent).—A Clerk of Works.—O. R.—W. P.—J. M. (there are several parties. Any fixtures or goods will explain).—T. G.—Middle-aged Man desiring pure Air (there are few nights when a window, open at the top, is not beneficial; but the practice should be commenced in mild weather, and exercised judiciously).—Messrs. W. & C. J. H.—R. E. (in type).—M.—A Reader (the case as to 1545 of Limitations is to be found in full in the Law Times of 25th February, 1859).—J. W. & Son (should inquire at Institution of Civil Engineers).—J. C.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to 'The Publisher of the Builder,' No. 1, York-street, Covent-garden. All other Communications should be addressed to the 'Editor,' and NOT to the 'Publisher.'

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

# The Builder.

VOL. XVIII.—No. 895.

A Few Facts relative to the Fall of Rain.



**W** RONG notions about rain, how it falls, in proportion to seasons and time, and how it flows off the ground, must be of the utmost importance to young engineers and architects. Parliamentary committees are capital schools in which to study human nature, as various forms of evidence may be listened to, and much truth may be learned; but the student must possess patience and perseverance to continue his researches over many sessions.

The evidence of 1840 is modified before 1850, and almost reversed in 1860. Howard had studied, written, and published his works "On Climate," and Dalton had given the results of his experience in meteorology before 1840; but few of our then young hydraulic engineers had learned fully the truths taught. Rain-gauges were put up, water-gauges were put down, and independent results obtained during one or more

years (seldom exceeding three), and then "averages" were struck to form data to work from. Compensations, in water, were demanded by mill-owners, and enforced by rival engineers, and were granted by Parliament, far greater than can be given. Nature, it is true, is one grand system of averages, but on a scale so colossal as to set at defiance the puny efforts of the engineer to equalize her differences for human purposes. Man cannot control Nature in her grand modes, and can only slightly modify her in her minor operations.

If we look at this world as a whole, we have, year by year, the same amount of sunshine and heat, the same extent of evaporation and cloud, and the same volume of rain falling back to the earth. If there is any modifying influence within or beyond the range of the earth's orbit, we, as yet, know nothing of it. The moon, the planets, and comets, are not thought now to regulate seasons: the influence of the moon on tides is allowed: its influence on the weather is disputed. The world has known many changes of climate during former geological periods, when a different arrangement of land and water prevailed. Area and elevation of dry land control climate, and modify the fall of rain; but the sublime "law of chance" gives difference to the seasons,—that is, given a number of elements which allow of variety in combination; and perfect regularity would be much more wonderful than variety. We have the light and heat of the sun, for anything we know to the contrary, constant quantities; the areas of the oceans and other waters much the same, and the equatorial currents of air; mountain ranges and vast plains, uniform and fixed, so far as concern man. Vapour rises over the entire area, acted on by the sun's rays: clouds are, however, local; the products in vapour of large areas being condensed over much smaller areas. The greatest storm only covers a mere speck of the earth's surface, as compared with the whole; and, during the time foul weather prevails in any place, fine weather also prevails over a much larger area. Universal fine weather, or universal foul weather, cannot exist; but there may be continued storms over a small section of the earth's surface, out of proportion, for a time, to that which is due to area and climate alone; but we may rest satisfied Nature does not suffer. There may be great falls of rain and vast

damage from floods in parts of America during one year, and at the same time great drought and heat over Europe. Portions of Africa may suffer from too much wet, and other portions from too much drought. The south and west of England may be dry, the north and east wet, and so of smaller areas: weather is ever local, and rain singularly so. All excesses have, for a time, a sustaining power. The explanation would be a long story, but we may accept the fact. Wet years and seasons generally follow each other, and so of dry years and seasons. Unreflecting people jump to a conclusion that Nature has become permanently wrong, and set about guessing out some trifling infinitesimal cause: they are not aware that the grand and solemn operations of Nature throughout the world are going on evenly and equably, and that it is only poor puny man who observes an infinitesimal microscopic difference in small places. The plains of a portion of Europe may be deluged, and portions of America may be scorched, during one year, but there is no such thing as a general deluge or a general drought over all parts of the earth at the same time.

But to return to local falls of rain, there probably never has been a perfect rain gauge, and probably there never will be one which is perfect: the best rain-gauges give, however, results near enough to the truth for practical purposes. Elevation above the sea-level gives different results as to rain, and places, a few miles apart, may have not only casual but important permanent differences. As to years, Howard, by observations near London over forty years, found that the first six months of the year must be considered "dry months," the last six months "wet months." April is the driest month, October the wettest month; the old proverb as to "April showers" is, therefore, wrong in one sense. The fall of rain in years varies about as 1 to 2.

*Fall of Rain near London.*

1802, annual fall,	13-916 inches.
1810, "	27-510 "
1812, "	27-240 "
1816, "	32-370 "

We see by these figures that the proportions betwixt 1802 and 1816 are much more than as 1 to 2. How is an engineer to strike averages for water-works compensations in such cases?

*Proportions due to Seasons.*

Winter .....	5 808 inches.
Spring .....	4 813 "
Summer .....	6 682 "
Autumn .....	7 411 "

24-804 annual.

The mean of rain-fall near London is 25 inches: the mean for all England, 31½ inches. It is important to know "the mean" rain-fall and the mean temperature at any place, but it is much more important to know the extremes, and to study these. Extremes are actual: means serve for purposes of comparison.

In Keswick the average fall of rain is 67½ inches; in Upminster, Essex, the average fall is 19½ inches. There is said to be no month in England without some rain, but there are several months continuously without any fall of rain available for water supply. More rain may fall within one hour than is due to one month, and more water will flow off the ground in a few hours than flows off the same ground during an average of months. If the flow of water in English rivers and streams, during dry seasons, is taken to represent one, in volume, then the wet weather volume is ordinarily 300, and an extreme excess mounts up to 500, taking time into account. How is an engineer to average such excesses? Some of our rivers in England are raised, vertically, by floods, the result of rain, as much as 23 feet. In South Africa and in America some of the rivers are swelled 60 and 70 feet vertically during wet seasons. To average the flow of water down such rivers for engineering purposes would be most fallacious. For water-works we must know the minimums; for bridges, culverts, and river embankments we must know the maximums, and guard against such. "Averages" are of no use in such cases.

The flow of water from any surface is modified by previous weather, and by the fall of rain. A dry surface absorbs and evaporates; a wet surface passes almost the whole fall of rain to the streams. There are parts of England in which, during twenty months continuously, no rain fell which was available for water supply; that is, upwards of 600 continuous days. How is an engineer to average such seasons?

In 1847 several important Water Acts were passed,—Manchester, Liverpool, and some others. Two-thirds of the rain-fall were supposed to leave the ground, and one-third of this was said to be due for water compensation. An "average of seasons" was considered equitable; and, under these false notions, works have been executed (we dare not say completed). In the cases of Liverpool and Manchester, the amount of compensation promised is found, in practice, to be more than is due, and an intolerable burden upon the ratepayers. We have shown that years and seasons vary in a proportion as one is to two, and yet Parliament secures to mill-owners, at the cost of the towns, a fixed and constant volume of water several times (four or five times) in excess of the dry-weather flow of the streams; and this has been done by the aid of the engineers, who now find that they are "hoist by their own petard" they are victims of their own want of experience and reflection. "Averages" seem so fair in theory, but are found to be so unfair in practice. The driest year and season, and the driest period of such year and season, are the only true tests for any waterworks burdened with water-compensations. "Averages," to be equitable, must be based on data so obtained. It is monstrous to fix ruinous penalties on town communities for failure in such cases as we have instanced. Water is the great necessary of life: there cannot be health without a constant and full use of it; and the comfort, health, and lives of vast communities ought to receive more consideration from Parliamentary committees in settling water-compensations than they have hitherto had. There are several large towns in difficulties by being over-burdened with excessive water-compensations: rights have been, however, granted to mill-owners; and, in the case of Manchester, large sums of money have been paid in lieu of water, and larger sums may have to be paid. If engineers and architects deal in "averages," it behoves them to know and fully to understand what it is they are averaging.

**PROGRESS OF THE METROPOLITAN MAIN-DRAINAGE.**

From recent inspection of the works of the Northern High-level Sewer, both at Old Ford and along the line, we are able to state that fully three-fourths of the contract work are completed, and that there will be no difficulty in finishing the remainder within a period of about two months after the time originally named. The work appears, in every respect, creditable to Mr. Moxon, and to the officers of the Metropolitan Board, of whom we shall do right to name the resident engineer for this portion of the Main-drainage,—Mr. Edmund Cooper, who is District Engineer for the Eastern Division of London. The works at Old Ford, comprising the overflow and penstock-chambers, and four channels therefrom to the Lea,—that is to say, two upper lines for the High-level and Middle-level Sewers, which will cross the Lea by an aqueduct, and two lower lines for the storm-water-outfalls into the Lea, have been completed, with the exception of one portion of the length of the upper channels, and a short portion of that of all four channels at the point where the line of the railway crosses that of the sewer or sewers. The ground near the Lea—was very bad, and large quantities of concrete have been required for durable foundation. Fortunately, the apprehensions we expressed, at the time of the strike, respecting the influx of water from upland floods, have not been realized. There have been several high tides; but the coffer-dam, constructed with a less amount of material and labour than works of this kind are generally thought to require, has stood well. Having, in our last year's and the previous volume, given particulars of the works, it is necessary here to do little more than add that the original drawings and specification have

been adhered to, with some exceptions not affecting the accuracy of chief dimensions or the general description.

The most important division of the works near Old Ford is that at the commencement (just west of the railway) of the four channels already mentioned, and point of junction of the Middle-level line with the High-level sewer. The provision here in the penstock-chambers and overflow-chambers, is made for contingencies which will probably not arise for many years to come; and the quality of the brickwork in Portland cement, and the massiveness of the blocks of Bramley Fall stone in copings, cut-waters, and other parts exposed to wear, are as well calculated for endurance as they are perchance for the astonishment of that New Zealand antiquary who in the year two-thousand and odd, may pursue researches into the sewerage contrivances of the Romans of the nineteenth century. Our readers may do well, if they can procure permission and a light, to anticipate these researches by their own; for, before many weeks have elapsed, we should say, the waters of the high-level may be purging in and on, and like "the king of dykes," Fleet Ditch,

"... than whom no slice of mud,  
With deeper sable blots the silver flood,"

rolling,—

"... with disembogging streams,  
The large tributals of dead dogs to Thames;"

or, like the clonca as described by Pliny, "sometimes huge pieces of stone and timber" carried in the current without detriment to the fabric; and saying haply in the music of their waters,—

"Here strip, my children, here at once leap in,  
Here prove who best can dash through thick and thin,  
And who the most in love of dirt exceed,  
Or dark dexterity of groping well,  
Who flings most fitly, and wide pollutes around  
The streams, be his the weekly journals bound;  
A pig of lead to him who dives the best,  
A peck of coals a-peace shall glad the rest."

Without repeating other particulars, it may be well to mention here that the overflow chamber, 138 feet in length, is about half of it formed with a peculiar arrangement of weir-walls, parallel with the length of the sewer, over which veils the water will fall into the storm-water outlet channels below, should it rise high enough—an event, as we have said, not likely to occur till some years hence, when a larger area of drainage in northern London will have its outfall by way of this sewer. Of the length, 70 feet, where the particular arrangement occurs, the breadth, 40 feet 6 inches in the clear, is first to be considered as divided and arched over in two unequal spans, namely, one of 25 feet 3 inches, and the other of 15 feet 9 inches: then, the latter portion of the double chamber, or that opposite to the line of the Middle-level sewer, has a weir along one side, whilst the former, or larger portion, opposite the line of the High-level, has four such weirs, by reason of a division of the line of sewage-flow into two trough-shaped channels, and arrangement for overflow along the middle as well as both sides. Each trough-shaped channel, in the High-level portion, is 5 feet 6 inches in width and 9 feet in depth, with the sides of 14-inch brick work coped with the Bramley Fall stone, and which flooring like that of the storm-water channels below, of a double course of 3-inch York stone landings, neatly fitted with rubbed joints, and laid, breaking joint, in Portland cement. The space along the centre of this overflow-chamber of the northern line, for the fall of the water, is on plan 2 feet 6 inches in width between the weir walls, and about 60 feet in length, and the spaces along the sides are of similar dimensions, the required counterforts being formed across in brickwork; and the arrangement of the weir along one side of the chamber for the Middle-level sewage is precisely similar. There is a junction between the Northern and Middle-level sewers, at the penstock chambers, immediately above the chambers we have been describing, and also below them, in order that there may be the best mutual provision against the larger volume in one case, of the sewage, and the more sluggish flow in the other. The Wick-lane Branch, which forms part of the same contract, though belonging properly to the Low-level sewage, is only commenced. It has a dyke under the storm-water outlet channels; and into these there will be an escape in storms. Thus, the relief for storm-waters will be in the case of the Northern and Middle-level sewage, downwards, the ordinary flow being forwards; whilst in the case of the Wick-lane Branch the reverse will be the arrangement, as in the case of the Southern High-level sewer at Deptford.

The completed portion of the main line of the Northern High-level now extends across Victoria Park and Hackney, and along Amherst-road and

Rectory-road to Stoke Newington. But the works commence again from Stamford-hill, where High-street crosses the Hackney-brook; they are completed up to the private property, and also for some distance on the other side along Manor-road: they are again resumed from the Green-lanes, and are being extended towards the New River; whilst farther on, the tunnelling under the Great Northern Railway is in progress, as well as that near the Junction-road, Kenish-town. Thus, much of what remains to be done is little more than an ordinary barrel-sewer of 6 to 4 feet, in 9-inch brickwork, instead of one 12 feet in width and 9 feet 6 inches in height, with arch and invert of two bricks and side-walls 2½ bricks thick.

The works having been commenced at several points, great care of course has been required to keep the gradients and in checking the levels from time to time. To get the permanent foundation, the ground, where good, is first dug out to the form of the invert as nearly as possible, and then made up as required accurately, with concrete, to a mould or frame, moved as the work advances—additional concrete being needed where the foundation otherwise would be bad. The difficulties of the work of this sewer, however, are slight compared with those which will shortly be apparent in the construction of the lines through central London, or through the Low-level districts. The worst ground yet met with for work in trenches, has been that in the Rectory-road. Here the trenches were perhaps 30 to 40 feet in depth, the upper portion through running sand, and opened no greater width than that of the sewer, with perpendicular sides, held up in the usual manner, by closely set boarding and cross-strutting. Much of the timber in such cases has to be left in, when the trenches are filled up. For this the contractor here is allowed 2s. 7d. per foot cube for fir, 3d. per foot super for 1½-inch deal, and 3s. 9d. each, for 12 feet planks.

In getting out the ground in deep trenches, and at the excavation for the overflow chambers at Old Ford, excellent use has been made of a form of scaffold and hoist for which Mr. Moxon has taken out a patent, and by which a score of barrows can be raised from the trench at once. The utilization of horse-power to raise materials, by connecting a chain or rope from the head of course is not new; it was made with great effect, at the Triage cutting on the London and Birmingham Railway; but the method applied by Mr. Moxon may have some features of principle and detail peculiar to it, which will appear on description. A trestle frame or scaffolding, formed of several pairs of "legs," spanning the line of trench, and carrying a longitudinal head to sustain the main pulley-wheels, is erected. Along one side of the line of the intended trench, in the positions required, short screw piles are fixed in the ground, for the attachment of pulley-blocks to correspond with the wheels, one for each barrow, above. Each chain, to which, at one end, a barrow is attached by slings, passes over the pulley-wheel and round the block, and is fastened, at the other end, to a chain running alongside the trench, and to this latter the power is applied. The screw pile has a friction roller fixed on the head, to ease the passage of the main chain or barrow chain. Wire or heupen rope may be substituted for chains; and the power, of course, may be that of steam or men, as desirable. The line of horse-power is most conveniently placed at right angles to that of the trench, through the intervention of a pulley; and arrangements may be made by counterbalance weights, to assist the working. The chain commonly is drawn back by the weight of the descending barrows; but, as these are heavier than required for the purpose, the surplus is made use of, says the specification which is before us, "as a counterbalance, to assist in bringing up the loaded barrows, and is about 12½ per cent. in favour of the power applied." This is scarcely comprehensible; and recollection of what we saw does not serve us. In the working, the loaded barrows being brought to the surface, and taken out of the slings, empty barrows, made to take their places, are lowered, with the aid of a break or break-wheel; then, loaded barrows are again attached, the power is applied, and the lot of barrows is again raised the 40 feet, in half a minute. One great advantage from the contrivance is that each man, having to keep time with his neighbours, is held only as 50 to 100 horses in working what is termed a "horse-swing road." The apparatus has been found to answer well commercially, where trenches are over 12 feet in depth, and the alternative would be that of lifts by a succession of stages. Labour-saving contrivances, for raising

materials, have been employed in works of a different character, in London, to a greater extent since the strike than previously. Amongst the number is one for raising materials up the line of a contrivance resembling a ladder placed perpendicularly on the top of which are fixed pulley-wheels for ropes of ascending and descending cages or carriages. The latter are worked by a windlass at the ground, each cage being furnished with wheels to run on rails fixed opposite to one another inside the ladder. It is surprising that, although there are numerous contrivances, the work of labourers has continued to be used uneconomically, in many of the lofty London buildings, longer than might have been expected.

The Northern High-level Sewerage Works have been easy as compared with those about to be commenced, in other particulars than those we have mentioned. The sites of only four houses were crossed by the sewer in such manner that it could be necessary to rebuild them. Of these houses some were purchased by the contractor. One in Church-street, Hackney, by the railway station, though in dilapidated condition, has been kept up cleverly. The house is now carried on iron girders, over the sewer.

Besides the resident engineer and the engineer-in-charge to the Board of Works, there are two clerks of works at each point where work is going on—one, principal, above ground, and one below in the trench. Thus there were just lately, six principal clerks of works; and these report weekly on a carefully devised form, particulars, such as those of the number, situation, and depth of ventilating shafts and gullies; of existing drains left into the sewer, and places for future junctions; the description of strata as exhibited by the trench, and the average thickness, which is marked to a scale; particulars of the side enclosures, even to the number of steps; of the quantity of sewer built, and cutting opened beyond; of the number and time of men employed in the several kinds of work; and of the description and quantity of the timber used or left in the work, with the situation where left, and depth in the trench below the surface; and with a sketch-plan of the place or street, and of the portion of sewer, with houses numbered and distances marked, as well as positions of gullies and gratings.

As regards other portions of the Main-drainage, we may mention that the statements in some of the newspapers, as to the commencement of the works eastward of the Lea, are not strictly correct. The drawings are only now in hand. This division of the drainage, described as the Northern Outfall Sewer, will, however, be the next portion for which tenders will be required. The work going forward about Stratford and Barking Creek, has been merely the preliminary boring, to ascertain the nature of the strata. As in previous cases, the results will appear in the drawings.

The Middle-level Sewer, north side, and the Outfall Sewer, south side, will be commenced immediately. The tenders for the Deptford pumping machinery have been sent in, as our readers know.

The High-level sewerage, south side, is progressing at several points. In the Broadway, Deptford, whence the two sewers, the main line and the Effra branch, extend side by side, as described in a previous notice, for a considerable distance, there is just now a great open cutting; running sand has been met with, and a large quantity of timber is used in shoring. We have not, however, made an inspection. Portions of the work of the main line, we learn, are in hand towards Stockwell; and on the Effra Branch much has been done at Nunhead, and in commencement of the Dulwich tunnel. At the tunnel there is much to interest geologists, and fossils are met with.

Mr. Grant is the resident engineer for the High-level sewerage.

Pending the completion of the plans and works for the sewerage of the low-level, south side, a pumping station for the relief of the Earl Sewer by discharge into the river, is to be formed. The lower portion of this sewer for about one-sixth of a mile in length, is to be diverted to a somewhat different place of outfall, at St. George's Stairs, Grove-street, Deptford; whilst the tidal flaps will be reconstructed, and the arrangements for the outfall as much as possible improved. These several arrangements will probably remain after the completion of the main drainage works, for use on emergencies. A tender has been accepted, as mentioned in our last number.

In the western division, which includes Hammersmith, Fulham, and Chelsea, and the district of which the West London Railway may be taken as the central line, extending to the London and

North-Western line, sewerage works have been some time in progress, about Acton and Shepherd's-bush, to form a connection, temporarily at least, with the present Coventry-creek sewer, and ultimately with the arrangements for outfall which may be settled. The principle, however, of the sewerage of this district may be considered as decided upon by the Board of Works. The outfall will be into the Thames,—the sewage being disinfected or deodorized.

The material which appears likely to be employed for the deodorization is perchloride of iron. Tenders are to be sent in on the 12th of April, for the supply of quantities not exceeding 5,345 gallons a day, at certain stations, at times to be appointed between the 1st of May and the 31st of August next, besides further quantities on receipt of notice. These arrangements are designed first to combat the evil of the stench of the river which is expected to recur from year to year till the Main-drainage works are completed. The deodorizing stations are chiefly those which were in use last year. There will be thirty-nine of them, for an estimated quantity of 4,095 gallons daily, together, on the north side of the river, and fifteen of them (whereof five belong to the Earl Sewer alone) for 1,250 gallons on the south side. The Duffield Sewer is expected to require as much as 414 gallons. The outlet of this sewer is in a district of Bermoudeuse where the deaths from cholera in 1853 and 1854 were 201 per thousand, nearly the largest number on that side the river. On the north side, the Fleet Sewer may require 718 gallons daily, the London-bridge Sewer 514 gallons, the King's Scholars' Pond Sewer 407 gallons, and the Ranelagh Sewer 382 gallons. The quantities contracted for are to be subject to diminution or discontinuance on fourteen days' notice being given by the engineer. The perchloride delivered is to be tested by a chemist for the Board. It may be either in the solid or the liquid condition; but the tenders are to state the minimum number of ounces of iron in the form of perchloride, per pound or per gallon, and the maximum number of ounces per gallon of free acid. The perchloride was decided upon in accordance with the report dated August last (and printed in full in our last volume\*), in which, after the examination of a large number of proposals, Dr. Hofmann and Dr. Frankland recommended the perchloride as markedly superior to lime, or to chloride of lime, with quantities of equal value; or, in other words, as costing least for the deodorization of equal quantities of sewage. The perchloride was found especially advantageous for permanency of effect produced. Limed sewage, it would seem, becomes offensive in less than one-third the time of the sewage treated with the perchloride. At the last meeting, however, of the Board, as our report has shown, the question of perchloride against lime was again referred to the same parties, and Dr. Miller. In any case, however, should the putrefaction have been allowed to commence before getting rid of the deposit, the process could be arrested only by quantities of the material which it would be almost impossible to obtain. It may be useful to add that the present daily discharge of sewage of the western division is 4,616,875 gallons, which, in future, might be doubled. Dr. Hofmann and Dr. Frankland stated that the deodorization of this, required all the year round, would not entail a greater outlay than that of 2,821l. 3s. for the disinfectant. We cannot but think, whilst their report is favourable to the desired view, and in a degree not previously anticipated by its authors, so far as the immediate disinfection is concerned, that it discloses apprehensions as to success of the mechanical arrangements of filtration, or deposition, for the separation of the residuum. The temporary storage of the sewage, and the removal of certain quantities of deposit, may possibly be found harmless for the limited quantity of sewage of the western district; but we should be better pleased with the principle of the scheme of the Metropolitan Board, had not an important deduction from the conclusions, to be made.

#### THE ARCHITECTURAL EXHIBITION.

ALTHOUGH the Architectural Exhibition, in the Conduit-street Galleries, will not be open yet for a few days, most of the drawings are hung, and lead us to hope that the collection will be interesting; though it is not all that could be desired. The smaller gallery is almost wholly occupied with competition drawings. Thus, for the Manchester Assize Courts, we have the designs sent in by Messrs. Garling, Truettitt (a clever flank), Crossland (in the Missal style as it may be

termed), E. M. Barry (with a Covent-garden Opera House treatment), Norman Shaw (some of the details very clever), F. H. Pownall, Roger Smith, Allam, Green & Deville, and Phipson. For the Cambridge Guildhall there are the designs by Messrs. J. P. Jones, P'anson, Deville Green, &c. There are some of the designs sent in for Heigham Church, one or two of those for the church of St. Peter and Paul, at Cork; and Mr. Morgan's design for the Jews' Hospital, mentioned by us at the time, as was the case with many of those previously alluded to. The design by Mr. Ernest George, to which the Royal Academy gold medal was awarded, is also here. In the chief gallery there is no *tour de force*. The larger, and in some respects most noticeable contributions by one individual, are six frames sent by Mr. F. R. Wilson; three of them rough groupings of the buildings of Athens, Rome, and Mediaeval England, under the title, "Gothic or Classic?"; and one, a very elaborate plan of Alnwick Castle, showing all the new Italian ceilings, and which ought to be nearer to the eye. Looking hastily round the rooms, we see, prominently, a view of offices recently erected in Mincing-lane by Mr. Whitehead; designs for fountains by Mr. Stapleton (elsewhere there are some by Mr. Burgess); proposed schools for St. Philip's, Bristol, by Mr. E. Godwin; shops at Folkestone, by Messrs. Walton & Robson; restoration of part of the high altar, Westminster Abbey, made under the direction of Mr. Scott, who himself sends some photographs of parts of his Foreign Office; cemetery chapels at Ledbury, by Mr. E. P. Cockerell; besides sketches for fountains from him; a collection of fourteen Northamptonshire towers, and spires from churches restored by Mr. W. Slater; the church and other buildings at Boyne-hill, by Mr. Street, who also sends views of St. Giles's Church, Oxford; a frame containing buildings recently erected by Mr. Truettitt; and a number of sketches and designs by Mr. N. Shaw, in decorated deal frames. Next week, however, we shall be able to view the exhibition more carefully, and speak of it more fully.

#### SYMBOLISM IN REFERENCE TO ART.\*

ALONG with Egyptian architecture, some notice should be taken of Egyptian lions. In Egypt the lion was symbolical of the overflowing of the Nile. When the sun was in *Leo*, the greatest rise took place; hence *lions' mouths* came to be a speciality of water-spouts, as lions themselves were of fountains of water; but it is chiefly with the sun that their connection lies. Horus, as the sun-god, had his throne supported by lions (Rougé).

The child Horus, seated on a lotus-flower, expanding as it rose to the surface of the water, was symbolical of the sunrise, and of the eternal youth of the divinity. Lions were also associated with the worship of Mithras, or the sun.

The lions at the gate of Mycene are supposed to have been connected with Mithras; but, I think this is a mistake. Lions, oxen, and cherubim—a rather singular fellowship, were among the hieroglyphs of Solomon's temple (1 Kings vii. 23). Two lions stood at the side of Solomon's throne (1 Kings x. 10). So they did also at the sides of the throne of the king of Egypt; as we may see on monuments; and possibly the son-in-law of the Egyptian monarch may thence have taken the idea; but the symbolical meaning of lions in this situation had reference to the administration of justice. It is probable that the Romanesque architects derived their lions from the Bible record; and their position at church doors, frequently with the columns of the porch resting on their backs, had a reference to the custom of administering justice there, and the rendering of certain public acts, so that the porch, with its lions, became a tribunal, and hence the formula which many public acts and documents bear, "*inter leones*." M. de Caumont has some interesting remarks on this subject. The lions over the gate of Mycene had probably a similar meaning; they were there as symbols of justice and judgment; for the gates of cities in the oldest time were often made the places for administering the law. I once thought that the lions of Daniel—so frequently seen on early Christian sarcophagi—might have had something to do with those at church porches; but I believe the association of lions with places of justice is of much earlier date than the days of Daniel. It is true, Shylock exclaims, "A Daniel, a very Daniel, come to judgment;" and Daniel himself might be put for the perpetual symbol of all righteous judges; but the poets, to whom we are often in-

debted for preserving the popular vestiges of nearly worn-out usages and exploded lore, and to no one more so than our immortal Shakspeare, have occasional reference to the lion as the symbol of clemency, and of generosity combined with power. Thus Troilus, upbraiding his brother Hector for sparing the fallen Grecians, bidding them rise and live, says:—

"Brother, you have a vice of mercy in you,  
Which better fits a lion than a man."  
*Troilus and Cressida*, act v., sc. 3.

The aspect and noble bearing of the lion is expressive of dignity and power. Unlike all other members of the *Felis* family, he holds up his head and looks you full in the face, and has appropriately enough been called the king of animals. Lions draw the ear of Cybele, the Earth, or the great mother, possibly by the Assyrians, Belis, the female form of Baal, or the lord, and consequently the queen of heaven, was represented standing on a lion. The lion is an emblem of solitude as well as of royal power. In Christian symbolism, lions are associated with Paul the Hermit; and, according to the golden legend, they dug the good man's grave. A lion is given as a companion to St. Jerome; and a unicorn is put by the side of the fair St. Justina, to signify her purity and virtue. The lion and the unicorn meet together as supporters of the royal arms of England; but here the British lion is rather an equivocal character, placed *vis-a-vis* his spotless associate, and their union savours of a Persian myth; for, while the unicorn is the first of the pure animals of Ahirman; and so the royal authority in England, or its symbol, is upheld by supporters of opposite principles.

Having said so much of the royal lion, I must, in justice, say something of the imperial eagle, not that this bird has to do with architecture, as the former, nor has it been made a sign in the heavens; it only stands by the side of Jupiter, the lord of the sky, and its personification, whence come lightnings and the bolts of the thunderer; but Apollo, or the sun, claims the eagle, no less than Jove, or the sky; and with an equal right, for while the eagle soars aloft in the upper regions of the atmosphere, and builds its nest in high places, it has a wonderful sight, and could, from time immemorial, look steadfastly at the sun. Dante notices this (Pard. l. 48) on Beatrice gazing intently at that luminary; he exclaims:—

"Aquila si non gli s' affice unquanco."

Possibly the wonderful eyesight of the eagle may have had something to do with the bird becoming the symbol of St. John, who, in his vision, looking up steadfastly, saw an angel standing in the sun. The history of the eagle as an imperial ensign will be found in Canto VI. of the *Paradise* of Dante, to which I must refer you. Considering the character of this bird, we cannot be surprised that the Aigle Français should long have had its eye upon the summit of Mont Blanc.

A history of animals in reference to their symbolical characters, while it would show much that is interesting in their habits and manners, would at the same time throw considerable light on the theology, mythology, and art history of the ancients.

The Greeks, by not caring to ascertain the symbolical value of animals' heads, came to treat the gods of the Egyptians with very little respect. Wit here took the place of wisdom, and they sought to turn into ridicule what they did not care to understand.

#### THE TREE OF LIFE.†

The art history of the Tree of Life is curious: it had its origin in the far East, where the life of nature and of man was combined in one poetic and symbolical whole; its most unmistakable form occurs among the Hindus; it is described as having first appeared on the mountain of Paradise (Himavet or Merou), as the antique Phallus of Siva, which the god divided into twelve ligatures radiating light, and afterwards caused to be transported into different parts of India (see Gulistan).

Dr. Layard, in his "Nineveh," has an engraving of a cylinder, on which is a tree of the form shown in drawing V. (coloured), between two winged bulls (here omitted). It would seem to be a conventional form of the palm tree, the branches ending in terminal buds, and might either have suggested the Indian myth, or might have been derived from it. There are two tripartite trees in a similar style on one of the tablets in the British Museum.

The winged bulls, with human heads, are analogous to the Royal Sphinxes among the Egyptians, and symbolize intelligence united with force and power, an attribute to the great Assyrian monarchy.

Every country has had its sacred tree, and some countries have had more than one. Egypt had several; the earliest was the palm tree, the date palm (*Phoenix dactylifera*).

\* We may observe the eagle, as a symbol of Apollo, on an altar to that leader of the Muses, in the Museum of the Capitol.

† This part was not read, but we have thought it better to make the subject complete.



that they do not project beyond the surface like the *reliefs* of other styles. The figures represented are, as it were, tacked into the surface, impressed beneath like a seal on wax, so that no part of the subject is above the adjacent surface. This treatment decorated the surface without disturbing its breadth and massiveness,—the character of Egyptian architecture.

The Egyptians were great in their knowledge and practice of the union of the arts. Their whole manner was archaic, no doubt; but it was most impressive, and has been most enduring. A treatment of incised *relievo*, analogous to that they so much used, might well, I conceive, take part in our own granitic architecture, which idea has lately been favourably discussed at the Society of Arts.

The Egyptians also used vast figures attached to their temples and tombs, not infrequently rock-hewn; also ranged in avenues. Between Luxor and Karnak, a distance of about two miles, stretched the most renowned of these avenues of statues, composed of repetitions of colossal recumbent sphinxes, lions, &c. With colossal of this character, and a profusion of incised and storied *relievo*, most of the Egyptian edifices were enhanced within and without.

We will not, however, linger longer in the valley of the Nile, but proceed to Greece *videlicet* the Euphrates.

By the banks of the broad Euphrates, and between that and the Tigris, dwell of old the Assyrians, and they also united intimately their architecture and sculpture.

On the outside of the lower story of their public structures, and in the very blocks of limestone which formed the walls, were hewn colossal images of their kings, warriors, and spirits, and other emblematic figures, from whose very backs the structure seemed to arise.

Among these figures the most remarkable are those colossal winged sphinxes, of which you may see examples in the British Museum. These were placed usually as guards at the entrances, either opposite the person entering or sideways, or both, according to the restorations of Mr. Ferguson and Mr. Layard. Between colossal sculptured symbols of this kind did Sennacherib re-enter his palace on his return from his discomfiture before Lachish.

These figures highly enhanced, decoratively, the appearance of the architecture with which they were associated, and also meant a great deal. The sphinx, as the old author, Clement, of Alexandria, says, signified "the combination of force with intellect." The lion's body with the man's head; that is, the androleone sphinx, from "aner," Greek for a man, and "leo," Latin for a lion. But the Assyrians had another variety of the sphinx, viz., the androtaurine sphinx, from "aner," a man, and "taurus," Latin for a bull,—in which the bull's body was substituted for that of the lion. As the former personified military force, so might the other probably have had a more pastoral significance. The Assyrians also added eagle's wings, to typify swiftness and extent of power. These two remarkable emblems of force, together with other colossal forms at the base of the Assyrian structures, appeared as supporting the whole edifice. So you see they had a meaning, and were not merely decorations. They were mental as well as sensuous.

When these sphinxes appear on the walls, back to back, their wings, together, form a fine structural embellishment of an arched form.

Within the walls, in the interior, the sculptures of the Assyrians were of a much smaller scale, illustrating a great variety of subject. In the British Museum an additional apartment for these works has been lately opened, which will well reward a visit. Among them are *reliefs*, as fresh as if they came from the hand of the workman yesterday, although 2,400 years have elapsed since that period. Here, for instance, is the cast of a horse's head just sketched in with the chisel, the original of which looks as if left off this morning, to be gone on with to-morrow.

Besides, however, the great historical interests of these works of the Assyrians, and also their frequent excellence, these lesser figures are peculiar as being of a style of very flat, and yet effective, *relievo*, half-way between the incised principle of the Egyptians and that of projection adopted by the Greeks. In modern times Donatello's method resembles this more than perhaps any other examples.

We will now proceed to the Greeks. As your time and my space will not allow of any extended discussion of each phase of our subject, it may be well to restrict ourselves as to the union of Greek architecture and sculpture to the one example of

the Parthenon, which, however, is a host in itself.

Nowhere can the union of the two arts be more justly illustrated than in this example of Classic temple structure, in which they were so evenly combined that it would appear a doubt, whether the sculpture were more evidently a decoration to the architecture, or the architecture a pedestal projection and frame for the sculpture.

This far-famed edifice was commenced on the Acropolis of Athens, 450 years before our Saviour, and, therefore, 2,310 years ago. It was about 100 feet wide by 225 feet long; was built of white Attic marble, and was, within and without, most elaborately illustrated and decorated with sculpture.

In the most retired interior was the statue of the goddess "Athene," herself, 60 feet high. This, however, having been made, by the decision of the priest, of ivory and gold, contrary to the wishes of the sculptor himself, Phidias, has long since perished, not a pinch of dust remains of the daughter of Jove.

There were various other smaller statues doubtless within the walls of this edifice, as attendants on the divinity, and as illustrations of the object of the temple; but of these it was deprived by the Romans when they finally vanquished Greece, and despoiled her at once of her freedom and her works of art.

It is, therefore, to the exterior sculptures of which we have record, and to those cherished remains which we possess in the British Museum, that we must turn. In these also we shall find that not only did they decorate the temple exquisitely, but they told its story.

The Parthenon was, as you know, erected in honour of the goddess whom the Romans called Minerva, but the Greeks Athene, and after whom Athens was named. She was fabled to be the daughter of Jupiter, or Zeus, the supreme god of heathen mythology, and to have sprung ready armed from his head. She was worshipped as the goddess of wisdom. It happened also that she always remained a maiden. Parthenos is the Greek for maiden,—hence Parthenon, the house of the maiden, or, in other words, the Temple of the Virgin.

The spaces on the front and sides of this temple were chiefly decorated with figure sculpture on the east and west fronts, as in the tympana, and the metopes between the triglyphs over the columns, which were continued at the sides as well as in the frieze which ran round the cella—or body of the building beneath the colonnade,—of these the most important are the tympana.

Within the triangular space of the east tympanum, which was in reality one gable of the roof, was represented, in sculpture, the birth of Minerva or Athene, and the council of the gods on Olympus, the figure of Jupiter or Zeus occupying the centre.

Within the west tympanum, on the opposite front, was represented the contention of Athene and Neptune, or, as the Greeks called him, Poseidon, for the honour of giving the name to Athens. Athens, the capital of Cæropia, or, as it was afterwards called, Attica, was situated on the sea coast, connected at some distance with her port, or harbour, called the Piræus, just as Edinburgh, our northern capital, often called the modern Athens, possesses her Leith harbour. The Athenians were in great measure a warlike maritime people—sea-robbers in fact originally,—and yet they claimed to furnish the favoured abode of wisdom and the arts of peace. Thus the myth arose naturally that originally there had been a contention between the god of the sea and the goddess of wisdom for the privilege of naming the city.

This is the old story:—These two deities having seriously disagreed on this subject, the assembly of the gods arranged the dispute by passing the resolution that that one should have the preference who produced the most useful presents for the inhabitants of the earth.

Upon this, Neptune struck the rock with his trident, and immediately a horse issued forth.

Minerva then waved her hand, when, full in leaf and fruit, from the teeming earth, sprang up the olive. On which she was immediately congratulated by the unanimous voice of the gods as having obtained the victory, who observed, as Hesiod says, that the olive, as the emblem of peace, is preferable to the horse, the emblem of war and bloodshed,—a remark in which probably we shall all coincide in spite of our rifle corps! The representation of this contention, in connection with groups of those various personages which figure in the tableaux of Greek mythology,

formed the subject of this tympanum. Thus did this composition voice the west front of the temple, and image forth how the daughter of Jove came to be the patroness of Athens and the goddess of the temple. This was the mental part,—it thus told the tale of the edifice.

As to the sensuous part, as an achievement of art decoration, doubtless nothing also could be more complete, according to the data that remain to us. Without crowding or confusion, the triangular space afforded by the tympanum was occupied by fine rich masses of sculpture, carefully adjusted as to projection, and light and shadow, and on a plan of geometric balance and flow of line, on the principle of which I shall presently offer a few remarks.

Along the sides of the temple, above the columns, were arranged between the triglyphs, the metopes, which were chiefly of groups of warriors contending with centaurs. This is a very common subject in Greek sculpture. Probably its frequency arose from the Greek traditions of the early incursions of the Thessalians, who were horsemen, upon the Greeks, who were foot-soldiers. The old myth of the centaurs—a compounded form of a man and horse—arose from the appearance of a horseman in the distance, when they might to those to whom horses were unknown present the idea of a single animal. This was not confined to the Greeks. When Cortez and Pizarro invaded America, and for the first time introduced horses into that country, each mounted Spaniard was taken for being all of one piece with his horse—together one animal—which, as you may conceive, proportionately astonished the natives. Just so it might have been when the Thessalian cavalry made the great incursion into Greece. The Greeks successfully resisted them and drove them out; and thus, probably, the sculptured fights of men and centaurs, the record of this early triumph, became a recognized and staple part of the decoration of their public buildings. The collection of ancient marbles in the British Museum will afford you several examples of this, besides those of the Parthenon.

So much for the tradition they recorded. In their quality of bold art decoration within the square spaces they occupied they were highly effective, as we see by the remains we possess, and the androecine bodies and forms came in finely to give variety and surface to them as architectural compositions.

The figures we have spoken of in the tympana of the east and west fronts were all more or less colossal, or considerably above the size of man, and they represented divinities of different grades. These were all figures on the round. These, separate or in groups, however, were yet so arranged near the wall behind them that they presented the combined effect of a very bold high relief.

On the other hand the metopes, although projecting much from the background, were only in high relief, being wrought out of the same block of stone with the background and attached to it. They were of a scale less than that of life, and represent the actions, not of divinities, but of heroes.

We now come to the frieze, in which the same consistent principle of gradation in subject, scale, and treatment, from the gods to men, from the tympanum to the frieze, is preserved. The frieze of the Parthenon was a nearly continuous equable band of low relief running like a zone round the whole solid of the temple beneath the colonnade. It represented an Athenian procession in honour of Athene and the other gods. This frieze is composed, almost without exception, of mortal figures,—of men, women, youths, maidens, cavalry, and sacrificial victims, &c., as we may see in the British Museum. Although less in scale than the metopes, they are equally beautiful as sculptural works and architectural enhancements.

We have not time to consider now any other Greek examples of the union of architecture and sculpture, or to dwell longer on the charms of this building, which we have taken as their type. Had we time to do so, the more we should recognize how thoughtful, logical, and just were the inventions and art treatment of the Greeks in the union they produced. As regards the Parthenon, the sculptural theme and art moved in unbroken harmony with the structure, which it enhanced to a degree which has never probably been elsewhere attained before or since.

From Greece we naturally proceed to Rome. The Romans, in their architecture, adopted in many respects the practice of Greece, but added many inventions and additions of their own, or drawn from other sources. Rome, indeed, was even more lavish of sculptural enhancements than Greece, and works of this art were used in connection with her architecture in the greatest pro-

fusion. For this purpose, not only did they ransack Greece, but had very many copies made of Greek statues, as well as new ones of their own to decorate their baths, fora, gymnasia, or places of exercise, as well as their temples and public arena.

The magnificent tomb of the Emperor Adrian, built prospectively for himself, which is now the Castle of St. Angelo, was among other buildings magnificently enriched with statues; and in the ruins at its base was found the well-known dancing faun restored by Michelangelo.

The Roman triumphal arches, also, as those of Titus and Septimus Severus, were profusely enriched with sculpture, illustrative of the victories of which they were the record. They also, like the obelisks, were records in stone of the events they celebrated; and this not only by means of illustrative statues and reliefs, but also, they usually contained a long inscription decoratively arranged in the front.

No feature of architecture, however, can be adduced in which sculpture has taken a greater part than in the Trajan's column, the whole of the surface of the shaft of which is occupied by reliefs of triumphs of that emperor. These appear in one continuous band, running specially round the surface from the base to the capital, like a ribbon round a staff, and containing many hundred figures. It was a bold thought, and effective decoratively; but it is deficient in clearness and mental effect. The compositions cannot be seen in sequence at any point, and are not distinguishable without a glass, except just at the base of the shaft.

Although it has been copied in Paris, it may rank rather as a clever, novel, and vigorous conception, very well for once, than as among examples to be followed of the union of the arts.\*

#### THE EXHIBITION OF THE SOCIETY OF BRITISH ARTISTS.

Nor entirely is it class of subject, and less is it the manipulation, that constitutes a work one of high art; and, of such art the inventive and intellectual attributes present, are more nearly than is supposed, the same, in one walk of art as in another. Portrait-painting in the hands of a Reynolds or a Van Dyke, or landscape in those of a Claude or a Turner, may fairly rank higher than painting of subjects allegorical, religious, or historical, when these, however excellent as studies from the life, contain nothing more, imparted to them, originated from the producer or resultant from observations before made and then filtered through his mind. Each branch of art, fine art, or called only *decoration*, can be constituted by the treatment, art such as may be entitled, almost if not altogether, to the designation, *high art*: for, whilst one branch may from subject be fitted for location in the halls of the Houses of Parliament, and another to a boudoir, and one may afford greater opportunities to the producer than the other,—but whilst making extraordinary demands,—no work is one of *art* at all, properly speaking or in the sense in which we should understand "art," unless it have the attributes which in the fact of their presence, go to constitute the equality of merit or parallelism. We have frequently felt called upon to state, both to architects and others, the view of what should be regarded as art; but it is equally necessary to insist upon what is needed in portraiture and landscape painting, to constitute the distinction between what might be done by the camera or a certain sleight of hand, and what involves something further. Mere drawing, or the use of colours and brushes, would be scarcely art; yet even objects in still life, or a very dingy hill, may be, whilst accurately represented, made also that which is required, and which goes far beyond. This statement of a difference between one kind of aim and the other is not the less correct, though the qualifications for representing and for originating exist together, and though one may assist, and may come to results—those of one kind such as are not distinguishable from those of the other. What is accidental, or imparted,—as the expression of face or passion in a portrait, or the effect of light in a landscape,—it is this which constitutes the *art* domain.

There is no occasion to show an excellence of the British school which has now been recognized by Continental nations, and is at length more apparent by the treasures that are the property of the nation. But, looking at some of the many exhibitions of pictures which are open every year, there has been cause to apprehend that the public desire for the advancement of art was not being

seconded by the artists of works of a particular class; though, from the category referred to, we may do well to except such works as a large number of those in the exhibitions of the Societies of Painters in Water Colours. Whether in exhibitions consisting chiefly of works of landscape art and subjects from domestic life, or in the exhibition of the Royal Academy, there must be in future manifested both the utmost art that can be expressed in a particular subject, and, to speak truth, a greater amount of it than we have lately discerned in some cases. The purchaser can play his part only when he has the meritorious work offered him, and after having been taught by the frequent exhibition of such works.

With these views, we are glad to find that the exhibition just opened, of the Society of British Artists, without any special application to it of the remarks we have made, is a considerable advance upon recent exhibitions at Suffolk-street. There are in the galleries, this year, works in landscape of the highest order of excellence, some capital bits of domestic life, and a few works of historical painting, some of them highly commendable; and generally the collection consisting of 633 paintings in oil, 236 in water-colours or other vehicles, and ten in sculpture or plastic art, is the best of several years. In the landscape department, we may instance the rock and waterfall scenes, chiefly Norwegian, by W. West, as Nos. 373, 422, and 554, some of which seem to us not inferior to anything of the kind that has been produced. The same artist has some scenes in Wales, one "On the Leant, Carnarvon" (39), also good, though not equally remarkable as the subject. Of the same order of merit is the "Scene on Egton Moors, Yorkshire," by E. J. Niemann (17), where, besides an excellent representation of twilight, a story is suggested, and interest is given to the scene, by the manner in which the most-troopers "in ambush" are discoverable in the picture, and amongst the rocks, or stealthily following the water-course. Mr. J. B. Pyne exhibits but one picture (74), "Wrecks and Wreckers, off Beannaris," a succinct piece finely treated, with stranded vessels and figures, helping by grouping and incident to make the picture, and to add to the atmospheric effect and inanimate matter represented, the interest of a different kind.

Every landscape-painter recognizes the value of figures as an accessory; but it is not every one who perceives that it is necessary they should be correctly drawn, however sketchily, and that it is desirable, however small, they should be doing something,—though they should not detract from the main subject, the landscape. Even in Turner's works, the later productions, the figures operate absolutely to the disadvantage of the effect intended: whilst, in some of the works of Claude, Wilson, and others, figures made to give the title of the work, have so little force in the picture, that the latter would be judged a failure, were the "work of art" observed according to strict rules of criticism, that is, in the spirit that it was entitled, and that which the painter set forth as the "end" he meant to "compass." Many of the works in Suffolk-street are, however, very good examples of the proper treatment. Mr. W. Shnyder's are of the number, and may be instanced all the more advantageously, because not characterized by much else than what we have named: at least they have become mannered, and lacking results derived from recent and frequent going to the observance of nature. The "Lone Scene, Isle of Wight" (229), is about the best of eight pictures by this artist. Mr. H. J. Bodington, also a large contributor, is one who has become remarkable for a manner not quite the best; but in the landscape "On the Hills, North Wales" (145), of good colour and an excellent effect of sunlight through a haze; and the "Welsh Stream, painted on the spot" (314), as well as No. 418, have merit. Mr. Vicent Cole's six pictures are all of them good as landscapes with figures. Nos. 16, and 106, a very fine work, are the best. Mr. G. Cole, who is also prolific, devotes himself to subjects of a different class, and with much success, as in "A Home-stall in Caernarvonshire" (30), and (203) "A Welsh Interior, with Sheep and Donkey." He also exhibits (627) "A Quiet Pool on the Machno, North Wales" a good picture. The "Tantallon Castle" of Mr. J. Syer (57) is a large and finely painted work, especially in the representation of the sea foaming about the wreck, and the action of the groups of figures on land. Mr. J. Zeitter, though always sketchy, is one of those who are particularly successful in the treatment, of the kind referred to above, of the figures in a general scene; though some of his works are to be regarded as figure-pieces rather than landscapes. In "A Passage-bout on the Lake at

Füed, Hungary" (96), each group, and the balance of the different groups, and the relative force of figures and landscape, are well managed. Amongst the works of superior excellence of a similar class, may be named "The Rush Gatherers on Loch Corrib" (204), J. J. Hill, who is the painter of a work of a very different kind, and having some of the highest qualities of art,—"The Gleaner" (481), a half-length female figure, with good management of colour, and of the shadow on the face of the neck. The treatment in some respects calls to mind that of similar subjects by Reynolds. We may mention at this time, the "Roman Peasant Girl" (161), "Shepherd Boy of the Abruzzi" (193), and "Jacinta" (207), by the late T. Y. Gooderson, as well-painted half-lengths in a low tone of colour; the "Rachel" (86), by J. Stevens, and Mr. J. E. Collin's "A Little Romp" (224), a good rendering of girlish playfulness. Observation of nature modified in domestic life is shown in the works, with a smaller scale of figures, of W. Heusley, T. Clater, J. Collinson, E. J. Cobbett, J. E. Walker, and others; and minute study in the abandoned ship represented in No. 37, "Off the Foreland, Studland Bay, Dorsetshire," by C. B. Hue, and in the "Summer on the Thames" (234), "A Pool" (578), and other works by W. W. Gosling; and fine effect in those of A. Clint and J. Dauby. Mr. A. J. Woolmer exhibits eight works of the manner which he has made so well known, to which it is impossible to deny the merits of poetry of conception and colour, or to avoid noticing errors against probability, and some errors of drawing. "The Flower on the Window-sill" (73), T. F. Roberts, and "Stray Thoughts" (284), T. F. Dicksee, resemble works by the same hands seen before, but deserve to meet with purchasers; and there is much careful painting in the "Prayer" (17) of Mr. Chester Earles, though the face has not altogether a pleasing expression. Mr. J. T. Peele's "A Moment of Suspense" (117), and "Girl with Blackberries" (531); Mr. J. Nolle's "The Young Agriculturist" (97); the works of T. Earle and J. F. Herring, like others, well known for merit; and Mrs. Rimer's flowers belong to very different classes, but are equally worthy of notice. The department of historical painting, with works of the largest scale of figures, is most prominently represented by the president, Mr. F. Y. Hurlstone, and Mr. W. Smiter. The latter artist's "The Union of the Rose and the Lily—first interview of King Charles and Queen Henrietta Maria" (119), though the more ambitious work, and one well painted in parts, is not so satisfactory as is the male figure (though not a Jew) in the group from the Merchant of Venice (225). Mr. Hurlstone, we think, succeeds better in his other subjects than his portraits; though in one of the former, the "Margaret of Anjou, Queen, and Edward Prince of Wales, in the Wood on their flight after the fatal Battle of Hexham" (179), it is necessary to get rid of some of the colour, or other peculiarity, to realize the breadth and truly grand conception and drawing which are embodied in this work. The same excellence of manner, however, is observable in the portraits (58, 118, &c.), in one of which, the portrait of Captain Hopwood, the dogs are by Ansdell. We should also not omit to mention "The Three Ages" (134), by Mr. M. Claxton, which though not successful, according with the intention, in presenting a picture of human life,—for, it wants other figures to represent infant life as distinct from childhood, and matronly beauty from simple girlhood or womanhood,—manifests technical skill in the drawing, and in the separate figures, as in that of old age.

In the Water-Colour Room, there are a good drawing of a stranded vessel (666), by G. Whitaker; a "View of Moel Shtafod" (698), by J. C. Reed, accurate in the mountain tints; and works by J. C. Schetky, R. P. Leitch, G. Wolfe, and C. S. Varley, which should be noticed, besides a small group in marble by E. G. Physick; busts, "The Lily," by R. Physick, and the other, "Wildflowers," by G. Halse; and three minute works in *alto-relievo*, creditable to the artist, Mr. J. Holt. Amongst the lady-artists in this room are Mrs. Oliver, Miss Macrone, Miss Bayner, Mrs. Duffield, Miss Baines, Mrs. Valentine Bartholomew, Mrs. Withers, and Mrs. Croudate, who has made a considerable advance in her art.

A DEPUTATION waited upon the Under Secretary at the Home Office, on Saturday, 24th, for the purpose of explaining the plans proposed by the corporation of the City of London for the erection of a new metropolitan market and poultry market, to be connected with the projected metropolitan railway.

\* To be continued.

THE MEANS OF COMMUNICATION IN BRAZIL.

INSTITUTION OF CIVIL ENGINEERS.

At a recent meeting, the paper read was "Upon the Means of Communication in the Empire of Brazil—chiefly in reference to the Works of the Mangaratiba Serra Road, and to those of the Mauá, the first Brazilian Railway," by Mr. E. B. Webb.

It was stated that, until a recent period, no roads, in the English acceptance of the word, existed in Brazil. Yet its area was equal to twenty-three times that of the United Kingdom, and it had a coast line of about 3,000 miles in extent. The sea-ports were frequently far distant from each other, and the communication between them was by sea. Inland, bridle paths were, to within these last few years, sufficient for the necessities of the inhabitants. These were occasionally improved, by some wealthy proprietors, by the avoidance of a terrific ascent, by the erection of a wooden bridge, and even by the building of a stone culvert. The increase of the population, and the development of commerce, led to augmented traffic; and, as the troops of laden mules grew more numerous, the yielding paths became more unserviceable. The provincial governments then took the matter in hand, taxing the troops of mules, and repairing the paths by contract. But being unpaired, and for the most part extending over a clayey surface, they were still, at certain seasons, impassable.

The province of Rio de Janeiro was stated to consist of two distinct regions. A small portion along the coast was but little raised above the sea-level, whilst the greater part was at an elevation averaging 2,800 feet. The sea-face of this elevated land had, however, a much greater altitude. It was precipitous and rugged, presenting granite peaks from 5,000 to 7,000 feet in height. This was called the "Serra do mar."

The first attempt at real road-making was the formation of a carriage road up the face of the *serra* to Petropolis, a small town at the head of the gorges leading towards the Bay of Rio de Janeiro. This road was not well laid out, nor were the works upon it considerable. It had an average gradient of 1 in 16, and had only recently been macadamized. Its summit level was about 2,800 feet above the sea. It was stated to have cost 40,000*l.* per mile, although there were no disbursements for land, or legal or parliamentary expenses.

Over the sandy plain lying between the head of the Bay of Rio and the foot of the *serra*, the Mauá railway had been constructed. This line presented no difficulty, excepting where a deep unhealthy swamp, from one to two miles in breadth, had to be crossed. The mode in which the ordinary excavations were carried on was not at all satisfactory, although an improvement took place, when English barrows and shovels, and small trucks and rails, were introduced. Slave labour alone could be depended upon; the native poor Brazilian not being inclined to work hard. The wages of the slaves were about 5*d.*, and the cost of their food about 7*d.* per diem. In the year 1857, after a lapse of four years from the time alluded to, the price of labour and food had doubled. The cost of skilled labour was generally about double that of the ordinary description. With one exception, all the bridges were of timber, with the certainty of a not very distant renewal. There was great difficulty in obtaining sound and durable timber, owing to its being almost impossible to collect in any single district a supply of one description, and also to the expense of transport to the place where it was required.

An examination of a timber pier, which had been constructed for the southern terminus of this railway, in the Bay of Rio, showed that not one pile, and very few pieces of the superstructure, had remained sound, after being in place about four years and a half. All the wooden bridges had suffered in like manner, and they had been replaced by works of either iron or brick. The rails used were double-headed, weighing 65 lbs. per yard, seated upon Greaves's pat sleepers, laid on clear quartz ballast. The gauge was 5 feet 6 inches. The rails did not appear to oxidize more than was customary in similar positions in England, nor had the cast-iron of the sleepers deteriorated. It was a single line, 11 miles in length, and the cost of the works, with the rolling stock, might have amounted to 15,500*l.* per mile.

Soon after the opening of the Mauá railway, which was completed by the author, he was appointed engineer to the Mangaratiba Serra Road, which was completed by the author, he was appointed engineer to the Mangaratiba Serra Road.

The route of this road was through a gorge, 100 miles to the west of Rio, descending to the port

of Mangaratiba. On the summit it passed, in a northerly direction, to the great river Paraíba, at a distance of 55 miles from the coast. Over the original track about 22,000 tons of coffee descended to the port, and about 10,000 tons of general merchandise were conveyed up the mountains. The work was commenced in May, 1855, by a body of Chinese, who proved utterly useless as labourers. But, as of late years, many thousands of Portuguese working men had emigrated to Rio, the works of the road were supplied with them. At one time there were as many as sixty-eight petty contractors, each employing from fifteen to sixty of his countrymen, so that in a few months upwards of 2,000 men were at work. At first they refused to use the barrow and the shovel. The hoe, their only tool, was not, however, so objectionable along the steep sides of the Mangaratiba mountains, as it was on the plains of Mauá. For a great portion of its length, the road was cut out of the solid rock, chiefly gneiss, or mica-schist. Immense rounded masses of pure granite were met with on the *serra*, and occasionally on the plains. Trap dykes were frequent in the ravines, and, dispersed throughout the cuttings, decaying masses of basalt and amygdaloid. The cuttings stood safely at  $\frac{1}{2}$  to 1, in most cases. The slopes of the embankments remained firm at 1 to 1. A thick-leaved grass, of rapid growth, protected the slope from the destructive action of heavy rains. The macadamized surface was 23 feet wide. A flugged drain, 3 feet in width, ran on the mountain side, and on the outer side a similar drain of 18 inches. The surface consisted of a pavement 9 inches deep, covered with a layer of granite metal 7 inches in thickness. A dry stone parapet, 3 feet high by 2 feet 2 inches thick, ran throughout the whole length of the road. With the exception of one arched bridge and some storehouses, none of the masonry contained lime. All the walling, the parapets, and the culverts were built dry. The abundance of stone, and the great cost of lime, in its purchase and carriage, led to its rejection. The masonry proved more satisfactory than almost any other branch of work. The Portuguese masons would make a good dry wall out of inferior materials, and with considerable celerity. The same could not, however, be said of stone work in mortar. If left to themselves, they spent as much time in filling the outer interstices as in building the wall itself.

On the Mangaratiba road there was only one work worthy of note in dressed masonry, and this was notable only on account of its cost. Although the Portuguese dressed stone very fairly, their work, as compared with English stone-cutters, proved, in this instance, four times more costly. In a locality far removed from the shore, and at first difficult of access, a bridge, with a chord of 52 feet, and a versed sine of 9 feet, occupied nineteen months of incessant labour. The coal, steel, iron, and lime, with the supplies of food, were carried to the spot, during many months, on the backs of mules. Timber had been shown to be unadvisable in Brazilian bridge building; at all events, in Central and Southern Brazil. The enormous cost of this cut stone bridge, amounting at least to 24,000*l.*, notwithstanding the most unwearied exertions to diminish expense, proved that stone was not economical. Without doubt iron was the best material for bridges in similar situations.

The works of the Mangaratiba road had cost, about 12,000*l.* per mile.

Allusion was made to the railways now in progress, or in contemplation, which were said to be destined to work a commercial and social revolution in Brazil. But, notwithstanding the stability and prosperity of that country, its public works and its agricultural operations were yearly becoming more and more embarrassed, on account of the scarcity of labour. Hitherto the supply of labour and the means of colonization had been considered separately. The author had suggested, in a document he had the honour lately of placing in the hands of the emperor, a means by which public works might be made the instruments of populating the districts in which they were undertaken. This system, it was believed, would be adopted to a considerable extent on the San Paulo railway.

In conclusion, the author referred to the important question of guarantees. Two distinct methods of guarantee were in operation. The shares of the Don Pedro Segundo Railway appeared only in the Brazilian market. Upon a stated capital, an interest of 7 per cent. was guaranteed conjointly by the General and Provincial Governments. Only a small portion of this capital had been paid up, and one-third of

the whole had been raised by loan in London, in the name of the General Government, at 4½ per cent. The difference in the two rates was to form a sinking fund, to replace the sum borrowed. The other method, that of guaranteeing foreign shareholders, as in the case of the two English companies managed by boards in London, did not offer much encouragement, for the shares of each company were at a discount. It might have been expected that investments in such undertakings, with a guarantee of 7 per cent., would have been largely sought after. It was felt that, perhaps, it would be more advantageous in future for the Brazilians to raise all railway money on loan. It might fairly be hoped, that ultimately Brazil, upon a calculation of the preponderance of good and evil, would not have to regret the epoch when English capital, energy, and engineering skill, assisted her in utilizing her own internal wealth.

NEW WORKHOUSE, DEANHOUSE, NEAR HUDDERSFIELD.

THE first premium in this competition, we are informed, has been awarded to Mr. Kirk, of Huddersfield. The second premium to Mr. Littlewood, of Manchester.

BELGIAN RAILWAY WORKS.

THE Belgian Minister of Public Works has just published an official "compte-rendu" of railway works in that country during the year 1858. It appears from this document that the total length of railways existing in Belgium (not including those for private enterprise, whose lengths have not as yet been precisely ascertained) was 1,691 kilometres 693 metres at the close of the year 1858, composed of 567,024 metres constructed by the State, and 1,124,609 by companies. The State railways are as follows:—The Northern, 53,477 metres; the Western, 205,229 metres; the Eastern, 145,081 metres; and the Southern, 163,234 metres. At the above date, the number of railways constructed by companies was twenty-two. The working of the several lines is thus classified:—

	Mètres.
A. Lines constructed and worked by the State.....	567,024
Lines constructed by companies and worked by the State .....	188,534
	745,338
B. Lines constructed and worked by companies.....	936,975
Lines constructed by the State and worked by companies.....	10,220
Total A .....	946,296
Total B .....	745,338
Total .....	1,691,633

The area of Belgium is 2,945,593 hectares (about 7,268,991 British acres), and on the 31st of December, 1858, the population was 4,623,059 inhabitants; thus giving a kilometre of railway to every 1,741 hectares of area, or for every 2,733 inhabitants. Of those lines worked by Government, 693,268 metres have a double line, and 52,070 metres single line of way; the former being 93.01 per cent., and the latter, 6.99 per cent. of the whole, which we have stated above to be 745,338 metres. For sidings and spare lines we have a length given of 225,000 metres. The total length of railway line, in main lines, sidings, and all accessories, is 3,311,860 metres. The expenses of the construction amounted in January 1, 1859, to 183,776,365 francs 30 centimes. A surplus of work not paid for amounted to 910,367 francs 67 centimes; and 15,961,400 francs were required to place the group of State railways in satisfactory working order.

The average cost of construction is 334,627 francs, 86 centimes per kilometre (or about 21,540*l.* per mile statute), but it varies considerably according to the nature of the works. It is only 119,519 francs 79 centimes, for the section from Gand to Courtrai; it amounts to 585,122 francs 17 centimes, for that of the Mense to the Prussian frontier. For that portion of line between Ans and La Mense, it is one million 588,145 francs 72 centimes, including the workshops and stationary engines for the inclines. The expenditure of the State for the construction of railways since their commencement has been, as above stated, 189,776,365 francs 30 centimes; including the value of the Mons and Manage section, which figures at 13,235,505 francs 51 centimes. The total sum will be 303,011,870 francs 81 centimes. The deficit which, on the 31st December, 1857, was 16,654,092 francs 93 centimes, was reduced in 1858 to 12,515,293 francs 67 centimes.



A SUBURBAN HOSTELRY.

## LONDON OF THE PAST.

## SUBURBAN HOSTELRIES.

In the memory of many not yet past the prime of life, the "Mother Redcap," at Camden-town, the "Mother Sbjpton," at Highgate-hill, and some other well-known signs, were far removed from town, and to go to them required a journey through meadows and green lanes. These places have now become surrounded with a vast population, and their characteristic features are fast disappearing. In place of the quaint-looking resting-places of other days, large and showy buildings, bright with all the glories of gas and compo, have been raised. One of the most picturesque of the old establishments was the "Bell and Horns," at Brompton, near the museum, where the more modern inn with that sign now is. The "Hoop and Toy," close by, was altogether a rural retreat. In Islington there were several with the old-fashioned sign-post and seats in front nicely shaded, for weary travellers or pleasure seekers in summer time. The large water-trough was a conspicuous object, and served as a means of affording refreshment to cattle and horses. There were several of these quaint farm-like inns in the Old Kent-road: amongst them was the "Half-Way House," so called, we presume, in consequence of its being half-way between Greenwich and London. This used to be a famous halting-place, particularly in the hop season, when it was thronged during both night and day by waggons and other travellers resting on their way to town. This once rural spot is now surrounded by buildings, and the "Half-Way House" may be passed by with little notice as hundreds of other spirit establishments in the central parts of the metropolis. In the Holloway road—in the main street of Islington—nearly all traces of the old style, except the names of the signs, have vanished. The "Angel," behind which there was a galleried yard, in which the players were wont to amuse the dwellers in this "merrie" village, has now the matter-of-fact appearance of the present day. Some of the houses northward, which are traditionally associated with Dick Turpin and other exalted scoundrels of the road, have cast off their heavy tile roofs and are resplendent with plate-glass and vulgar decorations. In one or two instances it may be noted that attempts have been made, without going to the extent of entire reconstruction, to disguise the appearance of antiquity: the practised eye, however, soon detects the portions which have been overlooked.

The spread of new buildings has much affected the style of the old suburban taverns. When a new neighbourhood has been planned,—almost as soon as the turf has been skinned off, a hole dug for sand if there be any, and if not, a huge mound of black mould provided for the mortar, before, indeed, the roads are made,—a lofty building is reared, doomed to be, for some time, a solitude, but which is expected, in due course, to be a prosperous public-house. The style and appearance of these sink into insignificance the older buildings which are within sight, and soon a wonderful change is made in them, and the ancient tavern is put into a shape more in keeping with its young rival. In the old "Queen's Head," in Islington (which had once a front older than Elizabeth's reign),

although it has been rebuilt, care has been taken to preserve the dark oak panels of one of the rooms, a ceiling, and some of the carving of early date; and it is desirable to follow this example as much as practicable, for in most of these places there is something worthy of preservation, which will become of greater interest as time passes on.

We have engraved a characteristic example of one of the wayside inns which were once so common, with its tiled roof, cattle-trough, and sign-post in the road. Viewed from a large waggon in front (the horses decked with scarlet and blue fringes), hay-carts and rustic figures, with a background of trees, the time-worn building covered here and there with ivy, it was a scene which will ere long have vanished from the outskirts of the metropolis.

## STRASBURG CATHEDRAL.

In one of the niches of the south-eastern tower of Strasburg cathedral, now under the workmen's bands for restoration, a fourth equestrian statue has just been placed, forming a portion of the design for adorning the principal facade of this structure, that of Henry I., surnamed l'Oiseleur. The other three, erected in 1859, equestrian also, are of Otho the Great, Charlemagne, and Pepin le Bref. These works have been undertaken on the exterior of the cathedral for some time past with a view of completing the decoration of this facade and replacing, in the numerous niches, the statues which were removed during the revolution and filling other niches with statues which had never been provided for them at any period.

This has been restored, by degrees, the grouping of the statues representing the Last Judgment, and subsequently the statue of Christ surrounded by angels, which is above those of the Apostles over the grand "rosace." At present the works are extended to embellishing the niches of the counter-forts of the towers.

It appears from the architect's researches that in 1291, when the western facade of the cathedral, commenced in 1277, had risen to the height of the gallery which surmounts the grand rose, three equestrian statues were placed,—those of Clovis, Dagobert, and Rodolphe of Hapsburg. Erwin himself then superintended the construction of the cathedral (1277 to 1318).

On the pinnacles, surmounting these niches for equestrian statues, are to be placed the statues of the bishops. They existed formerly and a few remain to the present day, leaving eight to be restored. The statues, thus numbering twenty, twelve for the monarchs and eight for bishops, are to be designed and prepared in the "Ateliers de Sculpture de l'Éuvre, Notre Dame," under the immediate superintendence of the architect, who has proved that one of the nineteenth century can powerfully contribute towards the restoration and completion of a grand architectural idea of the thirteenth century.

ART-UNION OF LONDON.—We would direct the attention of our readers to the circumstance that the subscription list will be closed at nine o'clock, this Saturday evening. The amount promises to be satisfactory.

## ST. PAUL'S CHURCH, HAGERSTON.

THE first stone of this church was laid on the 5th of May, 1859, by the Bishop of London, and the consecration took place on the 31st of January last. The building would have been completed and consecrated before Christmas but for a delay in the works occasioned by the strike. The site was secured by the Metropolis Churches Fund in 1849, but until last year sufficient funds could not be raised to commence the work of building. The plot of ground lies at the intersection of Broke and Marlborough roads, Dalston, on the estate of Sir William Middleton, Bart.

The church, which is built of brick, consists of nave and aisles, a spacious chancel terminating in a polygonal apse, a recess for the organ over the vestry on the south side of the chancel, and a bell-turret at the west end not yet completed. Externally the general face of the building is of Cowley stocks, with horizontal bands of Bath stone and red and black bricks. The jambs and heads of the windows and doorways are of Bath stone, set in a 9-inch reveal, with arched heads of red and black brick. The doorways throughout are square-headed, having stone lintels and relieving arches of red and black brick. It is intended ultimately to decorate the tympanum of each of the three west doorways with an incident from the life of Saint Paul, sculptured in the stone at present left rough for that purpose. Internally the aisles are divided from the nave by cast-iron columns standing on Portland-stone bases, and carrying arched ribs of timber. These bear the plates of the main roof, which is continued down to the external walls at a flatter pitch. Each bay of the aisles has a separate gabled roof intersecting with the main roof. The character of the load from the intermediates will be best understood from the illustration. The ceilings throughout are boarded on the under side of the rafters, and divided into panels by a moulded rib, those in each bay of the aisles following the form of the arch. The gallery trusses are carried on corbels in the wall, and small iron columns standing clear, behind the principal ones: the soffit of the galleries forms a flat boarded and panelled ceiling. A separate staircase is provided for each of the three galleries. The chancel arch is of stone, with a band of red and black bricks, forming one member of the arch mould; it is carried (as are also the principals of the chancel roof) on small shafts of red Mansfield stone, with bases and carved corbels, and capitals of Bath stone, by Mr. Tolmie, of Belvedere-road, Lambeth. The chancel is paved with red and black tiles; within the altar-rail the pavement is of encaustic tiles, presented by Messrs. Minton. The font is the gift of the architect; it is in the form of a spherical bowl encircled by a repoussing, bearing three medallions with symbols of the Trinity. The material is Caen stone, the supporting shaft being of red Mansfield stone. The whole of the sittings, the pulpit, reading-desk, altar-rail, and altar-table, are of deal, lightly stained and varnished. The pulpit and reading-desk have stone bases.

In adopting the peculiar method of construction employed in this church, the architect has been actuated by a conviction that the generally received Medieval type, is *not* (as every modern church ought to be) the building best adapted to the ritual of the Church of England, which seems to require for each individual in a congregation a view and hearing of the officiating minister, as uninterrupted as possible. An attempt has accordingly here been made to produce a building meeting these requirements, without sacrificing ecclesiastical character, or the many associations connected with the division of nave, aisles, and chancel. The church will accommodate nearly 1,100 persons, including children; and there is no sitting in the church, it is stated, from which the preacher cannot be well seen and heard. The building is lighted by three corone and by brackets, under the galleries, by Messrs. Hart, of Wych-street. The corone hang from the pendants of the principals, but are omitted in the illustration, in order to give an uninterrupted view. The whole expense, exclusive of gas, warming, and architect's commission, has been 5,467*l.*, but the fence-wall and the bell-turret yet remain unfinished, and there is at present a deficiency of 700*l.* Mr. Arthur W. Bloufield is the architect. Messrs. Holland & Hannen are the contractors. The church is warmed by air passing over a heated coker, the apparatus being supplied by Mr. S. E. Rossler.



ST. PAUL'S CHURCH, HAGGERSTON.—MR. A. W. BLOMFIELD, ARCHITECT.



## RIFLED CANNON.

THE CANNON MAKERS.

FOR four weeks in succession, each Tuesday night, the Institution of Civil Engineers, Great George-street, Westminster, has been crowded; the lecture-room has been full to overflowing; many members having had to leave the building on each night in consequence of there being no room, the regular seats, the aisles, the doorways, and the back stairs even having been crowded. The paper read was by Mr Longridge, "On the Construction of Artillery and other Vessels to resist great internal Pressure;" but the subjects discussed have been the Armstrong and the Whitworth rifled cannon, actual working samples of these rivals (twelve-pounders) having been placed on the table, open to the inspection of all the persons present. If there was a secret one, there is no such thing in this case now. On one evening Sir William Armstrong explained the mode of manufacture, the make, the method of working, loading, sighting, and firing, in the simplest and clearest possible language. Few men possess the enviable gifts of Sir William Armstrong. With a gentlemanly presence, a musical voice, a fluent delivery, a powerful and cultivated intellect, Sir William Armstrong is a man any nation ought to be proud of; and Lord Derby will have the honour conferred on Sir William long reflected lack on himself and on his government. But to the rifled cannon subject. The gun invented by Sir William Armstrong is in appearance light and even elegant: in use it is indestructible, and in its effects tremendous. A dozen such guns at Sebastopol would have shortened that terrible contest, as every ship and steamer afloat in the harbour must have been sunk within the first week of opening fire, and the most distant buildings would have been rendered untenable. All this, and more, was explained during this interesting lecture. Sir William answered all questions put to him, and gave clearly and fully all explanations required. There was the gun, there was the inventor, with his hand upon it; and there, within arm's length, sat Mr. Whitworth, listening to all that was said, for, against, and in explanation. Sir J. Burgoyne was in the second row of seats, in the front occupied usually by the members of the Council of the Institution; and generals, admirals, and officers of lower grades, with scientific Englishmen, and many foreigners, were also present. George Parker Bidder, the wonderful calculating boy of former years, as president, occupied the chair. Sir William Armstrong explained how his gun was made, the reasons why it was so made, showed its several parts, manipulated the breech, explained the mode of loading, the several parts of solid shot, hollow shot (shell), their mode of bursting, and their effects.

The Armstrong shot is coated with lead, to allow of its passing the rifle grooves; and this, we think, the objectionable feature in this otherwise most admirable cannon. A solid iron shot cannot be turned, or, rather, returned, to its offensive use, unless it happen to fit the bore of any hostile cannon most exactly. Hundreds of tons of round shot, and fragments of shells, lay about in front of Sebastopol, and on the plain of Bismarck and Balacava, perfectly unuseable; but if these had been fired from Sir William Armstrong's rifled cannon, the lead would all have been useable for rifle bullets; and, if ever fired against semi-savage nations, the lead from Sir William's shot will most certainly be so returned to us. This feature of the question may have excited the notice of the Tight Barnacles at the War Department, but it deserves to be considered before the next Caffre or Indian war commences. A leaden jacket, or coating, is necessary to Sir William's plan of rifling, and in this necessity is the weakness of his invention lies.

On the Tuesday night following Sir William Armstrong's exposition, Mr. Whitworth had a full table, and one of his wonderful 12-pounder rifled-guns was on the table before him. Mr. Whitworth has neither the presence, the power, nor the fluency of his rival. Mr. Whitworth said his remarks, but neither fluently nor clearly, and this never tells with an audience. The crowd was, however, all attention and patience, and continued so to the end. The matter was interesting and absorbing, though the manner was quaint. "The gift of the gab" is of great value—well used. Whitworth does not possess it. Sir William Armstrong makes his guns of cast-iron bars and flat rings of wrought-iron twisted and welded together. Whitworth makes his guns out of homogeneous iron or steel,—that is, a run from crucibles into moulds, so that it is a solid, compact, homogeneous mass. Both guns

are breech loaders, both have a direct passage through, from breech to muzzle, and both breeches open and close by means of levers and screws. In the Armstrong gun, the breech piece is small and moveable, and there may be any number ready to replace a lost or damaged one. In the Whitworth gun, the breech piece is heavy, and opens clumsily on a hinge, so as to be sadly in the way during loading, and liable to accident. Injury to the breech would be for the time ruination to the gun. This hinged breech is a weak point: in all besides, the Whitworth gun has a decided advantage. Homogeneous iron is better than welded iron bars, and the even bore and solid shot are far better than the lead-coated shot of Armstrong. Any enemy must possess Whitworth guns of the exact calibre, to return any of his shot, as each solid shot is a power of many tons weight to force one of Armstrong's lead-coated shot through from breech to muzzle; but any child may easily push one of the Whitworth shot through his guns, the fit is so true, even, and easy. The Armstrong gun cannot be used as a muzzle-loader: the Whitworth gun can be so used, if required. The Whitworth material and form of bore and mode of rifling, with the Armstrong breech and mode of sighting, would constitute a perfect weapon in every respect. With such guns Great Britain will fight her next great battles, and we be to whatever may be brought within the range of such terrible weapons:—wrought-iron plates, the thickest and strongest that can be made for any vessel to carry, as plate-mail, will be punched and perforated as if only of the consistency of cork. Shells and hollow shot of the most destructive character will pierce shells and scatter annihilation around, either above or below the water-line. No material will be able to resist the direct action of such engines. A Whitworth ball will pass through 40 feet of sand, and continue in a direct line at any angle through water. A Whitworth rifle bullet has a range of 2,000 yards, and spins on its axis at a rate of 10,000 revolutions per minute. Rope mantlets, sand-bags, or other known means of protection hitherto used, will be of no avail against such a spinning, direct, and insinuating projectile.

Monsieur Raymond may disparage the British rifled cannon as much as pleases himself and his egotistical countrymen. Sir William Armstrong—and we hope we may soon write "*Sir Joseph Whitworth*"—have made guns which require more than assertion to be proved inferior to any of French invention and make. Gunpowder cannot burst either the Armstrong or the Whitworth guns: this is about all which need be said on strength, and as to range and accuracy, these have been proved.

## THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary general meeting of members was held on Monday, 19th inst., at the house in Conduit-street. Mr. Hassey, V.P., presided. After routine.

Mr. Penrose (honorary secretary for foreign correspondence) introduced to the meeting Mr. Kleantes, an Athenian architect, who was, he said, the proprietor of the Parian and Verd Antique marble quarries. Mr. Kleantes wished it to be known that the Italian marbles could be introduced in any quantity, although at some expense, in consequence of the depth of the old workings. There were in the room several specimens of Verd Antique marble, but they were not equal to those of the ancients, although if there were a sufficient demand for the article the very finest specimens could be produced. Some years ago a report had been circulated that the true Verd Antique had been found, and Mr. Burgess had brought home a specimen, which, although good as far as its green colour was concerned, still was not so good as to enable him (Mr. Penrose) to pronounce it to be the veritable marble used by the ancients. The marble of which Mr. Kleantes was the owner could be procured in columns 14, 15, or 16 feet high if necessary. The price would depend very much upon the demand, but Mr. Kleantes was of opinion that it could be produced for 30s. a cubic foot: at all events, he was ready to receive orders at that price.

Mr. C. H. Smith said as to the Parian quarries it might perhaps be interesting to know one difference between Parian and Carrara marble for out-of-door works. The Carrara marble did not stand the weather in this country, and there was scarcely a clureyard in London which did not present examples of it in decay. Mineralogists were of opinion that Parian and Pentelic marble

were of aqueous origin, but the Carrara appeared to have been subjected to great heat, and to have become a metamorphic rock. This was perhaps one reason why it would not bear the weather. An instance of the perishable nature of Carrara marble had come under his own personal notice. Some time during the reign of George the Third a statue of his majesty was put up in a niche in the arcade of the old Royal Exchange. It was taken down to be cleaned thirty years ago: it was conveyed to the premises of Mr. Bubb, the statuary, and then it was found to have a crust over it of rotten surface so extensive that it was impossible to repair it. It remained in his yard for many years. Being anxious to know what had become of it, he questioned Mr. Bubb the last time he met him on the subject. Mr. Bubb said that it had laid in his yard for many years, until a careless carter drove his cart against it and it fell to pieces as if it had been made of sand. Even the far-famed Marble Arch had not escaped the general decay, for on examining it lately he found that it was gradually perishing by the action of the atmosphere. This was not the case with Parian marble, as, with the exception of slight decomposition on the surface, the stone was perfectly sound even in buildings which had been erected 2,000 years ago.

The Chairman then announced that the next meeting would be held on the 23rd of April, on which occasion the president, if sufficiently recovered from his recent accident, would present the gold medal of the Institute, and Mr. Penrose would make some observations upon the designs for the Wellington monument exhibited at Westminster Hall.

Dr. Barlow next read a paper on symbolism in art, with especial reference to Christian art and architecture, with which our readers are being made acquainted.

In the discussion which followed,

Mr. W. White said he was anxious to testify his sense of the value of the subject to which Dr. Barlow had called their attention that evening. In his opinion, the study of Christian symbolism, as a science, was of the utmost importance, for he held that symbolism was as essential to architecture as poetry to literature or music in common life to the well-being and happiness of society. He was aware that all might not take this view of the subject, but it was his impression that symbolism was the very poetry of architecture. If this were so, the first step towards following it out was to obtain such a concise history of it as that which Dr. Barlow had given. He looked upon symbolism, not as a fanciful theory, but as the only means of conveying abstract religious truth in a form comprehensible by man. It seemed to have been universal in all ages and countries, and to be derived from antediluvian sources. He believed that in all symbolism, from the earliest period down to the present time, there were three essentials, namely, the symbolism of the divine essence, the symbolism of ritualism, and the symbolism of teaching, which all nations in all ages had carried out. The first symbolism, described by a triangle, had been so defined in all ages. One remark which had fallen from Dr. Barlow reminded him that there was a tradition in addition to the written word which was forbidden to all but the priests and keepers of the written word. This was, first, a bond of union among Christian churches; and, secondly, it was a means of preventing others from intruding; for if they could not give an explanation of the signs and symbols they would not be admitted to union. The sign of the cross was one of these symbols: it was the sign which our Lord referred to when He spoke of the sign of the Son of Man appearing. He believed that the proportional arrangement of a church,—a porch, a nave, a sanctuary, an altar, or a choir, had an effect upon those who might enter the building, although their attention might never have been called to the symbolism itself. He recommended the study of symbolism as a science, although he would not degrade it by carrying it to a fanciful extent.

Mr. Papworth was inclined to think that the paper read by Dr. Barlow contained a large amount of what they were bound to protest against—namely, an extraordinary quantity of assertion without proof. The early portion of the paper was what they would find repeated by the pseudo-philosophers of an earlier period. He protested against the manner in which an assumption started by one man was taken up by another, while a third declared that it had the general assent of mankind, and a fourth asserted that it had always been so.

Dr. Barlow said that his assertions were based upon the highest authorities, and had no reference

whatever to Mr. Higgins, whose *ipse dixit* he had in no case relied upon. Mr. Papworth said he believed all good buildings depended upon geometrical combinations, but he asked why should the triangle be taken and not the square? He was inclined to think it was the square that ought to be taken. There were various ways by which a bobby could be ridden to death, and this was one.

Mr. Beresford Hope said that symbolism was necessary for originality. In the broad domain of symbolism, the truth, life, and originality of all architecture was to be found, and therefore discussion upon its theory never could be useless, although it might not lead to the point which it was most desirable to obtain.

Mr. Gilbert Scott said he was no symbolist: he thought it desirable not to lay down such strict laws as Mr. White had enforced. Many ancient buildings were found to have been built on the square and others on the triangle: Westminster Abbey and other English cathedrals were specimens of the former.

Mr. G. E. Street said that some years ago, when he worked upon Mr. Scott's plans, he used to prove (not, perhaps, with the knowledge of that gentleman) that they were all based upon a scientific principle of proportion! The most common symbolism was the unconscious expression of some common object. The nave and aisle were the most convenient form that could be built, and he believed that their adoption was altogether incidental.

Mr. Penrose said he had examined both Bruges and Lincoln Cathedrals: the first was founded on the equilateral triangle, and at Lincoln the proportions were determined by squares. The ancients appeared to have been of opinion that all that was required was size and effect, and that proportion or symbolism were but secondary objects.

Mr. Godwin, V.P., moved a vote of thanks to Dr. Barlow. He had brought together a vast amount of information on the subject; and whether they were prepared to admit it all or not, as matter for thought, it entitled him to their thanks.

Mr. White seconded the motion, which was carried by acclamation.

The following gentlemen were, on ballot, elected Fellows of the Institute:—Edward Salomons, Associate, of Manchester; Edward C. Robins, Associate, of 19, Arundel-street; James Murray, of 4, Agar-street, Strand, and Coventry; and George Trefnit, of 5, Bloomsbury-square.

#### THE CASUAL POOR.

FROM time to time in various parts of the metropolis observers are pained with cases of distress, which, if not fortunately attended to and relieved, lead to deaths, from downright want and destitution, which ought not to happen in this the richest capital city in the world. We have before referred to this matter, and mentioned that in ten years, from 1848 to 1857, 3,292 persons perished in the London district from absolute want. It is lamentable that 400 persons on the average died yearly of starvation. Various causes lead to this sad result: one is, an unwillingness on the part of many to make their distress known; but, undoubtedly, a great deal of the mischief is occasioned by the manner in which the poor are relieved by many of the officers of parishes, who, in their zeal to save expense, forget the claims of humanity, and so with little consideration persons in the greatest need, who cannot prove their claim upon a particular parish, are sent hungry away without assistance or relief. In the poorer districts of the metropolis, the inhabitants are so migratory that there are thousands who cannot say to which parish they belong, and are in consequence sent without help from one part of London to another. These cases are frequently reported in the newspapers; but even from these accounts little idea can be formed of the extent to which this evil presses upon a large and struggling class. Bad as this is for those who have for some regular shelter for their heads, it is worse for those without fixed habitation; and it unfortunately happens that many, both male and female, in consequence of illness, the falling of employment, perhaps from improvidence, or the commission of some offence, are prevented from readily getting work. We have met with discharged soldiers, sailors who have lost the outfit which would enable them to go to sea, and many others, who from sheer misfortune are driven to the streets, and exposed to hardships which can scarcely be conceived. These characters, bad and good, are driven by the police: the eyes of other officers are

upon them: they must not beg: their condition soon becomes so bad, that even the cheap lodging-house keepers refuse them admission: hundreds of instances might be given, but two or three may be sufficient to show how the present system works.

"I met a man," says an informant, "so ill in the street, on a wet dreary night, that he seemed scarcely able to wander along. He had been engaged on a railway in France, but had been discharged in consequence of ill health: he was sent to England, and with difficulty reached London, where he had endeavoured, without success, to get into an hospital. He was hopelessly afflicted with consumption; and those in charge of the hospitals to which he applied said that it was their duty only to admit those whom they might hope to cure—that he must apply to the workhouse. This he did, but was like to drop in the street,—having gone from place to place, but only met with refusal." Whatever might have brought this man to the condition he was in, there could be no mistake respecting his illness and destitution. The writer endeavoured to get him a lodging; but, seeing that the man was almost at death's door, he was not taken in. No better success was met with at the workhouse. Then the police were applied to: they could do nothing; and, but for the interest of a friend who was in charge of the Westminster Hospital, where he was admitted late at night, this man might have been left to die in the street.

We will not at present mention the workhouse gate (it is not in good repute), at which we saw a man clinging to the knocker, evidently in great distress and sickness. The circumstances were much the same as in the case above stated. He had slept in a damp bed, which had been the means of almost depriving him of the use of his limbs. He had made application at St. Bartholomew's Hospital, where he was supplied with a bottle of medicine, but he could not be admitted into the house. The man had the medicine in his pocket, but, as he said, what was the use of it when he had no place to rest in? He had made application to the officers of the workhouse, and been denied admission. Servants who have no relations in London, and who have been seized with illness, and have no legal claim on the metropolitan parishes, are often discharged from the hospitals in a weak condition. Some even afflicted with incurable complaints are sent away after the means of medicine have been tried, but without avail: if even able to undertake the duties of the situation they have left, it will be found, in nine cases out of ten, that it has been necessary to employ some one else. Without money, without friends, their slender store of clothes, &c., is soon exhausted; they are unable to pay for their lodging; and, half clad and penniless, they are obliged to take to the street. Such is the history of several of those who may be seen crouching as if to hide from their fellow-creatures, in dusky portions of Farringdon market and elsewhere.

Experience has shown us that the duties of a relieving officer to a poor and populous parish is one of great responsibility, and beset with difficulties. The attempts at imposition are many, but it will be admitted that those who are the most troublesome have been for years accustomed to idleness, and to make the workhouses a home when the weather or other circumstance does not make it agreeable to roam abroad. Most of them have been actually reared in workhouses, and in a great measure, owing to the want of better training and more enlightened management, they have failed to become industrious and useful members of society. We have it, however, on good authority, that more than ninety in the hundred of those who apply for relief are really in circumstances of distress, and deserving of assistance. It unfortunately happens that in the poor districts there is the greatest pressure for help, and the ratepayers are there but ill able to meet the enormous poor-rate which is necessary. Some parish officers are more humane in the relief of applicants than others. Some have casual wards provided for the homeless; others, even in wealthy neighbourhoods, have none: this causes a heavy pressure upon those who are willing to do their duty. This important matter evidently merits the consideration of the congress of delegates from each of the numerous parishes which form this vast population; and in case of this body not making arrangements, the Parliament should interfere.

We ought not in these days to have cases of death from starvation. If those in dire distress have no claim upon a particular parish, there should be some means of assistance obtainable until their claims can be set forth effectually in the right quarter. In order to effect this, we would, as has

been before proposed, have four or more places of refuge in London, presided over by persons of humanity and intelligence, to which persons found in the street in conditions such as have been alluded to, and who have failed to meet with attention from the authorities of the parishes in which they reside, might be directed by the police and others. Here should be provided shelter and food until the cases could be inquired into. Some might be recommended into hospitals; others put into the way of escaping from further evil by helping them to admission into reformatories: others might be cared for until friends at a distance could be communicated with. Servants, when it was found that their character would bear inquiry, might be helped to situations. Much good might be done, and such places of refuge would, to a great extent, prevent those idle persons to whom we have referred from making a trade of the imposition on many parishes. Impositions should be duly punished. Such a public institution as is here hinted at should be supported at the cost of the united parishes. Thus the jealousy and striving would be avoided, the number of deaths from starvation would be materially lessened, and numbers would, by these means, be restored to health, honesty, and usefulness. This is not a thing which ought exactly to be made a matter of money consideration; but, in our opinion, if all the expenses which are incurred by the present system were to be taken into consideration, an annual saving would be found to result.

#### THE STEPHENSON MONUMENT.

MR. LOUGH is making progress with the monument to George Stephenson, intended for Newcastle. Our readers may remember the group that was determined on: Stephenson, in ordinary costume, and wearing his plaid, on a central pedestal, with four figures on sockets at the angles below,—representing the navy, the miner, the smith, and the engineer. This step towards reality is an admirable one. The figures will tell their own story to the multitude, and require no gloss. Two of the figures are now nearly finished. One, the miner, with "the Geordie" in his hand, is in clay; the other, the engineer, is in plaster, ready for casting. Both have fine heads and considerable nobility. The lower limbs of the miner, however, seem to us scarcely long enough or large enough for the colossal body of the figure, and as it is still in clay, we may hope that the excellent sculptor will give this point further consideration.

Mr. Lough has bravely fought his way upwards, and many will be surprised, on visiting the studio, at the large amount of ideal sculpture which has been executed by him. They will see, too, a fine bust of Sir John Lawrence, the hero of India, and one of Robert Stephenson, made since death. Robert Stephenson had the power of attaching others to him to a remarkable extent. He had a heart as well as a head, and while his intellect and knowledge commanded respect and admiration, his fine social qualities made captive the affections. Mr. Lough is amongst his worshippers.

#### MEMS. FROM PARIS.

THE greatest activity reigns in the works of the Zoological Garden of Acclimation of the Bois de Boulogne, which is to be open to the public next spring. The gardens have been designed and laid out; the principal buildings indispensable to an establishment of this nature have been erected; and the interior arrangements of the dwellings for the numerous species of animals belonging to the society are to be commenced forthwith. Every day their collection receives augmentations.

A gold medal of the value of 400*fr.* has been offered by the above society in its annual meeting of the 10th ult., to be presented on the same day in 1862 to the American or African traveller who will have rendered the greatest service to the institution by his discoveries, especially as regards human food. This prize has been given to the society by Madame Guérineau in the name of her late brother, Pierre Delhaude, travelling naturalist of the Museum of Natural History in Paris, one of the principal explorers of Brazil, and also of South Africa, whose death took place on his return from the Cape, which he left in a complete state of prostration from fatigue and illness.

The Mazarin Gallery of the Imperial Library of Paris has been undergoing some improvements. Since a few days has in part the upper portion of the small staircase leading to the manuscript-room has been suppressed, and the remainder still serves for the department of maps and geographical collections at the entrance. The Mazarin

Gallery (communicating now directly with the manuscript study-room) is open every day to the public, who can admire the vast proportions, the noble architecture, the painted ceilings by Bonanelli, and form an idea of what this grand saloon must have been in all its former splendour, adorned with paintings, sculptures, &c. the property of Cardinal Mazarin. In the first hall, in a glass case, were several precious manuscripts remarkable for their binding in sculptured ivory and tortoise shell and silver, with figures in relief, and surrounded with stones formerly of great value. In the second room figured the important collections of Colbert, Mesmes, and the Freres Dapny, &c. The third chamber contained Chinese books. The origin of this collection was the sending of forty-nine Chinese books addressed to Louis XIV. in 1697 by the Chinese emperor, on the demand of the Jesuits. In the library of Cardinal Mazarin there were only four Chinese books.

EXETER BRANCH BANK COMPETITION.

THE Directors of the Devon and Cornwall Banking Company, having determined in December last to erect a new Bank House in the Cathedral close, Exeter, proposed to the following architects to send in designs in competition for the same:—Mr. E. C. Robins, London; Mr. Walter Dament, Plymouth; Mr. John Hayward, Exeter; Messrs. Hine & Godwin, Plymouth; Mr. Edward Appleton, Torquay; Mr. G. Melnionell, London; and Mr. W. H. Reid, Plymouth.

The plans were required by the 1st of February. There was no limitation as to cost. The premiums offered (quite inadequate to the occasion) were respectively, ten guineas and five guineas.

On receipt of the drawings, three designs were first selected from the nine submitted, viz.:—"M. I. B. A.," to cost 5,070l.; "Avisé le Fin," to cost 4,200l.; and "Use," to cost 4,000l.

The design to be followed in the execution of the work was next to be determined on. The voting-papers being opened, it was found that an equal number of votes were in favour of the first-mentioned two designs; but eventually it was decided that the design marked "Avisé le Fin," by Messrs. Kennedy and Rogers, should be carried out; that the first premium should be awarded to the design marked "M. I. B. A.," by Edward C. Robins, of London, and the second premium to that marked "Use," by Walter Dament, of Plymouth. We give these particulars as they have reached us, but do not understand the transaction. If Mr. Robins was entitled to the first premium, why is he not employed?

TEMPERATURE OF EUROPE.

THE following was the temperature (Fahrenheit) at the hour of 8 a.m., on the 18th inst., in the principal towns of Europe:—

1 Dunkirk, 46° 4'; Mèzières, 44° 1'; Strasburg, 40° 9'; Paris, 46° 4'; Havre, 45° 6'; Brest, 50° 4'; Amoges, 45° 1'; Montauban, 47° 8'; Bayonne, 41° 8'; Avignon, 45° 6'; Lyons, 43° 2'; Besancon, 41° 8'; Brussels, 47° 5'; St. Petersburg, 6° 8'; Copenhagen, 35° 2'; Lisbon, 55° 3'; Rome, 44° 6'; Stockholm, 33°; Madrid, 39°.

From this it appears that the temperature of Rome was inferior to that of the towns in France, except four, viz., Strasburg, Mèzières, Lyons, and Besancon.

On the 17th, we had at Turin 44° 6'; Haplands, 11° 48'.

On the 16th, St. Fernando, 46° 6'; Florence, 40° 9'; Moscow, 11° 7'; Kief, 14° 36'; Warsaw, 10° 0'; Helsingfort, 15° 8'.

CITY OF ELY WATERWORKS.

WE have received several replies to the statement of "Viator" in our last, all agreeing that the public works at Ely, whatever the shortcoming in certain respects, have conferred a great blessing on that city. One writer, "X. Y. Z.," with reference to obtaining water from a gathering pond, shows that the reservoir would have cost an immense sum. As to laying a main along the way to the waterworks at Cambridge, he contends "the distance from Ely to the Cambridge waterworks is eighteen miles, and pipes eighteen feet long, capable of supplying Ely with 330,000 gallons per day, would cost at the very least 1,000l., and we would have to pay the railway company and others something like 100l. per mile to lay the pipes on their land, which would be an additional 1,800l., and the pipes could be liable to pay parochial rates in Cambridge to the tune of 500l. a year, and the Cambridge waterworks company charge 1s. 6d. per

1,000 gallons for their water, which would amount to 9,033l. a year. . . . Ely can be supplied with filtered water from the river at about 13d. per 752l. a year."

A second writer says, as to the assertion that the old engine and pumps are badly contrived, "If so, the new engine and pumps must be worse, for it costs 65l. per cent. more money to pump the same quantity of water with the new engine and pumps than with the old engine and pumps. The duties of the two engines stand as follows:—

To pump one million gallons 140 feet high the old engine consumes—	
Four tons of coal, at 16s. per ton	£3 4 0
Oil, tallow, and packing	0 12 0
Wages	0 9 0

Total cost of pumping one million gallons £1 5 0 which gives 1d. per 1,000 gallons pumped 140 feet high (not a very high price).

The new engine requires—	
Five and a half tons of coal at 16s.	£8 8 0
Oil, tallow, and packing	1 10 0
Wages	1 2 0

Total cost of pumping one million of gallons 140 feet high £7 0 0 which is 65 per cent. more money than the old engine requires.

The old engine has been at constant work for ten years (reckoning ten hours' work equal to one day) without anything materially going wrong with it. The new engine has been at work only a few weeks and several of the cogs have broken, and all the cogs are worn through one-third already.—DAX.

THE ARCHITECT OF CLOTHWORKERS' HALL.

AT the banquet given on Tuesday evening last to inaugurate the new Hall of the Clothworkers' in Mincing-lane (illustrations of which have appeared in our pages), the Prince Consort was present, and closed the proceedings by proposing as a toast, "The architect of the new building." Sensibly drawing the difference between the two functions of an architect, that of man of business and artist, his Royal Highness said, it was evident, at any rate, in the latter capacity, Mr. Angell had happily discharged his duty. Mr. Angell briefly thanked, and was loudly and deservedly cheered.

THE SERPENTINE.

WE have every reason to believe that by the time of our issue the Parliamentary Committee will have put an end to the unwise filtering scheme,—though not soon enough to save much money, it is to be feared. We had drawn out some facts touching the sewers and springs in connection with the Serpentine, but it is unnecessary now to print them. A recommendation to be made to the Metropolitan Board of Works on this, Friday:—

"That about 1,000 feet of brick sewer, 9 feet in diameter, and 4,700 feet, 8 feet 6 inches in diameter, be constructed across Kensington Gardens and Hyde Park, at an estimated cost of 23,000l., the Commissioners of Her Majesty's Works, &c., to contribute 2,000l., provided the work be carried out in the manner proposed, and the Legislature sanction the estimate to be submitted to them,—has in view the future purity of the water.

CHURCH BUILDING NEWS.

Lincoln.—The west front of the cathedral, according to the local *Chronicle*, is about to be thoroughly restored, the Dean and Chapter having given directions to that effect. The scaffolding has been already erected, and the work will be immediately proceeded with.

Fordham (Cambridgeshire).—The restoration of Fordham Church has been commenced: the lead from the roofs has been raised, and as much of the former timber and masonry will be preserved and shown as is practicable. Mr. G. E. Pritchett, of London, is the architect; and Mr. Martin, the builder. A bequest of 600l. started the restoration.

Southampton.—The new Unitarian "Church of the Saviour," erected in Bellevue-park, has been opened for Divine worship. The edifice occupies a conspicuous position at the junction of the Above-bar, Bellevue, and Winchester roads. The interior of the church is 70 feet long by 32 feet wide: it is open-timber roofed, and has vestries and offices on the south side. There is an arrangement in the front of the pulpit for the deaf: in addition to the appliances for the conduction of sound, the book-board itself is constructed so as

to collect and convey the sound into the sound chamber; and the pulpit canopy or sounding-board is contrived with a special view to intensify the power of the preacher's voice. The seats are arranged for the present to accommodate 300 worshippers; but the whole church can at any time be thrown open and seat 600. The warming is on a double system, and has been carried out by Messrs. Lunkester. All the other contracts have been taken by Mr. G. W. Chinnock. The style adopted is Early English. The architect is Mr. P. Brannon. The carvings have mostly been executed in stone by Mr. R. C. Baker, assisted by Messrs. Grashy and Abbey; and in wood by the Messrs. Elmes, and are all designed with a special significance in relation to the great truths of the Christian religion. The symbolic expression is chiefly derived from the natural qualities of plants and animals. On the east the references are to the Redeemer as the Sun of Righteousness arising with healing on His wings, and the bright and morning star. On the north the trials and temptations of life are symbolised with the effects of the experience of the cross in the heart of the believer. On the west are references to death and the promises of a future life; and on the south the triumphs of the Church and its extension over the world. In the tympanum over the west door is an alto-relief of the sermon on the mount; and in the interior are various symbolic emblems.

Gloucester.—The Roman Catholic Church in Northgate-street, having been so far completed as to permit of the performance of Divine service, has been publicly opened. The edifice was designed by Mr. Gilbert Blount, of London, architect, and is in the Gothic style of the second period of the pointed arch. The parts at present completed are the chancel, lady chapel, sacristy, and about two-thirds of the nave and aisles; and there are still to be added, before the design will be complete, two bays of the nave and aisles, and tower with spire, and a porch. The total internal length will then be 101 feet; width, 39 feet 6 inches; and height, 41 feet. The frontal of the altar is divided into three panels, the centre containing a representation of the Crucifixion; and on either side are representations of the sacrifices of Aaron and Abraham's. The artist is Mr. Farmer, of London.

Bristol.—The intended alterations in the cathedral will be commenced on the 16th of April. —The whole of the light tracery work which enriched the summit of St. Stephen's tower has been removed, in furtherance of the restoration: its removal, says the *Mirror*, has greatly changed the appearance of the structure. The restoration of the south side of St. Maryleport Church is progressing, and it is to be hoped that some means will be devised for lowering the churchyard wall, so as to throw the edifice open to view.

Sunderland.—The foundation stone of a new Roman Catholic chapel was laid here on St. Patrick's Day. The site is in Church-street, and the edifice will be dedicated to "our Lady and St. Patrick." It is to be erected from designs furnished by Mr. James Gilles Brown, of this town, architect. The building will run north and south with Church-street, covering an area of upwards of 650 square yards. The elevation next the street will be the only ornamental one, built of stone, snick-pointed, and with chiselled dressings. The style adopted is Early English. An octagonal sacristy, lighted from the roof, enclosed in a pointed arch, is designed at the south end, together with vestries and other adjuncts. At the north end, enclosed in another arch, spanning the whole width, will be placed an end-gallery, to seat 600. The benches on the ground floor will be arranged to seat 600. The roof will be open, and stained of an oak colour.

PROVINCIAL NEWS.

Newark (Notts).—The execution of the interior fittings and finishings, comprised in the second contract, for Kellam Hall, the new residence erecting for Mr. Manners Sutton, from the designs of Mr. G. G. Scott, has been entrusted to Messrs. Ruddle, of Peterborough.

Sutton.—The foundation-stone of new National schools has been laid in this village. The building contains two large school-rooms, class-room, master's residence, and offices, &c. It is of Gothic design. Mr. Robert Hutchinson, of Huntingdon, is the architect, under whose superintendance the works are being carried out by Mr. G. Bunting, of Llanystanton.

Liverpool.—The project for building a new Exchange News-room goes on with promising activity, according to the *Courier*, and the support it has met with is evidenced by the fact that upwards of 200,000l. have already been subscribed to

the capital of the proprietary. The company is incorporated by Act of Parliament, and will have a total capital of 450,000. The present Exchange-buildings and the Sessions-house will be purchased, and materially improved and beautified; while an Exchange News-room will be erected on the site of the Sessions-house and the intervening street, which will be more than double the area of the present news-room, and will contain four times the cubic capacity.

#### LIVERPOOL ARCHITECTURAL SOCIETY. THE NEW PUBLIC-OFFICES.

At the fortnightly meeting, on 21st inst., Mr. Barry presiding, Mr. L. Hornblower exhibited and proceeded to explain the plans prepared by him for the Corporation Public-offices. He said the building was in the French-Italian style, with a granitic rusticated basement; in fact, he had tried as much as possible to retain the appearance of the old Town-hall in the centre of the building. It had ground-floor windows, carved and moulded dressings, and keystones, surmounted by Corinthian coupled columns detached, carrying a Corinthian entablature with balustrade and dormer lights. In the centre was carried up another series of columns carrying an entablature and square dome, with ornamental and enriched crest. The front was enriched with panels charged with carving, showing the shields of the various mayors of the town of Liverpool. The plan of the building was a parallelogram of 225 feet by 175. In the centre of the building there was the council-chamber, 80 feet by 40, and 40 feet high, with an entrance from it to the mayor's room, and five committee-rooms, 38 feet by 21 feet 6 inches, and 32 feet high. Above had a space of 800 feet, and had arranged the rooms 22 feet high and 22 feet wide, as a picture-gallery (in the centre of the town), with lights suitable for pictures. The cost of the entire building was estimated at 80,000. Mr. Hayes, after a few general observations, asked why the borough engineer should be overloaded with duties of this sort, when there were men in the profession, living by that profession, quite able to stand on the platform of the borough engineer upon an architectural matter? He was of opinion that the designs for the public offices ought to have been put out to general competition, or at least a competition limited to the profession in Liverpool. He moved, "That a committee be appointed by the society to memorialize the Town Council at once on the point that, if public offices are to be built, the designs should be thrown open to general or private competition." This, with the understanding that the council would prepare a resolution to be laid before them at the next meeting, was carried unanimously. The paper for the evening was on "Measurement and Quantities."

#### MODERN CONSTRUCTIONS.

It surely is not necessary, where strength is required, to have ugliness as a co-partner.

What are we to say of the iron railway bridges that positively disgrace and disfigure the outskirts of London in every direction? Surely no scientific man will tell me that in order to make a bridge sufficiently strong to carry a railway train, or two together, if necessary, over a span of some 40 feet, it is necessary to have a heavy, monumental, dead weight of dismal-looking iron, with apparently a sufficient quantity of metal to make a gun-boat or floating battery impregnable. I say "apparently," to give the benefit of the doubt to all who may have had the misfortune to be in any way concerned or responsible for the erection of such unsightly structures, because although I feel quite confident that they contain far more metal than was necessary, still it is also a great fault to have the appearance of being too heavy, even if it can be proved that a building is sufficiently light.

What should we say to a tower or steeple that looked top-heavy, although there might not be the least fear of its falling down?

We often rail at those who went before us for the enormous excess of material used in building, and we boast that, enlightened by the aid of science, we can calculate pretty nearly the quantity of a given material which it is necessary to employ to do any particular duty. This is true; but how have we availed ourselves of it in the cases I am alluding to? Be that as it may, I cannot help saying that anything more frightfully ugly than these bridges I have never seen.

In a recent trip which I took to London, I was greatly horrified by many *disimprovements* which our metropolis has undergone during the last ten years, so I resolved to write to you on the

subject, taking my text from the changes that had taken place in the town, just as Shakespeare did, in the country: find "tongues in trees; books in the running brooks; sermons in stones; and good in everything."

I had lately seen the Sitter Bridge, which I gave you a description of some years ago. It is a high level bridge near St. Gall, in Switzerland. It is a most beautiful thing—light, airy, and fantastic, but, nevertheless, strong and substantial. It beautifies the beautiful scenery round about it. There are various other bridges of the same kind in Friburg, in Savoy, in Italy, and in France. We have some fine bridges ourselves. The Menai-bridge, built by Telford, is light and elegant: Southwark-bridge deserves to be praised for the taste of its design; and Canova said that Waterloo-bridge was a most perfect work. Why, then, should we be hemmed in by such wretched rumparts of cast-iron, designed in worse taste than the most monstrous Egyptian mummy-houses?

Again, our constructions in iron and glass are not good.

I am not going to make a sweeping objection to such buildings: on the contrary, I think them a very suitable style of building for certain purposes; and you may remember I once proposed to have our flagways covered in with glass roofs supported upon iron columns, so as to form covered ways on each side of the streets, thus to shelter the passengers from rain and snow in winter, and, by covering the glass with brown holland in the summer, to form continuous porticos as a protection against the sun. What I object to in what has been done is the complete absence of all taste.

I see now that there is to be a Great Northern Palace, or People's Palace, and I hope to goodness that this time we may have something pleasant to look at. All materials may be lawfully used. The world is not to be restricted for ever to stone and mortar, nor to the "original orders" of the ancients. Glass and iron may be legitimately used occasionally, and can be made as ornamental as they are useful: *but let them be put together with taste or not at all.*

I see that the view of St. Paul's Cathedral from Cannon-street is being shut out by a horrible pile of buildings erected to economize the value of a triangle of ground: could no body, or guild, or corporation, in wealthy London, be found to indemnify the proprietors, and save the view *pro bono publico*?

Really, when we look at Paris, and many other Continental towns, where so much more taste is exhibited, we are tempted to ask, what is the value of our boasted wealth if we do not know how to employ it?

The miser that locks up his gold, and lengthens out his wretched life by a bare subsistence, neglecting to provide proper nourishment and necessary raiment out of his hoarded and useless treasure, is not more to be pitied than those who for want of taste expend large sums of money for themselves and others, in perpetuating their own incapacity in the shape of huge monuments, devoid of æsthetic beauty, elegant proportions, or correct style. To such an architect one cannot help saying again, and again,—

"Lie heavy on him Earth, for he  
Laid many a heavy load on thee."

It is good there is a journal like yours by way of a "safety-valve," or I do not know what I should do. WM. H. VILLIERS SANKEY.

#### THE CONDITION OF ARCHITECTURAL CARVING.

A CORRESPONDENT, who writes from the cathedral works at Hereford, has addressed some observations to us on the circumstances under which much of our carving is done (a subject before now referred to by us) and the results that follow.

"The intolerant usages of barefaced competition," he writes, "are carried to fearful excess, and are the very rock on which art in general is foundering. Architects oftentimes forget that the solidity and beauty of their buildings are the very basis of their reputation: they make a design for this or that: it is contracted for generally; and the contractor, a man of business, not often knowing or little caring how the decorations should be done, refers the carving to him that will do it cheapest. It is proceeded with, the price scarce permitting time for thought;—the architect and the carver, perhaps, never seeing each other during the progress of the work. Thus the original design, if any, is entirely lost sight of. The carver is poorly compensated, the architect when he has seen the work is chagrined, and the public are disappointed of good work.

Should Englishmen, in their pride of rivalry with other nations, allow the boasted arts of their forefathers to dwindle into insignificance,—should the glorious examples of the Greeks, the Romans, the Mediaevalists, be allowed to go for nothing, while the pockets of contractors are being filled with the profits of the public loss, and the deserving artist becomes the tool of ignorance?

We earnestly appeal to architects to assist us in rescuing genius from the fetters of ignorance and folly, and to have their carving better done and by competent men.

Men of little skill suit the builder's ideas best, and find employment, while clever men are half their time idle: the consequence of the system is, the public become so accustomed to indifferent work, that they do not like to pay more for better. We have those whose souls are wrapt in the beautiful studying old examples, and searching among hedges and gardens for the truth of nature. But until the hand of liberality is stretched forth to welcome them, and until architects hold more approximate conversations with carvers for the interpretation of ideas, and the baneful custom of so much per cubic is entirely abandoned, we shall have no improvement in our works. C. J. HERLEY."

#### THE STONE OF THE NEW HOUSES OF PARLIAMENT.

SIR,—I cannot permit the remarks of Mr. C. H. Smith, in your journal of the 17th instant, with reference to the decay of the stone used in the erection of the New Houses of Parliament, to pass unnoticed, lest it might be inferred that his charge of neglect, in the selection of the stone in the quarries, was justified by my silence on the subject.

Mr. Smith is pleased to justify his selection of the Auston stone, as the stone of all others best calculated to withstand the effects of the London atmosphere, because it has resisted for some centuries the atmosphere of Yorkshire, its natural element, in several of the old churches in the neighbourhood of the quarries; and, consequently, it would have stood equally well in London, had greater care and supervision been used in its selection.

If that be so, and if this especial supervision be considered necessary, how comes it that Mr. C. H. Smith and the commissioners did not recommend, at the onset, that a practical chemist should be resident at the quarries to determine which beds of the stone would resist the London atmosphere, and which would not? For I deny that any practical mason, even Mr. Smith himself, had been the party selected for the purpose, could have undertaken to decide this point.

For myself I have no hesitation in saying, that the greatest care and anxiety were evinced by all concerned in the quarry, that no stone of an inferior quality should be sent to London. My own character and reputation, and that of my late partner, as builders, were at stake; and it is not likely, after an experience of some thirty years, that we should be disposed to jeopardize them in so important a building as the New Houses of Parliament.

It is a satisfaction, however, to know that during a period of upwards of fourteen years, during which I had the honour to be concerned in these works, I am not aware that Sir Charles Barry, or his numerous assistants, had occasion to reject any of the stone as inferior or unfit for the work. To all outward appearance the stone which has failed was, before being fixed in the building, as sound and as suitable as that which remains sound; and up to the period when I ceased to be concerned for the Government, about seven years since, the only stone which had showed symptoms of decay was that which had been used in the under surfaces of string courses and cornices, while that which had been thoroughly exposed to wind and weather, particularly the plain surface, was perfectly sound.

I may state also, that the stone supplied for the Museum of Economic Geology, and the Amicable Assurance Office, to which Mr. Smith refers with some exultation, came from the same quarry as the Houses of Parliament stone, and without any greater care, or particularity of selection; and the stone supplied to the buildings in Lincoln's-inn, which it seems has suffered most, was expressly selected by a practical mason, sent from London by the authorities who had charge of those buildings.

In conclusion permit me to say, that I think it would have been more becoming in Mr. C. H. Smith, had he adopted the reasoning of Professor Ansted, who says, truly,—"So long as these stones

were crystallized, they were the best stones that could be taken, and the specimens examined in the churches in the neighbourhood of the quarry selected went to prove this; but, unfortunately, the quarry from which the churches had been taken was not found to be in such a state as to supply so large a quantity as was required for the Houses of Parliament, and they were obliged to go to another quarry in the same neighbourhood, which was not of the same quality of stone as that which had been experimented upon by the commissioners, and no doubt this was the correct history of the matter,"—instead of endeavouring to shift the responsibility from his own shoulders to those of the quarrymen and contractors, who know well, and as everybody else knows at all conversant with building stone, how extremely difficult it is, if not impossible, in this country, to discover any stone which will, under all circumstances, resist the effects of time and atmospheric influence.

Palace Gardens.

T. GRISSELL.

#### PATENTS CONNECTED WITH BUILDING.\*

**LOCKS AND KEYS.**—*R. A. Brooman*, Fleet-street, London. A communication. Dated August 17, 1859.—This invention cannot be described without reference to the drawings.

**BRICKS, TILES, &c.**—*H. Wilson*, Glasgow. Dated August 18, 1859.—This invention relates to the manufacture or production of bricks, tiles, and other articles of earthenware, according to a novel system or principle as regards the primary preparation and subsequent treatment of the clay used in the manufacture, and to the arrangement and construction of the preparing and moulding machinery used in the actual preparing and moulding or shaping processes. According to this system the clay-pit, or field, whence the raw material is to be obtained, is covered over with a temporary roof or house, so as to defend it from the weather. The top or useless crust of the clay stratum being removed, the clay itself is dug up in blocks, and turned over to allow it to dry, the mass being merely roughly disintegrated. In this condition the clay is allowed to remain until it is wanted, or is ready for use, being kept free from the action of rain and frost. And to improve this preparatory treatment hot-air flues or pipes are passed through the clay-house, such flues or pipes being in communication with the waste beat discharge-flues of neighbouring brick-kilns or furnaces, or other sources of heat. By adopting this system of primary preparation, bricks are made in the way described in the patent both in winter and summer.

#### Books Received.

*Memoirs of Early Italian Painters, and of the Progress of Painting in Italy.* By Mrs. JAMESON. A new edition. London: John Murray. 1859.

The lamented death of Mrs. Jameson, to whom Art and Social Science owe much, chides us for delaying notice of this much enlarged edition of her "Memoirs of Italian Painters," first issued about fourteen years ago. It commences with Cimabue, who died about 1302, and runs on to Paul Veronese, who died in 1588, and Bassano, who lived till 1592. Mrs. Jameson in her introduction properly says, that the first question on looking at a picture should be—What does it mean? What is it about? We should first endeavour to understand the work, and have delight in it for its own sake. When this is done we may inquire the name of the painter, the school of art to which he belonged, and so derive the most various delight from the associations connected with this extended knowledge. To enlarge this sphere of rational pleasure these memoirs were projected, and the task has been carried out with elegance and taste. The story deals with great names, a Leonardo, a Michelangelo, a Titian, a Corregio, and greater than all, a Raffaele, who, as "Pamela"—Richardson says, "was one of the politest, best-natured gentlemen that ever was, and beloved and assisted by the greatest wits and the greatest men then in Rome." Of Leonardo, Mrs. Jameson writes,—

"Leonardo da Vinci seems to present in his own person a résumé of all the characteristics of the age in which he lived. He was the miracle of that age of miracles. Ardent and versatile as youth, patient and persevering as age; most profound and original thinker; the greatest mathematician and most ingenious mechanic of his time; architect, chemist, engineer, musician, poet, painter. We are not only astounded by the variety of his natural gifts and acquired knowledge, but by the practical direction of his amazing powers. The extracts which have been pub-

lished from MSS. now existing, in his own handwriting, show him to have anticipated, by the force of his own intellect, some of the greatest discoveries made since his time."

When Raffaele died at the age of thirty-seven, he left behind him 287 pictures, 576 drawings, and a fame that has filled the universe. Of this great and harmonious genius,—

"His heavenly face, the mirror of his mind;  
His mind, a temple for all lovely things  
To flock to, and inhabit."

Mrs. Jameson is never tired of talking; nor can she find any language too strong to express her admiration.

The book is intended for young travellers, young students in art, and young people generally, and will be found delightful by all. It contains numerous illustrations, but some of them are not worthy of the work. Looking at the first impression, from a metal plate, the Pax of Maso Finiguerra, 1452, of which a copy is given in the Memoirs, it may be asked: What real advance have we made in the art of engraving?

#### VARIORUM.

"STEAM Boiler Explosions," by Zerah Colburn, of New York (Weale, 59, High Holborn), is an extension into the form of a thickish pamphlet of a series of leading articles in the *Engineer* journal. "All our knowledge of boiler explosions goes to show," remarks Mr. Colburn at the close of his pamphlet, "that however possible it may be to accumulate an excessive pressure within the boiler, the actual explosion results, in the majority of cases, from some defect, either original or produced, and either visible or concealed, in the materials, workmanship, or construction of the boiler;" and "public safety," as he observes, "requires the frequent and systematic examination of all boilers, so that, as under the system of inspection which is in operation with such excellent results at Manchester and Huddersfield, defects may be discovered and remedied, in most cases before actual danger has been incurred."

On the subject of Metropolitan Tolls, a "Memorial presented to the Right Hon. Sir George Cornewall Lewis," the Home Secretary, by 107 public companies, merchants, tradesmen, and other metropolitan residents, has been printed for the Toll Reform Association, 19, Strand. The Home Secretary, we are glad to observe, has promised to bring in a bill to abate the nuisance of toll-gates and side bars, by which the metropolis is hemmed in, and its inhabitants made to "stand and deliver," on all sides. It is so long since the Government promised to do something in this matter, however, that we should like to see the "Act" which is to put an end to the evil before we believe in its advent. The threatened visit from "Rebecca" may be requisite to jog them on to act in earnest in the matter.—

"Beeton's Book of Household Management, edited by Mrs. Isabella Beeton" (Beeton, Bonverie-street), appears to be an excellent compendium for the instruction and guidance of the young housewife: although a considerable portion, doubtless, is compilation, the editor must be possessed of good practical ability. The work is nicely got up, with many good little cuts, to illustrate the various subjects treated of. It will comprise from fifteen to eighteen monthly parts, at 3d. each.—Beeton's "Dictionary of Universal Information" (Beeton, Bonverie-street) has reached about the close of letter F. So far as regards names of persons and places chiefly, this work contains a good deal of condensed and useful information; but those who expect "universal information" from it, as its progress more clearly reveals, will be sadly disappointed: its leading title is a decidedly misleading one, which the underlying acknowledgment that geography, biography, mythology, and so on, comprise what it is made up of, certainly does not justify.—The "Boy's Own Magazine" (Beeton, Bonverie-street), Nos. 1 and 2 of vol. vi., is an attractive-looking little twopenny magazine of instruction and entertainment, which seems to be very well adapted to please the boys.

#### Miscellaneous.

**CAMBRIDGE ARCHITECTURAL SOCIETY.**—On Thursday evening, March 22nd, the rev. the president in the chair, Rev. H. R. Lunt, Trinity College, made some remarks concerning the Congress which it is proposed to hold in Cambridge at the close of the Easter term. Mr. J. W. Clark then read a paper upon "The Roman Catacombs." Illustrations were shown of the curious chapels found in them; but the description of the decoration and colouring of these was left for a future lecture.

**ASPHALTE ROOFING.**—At the last quarter-sessions for Gloucestershire, the subject of the asphalt roof of Cirencester armory caused some discussion. It appears that the roof was constructed of asphalt or "mineral lava," at a cost of about 300*l.*; but, having been a constant source of trouble and expense, the firm by whom it was laid was consulted as to its renewal, and their estimate of the expense was about 200*l.*, for which sum they guaranteed to keep it in repair for four years. The chairman said asphalt was used against his wish, as there was great difficulty in making it act satisfactorily, unless the roof overhung the side walls of the building, owing to the asphalt shrinking at its junction with the walls. The subject was referred to the police committee.

**ARBITRATION.**—**CUTHBERT v. ATKINSON.**—This action, the *Northern Counties Advertiser* says, which has long been pending, and created a considerable degree of interest, has been settled by arbitration. The dispute arose as to the right of the defendant building on the party-wall and on the ground behind his house, situated in the village of Tynemouth, and adjoining that of the plaintiff. The arbitrators were Mr. George Rippon, J.P., of North Shields, on behalf of the plaintiff, and Mr. J. E. Watson, architect, Newcastle, on behalf of the defendant, the third arbitrator chosen by them being Mr. Green, architect, Newcastle. After examining a number of witnesses on both sides the award has been made in favour of the defendant, the plaintiff to pay all costs, both of the arbitration and the action.

**WORKS AND PUBLIC BUILDINGS.**—The accounts of the receipt and expenditure of the Commissioners of Works and Public Buildings for the year ended March 31, 1859, have been published. The receipts for the year were 1,168,964*l.* 17*s.* 6*d.* and the expenditure 639,662*l.* 19*s.* 6*d.*, leaving a net balance of 529,301*l.* 17*s.* 6*d.* Of the money expended, 47,298*l.* 19*s.* 11*d.* was paid for the maintenance and repairs of royal palaces; 100,131*l.* 9*s.* 5*d.* for public buildings, which includes such items as 9,210*l.* 1*s.* 6*d.* for gas, oil, soap, candles, and other house articles, and 9,436*l.* 16*s.* 2*d.* for coals and firewood. The royal parks and gardens absorbed 90,031*l.* 11*s.* 10*d.*, and the new Houses of Parliament, 87,210*l.* 10*s.* 9*d.*, of which latter sum 5,315*l.* 3*s.* 11*d.* was for warming, ventilating, and lighting; 6,673*l.* 13*s.* 11*d.* for gas, oil, lamps, and fuel; 8,758*l.* 11*s.* 4*d.* for supply and repair of furniture, fittings, &c.; 2,315*l.* 12*s.* 10*d.* for commission to Sir C. Barry, and 2,257*l.* 6*s.* 8*d.* for payment on account of the great bell and four quarter-bells for the clock-tower. The new building works, fittings, &c., of the British Museum cost 32,924*l.* 8*s.* 4*d.*, of which sum 9,446*l.* 0*s.* 11*d.* represents the amount required for the new reading-room and library. Last, but not least, come the expenses of the Office of Works and Public Buildings itself, including salaries, &c., amounting to 26,666*l.* 12*s.* 4*d.* The above expenses, with other smaller sums too numerous to mention, make up a total of 639,662*l.* 19*s.* 6*d.*

**A BATH AMATEUR.**—Mr. Empson, of Bath, writing of the death of his townsman, Dr. Richard Taylor, in his ninetieth year, says:—His father, John Taylor, esq., was one of the best amateur artists in the kingdom. His house, in the Circus, was very popular, from the number of works of art, which the proprietor's taste had rendered especially attractive by their elegant arrangement. The house was freely shown to strangers visiting Bath, on condition, however, that no money should be given to the servants: if this rule were ever violated, the privilege hitherto granted was to cease. A member of the royal family, during the time when Queen Charlotte lodged in Sydney-place, gave a guinea to the butler. This the master heard of, and put his orders into force so stringently, that from that time none but personal friends saw the gallery. Mr. Taylor was a very intimate friend of Gainsborough, and once, for a considerable wager, painted a picture in competition with that great artist. The judges were selected from amateurs and professional artists; the subject, a composition with landscape and architecture. The committee decided that the foreground of Mr. Taylor's picture was the better, and that the background of Gainsborough's painting claimed preference. So the result was a drawn wager. We know not what has become of Gainsborough's picture; that of his rival is bequeathed, we understand, by Dr. Richard Taylor, to her Majesty. Some of Mr. Taylor's subjects have been admirably engraved by Lornipine, from pictures now at Windsor Castle, presented to King George III., by Mr. Taylor, on whom his Majesty wished to confer the honour of knighthood.

\* Selected from the *Engineer's* lists.

**OPERATIVE BUILDERS.**—The operative builders of the Wigan district have addressed their masters, requesting an advance of wages of 6d. per day, which they allege is necessary to place them on an equal footing with the workmen of other towns. They ask that it may be granted them from the 2nd of April next.

**FALL OF A RAILWAY ARCH.**—On Saturday, about one o'clock, one of the newly-formed arches for the Exeter and Yeovil line of railway, in the York-road, Lanneth, fell in with a tremendous crash. The laborers, about 200 in number, were at dinner at the time, and this fortunately their lives were saved. The recent damp weather was the supposed cause of the accident.

**ARCHITECTURAL DISCOVERIES AT WARRINGTON PARISH CHURCH.**—The work of restoration has gone on rapidly. A few days since, on sinking the floor of the nave for the introduction of the apparatus for heating the church, four very interesting stone capitals of pillars were discovered at the depth of 2 feet from the surface, and along with them a grotesque stone corbel-head. These remains are said to be of the date of the middle of the twelfth century.

**CHURCH-NEWS FROM INDIA.**—At Hosangabad, the small civil and military station at the western frontier of the Sogor and Nerubudda territories, a church is now to be built, by private subscription. A considerable sum has already been collected for the purpose, and a design, not after the Indian order of architecture, has been furnished by Mr. Whittaker, one of the contractors for the new railway. For the Memorial Church, which is to be built at Cawnpore, upwards of Rs. 30,000 have been collected.

**ST. MARTIN'S SCHOOL OF ART, CASTLE STREET, LONG-ACRE.**—On Monday evening an exhibition of the drawings of the students of the school was opened. The school inspector has awarded twenty-four local medals, and nine drawings have been selected for the national competition. The following are the names of the competitors:—Miss Von Hurmer, Mr. Trego (two drawings), Mr. Drew, Mr. Romel, Mr. Glenny, Mr. Willison, Mr. Parker, and Mr. Dixon.

**ROYAL INSTITUTE OF BRITISH ARCHITECTS.**—Mr. C. C. Nelson having expressed his intention of retiring from the office of honorary secretary in May next, it has occurred to various members that some testimonial should be presented to him, to mark the obligations of the members for the very efficient manner in which he has discharged his responsible duties for some years, and the many advantages which have resulted from his services. A meeting is to be held on Tuesday evening next, the 3rd of April, at 8 o'clock, at the rooms of the Institute, to consider the proposition, when Mr. Sydney Smirke, R.A., will take the chair.

**THE CONSERVATIVE LAND SOCIETY.**—The thirtieth quarterly general meeting of this society was held at the offices, in Norfolk-street, Strand, on Tuesday, the 27th inst., Viscount Ranleigh in the chair. The report of the executive committee, read by the noble chairman, showed a large increase in the business returns; the receipts for the quarter being 17,834 l. 9s. 9d., making an increase for the half-year of 1860 over 1859 of upwards of 13,000 l. The total receipts amounted to 112,870 l. 1s. 1d., and the sale of land to 237,173 l. 18s. 11d. The allotment of the Roman-road estate, at Old Ford, had resulted in the sale of all the higher-priced plots.

**MONUMENTAL: THE BUNYAN MONUMENT.**—A meeting has been held at the Freemasons' Tavern, Great Queen-street, Lincoln's-inn-fields, under the presidency of the Earl of Shaftesbury, to consider as to raising a metropolitan monument to John Bunyan. The meeting was attended by many gentlemen of influence in the Established Church and Dissenting congregations, and a resolution was agreed to unanimously, to the effect that a statue to the memory of Bunyan shall be erected by public subscription in one of the leading and most public thoroughfares in the metropolis.

**MASTERS AND OPERATIVES.**—The select committee appointed by the House of Commons to inquire into the best means of accommodating differences between masters and workmen met, on the 21st March, for the first time; Mr. Mackinnon in the chair. The other members of the committee are Lord Robert Montagu, Sir J. Ferguson, Sir J. Penton, Sir S. M. Peto, Mr. Waller, Mr. W. Beaufort, Mr. Buxton, Mr. Colquhoun, Mr. Hunt, Mr. Ingham, Mr. P. Erskine, Mr. Slaney, Mr. Trevelyan, and Mr. Arden. Mr. Humphreys, of Kentish Town, financial secretary to the National Association of United Trades, was the first and only witness then examined, and gave his evidence in favour of courts of arbitration.

**SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.**—The second *conversazione* of the season of this society was held last week at the Portland Gallery. Mr. J. Herard opened the evening's proceedings with a paper on "The Ideal in Art," after which a performance of music took place, conducted by Dr. James Peck. The vocal department included Madame Enderssohn, M. Depret, and the London Quartet Glee Union.

**DURHAM CATHEDRAL.**—A discovery has been made during the restoration of the great central tower of this edifice, now in progress. The corners of the tower finish at the top with solid masses of stone, which are believed to be the lower portions of large pinnacles that were never built; and, on removing the covering of cement from the inner surfaces of these masses, certain incisions have been found, which have led to the supposition that the tower was originally intended to be terminated by a lantern.

TENDERS

For alterations to Wraitham Park, and New Lodge, for Viscount Eddell; Mr. H. Clutton, architect:—  
Mansfield ..... £4,535 0 0  
Myers ..... 4,825 0 0  
Parson ..... 5,787 0 0  
Pritchard ..... 4,479 0 0

For New Church, Sligold-street, Horsham; Mr. Benjamin Ferrey, architect:—  
Piper ..... 4,096 0 0  
Myers ..... 4,471 0 0  
Ayres ..... 4,405 0 0  
Sherborne ..... 3,756 0 0  
Holland ..... 3,715 0 0  
Dove ..... 3,520 0 0  
Carr ..... 3,398 0 0

For alterations, additions, &c., at Great Blacke Hall, near Wauwreath; Mr. R. Kerr, architect:—  
Asford ..... £3,985 0 0  
Ashby ..... 3,980 0 0  
Mansfield ..... 3,715 0 0  
Myers ..... 3,700 0 0  
Jackson & Shaw ..... 3,435 0 0  
Corder ..... 3,205 0 0

For erecting and finishing a Dwelling-House, at Wimbledon; Mr. B. A. C. Herring, architect. Quantities supplied:—

For one House. If two Houses.  
Hammon ..... £1,196 ..... £3,800  
Turrer & Sons ..... 1,803 ..... 3,555  
Marshall & Son ..... 1,745 ..... 3,525  
Macey ..... 1,634 ..... 3,272  
Dowds ..... 1,630 ..... 3,180  
Browne & Robinson\* ..... 1,597 ..... 3,147

For New Buildings, at St. Augustin's, Ramsgate; Mr. Pugin, architect. Quantities supplied by Mr. Marples:—  
Walters ..... £3,900 0 0  
Smith ..... 3,840 0 0  
Brown ..... 3,180 0 0

For alterations, &c., at Chelsea Workhouse; Mr. G. Handford, architect. Quantities supplied:—  
J. & C. Todd ..... £2,297 0 0  
Radford ..... 2,195 0 0  
G. T. Smith ..... 2,163 0 0  
Gosbell ..... 2,158 0 0  
G. Todd, Junr. ..... 2,143 0 0  
McLennan & Bird ..... 1,122 0 0  
Adams & Sons ..... 1,031 0 0

For Warehouse, at Cauden-town, for Messrs. C. Goodall & Son; Mr. Thomas M. Rickman, architect. Quantities supplied by Mr. Arthur Carr:—  
Jackson & Shaw ..... £1,505 0 0  
Evans, Brothers ..... 1,375 0 0  
Browne & Robinson ..... 1,347 0 0  
McLennan & Bird ..... 1,240 0 0  
R. Batterbury ..... 1,335 0 0

For New Church, Kingston Vale; Mr. Christian, architect:—  
Myers ..... £1,250 0 0  
Mason ..... 1,190 0 0  
Bird ..... 1,194 0 0  
Higgs ..... 1,181 0 0  
Smith ..... 1,059 0 0  
Hulwell ..... 1,053 0 0  
Mills ..... 1,250 0 0

For the commencement of the New Academy building, at St. Mary's College, Oxford; Mr. Birmingham; Mr. E. Welch Pugin, architect. The quantities supplied by Mr. Marples:—  
Gase-yne ..... £1,210 0 0  
Hardwick ..... 1,050 0 0  
Smith ..... 999 0 0  
Branson & Gwyther (accepted) ..... 999 0 0

For a Warehouse, at Rochester, Kent, for Mr. H. Riage; Mr. J. H. Andrews, architect:—  
Cronk, Rochester ..... £2,365 0 0  
Collins, Chatham ..... 283 0 0  
Spicer, Strood ..... 231 0 0  
Lilley, Strood (accepted) ..... 223 0 0

For the erection of a House, at Rainham, Kent, for Mr. W. Moss; Mr. J. H. Andrews, architect:—  
Spicer, Strood ..... £2,573 0 0  
Naylor, Rochester ..... 530 0 0  
Jennings, Rochester (accepted) ..... 449 0 0

For Works to be done at the Jews' Free Schools, Bell-lane, Spitalfields; Messrs. Tiltot & Chamberlain, architects:—  
Jennings ..... £275 0 0  
Ashby & Sons ..... 332 0 0  
Pritchard & Son ..... 322 10 0  
King ..... 321 10 0

For alterations and additions to the Bacchus Tavern, Hoxton; Mr. H. J. Hammond, architect:—  
Lewitt ..... £270 16 0  
Macey ..... 273 0 0  
Pask ..... 260 0 0  
Starkey ..... 239 0 0

For Abingdon Cemetery; Poulton & Woodman, Reading, architects:—

	No. 1. Chapels and Lodge.	No. 2. Home-dwelling.	No. 3. Laying Out.	No. 4. Railing and Gates.
Chesterman	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Orton & Child	1,394 0 0	642 0 0	620 0 0	75 0 0
Thomas	1,429 0 0	640 0 0	197 10 0	71 0 0
Young & Co.	1,350 0 0	612 0 0	0 0 0	0 0 0
Drew	555 0 0	0 0 0	0 0 0	0 0 0
Dalrymple	388 0 0	905 0 0	0 0 0	0 0 0
Williams & Diven	0 0 0	0 0 0	179 18 6	0 0 0
Randall & Co.	0 0 0	0 0 0	100 0 0	0 0 0
Hornalewick & Co.	0 0 0	0 0 0	91 0 0	0 0 0
Copeland	0 0 0	0 0 0	82 10 0	0 0 0
Graton	0 0 0	0 0 0	77 0 0	0 0 0
Hill & Smith	0 0 0	0 0 0	68 3 5	0 0 0
Shaw	0 0 0	0 0 0	157 6 0	0 0 0
James	1,107 12 0	883 8 0	0 0 0	77 0 0

Bowler ..... £2,084 0 0 for No. 1, 2, and 3.  
Walters ..... 2,075 2 6 for No. 1, 2, and 3.  
Beckensell ..... 1,996 0 0 for No. 1, 2, 3, and 4.  
\* Accepted.

TO CORRESPONDENTS.

M. A. W. (we cannot undertake to spare dimensions)—F. R. W.—B. S. W. R.—C. G.—L. de V.—J. P.—S. O. R.—Ry.—J. E.—C. H.—T. R.—R. T. S.—J. D.—E. R.—B. L.—C. T. (next week).—W. B.—A. T. (not received in time).

**NOTICE.**—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Coleridge-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."  
Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

[ADVERTISEMENT.]

THE CHARGE AGAINST MR. HEATH.

"Union Dock, Limehouse, March 21, 1860.  
Sir,—We beg to assure you that it was entirely without our sanction or knowledge that you were taken into custody upon the charge of receiving timber which had been stolen from us, knowing it to have been stolen; and we quite concur in the remark made by Mr. Selge, the police magistrate, in dismissing the case, that the transaction leaves no imputation whatever on your character.

We sincerely regret that you should have been subjected to a charge of the kind, and we are ready to testify our exoneration of your character by the permission to publish this letter.

Understanding from our solicitors that the costs incurred in procuring your discharge amount to 25*l.*, we herein enclose a cheque for that amount.—We are, sir, your obedient servants,

HENRY FLETCHER, SON, & FEARNALE,  
To Mr. George William Heath, of Bishopsgate-street, London, Builder."

ADVERTISEMENTS.

**MR. WILLIAM ELLISON,**  
CONSULTING SURVEYOR, late of STAINBY-ROAD,  
Is taken Office at  
13, FENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C.  
Where he continues to receive applications  
ON BEHALF OF CONTRACT, DISPUTED ACCOUNTS, &c.

**TO ARCHITECTS, CIVIL AND MECHANICAL ENGINEERS, &c.**—Mr. C. B. RICHARDS begs to intimate that he has removed his OFFICES from Trafalgar-square to IMPROVED BUILDINGS, FENCHURCH-STREET, E.C. The very many applications made within the past few years, and the general satisfaction expressed in the selection for Government, Public and Private Office, induce him to solicit his continuing to render to the profession such grateful services as he can.

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**PLANS, WORKING DRAWINGS, IMPROVED BUILDINGS, &c.**—Mr. W. G. MARSHALL, Architect and Surveyor, 5, 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 141, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 331, 333, 335, 337, 339, 341, 343, 345, 347, 349, 351, 353, 355, 357, 359, 361, 363, 365, 367, 369, 371, 373, 375, 377, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 405, 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2169, 2171, 2173, 2

# The Builder.

VOL. XVIII.—No. 896.

London of the Past.

ONDON is changing in a very remarkable manner.

In all the older parts rebuilding is actively going on, and in all the outskirts, street upon terrace, and terrace upon terrace, are springing up, and enlarging its size to an extent that is marvellous if not alarming. In some cases where simply speculation is at work, preparing houses for the market, the commonest type is followed, and the whole construction is cut to a shaving; but in others, as in the new roads about the proposed Horticultural Gardens in Brompton, and mostly where houses are being rebuilt in town, substantial and well-arranged structures contrast forcibly with the less recent buildings remaining

around them. To estimate rightly this change and this increase in London, it is desirable occasionally to look back, as we have done on some previous occasions, and to examine the aspect of the metropolis at different periods. We have opened a map, dated 1600, of the neighbourhood on which now stands the British Museum with rows of houses and public buildings. If we compare it with what we know of the district in 1860, we shall see how circumstances have altered. Eastward our map extends to Little Turnstile, on the south side of the country road, marked Holborn. Passing along this road westward, we come to a street lane which is now represented by King-street, running northward, and another lane (now Little Queen-street), which is met by cross footpaths through the fields, at the corner of Great Queen-street, just where the printing-office of Messrs. Cox & Wyman now stands. Lincoln's-inn-fields are marked, and are crossed by footpaths. The map does not extend so far as the old Inns of Court and Chancery-lane. From Great Queen-street a lane in the map passes across Drury-lane, and continues to St. Martin's-lane: this is the site of Long-acre.

Returning, however, to the Holborn corner of the present King-street, it is seen that no houses had been built in the now great thoroughfare, so far as the map extends, on either side. Except at the bottom extending for a short distance, there are no houses on the east side of Drury-lane, until we reach the part now called the Sand-yard, near Broad-street, St. Giles's. On the opposite side of the lane here, a building or two are marked on the site occupied by the wooden houses that were recently engraved in the *Builder*, and wherein, it is reported, the great plague of 1665 first made its appearance. Lower down are rows of trees, broken here and there by houses: some of these may at the present day be readily distinguished from those of a more modern date. Great changes took place in this direction during the sixty-five years between the time of the publication of the map and the great plague. Lincoln's-inn-fields and Great Queen-street had been squared up, and partly built upon with houses designed by Inigo Jones; and in other directions the brick-makers might be seen at work; and there were notices set up, here and there, of land to let on building

leases. Notwithstanding this, drainage was a matter not much considered. Houses were planted in parts here as at Agar-town and Lambeth, to prepare the land for human habitation, as it were; but this process was attended with a fearful loss of life. The dwellers in the new districts felt like those conducting the "forlorn hope" in a siege. Long even after the plague and the Great Fire of London, the vacant spaces here, in the absence of any sufficient police, were the chosen spots for dog-fighting, and other scenes of riot.

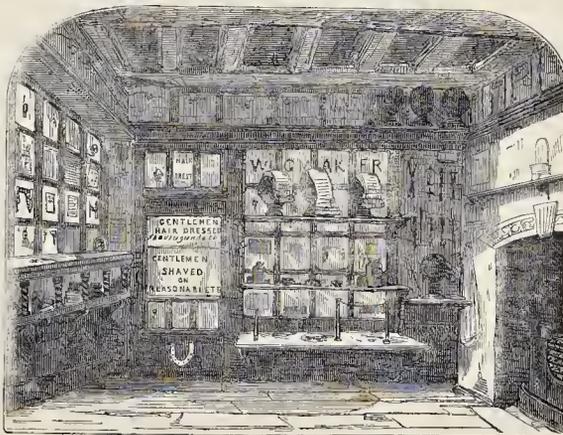
South of the present Long-acre is the Convent Garden. The details from this to the Strand are not filled in. Farther west, however, "The Mees" is marked, and thence runs a wide road going north to the junction of the Broad-street of St. Giles's, and we see St. Martin's-lane, with hedges and trees on each side; the still-called Tottenham-court-road, and the Oxford-road. Passing up St. Martin's-lane we find the Cock and Pie Fields, now covered with the swarming, bustling, and not too fastidious population of the Seven Dials. A road leads along the side of a wall from St. Martin's-lane to Broad-street, St. Giles's. This is marked Lc-lane, but became Monmouth-street. Beyond the fence is the picturesque little church, St. Giles's-in-the-fields, with one or two houses close by embedded in trees. Northward the green fields are intersected by several paths, one of which is now represented by a side of Bloomsbury-square. Eastward from St. Giles's, but a little to the west of the present King-street, in the midst of gardens, is Southampton House. From this some of the streets take their name. No houses appear on the site that afterwards became the notorious Rookery and surrounding dens of St. Giles's. Long after this map was made dwellings of a good description were built, and declined into terrible lodgings for human beings. Demolitions and alterations have taken place: model lodging-houses, schools, chapels, and churches have been reared, which form a new stratum in the section of progress. Montague-lane is not marked: the wondrous antiquities of Egypt; the rare works of Greek and Roman art; the great rooms filled with miles of books, were not thought of in the days when this map was made: the valuable objects now there were then scattered in all parts of the world.

But for the writings of Fitz-Stephen, patient John Stow, and a few others, the early condition of London would have been a matter of as great obscurity as is that of the lost cities of antiquity. In the "Antiquarian Repertory," a translation is given of a book published in Paris, in 1672, which contains accounts by one Jorevin, of his travels in England and Ireland. During this tour the writer visited the chief towns of the kingdom, and his notes show the wonderful changes which have taken place in

many of them in something less than 200 years. The mistakes are ludicrous, but he seems to have been a good topographer, and to have described well the things which came under his own observation. After mentioning Westminster and the Strand, he says, "We may now go to see the Conan Giardin [Covent-garden], a royal market-place. In the middle of this market-place is the king's statue on a pedestal, and a church, the frontispiece of which is sustained by many thick columns, like the Pantheon at Rome. There are five or six great streets described by a line that leads to Lincoln's Infields—the fields of Lincoln,—which is a square larger than the Place Royal at Paris. The houses that encompass it are all built in the same style. The king has given them to the nobility for their residence. The middle is a field filled with flowers, and kept in as good order as if it was the parterre of some fine house. The college of the University is here to be seen [probably Lincoln's-inn], which has a garden, with a fine terrace, from whence there is a view of this fine square, which is the ordinary walk of the citizens. The college of Greze [Gray's-inn], is a handsome building. It stands in the street of Holborne, which is one of the largest in London, since it crosses it from end to end, only it changes its name in the different quarters through which it passes.

"As to what remains of the walls and ditches of London, they are scarcely to be perceived; they do not enclose a fourth of its extent. This centre of the town was burnt some years ago, with a very considerable loss of rich merchandize, the ruin of many palaces, and more than fifty churches. It is an astonishing thing to hear how this general conflagration happened, which, at the distance of more than ten leagues, seemed like a deluge of fire coming to burn the whole earth. Nevertheless, by an order from the king, all the proprietors of houses which had been burned were obliged to cause them to be rebuilt within the space of three years, in default of which their sites were to be forfeited, so that when I arrived in London, almost all was finished, when, in some measure, they attempted to make the streets straighter and wider. There was a man who laid a wager, that he would cause his house to be built up, from the foundation to the roof, in two days, which wager he won. It is true, all these houses are built only with bricks, one upon the other; they have, however, something so handsome in their architecture that they seem like little castles.

"It is certain that if there are as many houses in London as in Paris, London is the most populous, principally from the number of hands employed in the silk and linen manufactures, and other works of that kind, not to speak of the scaffolding people, who are here as numerous as the manufacturers. In walking through the great street of Solborne [Holborn] one may



London of the Past: a Shop in Clare-market.

observe many things. In beginning to leave the suburbs you pass a small river, which formerly served to fill the ditches of the city, where there are still to be seen her ancient gates, garnished with large towers; these are at present the city prisons. There is a cross-way, ornamented with a fountain, after passing the bridge, to which adjoins the great street leading to the hay-market [Smithfield]. This is one of the largest markets in London, and here is the ancient church of St. Bartholomew, which at present serves as a kind of exchange for tradesmen, who have their shops therein; and near it is the church of St. Jones [John's], which was formerly a commandery of the knights of Malta. It is not far from the palace, or court of justice, where public affairs are regulated. The street of Holborne begins at this cross-way to take the name of Chispyade, which is the handsomest street in London, enriched with many fountains, and with the Great Exchange. This was entirely burnt down, but at present is almost re-edified, and handsomer than it was before: it has a great court, surrounded by galleries, and great halls supported by columns, with all the figures of the kings of England carved in marble.\*

He visits the India House, and is surprised at the riches here displayed, and acknowledges "that the English well understand the maritime art, and that they are the true merchants of all seas."

"The Castle of London, called the Tower," its broad ditch, filled with water; its magazine and stores; the armour of William the Conqueror, and that of the jester of that monarch, with horns fitted to his casque; the place where the coin is struck, are all noticed. He also sees the royal wild beasts, the treasury, in which is the crown of England, &c., and more than 2,000 large cannon, ready to be conveyed away, for the defences of places at home and abroad.

Along the river side of the castle runs a quay, and, beyond, a long suburb, which shelters,—along the Thames, and in the residue,—the seafaring people, waiting for a wind, and the loading and unloading of ships "which arrive in this fine river in such numbers that one may call London the most famous port in the universe. What displaces me in London is that there are so few quays along the river side, owing to which we cannot have a view of all those vessels, there being only some small stairs and platforms, for loading and unloading the merchandise into and from the vessels."

"Besides the great depth of the Thames, the water rises here more than two fathoms, which affords a subject for admiration how they have been able to build London Bridge, which is of stone, and in length upwards of 400 paces, with nineteen arches. The houses which cover the bridge had been burnt down and rebuilt: they are inhabited by rich merchants. At the entry on this bridge there is a machine like the Samaritan of Paris, which raises a quantity of water to furnish the fountains in the squares and cross streets of the City, from whence by the bridge lies the passage to Sodorik [Southwark], which might pass for a great city were it encompassed with walls."

Here our French friend visits the "Bergardin" (Bear-garden), and was delighted with the battles of the beasts, but still more with some human combatants, who with swords mutilated each other. The visitor regrets that he was not able to attend some other exhibitions of a similar kind at Hockley-in-the-Hole and in other parts of the town. There were at one end of this suburb, not far from the "Bergardin," two large hospitals for the poor, built, as some of our readers will be surprised to learn, "near a field where St. George with his lance killed the dragon which devastated the whole country." In the environs of this place are several beautiful pleasure-houses: that of "Pringardin" (Spring-gardens) is a place of pastime and diversion for the youth of both sexes. Near it is the little village of Lambemark (Lambeth-marsh), in which stands the great castle of the Archbishop of Canterbury, and the house of a gentleman, filled with curiosities (the museum of the Tradescants). Re-crossing the bridge, a handsome street is

visited near a church, in which stands "Londonchton," which is a stone in the middle of the street, raised about a foot and a half from the ground. "This, it is said, was placed by William the Conqueror as a boundary to his conquest: others say it grew there spontaneously: be that as it may, the coaches by striking it in passing have much diminished it. One must not forget to observe it well, for it is said that he has not seen London who has not seen this stone." In these days one might go and walk in Moorfields, where are certain meadows where there are always jugglers and Merrie Andrews. A mile from them, towards "Common Gairden," was a little river called "Nieu River," a part of whose waters were conveyed by subterraneous pipes into the fountains in the City. When in this neighbourhood, we have a strange account of a pit or gulf to which no bottom can be found, and of a spring said to yield the best water that can be found in London, and that the king regularly drinks it at his meals.

To come, however, to evidences of great change remaining to us.

In the neighbourhood of Clare-market, Drury-lane, and some other now unfashionable parts of London, shops still remain which are so peculiar in their proportions that all endeavours to alter them, to a corresponding appearance with the now light and elegant places of business which adjoin, fail. We are thus enabled in a measure to judge what was the appearance of many of the shops in the metropolis in which a former generation quietly and comfortably carried forward their trades, and so were able not only to obtain the good things of this world, but to leave considerable fortunes to those who succeeded them. Some of these shops which so obstinately defy change have for more than half a century been occupied by hair-dressers. One of these, near the bottom of Drury-lane, on the west side, is a characteristic example. Two others, which bear the once well-known title of "wig-maker," are still within the precincts of the Temple. More might be mentioned, but, passing them over, we walk to the streets near Clare-market, once a place of gaudy resort, but which is now in the possession of a dense and very poor population.

In those streets the dignified calling of the wig-maker has fallen into contempt, and in all directions poles of great length, brightly emblazoned, denote the changes which have taken place: the quiet hair-dresser has given way to the "easy shaver," who with striking display announces his calling. In some instances, fluttering banners catch the eye; large illuminated announcements denote the great ability of the various artists. In some windows it is advertised that this is the "only easy-shaving shop;" another, in still bolder letters, informs the passenger that this is the "original shop;" and close by is the "real original." It is advertised by some that gentlemen can hesplendidly shaved for "one penny," and by others, that the operation can be performed for "a half-penny." At first sight one might tremble for the existence of the professors on such low prices; in the next place, for the safety of those who are under the necessity of submitting themselves to such a cheap operation. It will be found, however, on inquiry, that these tradesmen now consider it a very poor day's work if they do not, at 1d. for each sitor, earn from 10s. to 12s. on a Sunday morning, and on other less busy days a proportionate sum. To earn even 10s. requires, of course, 120 customers. If such a feat had been mentioned to hair-dressers thirty years ago, when 3d. was charged for shaving, they would have looked upon it as little less fabulous than the idea of the locomotive travelling at the rate of sixty miles an hour. However, by the assistance of apprentices, who systematically perform the least difficult parts of the business, leaving the finishing touches to the master, row after row are finished with fewer sanguinary effects than might be expected. At one of the half-penny shops, the cheap artist stated that his income was as much as that of those who charged the higher price: increased activity and better management make up for the difference of charge.

We have sketched the old shop near Clare-market to which we have referred. The small size of the windows speaks of dear glass: in some of the least important parts of the glazing may still be seen the central "knot." The wooden window-frames are of great thickness. In the windows there are not any waxwork figures, gay with artificial jewellery and flowers, but in their grim-looking wooden blocks, with out human features, most of them worn-eaten. On some are wigs of different orders, in sooty and decayed condition: there are blocks on which the foundations have been cunningly laid in order to be ready for expected commissions: there are other wigs, not of legal shape, and of various hues: on others are singular bunches of ringlets and other mysterious matters, the use of which can scarcely be guessed by the passer-by. The pole is of very modest size, and the tints upon it are subdued and harmonized. In plain Italian letters, which have once been yellow shaded with black, is "—, Wig-maker and Hair-dresser." Few things can look more out of date than the whole exterior of this London shop. With the exception of improving the low, narrow doorway, there has evidently been little effort made to keep up with the age. Here a desperate attempt has been made: plate glass of moderate size has been introduced, and in modest type it is announced that "Gentlemen may be well shaved on moderate terms. Ladies' and gentlemen's hair dressed."

On entering, the dingy dimness of the place has a remarkable effect. You drop down at once to the early part of the reign of George III. With that old-fashioned politeness which has given place to a less ceremonious manner, the wig-maker discoursed on the changes of the times and his own decay. The oil-lamp had not been superseded by gas: on the shelves were rows of wig-boxes, on which could be dimly traced the names of "Serjeant —," and others who are no longer toiling and trampling in the law.

On the door, conspicuously placed, was an old horse-shoe, and some "holy stones," fastened together with a string; the first for the purpose of ensuring good luck, and the latter to keep away witches.\* In parts were numerous pincers and other instruments and tools already rusty, but which in future days may cause contention amongst antiquaries. The heavy rafters and panelling marked the ancient date of the premises: the quaint fireplace, the limited space, and other features, showed the difference between the past and the present.

The shop of the wigmaker is now closed, and the history is instructive. At one time, he said to persons who casually called for that purpose, "Sir, we do not shave." At last necessity obliged the condescension; but the worthy wigmaker was slowly driven. He could not be induced to write up, "This is the easy shaving-shop. Only 1d.," and so business departed, as it has done from many others in different trades and occupations, who will not adapt themselves to the times, and avail themselves of the facilities which are at hand.

There are many in higher places who might take a useful lesson from the fall of the wig-maker; and we thus get a moral out of our gossip about London of the past.

#### MODERNISM IN ART.†

It might seem desirable, in commencing the few remarks I am about to make on "Modernism in Art," to define the term before I proceed to discourse upon it. But I prefer to leave the preface till the last; or, if you have not perfectly comprehended all that I mean by the term at the conclusion, we will discuss the matter, and endeavour to obtain some definitions of it.

M. Montalembert, in his celebrated pamphlet, speaks somewhere of the study of "contemporary archeology;" and this I cannot help fancying is a phrase intended to convey such notions of the

\* About twenty years since horse-shoes nailed above the doors were not uncommon in Monmouth-street and other neighbourhoods.

† Read at the Architectural Association, Conduit-street, on Friday, the 30th ult., by Mr. C. F. Hayward, A.I.B.A. The discussion of it was postponed; and the chairman, Mr. Penfold, stated that the committee had determined to postpone the *conversazione* which had been announced for Friday evening, 13th of April, until some future day, to be afterwards announced.

value of the observation of daily life and present circumstances and living history, which I would endeavour to include in the term I have chosen.

The study of antiquity is enforced in a variety of ways at the present time: although the period chosen is somewhat changed—Classic to Medieval lore,—societies in every county, and amateurs without number, devote themselves to the collection and contemplation of the minutest relics, often overlooking in the study of a detail the more broad and comprehensive objects of research, and caring less for the beautiful and suggestive than for the more curious and aged.

It has, however, been reserved for a French idea to form a political society for the sole purpose of studying and contemplating ruins,—renouncing any interest in the present, acknowledging one only duty, and that, the support of an effiee piece of archæology which happens to be contemporary.

To the artist, however, and especially to the architect, the study of antiquity is necessary, not only to form his ideas, but to stimulate them; not only to awaken his enthusiasm, but to feed the fire of his genius; not only to afford fit subjects for contemplation, but to give him instruction and advice, and to offer suggestions for his daily labours.

Archæology is a necessity with him if he would excel, but its true use is like the study of history—of which, indeed, it is only a branch,—to teach lessons of wisdom, of warning, and of hope.

But to study ancient art for the purpose of reproducing it, without reference to altered circumstances and times, is the same as studying costume for a fancy ball, or the fables of heathen mythology, for the purpose of setting up the worship of Isis or Jupiter.

Moreover, it is quite contrary to the spirit of the arts in any age, for no art can be art (paradoxical as this may seem) which subsists on bygone talent, and has no power of its own but that of copyism.

Your antiquarian is not generally a surpassing genius of originality, but he lays up stores of valuable lore for those who have the wit or the wisdom to turn them to account.

Now it surely is a matter of surprise, that living in the present with all the associations and connections of modern life, and feeling all the force of passing events, and the attraction of the present times around us, that this spirit of antiquarianism should so often override and overrule our artistic notions, stifling the aspirations of genius, cooling the enthusiasm of youth, and distorting even those inevitable lines of beauty which are traced by the hand of the true artist.

Yet that it does so affect the fine arts generally at the present time—and especially our own branch of them—I think few will deny. None can be more ready than myself to admit that its influence is considerably less than it was even a short time ago, and to rejoice in the hope that its cramping and hampering influence shall entirely give way before the genius of nineteenth-century art; that its effect shall be recognized only in the curbing and restraining of too wild and sportive fancies, which, by substituting mere conceits for high art, often in the best periods bring down ridicule and contempt upon art and its professors.

Now, let us inquire how, in the history of our own branch of the fine arts, the wants of the period and the capabilities of the times were met,—how far ancient architects were modern in their day.

In Egypt, as far as we know or understand their works, they seem to have had their eyes open to the works of nature around them in the form of their columns, and the floral and other ornamentation they introduced, and even did not disdain to copy in enduring porphyry the tailors' work of the period. Then look to the use of the noblest materials in the noblest proportions. Of Assyria we know at least this—that their houses and their temples were suited to their circumstances and their purposes, and that their ornamentation and their sculpture commemorated their modern events.

Who shall say that the great Greeks were antiquarian architects? Slight evidences of Egyptian studies, indeed, are to be found; but how great must have been the originality and inventive power of their architects,—but infinity of design, what amount of careful thought and study have been gone through before the simplicity of grandeur in their forms and the delicate magnificence of their decoration had been achieved. We hardly appreciate this inventive power in the Greeks sufficiently. Gradual, doubtless, but throughout original, and in the end perfect, was the architecture of this wonderful race; but it was also

essentially suited to themselves, their worship, and their climate, and the materials around them.

The Romans were a progressive people, and I would give them the full credit of appreciating Grecian works, which is often denied them; while at the same time they were essentially modernists. They had different works to erect, and were masters of more science, though less delicacy of taste, and, let us add, less noble materials than the Hellenes.

Far from copying alone, they went on originating and adopting till at last their originality overcame their antiquarianism, and they produced their grand basilicas with vaults or domes such as Grecians never dreamt of.

Were they not modern? When a circus to hold half the city seated was wanted,—how was the difficulty overcome? Certainly not without reference to precedence, but with unprecedented boldness and success was the problem solved. Who was the Benjamin Edgington of the period who made the velarium? and what were the cushions that these things were not built to be mere picturesque ruins for an English traveller to contemplate on a moonlight night, but were once modern works to serve the wants of the time.

Then, as to the Early Christians, I am disposed to fancy that a good deal of art we consider modern to them was ancient, inasmuch as they probably adapted many common pagan notions and symbols in their churches, &c. Yet what they built was most essentially different, and had a different purpose to serve from the pagan art around them, and when, as ages rolled on in the darkness or rather twilight of art, church after church was erected east and west, no slavish copy of former types, was held, but here a dome, there a round vault, and elsewhere a flat ceiling, all referable to former phases of art, but at the same time all modern in their day, gave a character and a distinctive individuality to the building.

And when at last this darkness rolled away, and the glorious power of the sun of Gothic art was felt, did the art traditions of antiquity or the originality of modern genius stand out as the vital spark of all this blaze? Step by step can we trace the path of this noble development of art, each piece in advance of the other spurning any backward movement for three centuries and more. One period, feeling its own power, disclaiming to continue its previous design if it had been stopped in its fulfilment, and taxing its own genius to find a fresh (at that time at least considered an improved) design for the remainder,—artists at one time overstepping the limits assigned by the endurance of their materials, then repairing their error by a fresh and perchance even a holder experiment, triumphing over material, submitting to every variety of circumstance, and improving every opportunity and every local advantage.

Was brick to be obtained and stone not, the baser material was not despised, but shown to be capable of bearing the impress of the artist's mind.

Was iron available, it was welcomed by the designer, and wrought out with care, fashioned by the tongs by the smith into forms of beauty.

Was glass manufacture established, the painter touched it with his brush, and the architect made way for it in his walls, cutting out of his stone graceful forms of tracery to set the most precious jewels in.

Foreign marbles were scarcely wanted when men could find at home alabaster, Parbeck, and serpentine.

Antiquity need not be searched for subjects to sculpture when the truths of Christianity were deemed worthy the noblest efforts of the sculptor's chisel. The painters of plaster walls were at no loss how to decorate, whether a flat ceiling or a vaulted roof was to be the subject of their labours. The workers of tapestry or stamped leather, the makers of furniture or armour, were all imbued with the same spirit, keeping up to the knowledge and requirements of their day, and being, perhaps, as ignorant of, as unable to copy, any art but their own.

And here is the gist of the whole matter: they had not to produce a Grecian work or a Roman, or a Romanesque, or an early this or a late that, but to do something modern, of their own time and period. Their employers would not have been satisfied with an Egyptian house, a Norman church, a Grecian museum, a Roman exchange, a Romanesque warehouse; but house, church, museum, exchange, or warehouse, would have been designed of one date and in the style of the time, embodying the best art which was to be had, each and all being individual artistic emanations, and

no more to be confounded one with another than the individuals who built them.

Living art must be at unity with itself, and when so it must progress. A house divided against itself must fall; and so is art degraded when its professors are intent on producing archæological specimens instead of real designs, in the art of their own day.

Then, as to what is called Renaissance, or Italian revival of the antique: at the same time that we object to the inordinate reverence for everything of a former period in this phase of architecture, so that art was not valued with reference to its own intrinsic worth, but according as it embodied former notions in every detail, we must admit that the great element of modernism was not wanting in many of its arrangements. Indeed, under the hands of the great surpassing genius of the time, it was impossible that it could be.

And it seems to me that it is owing to this very circumstance that its influence in our modern times is to be attributed. When men shook off the trammels of precedent, behold what was produced in Florence,—buildings which embody the spirit of their times in every stone. See at Venice what was the effect of Palladio's cold but correct tabular architecture, and read how his proportions are described in all students' books, as if it were a table of some Building Act, showing how the proper thickness of a wall was to be found by the rules of arithmetic. The finest buildings of this period are those least of all correct, and perhaps one of the wildest of all—the church of Sta. M. della Salute, in Venice—has, in my opinion, as fine an outline as any building of any date. Yet, as I said, the necessary element of life existed in the style, viz. its sympathy with the wants of the age, and the requirements of the period. I cannot help, however, stopping to remark the great individuality of the artist, his personal ascendancy over the style, not, as in the preceding Gothic period, when the workman was lost in the grandeur of the style and the great art spirit of the period seemed to pervade all grades alike. I do not desire to lower our estimation of the fifteenth-century artists, but simply to point out this significant fact, that they seem more prominent than their art.

To come to more recent times—the seventeenth and eighteenth century,—how did architecture adapt herself to the wants of that age? Has she generously accepted the altered circumstances of the times—made the popular requirements her own, and so popularized her art? Has she adopted every new scientific improvement, and clothed it in robes of beauty, adding all the loveliness of grace to mere constructive requirements, and moulding every form of pure workmanship into a shape of artistic excellence? In short, has she been worthy of her high mission?

Nay, is it not rather true that, through pride or incapacity, she has held aloof from the great work of the times,—that of infusing the spirit of her art into everything about her? Despising this her true mission, she disdained to touch any but great works, and so in turn was not permitted even to direct those, till at last architecture herself seemed dead, and all appreciation of her seemed confined to pure archæological students; and when at last she began to show signs of life, it was in this archæological direction she began to move, and the antique school for a long time endeavoured to keep up this backward tendency. The architecture which is to endure beyond the fashion of half a century must be the art of the day—modern in its appliances, its arrangements, and its tastes—like all the great developments of art before it in every age.

In the foregoing remarks on periods of architecture, I am speaking, of course, very generally; otherwise I might have referred to many illustrations of the truth, or to the exceptions which may be found in the works of some individual artist—our own Wren for instance.

I might, I think, show where he is essentially modern in his designs for Protestant churches, although he sometimes based his notions on Gothic, partially learned, as well as on Italian architecture, most profoundly studied. I might show that his greatness is exhibited more in his departures from "correct" Classic proportions and arrangements than in his adherence to them; that his genius is greatest where it is least indebted to antiquity; that where he has been most blamed by *distant* architects he has shown most his high appreciation of the circumstances and necessities of his work; in fact, that the chief reason of their influence, and the chief value of his works is, that they contain, in a great degree, that necessary element of all true art,—modernism, or adapt-

ability to the wants, and sympathy with the feelings, of the times in which they are wrought.

I believe St. Paul's churchyard is the first space which was enclosed by east-iron railings, and I never hardly pass by them without recollecting this significant fact.

Now, had Wren been properly supported by men of his own profession, had his followers been imbued with his spirit of true art, united to his love of science,—had his mantle of modernism fallen on any of his pupils, or rather had it descended upon the members of his school, instead of being partially caught by a few, what a noble position might our art have been in at this time. What an amount of noble work might have been found in our cities, and what a mass of ignoble and base erections might we have been spared. If he had been allowed to plan London afresh and been followed by true men, our city might have rivalled any in the world, and we might have taken the lead of all nations in art as we have done in science, instead of labouring day by day—pushing back a house here and there to get space enough to move along our streets—hencecching now and then some Board of Works to grant us a few feet more room to get a sight of what architecture is left to us by that great man! But the real state of the case will serve to show that an individual, however great, has but limited influence, and, therefore, how vain to hope of any great permanent artistic change, except from a whole generation of artists!

Of course other circumstances had their influences, but I do attribute to the school which Wren founded—to their want of sympathy with their great master's principles—the dearth which followed. It seems to me that had they perpetuated his principles and carried onward the work of revival which he, in a measure, may be said to have recommenced, the public would have learnt to confide in them, and would have entrusted to architects, not only their churches, hospitals, and public buildings, but their warehouses, shops, business works, and private dwellings.

Instead of this onward march, we have to note retrograde movement—less modernism, more antiquarianism—till the building public learnt to believe that architecture was a mere toy, or at best a sort of conventional dress which was proper to be used on state occasions; that it was meant only for display of wealth, or to please the fancies of some learned nobleman.

Thus, when a house was to be built, if it were substantial it must be plain,—if it were to be good it must have no gimerack ornament,—till at last, your Harley-streets, Baker-streets, and Portland-places were produced, and not only built, but, worst of all, considered the right thing.

Thus, when a public building was to be erected, the folio of the works of Palladio, or the wonders of Athens, measured and drawn by Stuart and Revett, had to be appealed to, or again the remnants of Rome as delineated by Desgoetz; and nothing could be done without the sanction of the great god of architecture—Vitruvius. A portico was a necessity, and the originality of a novel intercolumniation, of say an Ionic or two more than usual; or, perhaps, an Ionic capital with two balustr sides next each other, so as to show the curls on the outside angle, was the subject of discussion and sufficient artistic capital for a lifetime.

So it came about that an architect must travel to Athens and pick up sufficient nussed "antiques" to form novelty at home, and the art of design was mere tact in picking out suitable hits to fit in given positions.

To come to even later times, have we not to lament that sort of censorship which has been set up over the early workers of our Gothic revival—by amateurs and others learned in Medieval archaeology—nay, is this over yet? Must not an architect be prepared with precedent, chapter and verse—for his design—be it from Italy, France, or at home.

Has he ever to defend the principles of his designs; or, if he has not been successful so far, are they admitted without his being able to point to some building or other, being very near relationship to his work?

If these remarks are considered as applicable to a few years back, but not to the present moment, so much the better. So much are we nearer what this generation, I hope, may yet see a rational and national modern nineteenth century architecture—based on the wants combining the resources—appealing to the sympathies and embodying the sentiments of these glorious days of prosperity and content.

Of style, I do not intend to say much, but this I fully believe, that had our seventeenth and eighteenth century architects been all minor Wrens—looking to his almost at the time isolated,

though perhaps cold, appreciation of some of the beauties of Gothic architecture, noting that more than once he built in that style, with, we may say, partial success;—I say, observing all this, I believe that our own noble examples of Medieval architecture must have made an impression on the minds of the seventeenth and eighteenth century architects, had they been worthy to tread in Wren's footsteps.

We should, I believe, have long ago taken up our national style, and wrought it out into something as superior in power, at least, if not in beauty, as our scientific works are superior to our materials, and appliances more varied than those Medieval times.

So we should have saved a whole century; and not only this, but, without having progressed, we might at least not have retrograded altogether, nor been compelled to lose further time in picking up lost ideas in experimenting to find the lost path.

And again, the nation would not have lost all appreciation of architecture as a modern art, nor looked so coldly and suspiciously on its professors.

We should have had nothing like the National Gallery, purely archaeological in all its associations. We should have had a decidedly different British Museum, where all the ideas are referable to Greece, and our churches would have probably contained some allusion to their sculpture or their design to the Christian religion, other than the simple reminder that Paul preached at Athens, from whence also the architectural details were borrowed. Look how Wren rendered the pediment of a Classic building interesting to the people for whom, and illustrative of the object for which, it was erected. Was he right in making St. Paul and his followers usurp the place of Jupiter and his? Then have we been wrong ever since till our Gothic revival.

I put forth the broad statement not with reference to pediments only, but to ornamentation generally; and I use it as an illustration of my remarks.

No doubt, the hard study of Gothic has been necessary to ground us in its principles. No doubt, the buildings which have been erected in this style were necessary reproductions of ancient Gothic forms, to give confidence to ourselves and those who employ us; so gaining liberty for our own artistic emanations. No doubt, the spread of archaeological study of the Medieval age among amateurs has led to the formation of a body of the public deeply interested in, and capable of appreciating, the efforts of modern as well as ancient architecture.

But still it is time we began to build modern churches without always taking ancient churches as our models for every arrangement. It is time we showed the public that Gothic architecture applied to public buildings is not a mere affair of mullions and lead-lights; that a warehouse can be of true modern architecture, and yet accord with the ancient principles of Medieval art, which was, in fact, the greatest common-sense architecture of the time; and that iron girders, and plate-glass, and gas burners, are not inimical to true art, and only a difficulty to a mere archaeological architect or church restorer.

An amusing illustration occurs to me.—Some fifteen years ago, a gentleman, looking at the restorations then going on at a church of Bury St. Edmund's (being more of a business man than an artist, and decidedly rather modern in all his notions than antiquarian), spoke to some one in the church who seemed connected with the works, and suggested the introduction of the Bude light, then a favourite patent method of lighting used in St. Pancras, and a few other great London churches, in some of which even now a sort of inverted glass umbrella remains to testify to its adoption.

Fancy the horror of the architect, who turned out to be the gentleman addressed, at this bright idea:—"Sir, if I had my way, nothing but wax candles should be used, and few of them."

Yet, though my friend was wrong, we cannot admit that the architect was right, or was working in the spirit of the old Gothic men. The church itself was a mass of window space, which was doubtless filled with gorgeous colour; and yet, a century and a half before, perhaps not more than a hundredth part of the light would have been admitted into the church. Why? Because they had not the glass to use.

Shall I be told that Medieval enterprise would not have used gas in their churches had it been invented, or plate glass either? And yet we have men, even to-day, lamenting over railways, and gas, and telegraphs, as if the advance of mind in one direction were antagonistic to its progress in another. Rather let us imitate the spirit of

Gothic art by refusing to copy even its sublimest efforts, lest we end by spoiling for ever the effect of the original.

Would our churches be the worse for being warmed and ventilated and used, instead of being shut up and preserved? Rather would it tend to the breaking down of the idea that architecture is a mere abstract idea, and not a living art for daily use and everywhere.

If we are true to ourselves—such is the rising spirit of the art in the public, I believe, such the increase of intelligent, independent judges, such the opportunities of seeing examples of good modern art everywhere, and such the resources at our command—that nineteenth-century art has only to be cultivated, to grow into a flourishing and wide-spread tree. It is already planted; there are those capable of guarding and protecting its tender years; and it only depends upon the rising generation to do their duty, and it will bring forth fruit to perfection.

Let us not forget the magnitude of the work; for it is not only here, but in Australia, in Canada, in India, and Constantinople, as well as on the Continent, our architecture is demanded,—not only ecclesiastical (for some would fain persuade us that our art is only fit for religious purposes), but large secular buildings,—universities, museums, Parliament-houses, at home and abroad are rising, and will show in after ages what we were capable of in the nineteenth century.

I question then if there will be much care as to whether the early part of the twelfth century, the middle of the fifteenth, or the late fourteenth, or the too late fifteenth century, was the basis of the design, if only loveliness of form, fitness of purpose, hearty sympathy with the work, and true artistic power be discernible in all.

Then shall we have praise for our modernism, and not blame for our want of it, and though our individuality be lost, what matter, if only the great flow of artistic genius envelop it, instead of its being overwhelmed by the ignominious cloud of inequity. In a generation of artists, few names, and those are of surpassing power, will survive; but, if we have all done our work in elevating the art of our day, we may feel satisfied in leaving the result to futurity, and rely on the fair judgment of posterity.

It would take a long time to discuss,—but I believe it is intimately connected with my subject,—the divorce of science—*par excellence*, the "science" of construction—from the "art" of architecture. It might have been necessary for the onward course of mighty modern inventions, such as railway viaducts and bridges, and so it might inevitably have come to pass even had the followers of Wren been worthy of him. But still, when I recollect what a man of science Wren was himself, when we see what the artistic men of the fifteenth century did,—what the priestly architects of Medieval times,—what the Roman, or Grecian, or Egyptian architects achieved,—I am constrained to believe that artists must have in a measure voluntarily resigned their position, leaving engineers to build bridges, aqueducts, railways, and docks,—speculative builders to houses and hotels, and shops, and stores, gardeners and iron-founders to do crystal palaces and railway stations, and retaining to themselves only the few public buildings which admit of pure aesthetic (?) treatment, and a few private works which their friends may wish to put in their way.

Who built the bridge at Narni 1800 years ago, and who spans rivers and streets, miles in width, in the present day? The architect or the civil engineer?

It may be right that our Leonardo da Vinci should confine their attention to canvas or fresco; but surely architects should not have lost all control over the chief civil and domestic buildings of their country.

It seems to me that it is in the power of the present generation to regain it in part, and I commend this notion to your consideration.

In the foregoing observations I have confined myself to our own branch of the fine arts, but I believe the same remarks will hold good, in a modified form, with respect to the sister arts of sculpture and painting. Why have we Nymphs at the Bath without end, and so few embodiments of the most stirring incidents of our own history, our own religion, and the events of the present period? Vacant pedestals seem to be our chief advances towards the statuesque decoration of our cities; invitations to young England to achieve something worthy of a hoist up, as if no one yet had done anything for the country but Nelson and Wellington. But there are signs, I hope, of something better in time.

Painting, too, does not disdain to represent the

events, the costume, the emotions of the present day, and some of the noblest art is applied to perpetuate scenes which will be hereafter identified with the nineteenth century. But it is as impossible for one branch to flourish without the rest, as for a good tree to bring forth evil fruit. Frescoes have begun to enliven our blank walls, and sculpture to adorn our empty niches.

Let sculptors and painters look to it—the game lies in their own hands.

And now for a few illustrations and I have done. I have referred to the British Museum as a piece of archæology; now let me speak of the reading-room as a piece of real modernism. Here is the Pantheon dome translated into modern language;—suitable to all its purposes,—light, solid, fireproof, convenient for readers, yet wanting somewhat in decorative finish; though this is not the architect's fault. The new Museum at Oxford was in many points not so successful at first; I mean as regards its constructive roofs of iron and glass: what it may be as a work of scientific art we hardly know yet; but of this I am sure, it will be a source of wonder to many who could not conceive the artistic value of metal-work, or who believed our smiths incapable of producing artistic forms in it, and who, when iron was mentioned, had only visions of tubular bridges and wrought-iron girders, studded over with little dots called rivets. Railway engines and tenders have been made highly decorative, and gorgeous metal-work pavilions have been sent after them to the luxurious East.

Our own Crystal Palace does not pretend to be artistic, except in its mighty covering of space; but the Floral Hall is a combination of science and art on a smaller scale, which, as a sign of the times and a great stride onwards, is very valuable. St. James's Hall is another example of the use of modern appliances artistically worked out.

But time would fail me if I were to enumerate the great and small churches, warehouses, mansions, clubs; and, indeed, I must not attempt so great a task as to criticise them even as a whole.

This I will leave to your own suggestions, and shall venture to hope that you will be urged to consider some of the points I have brought before you.

Crude, and perhaps erroneous, may these few observations be; but they have this in them,—that they emanate from one sincerely anxious for the best interests of his profession, and ready in any way in his power to advance the study of all true art.

WAS THE CEILING OF THE PARTHENON FLAT OR CURVED?

MR. EDWARD FALKENER is about to publish a new work, entitled "Dædalus; or, the Causes and Principles of the Excellence of Greek Sculpture." As a frontispiece he gives his restoration of the Parthenon, with the statue under a curved roof, to which we referred some time ago, and prefixes an introductory essay headed as above. From this we make the following extracts without comment. The work itself, we have no doubt, will be valuable.

"It is due, both to myself and to the subject, both to myself and to my readers, to offer a few remarks on the frontispiece to this essay. A vaulted ceiling to a Greek temple is so repugnant to one's ideas of Greek taste or Greek knowledge, that few critics will be independent enough to pause in their opinion, when they find that the great majority of persons, learned and unlearned, unhesitatingly condemn it as an absurd anachronism. These few people I invite to follow me. If it can be shown that the traditions of art as to the non-employment of the arch are only of modern date,—it necessarily can be shown for its introduction, and history confirm its usage, then, and then only, can I expect my readers to agree with me.

Of evidence from actual remains we have none. We have not, in any of our museums, a single specimen of a Greek ceiling. Those which are pointed out to us are the ceilings of porticos, not of rooms. These porticos do not exceed 10 feet in width. Nothing could be easier, or more natural, than to cover these porticos with stone. Argument would be unnecessary to prove it, for experience shows it in the remains of every ancient temple. It is from these ceilings of the outer porticos, the stone or marble lacunaria, overlaid with gorgeous colouring and gilding, that architects have too rashly presumed that the interior also of the temple was covered in a like manner. But this opinion is unsupported by any proof, or any confirmation.\* Nevertheless, the opinion has been



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received and adopted, and modern buildings, as, for instance, our National Museum, which are erected after the Greek manner, have their ceilings, it may be, of cast-iron girders, or lath and plaster, painted to imitate, what it would be impossible to execute,—a marble roof. Such, then, is the tradition of the so-much-talked-of trabeated ceilings of the ancients. So little do we know of the interior of the Greek temples, that we cannot even decide upon their arrangement. Some have supposed that the hypæthron consisted of a range of skylights on either side, ignorant of the sacred significance of a hypæthron. Some have supposed that there was only one order of columns within the temple; others that there were two, and that the second reached the ceiling. Some have supposed that there was indeed an upper gallery, but that this gallery was void and unadorned, a receptacle for dust and cobwebs; others that there was not even a gallery, but that the two orders of columns went round the cella like a screen or scaffolding. With this ignorance as to the internal plan, can it be wondered at that we were unable to discover the nature of the ceiling? It has been asked, how is it, if such vaults existed, that no mention of them has been made by ancient writers? With the like reason we might ask, how is it, if such galleries existed, that they are not described? We have assumed the fact without allusion to the second point.

Perhaps there is no temple, with the exception of the Temple of Jupiter Olympius, at Agriguntum, of which so many attempts have been made to restore the interior, as the Temple of Minerva, at Athens. Of these projects two deserve attention. The one, entitled to consideration from the celebrity of its author, carries up the columns to the line of rafters, and makes the line of ceiling to correspond with that of the line of roof; the other gives a less altitude to the columns, but covers the cella with a horizontal ceiling. In the former case the architect could only succeed in his object of reaching the line of rafters by employing imaginary Corinthian columns, and elongating them at pleasure, while his line of ceiling, from being angular, could never have looked well. The hypæthron of such a ceiling, exhibiting a double notch, must have appeared most awkward; and, indeed, the form is more like that of an Etruscan tomb than that of a Greek temple.

In the other design the hypæthral opening likewise constitutes an objection; but in this case it resembles a well, the depth and narrowness of which precludes the admission of a sufficient body of light, while from its peculiar form the upper part of the interior must have been in continual gloom. But a more fatal objection arises from the fact that an interior so constructed would not have been sufficiently lofty to contain the celebrated Minerva of Phidias.

The statue is represented as being 26 cubits in height, while her spear touched the ceiling. She stood upon a pedestal on which was sculptured the birth of Pandora, attended by all the gods of Olympus. The plan of the pedestal may still be traced on the pavement, by which we find it to have been 21 feet 6 inches long by 8 feet 6 inches wide, with a railing round it extending nearly 3 feet more on every side. This must have required a height of about 10 feet to be in pro-

portion, which, added to the 39 feet, or 26 cubits, gives us a total height of nearly 50 feet. This height of 50 feet requires the utmost limits of the temple: so that the horizontal ceiling must be rejected, were it only from this evidence. Of these two projects, therefore, the one is inadmissible from the loftiness of its colonnades, the other from the lowness of its ceiling. The only alternative, then, is a mode of construction somewhat similar to that exhibited in the frontispiece.

We now come to the third point of consideration, how far such theory is in accordance with historical data. Much has been written regarding the antiquity of the arch; and the general impression is, that it was not invented, or at least not commonly made use of, when these temples were erected. M. Dutens, on the other hand, insists on the remote antiquity of its invention, and M. Quatremère de Quincy believed in its employment by the Greeks at the highest period of their history. The last-named writer based his opinion on the description of the Temple of Jupiter Olympius at Elis, where, it is said, 'The statue of Jupiter was of so great magnitude, that though he was represented sitting, his head seemed to touch the summit of the roof; and if he arose and stood upright, he would have broken through the covering of his temple.' M. Quatremère suggests, from the words τῆ κορυφῆ τῆς ὀροφῆς, the summit of the ceiling, that the central part of the temple had a circular ceiling which can have a summit.\* This opinion Kinnard strongly opposes, without offering any other interpretation, perhaps without having any. He contents himself with saying, "So gross an anachronism as the introduction of the representation of a type or principle then unknown can scarcely be contemplated with gravity."† M. Quatremère supports his theory by imagining that the arch which is shown on many Roman coins of Grecian buildings represents the vault of the temple; that the artist endeavoured to show in one view, the front portico, and the interior of the temple, with its statue and vault over; a conjecture which is perfectly reasonable when we recollect that the ancient medalists were frequently in the habit of giving conventional representations of the objects which they wished to portray.‡

M. Quatremère believes that Pausanias, where he says λίθον καὶ ἀντὶς ὀροφῆς, in speaking of the temple of Apollo at Phigalia, is describing a stone vault; and he further goes on to remark that Pausanias tells us that in the city of Megalopolis, near the portico Philippeon of the Forum, is the Temple of Mercury Acaecus, of which nothing but the stone vault (χρυσῶν) remains;||

\* Q. de Quincy, "Mémoires de l'Institut—Hist. et Lit. Anc.," tome iii. p. 212; "Le Jupiter Olympien," Part IV. par. xii. p. 267.

† Kinnard, "Stuart's Athens," H. 31.

‡ A distinguished architect has just published a most interesting and valuable work on numismatical architecture ("Architectura Numismatica; or, Architectural Medals of Classic Antiquity.") By T. L. Donaldson, Ph. D. London: Day & Son, Gate-street, Lincoln's Inn fields, in which he propounds a new theory. He supposes that these conventional types of temples are mere baldachios, instead of temples, as has always been supposed by the learned. I leave the subject for numismatologists to decide, and merely refer to it to show that I have not adhered to the general opinion without consideration. Animated, as all antiquaries should be, by the like zeal for truth, and love of art, a difference of opinion in details must yet always be expected.

§ Paus. viii. 41. || 16. viii. 30.

\* Unless the temple were very small, or the cella of diminished width, as in the temple of Apollo at Bassæ; the roof of which Pausanias expressly mentions was of stone.—Paus. xli. 5.

while Pliny informs us that Diocretes began to vault (consecrate) the temple of Arsinoe in Alexandria.\* Vitruvius, in recording the names of artists who wrote on their work, says, "Theodorus Phocæus (scripsit) de tholo qui est Delphis,"—on the vaulted (temple) which is at Delphi. Roman temples, we know, were sometimes vaulted, as at Nismes, at Baalbe, and the temple of Honour and Virtue at Rome. \* \* \*

We have evidence of the arch existing in the time of Alexander, it having been used by Diocretes in the temple of Arsinoe: we have seen it attributed to Democritus, one century earlier, while a conjecture has been raised that its origin was of a still earlier epoch, the opinion seeming to be based on monuments the antiquity of which could not be disputed.

It is well known, however, that the Greeks were in the habit of appropriating to themselves the discoveries of other nations, and we must therefore go back to a far earlier date for the discovery of this important principle. It has been found that the arch was very generally made use of in Egypt 1400 years before the time of our Lord, as is proved by the monuments of Thebes and paintings at Beni-Hassan, while a still earlier use is shown by the brick pyramids, which were built several centuries earlier.

Thus it must be acknowledged that, were the question even about a vault, it is far from improbable but that a vault might have been employed; but the frontispiece does not show a vault, it merely represents a wooden ceiling of a circular form: the one is an arch of masonry and construction, the other of mere form and semblance. It is unnecessary to say that there is a vast difference between the two. I do not show a vault,—not that I doubt the antiquity of the vault, but because I believe that most of the temples were culled with wood.

\* \* \* \* \*

Having restored the colonnades as described, I found that there was yet remaining a considerable space to account for, while, on the other hand, I required the utmost altitude, in order to admit the statue. This space being just sufficient for a semicircular arch, and the arch being the form which filled up the angular lines of walls and rafters with least sacrifice of room, I did not hesitate to adopt it, particularly as I considered that this was the only form capable of admitting the colossal image, and that it was the only form in which the hyæthral opening could partake of a graceful character. As regards effect, I consider that the arch-form gives greater height and magnificence to the building than any other, and that it best harmonizes with such a statue."

#### COPPER AND ITS RELATIONS.

It is to the dark and obscure periods of our prehistoric annals that we must look for the origin and development of the art of working in metals. Next in order, and standing in bold relief to the barbarous usages of the stone period, followed a step so gigantic in the march of civilization, that history itself will scarcely afford another instance so remarkable. The discovery of the method of working in metals—and copper was among the first of these—constituted a memorable triumph of mind over matter; and was of such importance in its results, that the Bronze Period of the archeologist will ever be regarded as an era in the social existence of our race.

The antiquity of copper is thus possessed of no common degree of interest. Its relics, indeed, form the best and most connected link between the minds of this generation and of those that have long since passed away. The tombs of Memphis, the cemetaries of Etruria, the disintegrated treasures of Pompeii, or the relics of Scandinavian superstition, bear testimony alike to the universal applications of copper, and bring to light the same glimmering indications of human progress. The bittern intractable boulders of granite, or the softer limestone rocks, were fashioned into square blocks, and at length applied to all the purposes of building. The gregarious and social habits of our race, even in its ridest stages, led to the formation of communities. Coinage was established, and the principles of currency originated. Spade husbandry—if the miserable flint and wooden implements permitted anything deserving of the name—was changed for that of the plough. Men began to practise the humanizing usages of interchange and commerce; and not only that, but they also—after a time and time-honoured principle in political economy—improved their warlike instruments.

\* Plin. xxiv. 14.

The pages of sacred history abound with minute accounts of the early acquaintance of the Jews with the arts of metallurgy. But with regard to their mines, and their mode of working the ores, the same accuracy is not preserved. "Report states," observes Bishop Horne, "that there was anciently a copper mine at Aleppo, which, however, must long since have been abandoned; but the fact substantiates the accuracy of Moses in his description of the Promised Land, as 'a land whose stones are iron; and out of whose mountains thou mayest dig brass' (or copper, as the word should be rendered)." Egypt furnishes some of the most interesting relics of copper which have yet been brought to light. From the indelible paintings on the tombs of Thebes we likewise derive a very complete and accurate knowledge of the modes of casting bronze practised by the ancient Egyptians; and what is very remarkable, the same methods, and, with but little improvement, the same implements, are still employed by the Arab and Chinese workmen of the present day. The early inhabitants of Etruria and Central Italy were particularly skilled in the arts of mining and smelting copper. They possessed a bronze and a copper coinage from the earliest times; and the singular application of the copper ploughshare, to mark the boundaries of a city—as Romulus ages afterwards did at the foundation of Rome—was one of the superstitious purposes to which the metal was put among the ancient Etruscans. The Greeks were, also, at a very early period, familiar with the uses of copper, and with the art of smelting its ores. Their chief supply of minerals was first obtained in Attica, and from the island of Cyprus (from which place the metal derives its name); but in process of time they sought for and discovered it in Western Asia, in the south of Italy, in the Alps, and in the mountains of Spain. The Greeks and Romans were profuse and even prodigal in their consumption of this metal. Enormous quantities of copper were consumed in the production of their colossal bronze statues, the ornaments of their temples, their instruments of art and war. The scholar, the antiquary, and the admirer of ancient art, will alike regard with interest this period in the history of copper, on which, however, it is beyond our present purpose to dwell.

The origin of the art of alloying copper with tin to form bronze is lost in the obscurity of the mythological period. But we cannot fail to perceive, at a single glance, the exceeding value of this discovery, which, in all probability, was made by accident. Copper is, comparatively, a soft metal, and of itself altogether unfit for the fabrication of the sharp and cutting instruments of art and war, which the tastes or necessities of mankind desired; but mixed with tin in proper proportion, it forms an alloy so singularly hard and dense, as to be equal almost in these respects to tempered steel, and certainly far superior to the softer kinds of iron. Bronze implements are also possessed of a much more imperishable character than those of iron. A small bronze knife, dug up at Thebes, was found to have preserved its edge as perfect and entire as it could have been 2,000 years ago, when it was first cut. The proportions of this alloy seem to have been ably and almost scientifically investigated by the ancients. Indeed, it has been held—and Dr. Priestly was of this opinion—that they were acquainted with some alloy, or possessed some mechanical means of hardening copper to a degree much greater than the bronze of modern generations. Bishop Watson, however, controverts this view; but the point is of small importance, since it is indisputable that the ancient metallurgists were, either from observation or experience, remarkably skilled in the proper proportions of its manufacture. It is very singular, moreover, that all the specimens of ancient bronze which have been analysed correspond closely in those relative proportions which are known to produce an alloy of maximum hardness. Some bronze nails, for example, and some ancient coins of Corinth, a very ancient Greek helmet, now in the British Museum, and an antique sword found in France, have been shown to contain respectively from 86 to 88 per cent. of copper, and from 12 to 14 per cent. of tin.

Of copper mining in England we have no authentic history. It seems probable, from certain rude indications in old and abandoned mines, that copper was worked at a very remote period in the mountains of North Wales by the ancient Britons. It is also probable that in the county of Cornwall the early workers of tin—whose traffic in that metal we read of with the Phœnicians—could scarcely fail to make the discovery of copper,

since the ores of the two metals are sometimes found in intimate contact. But however this may be, we know that this immense source of mineral wealth was almost neglected in that county until within a comparatively recent period. We have also evidence to show that the Romans worked copper mines in England; and, from the existing remains of these mines in Anglesa and Cumberland, together with their extensive applications of the metal, we infer that mining by them must have been pursued with their characteristic skill and with their accustomed success.

It was not until the middle of the last century that copper mining in Cornwall received its greatest impulse. Mines were sunk to greater depths: new hydraulic engines were constructed; the machinery improved; and the operations generally systematized and reduced to method. Hence it was not long before this important branch of mining enterprise assumed its true position in the valuable produce of the country. Sir Charles Lemon has computed that for fourteen years previous to 1758 the yearly value of Cornish copper was 160,000*l*. Half a century later the same annual produce had increased to 550,000*l*. and now the copper works of Cornwall and Devonshire are undertakings of enormous magnitude.\* They are sunk in some cases to the enormous depth of 300 fathoms, and are drained by means of the celebrated Cornish engines which for size and power are unparalleled in any country in the world. They are generally worked by companies of adventurers. If the mine be on waste land, it belongs to the revenues of the Duchy of Cornwall, and the lease is obtained from the Crown. If on private property, it is let from time to time on special terms, and these consist of a payment in kind, varying from 1-25th to 1-10th part of the produce. It is proper to state, however, that these rates, or "lord's dues," as they are termed, are modified with the facilities of the difficulties of working the mine. Some copper mines pay thousands of pounds sterling of rent to others, again, pay no rent whatever. The profit arising from them, however, are occasionally very large. Sir Henry de la Beche mentions a copper mine,—that of Wheal Alfred, in Cornwall,—having afforded at one time a net profit of 140,000*l*.

But we could not, perhaps, select a better illustration of the enormous extent of these copper mines than what is comprehended in the statistical tables of Mr. Burri's valuable paper, in the *Mining Review*, respecting the celebrated consolidated mines in Cornwall. These mines are situated about two miles east of Redruth, and they form one of the remarkable chain of important mines existing on the great mineral vein which traverse this district in an easterly direction, from the Land's End in Cornwall to the Dartmouth hills in Devonshire. They are, or at all events they were recently, the richest mines in Cornwall; and they are still by far the deepest mines in England. They consist of four distinct mines,—Carhurruck, West Wheal virgin, Wheal-virgin, and Wheal-fortune. The nature of the rock is chiefly clay-slate, resting upon granite; and the metalliferous veins are from two or three to seven or eight feet wide. The depth of the vertical shaft in one case exceeds 1,300 feet. The underground workings extend to upwards of seventy miles of linear measurement! The ore raised are chiefly copper; and of these the blue and green carbonates predominate. Nine steam engines are employed in the drainage; and their probable equivalent in actual power is 4,500 horses. The annual expense of this drainage is 12,700*l*. The quantity of ore produced is, on an average of ten years, 16,000 tons of copper and a little tin; the value of this, 119,800*l*. The total cost of the mine annually amounts to 93,500*l*. exclusive of lord's dues; and, with these, to 98,500*l*. clear profit to the proprietors, 21,000*l*. per annum. Amount of capital invested, 75,000*l*. In interest, after paying back the original capital 200 per cent! Number of men, women, and

\* The total quantity of copper ore raised from the Cornish and Devon mines during the year 1858 realises 1,957,534*l*.; the value of the copper and copper ore imported into the United Kingdom during the same period amounted to 3,099,916*l*., making a collectively amount of 4,157,351*l*., while the export of wrought and unwrought copper for the same year represents a sum of 2,032,217*l*., thus leaving an amount of copper to the value of 1,224,134*l*. for home purposes for that year. The average price per ton of copper ore was—

Cornwall and Devon	£5 14 8
Australia	20 4 0
New Zealand	14 0 0
Chili	18 10 3
Cuba	13 3 0
Spain	9 6 0

\* *Wheal* is a very old Cornish word, signifying pit or mine. It is met with at every turn of mining phraseology.

children employed, about 2,500, of whom about 1,400 work underground.\*

Such are the plain matters of fact connected with a Cornish copper-mine in the nineteenth century. This, however is only one, though certainly it is a remarkable example of profitable adventure in copper mining. The celebrated Barra Barra mines, in South Australia; the Santiago and Cobre mines, in Cuba; the Copiapo mines, in Chili, and others might be named that are equally startling in their amazing richness. But the picture has its dark side. A copper-mine is not always such a profitable adventure, as some of our readers may know to their cost.

We may add here, that although Cornwall and Devonshire are so remarkable for the produce of copper ore, not a particle of it is smelted there. From the great poverty of coal in these districts, it is found better to transport the ore to the coal districts of South Wales, chiefly to the extensive copper works of Swansea and its neighbourhood. The propriety of this will be very apparent from the fact, that for every ton of pure copper produced from average ores, about twenty tons of coal are required.

It is very surprising how poor an ore of copper may be profitably mined. Mr. Allan, speaking of one of the Cornwall ores, observes: "Though copper pyrites occurs in vast profusion, it is by no means a rich ore; what is picked for sale at Redruth rarely yielding twelve, generally only seven or eight, and occasionally as little as three or four per cent. of metal. In the latter case, such poverty of ore is only made up by its facility of transport, the moderate expense of fuel, or the convenience of smelting." The copper slate of Mansfeldt, which has long been celebrated for its copper-mines, is also a remarkable instance of this. Here there has long been pursued a scientific system of mining; "and such," says Dr. Ure, "is the influence of a wise administration on the economy of mines, that the thin layer of slate in this formation, of which 100 lbs. commonly contain but 1½ lb. of copper—occasionally argenticiferous—has been for several centuries the object of smelting works of the greatest importance to the territory of Mansfeldt and the adjoining country. The frequent derangement which this metallic deposit experienced, led skilful directors of the underground operations, at an early period, to study the superposition of the accompanying rocks. From their observations, there resulted a system of facts, which have served to guide miners, not only in the country of Mansfeldt, but over a great portion of Germany, and in several other countries where the same series of rocks occur."

Copper ores are abundant in Sweden, Russia, Persia, Japan, Cuba, Chili, Colombia, Australia, and many other countries, where, however, mining is not pursued to a large extent. Some of the mines in Cuba were worked in the seventeenth century by Spanish adventurers, but were subsequently abandoned by them. They have only recently been reopened, and were found to be of great value. In Sweden, the celebrated copper-mine, in the province of Dalecarlia, is supposed to have been wrought for 1,000 years; and Gmelin, the celebrated German chemist, has traced the remains of mines on the southern and eastern borders of the Ural mountains, which, it is conjectured, must have been the work of a nomadic people, ages before the conquest of Siberia by the Tartars.

The mechanical treatment of the ore at the mine, preparatory to its sale, is effected in a variety of different ways. It may receive a first sorting either in the mine or at its mouth. It is first separated into small pieces, and then picked, or sorted, into heaps of relative richness by children, who soon become surprisingly expert in the selection. It is then pounded, crushed, washed, separated as much as possible from impurities, and finally sampled and sold by public ticketing to the smelters. This last transaction has continued to exist in Cornwall, without change, for upwards of 100 years. The sales of the ores take place weekly, at one of the principal hotels in Truro, Redruth, or Poole. Samples of the different lots are procured by the buyers' agents—and every

copper-smelter has such a functionary constantly in Cornwall—who, on the day of sale, attend and procure their offers. On these ticketing-days, dinners are or used to be given, like City feasts, to the purchasers, at the expense of the mine.

Copper is distinguished from all other metals by its beautiful and characteristic red colour. This fact could not have been stated so explicitly some years ago; for the metallic substance known as Titanium, long classed by chemists as a pure metal, was also possessed of a splendid red colour. But Wöhler has since shown this substance to be a compound. Copper is frequently met with in nature, sometimes beautifully crystallized. In Siberia and the Farøe Islands, arborescent groups of native copper are disseminated throughout the amygdaloidal rocks of these districts. It has also been found in Cornwall; and in the red sandstone region of the United States it exists in fine crystalline masses. But the largest specimens of native copper known to exist have been found in the district of Lake Superior. One remarkable mass, recently discovered there, has been estimated to weigh upwards of eighty tons.

Mineralogists know of about forty different minerals containing copper. Of these many are associated with sulphur, selenium, arsenic, and antimony; others with oxygen, and chlorine; and carbonates, phosphates, and sulphates are very frequent in their occurrence. Commercially speaking, the most valuable minerals of copper are copper pyrites—the yellow sulphuret of copper, the blue and green carbonates or malachite; the oxide, phosphate, silicate, and some others. The first of these—the copper pyrites,—is by far the most common ore of copper, and constitutes, indeed, the chief supply of the mines of Cornwall, and those of Mansfeldt. Malachite is a very beautiful mineral. It is found abundantly in Siberia, and some localities in the north of Europe; and an almost inexhaustible field seems to exist in the copper districts of Australia. It admits of a high polish; and when large enough is cut into vases, book-plates, and other ornaments. The beautiful and costly malachite doors, from Russia, in the Great Exhibition,—which were purchased by Mr. Hope at an enormous expense,—must be fresh in the recollection of our readers. The Museum at St. Petersburg contains a *monstrous* block of this mineral, weighing upwards of forty tons, and valued at 20,000*l.* The phosphate, and some others of the copper ores, are likewise very beautiful minerals.

Indeed, the characteristic feature of copper and its minerals is that of extreme beauty. The salts of the metal are especially remarkable for the delicacy of their blue and green colours. Blue vitriol is a "gorgeous azure," and the sulphate or nitrate of copper with ammonia constitutes the fine blue coloured solution through which the chemist loves to transmit the rays of his gas-lamp. The alchemists of old were so alive to the rare beauties of this metal, that they called it after the planet Venus; and this signified, in their fantastical creed, the essence of everything that was beautiful and fair to look upon. Some salts of copper are employed in the arts as pigments. The neutral acetate of copper, the sub-acetate, or common verdigris, and the Schiœnfurt or Vienna green—a combination of copper, arsenic, and acetic acid—constitute the splendid mineral greens of commerce. All these compounds of copper are poisonous; the verdigris which forms on copper cooking utensils is dangerously so. On that account, copper should never under almost any circumstances be employed for this purpose, particularly when brought into contact with substances containing fat or vegetable acids, in which case a peculiar and most energetic chemical action occurs to produce the poison.

#### ARCHITECTURAL COMPETITIONS AND SPECULATIVE BUILDING: THEIR EVILS AND REMEDIES.

I THINK these subjects are closely connected; certainly they are allied in a money point of view. First, with regard to competitions.

"We call it a society," says Carlyle, "and go about professing openly the best separation— isolation. Our life is not a mutual helpfulness, but rather, cloaked under due laws of war, named 'fair competition,' and so forth, it is a mutual hostility."<sup>1</sup> How true is this respecting architectural competitions! Few occur but what the competitors quarrel with the judges, being, at the same time, so jealous of one another, that they have never been able to settle the proper regulations. The judges, also, are often at war,—two

factions contending for the mastery. And "fair competition,"—who does not fear the uselessness of sending in, without having a friend on the committee? Then, again, more especially with reference to recent Government competitions, the barracks and public offices, principles of equity are totally disregarded. True, the merits of some of the competitors were acknowledged; true, the premiums were paid; true, few architects would have made any drawings were it not for the implied condition that the successful competitor should be employed; but true it also is "We have profoundly forgotten that cash payment is not the sole relation of human beings; we think, nothing doubting, that it absolves and liquidates all engagements of man. . . . Did I not hire them fairly in the market? Did I not pay them, to the last sixpence, the sum covenanted for? What have I to do with them more?"<sup>2</sup>

Then there is the reprehensible proceeding of men setting themselves up as judges, well quite unfit for the office, for few competitions have taken place in modern days in which the judges were qualified to decide. Were they familiar with the principles of art; acquainted with its true scope; unswayed to false systems; able to separate in a design what is the designer's own from what belongs to others; and that which is appropriate to the present age from that which was suitable only to races long since passed away? For mark, the judges should have all the above qualifications. How was it in ancient times? Winckelmann observes of the Greeks, "The reputation and success of artists were not dependent upon the caprice of ignorance and arrogance, nor were their works fashioned to suit the wretched taste or the incompetent eye of a judge set up by flattery and fawning; but the wisest of the whole nation, in the assembly of united Greece, passed judgment upon and rewarded them and their works; and at Delphos, as well as at Corinth, contests in painting, for which judges were specially appointed, were instituted in the time of Phidias."<sup>3</sup> So Ferguson remarks, "Had Pericles and Leo X. not been as familiar with the processes and exigencies of art as any of those that surrounded them, and had the artists of their day not been gentlemen in feeling and education, and treated as such, the arts of their respective ages would never have risen to the elevation that marks them." Now, as the same author continues, "In almost every competition that has taken place for a public monument, it has, either from ignorance or unfairness on the part of the judges, degenerated into a job; and no man of gentlemanly feelings could subject himself to the trickery and chicanery that are requisite to get a design accepted. If he did so, he would soon cease to be either a gentleman or true artist; and although those in the humbler walks of art can, in the mass of the public, secure some patrons, they must descend to their level, and flatter their feelings and prejudices to secure a verdict in their favour and a remunerating price for their works, for it comes to that after all."<sup>4</sup> We have lighted on the brilliant discovery that, because a man is a peer, a millionaire, a member of Parliament, or of the parish vestry, he is qualified to decide momentous questions of art, and to pronounce what rewards are to be assigned to those who have devoted their lives to the subject. It may be said that people who pay ought to have a voice in the matter. The question, however, is, whether they want the best that can be had for the money, and are competent to choose for themselves.

Looking at competitions with purely monetary considerations, the present system is founded on gross injustice. Whatever certain benefits there may be rests with the public; the consequence of this ignorance of the true artist's certainty of reward being that the public rarely, if ever, receive any real and lasting benefit. The individual artist has only a chance of remuneration; while numbers of meritorious practitioners are sure to lose their time. There is also the erroneous supposition that architects are men of fortune; the members of other callings not being presumed to have that leisure which comp-tee gives, enabling them to devote their time and money to a given purpose, with only a probability of remuneration: they will not gamble.

Speaking of the competition for barracks, the *Builder* justly observed:—"There were 114 sets of drawings; and if we take 50*l.* per set, which will be a low figure, the account will stand as follows:—

\* Ibid.

† "The History of Ancient Art among the Greeks."

‡ "An Historical Inquiry into the True Principles of Beauty in Art."

\* Some years ago, a party of Cambridge philosophers undertook, for a scientific object, to penetrate into the vast depths of this mine. The venerable Professor Faraday, who made one of the number, used to relate with infinite gusto the following startling incident of his visit. On his ascent in the ordinary manner, by means of the bucket, and with a miner for a fellow-passenger, he perceived, as he thought, certain unmistakable symptoms of frailty in the rope. "How often do you change your rope, my good man?" he inquired when about half way from the bottom of the awful abyss.—"We change them every three months, sir," replied the man in the bucket; "and we shall change this one to-morrow, if we get up safe!"

\* "Past and Present."

114 sets of barrack plans at 50l. per set. . . . .	£5,700 0 0
Premiums paid for same . . . . .	600 0 0
	£6,300 0 0

In other words, the architects who have entered into competition give 5,100l. to the country, exclusive of professional knowledge. And this sum of 50l. does not represent more than one-third the actual money-cost paid to assistants for some single sets of plans.\* The Government retained the whole of the designs, whether premiated or not.

None who refer to the premiums usually offered can be surprised that competitions fail to elicit worthy results. It may be stated, as a general rule, that no one has the slightest conception of the data on which these premiums are fixed. We find one fortunate architect actually getting 5l. for a design for a church. The committee of the Mechanics' Institute, at Alford, asked for designs for a building to cost 600l., offering three premiums of two guineas, one guinea, and half a guinea. For laying out, &c., four acres, on which a dwelling-house, a lodge, offices, and stables were to be erected, and providing a specification and estimate, "a 10l. prize" was advertised; with, however, the advantage of inspecting a plan by the talented and munificent proprietors. The guardians of the Blandford Union required a workhouse for 250 inmates, "the drawer of the plan" to receive 10l., "provided that he should not afterward become the contractor for the work." These are not solitary, but common instances of the parsimony and ignorance of people; who, nevertheless, find architects too degraded, or too poor, not to spurn their offers; nay, they are often willing to pay for particulars.†

As to the time allowed, the present manufacturing system has led to the idea that architects can produce elaborate results at the slightest notice. Mature thoughts, originality of conception, and truthfulness, are not, however, now required; and an architect would lose all chance of ascertaining what he judges best, instead of ascertaining what is most likely to please a committee, who know little or nothing of the subject. When Michelangelo was asked by Julius II. to design his sepulchral monument, he brooded over the subject for months, without touching a line; but the result was worthy alike of the artist and of the pontiff.

These, then, are the evils of competitions. The judges are usually incompetent; being no more qualified to give an opinion on art than on the technicalities of a lawyer's or doctor's vocation. Impartiality is rarely observed, it being continually settled beforehand who is to do the work, which is sometimes put into the hands of a favorite protégé, instructed to gather what there is of value in the competitors' productions. Numbers throw away their time, in order that one may have a chance of employment. Leading architects will not compete, unless for an extensive production, or the competition is limited. The premiums are nearly always inadequate, considering the risk of total loss, and sufficient time is rarely allowed. For a single case in which the best design is carried out, in fifty, one of the worst is adopted. Altogether, the system, as now practised, is unsuited to the present constitution of society.

How is it to be reformed? The celebrated competition for the reconstruction of the gates of the Baptistery at Florence teaches a valuable lesson to artists and to the public. "From amongst a great number, seven were selected by the *consoli* as worthy to compete for the work, upon terms not merely just but munificent. Each competitor received, besides his expenses, a fair indemnity for his labour for one year (the time for competition). . . . There were thirty-four judges, principally artists, some natives of Florence, others strangers: each was obliged to give his vote in public, and to state at the same time the reasons by which his vote was justified." The works of Brunelleschi, Donatello, and Ghiberti being selected from the rest, "the suffrages seemed divided; but, after a short pause, and the exchange of a few whispered words, Brunelleschi and Donatello withdrew, generously agreeing and proclaiming aloud that Lorenzo had excelled them all, that to him alone belonged the prize; and this judgment, as honourable to themselves as their rival, was confirmed amid the acclamations of the assembly. . . . The great artist was not hurried into carelessness by their impatience or his own; nor did he contract to finish it, like a blacksmith's job, in a given time. He set about it with all due gravity and consideration, yet, as he describes his own feelings, 'with infinite diligence and infinite love.' He

began his designs and models in 1402, and in twenty-two years from that time—that is, in 1424, the gate was finished. . . . Such was the glory which this great work conferred, not only on Lorenzo himself, but the whole city of Florence, that he was regarded as a public benefactor.\* I know it will be long before these suggestions can be adopted. There are too many important committees and vestry men in the way; very estimable in their counting-houses and shops, but who would feel insulted not to be able to help their friends.

Next, with respect to the system of "speculative building," i.e., building not for convenience, durability, and bounty, but to obtain the utmost amount of money, in oftentimes, the most unprincipled manner.†

In England, says Hassenfratz, writing in 1804, "Il est rare qu'on achète le terrain où l'on veut bâtir; mais on l'engage pour 20, 30, 40 ans, et on paie une rente; cet article seul est une grande économie de capitaux; et quoique au bout du terme prescrit les édifices reviennent au propriétaire du terrain, l'art de bâtir pour un temps déterminé a été si perfectionné qu'il est rare que le propriétaire en retire le moindre avantage." Rare method, by which the interests of freeholders and builders are rendered so perfectly antagonistic! But who is really benefited? Not the freeholder; not, certainly, the occupants of such houses; and, as to the enterprising, speculating builders, ruin commonly overtakes the most astute.

Happily our Continental neighbours have avoided a system which goes far to account for those long rows of ugly houses,—one propping up the other, with rectangular holes for windows, flat arches, settlements in all directions, and not the slightest aim to beauty, except, perhaps, by means of flimsy cement work, "hiding with ornament the want of art," and which are peculiar to a country where it does not pay to build otherwise than for a very limited time. So long as the English public are content to live in houses run instead of built up; so long as people consent to build on leaschold, instead of freehold ground, and encourage "tendering" for work, in place of measuring it when done, and paying fair and current prices; and so long as competent and honourable professional men are excluded from the supervision of builders, so long shall we continue to have houses as they now are, but not as they ought to be. EDWARD L. TARBUCK.

#### THE SERPENTINE BLUNDER.

THE Select Committee, as we last week stated would be the case, have reported against the mistaken course that has been adopted, and on which thousands have already been wasted. After describing the condition of the Serpentine as given to them in evidence, the various plans at different times submitted, and the arguments used in support of the course adopted, the report thus concludes:—

"If a supply of fresh water sufficient not only to replace the waste, but to provide for a continual charge, were impossible to be obtained, in the absence of another alternative, filtration might be justifiable; but your committee believe that such a supply of fresh water may be obtained from the springs within or contiguous to the Serpentine, from an enlargement of the water shed of the park and Kensington-gardens, and from other sources which have been pointed out to the committee. Some of this supply may be obtained by means of simple gravitations at a small expense.

Conflicting evidence has been given as to the quantity and quality of the water that can be pumped from the well in Duck Island, but Mr. Hawksley states in his evidence that he entertains no doubt that a considerable supply of water can be procured in the neighbourhood of his works, and that an increased amount of water could be drawn into the Serpentine by an extension of the surface drainage of the park and Kensington-gardens.

We have had, however, a more embarrassing task than to decide merely whether Mr. Hawksley's plan is the best for effectually cleansing the Serpentine. We have had to consider whether that plan, recommended by great engineering authority, adopted by the Executive Government, sanctioned by Parliament, and nearly approaching its completion, is so unsatisfactory in its object and means that it ought to be arrested, even in its present stage of advancement, and the work which has been performed diverted to other purposes. After much patient investigation, we have arrived reluctantly at the conclusion that the proposed filtration will not be effectual for the desired object, and that this cleansing process ought not to be carried on in one of the most beautiful of our Kensington-gardens. We recommend, therefore, that the project of filtration be abandoned, and that the best available

\* Mrs. Jameson's "Lives of the Italian Painters."

† "In an account of a bankrupt's final examination, recently published, it appears the petting creditor, who was the mortgagee of nearly all the bankrupt's property, had agreed to leave some land to the bankrupt, had induced him to expend 4,000l. of his own money on it, to get largely into debt in covering the land, and had proposed to the bankrupt to assign the whole of his property to him, and then to go through the Bankruptcy Court, promising him, after he should have obtained his certificate, to give him 1,000l. to 'begin again' with."—The Builder, no. 710.

‡ "Traité de l'Art du Charpentier."

supply of fresh water be poured in to such an extent as to produce some continual flow.

Whenever the Metropolitan Board have completed their works for the diversion of sewage from the Serpentine, measures should be taken for rendering the bed of the lake clean and hard. We have not come to any conclusion as to the extent to which the mud ought to be removed, hardened, or covered, nor as to the relative merits of gravel or concrete as a covering, nor as to the expediency of burning it, nor as to the depth which would best promote the convenience and safety of bathers and skaters, and the purity of the water; but we are of opinion that the present condition of the bed of the Serpentine absolutely requires amendment."

Of course it must not end here. Having got out of the wrong road, the Government must now at once get into the right one.

#### ARCHITECTURAL INSTITUTE OF SCOTLAND.

At a meeting of the Architectural Institute of Scotland, in George-street Hall, Edinburgh, on the evening of the 2nd day of April, the report of the council upon the drawings sent in, in competition for the prizes offered by the Institute, was read, and the prizes were delivered to the successful competitors, viz.:—

1. For the best geometrical drawing. Medal.—Alexander C. Beattie, apprentice to Mr. David M'Gibbon, architect, Edinburgh.
- Second Prize.—Thomas Bryson, apprentice to Messrs. Poddie & Kinneir, architects, Edinburgh.
2. For the best series of drawings of architectural details, measured and drawn from the originals. Medal.—Francis D. G. Stanley, apprentice to Messrs. Brown & Wurdrop, architects, Edinburgh.
3. For the best original design: Subject—an ornamental public fountain. Medal.—John Alexander Hamilton, apprentice to Mr. David Rhind, architect, Edinburgh.
4. For the best model in clay of an architectural ornament, being an original design. —George M'Callum, apprentice to Mr. William Brodie, R.S.A.

Afterwards a paper was read "On the Domestic Architecture of Italy and France during the Middle Ages, and the period of the Renaissance," illustrated by drawings, by Mr. Robert Anderson, architect, Edinburgh.

#### BISHOP AUCKLAND TOWN HALL, ASSEMBLY ROOMS, AND MARKETS.

We have already mentioned that the first premium offered for the best design for Town-hall, Assembly-rooms, and Markets, for Bishop Auckland, Durham, was awarded to Mr. J. P. Jones. The accompanying engraving illustrates the selected design.

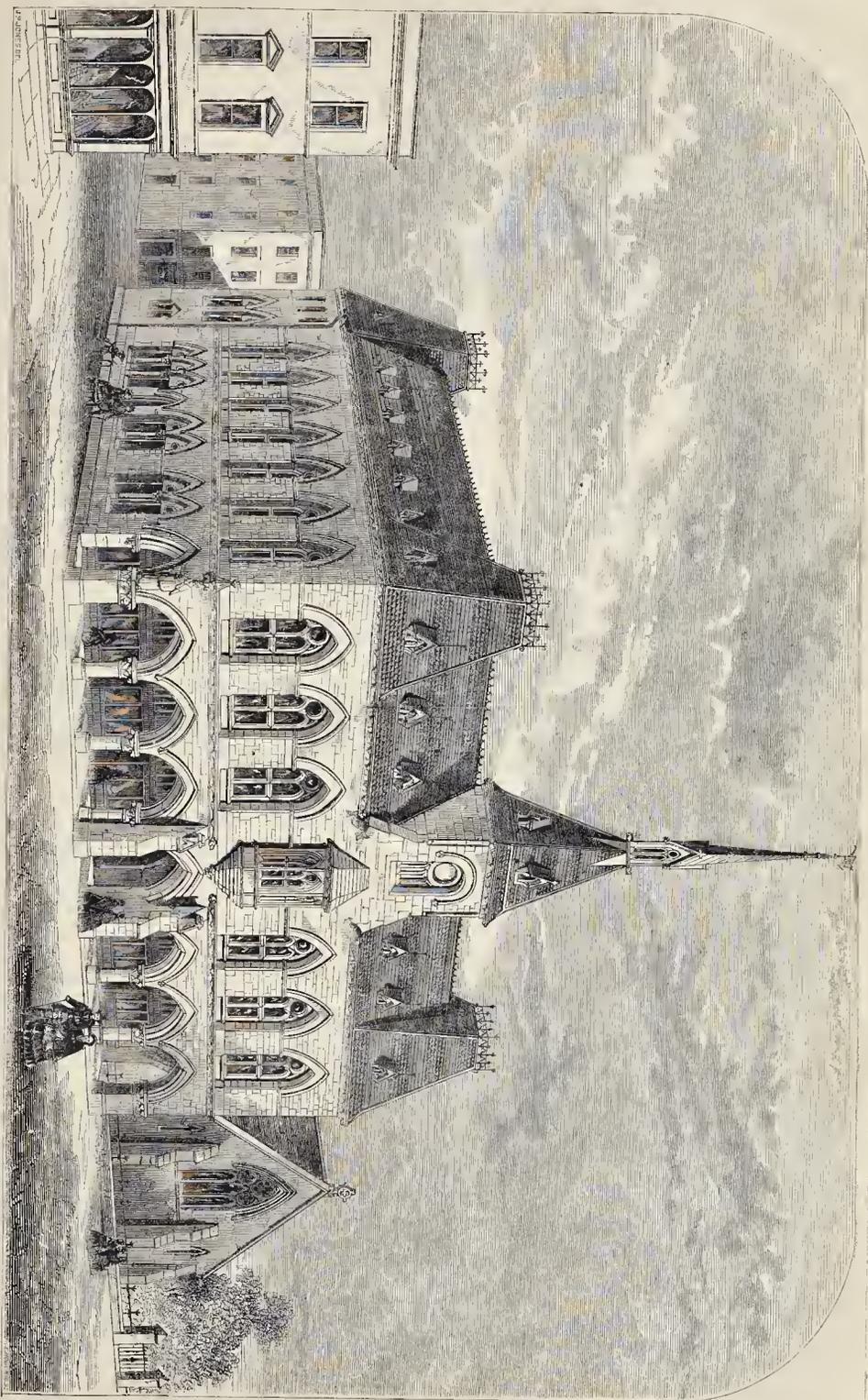
On the ground-floor is placed a large room for Mechanics' Institute, with ante-room, news-room, offices for Town-hall Company, and Board of Health. These are approached from the entrances at the side facing north. On the west, a principal front, under the arcade are shops, with living-rooms over; and in the centre of this front is the principal entrance to the covered market, and also to the Assembly-room, over the rooms above mentioned. The market is in the rear of the front building, and open to the roof, with a gallery for butter, poultry, and other dairy produce, the butchers' stalls being on the ground-floor. The gallery and the roof are to be constructed of iron, and the whole of the roof is to be covered with glass; the spandril of arches to be filled in with ornamental scroll-work, and coloured in blue and white. There are three entrances to the market, one for the north, west, and east, leading into three different streets.

On the first floor is the large assembly-room, 86 feet by 40 feet, with vaulted ceiling, divided into compartments by moulded ribs, resting on foliated capitals and shafts, the whole to be decorated with colour. At the end is a recess for an orchestra and organ. The assembly-room is approached by two large staircases, one at each end of hall, 20 feet square. A smaller public room is attached to the larger one, facing the west, or principal front. Retiring-rooms are also provided, 35 feet by 30 feet, with coved ceiling.

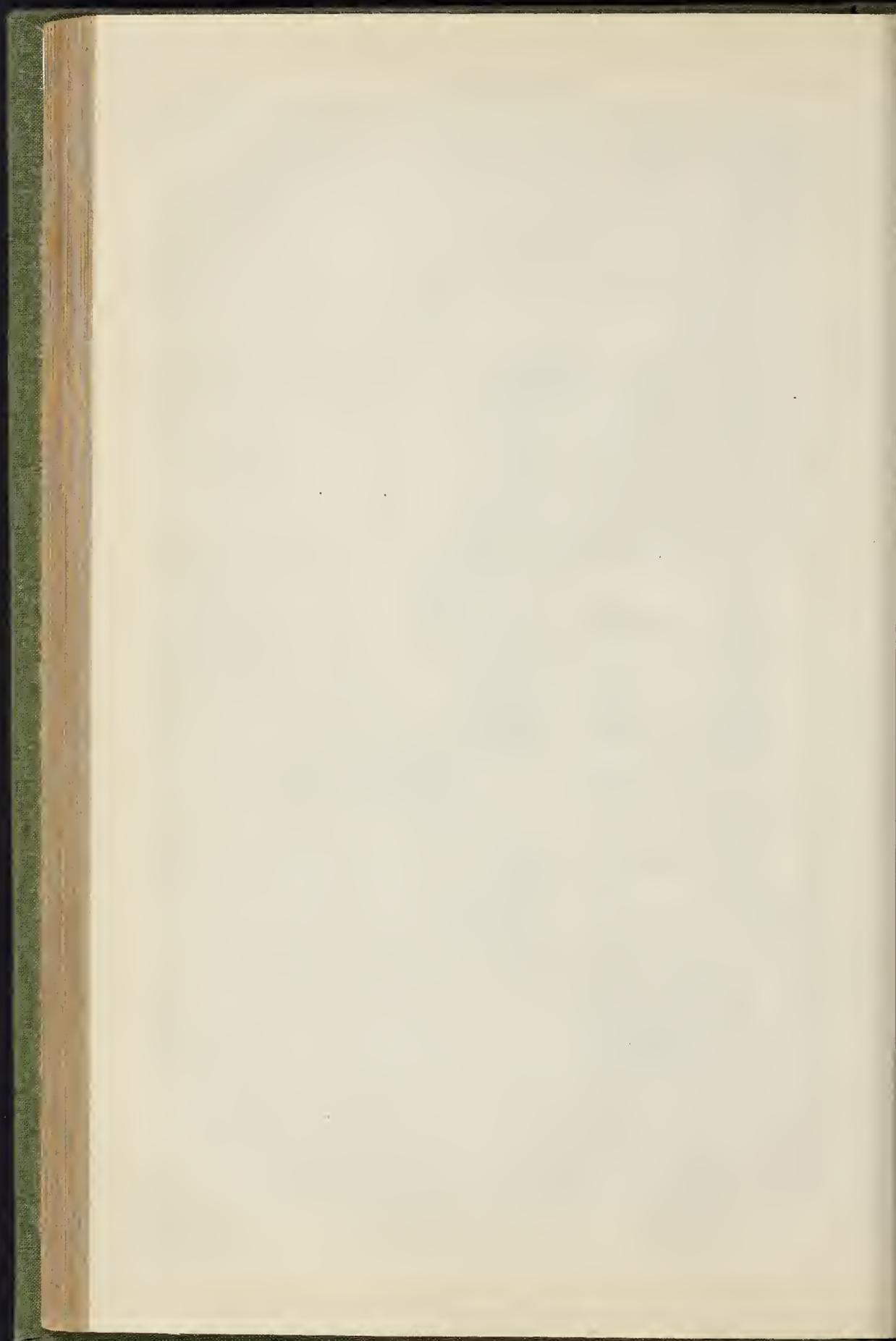
On the south side is a Gothic chapel, so that it was thought best to design the building so as not to interfere with it by placing an Italian building close to it. The architect sent in both a Classic and a Gothic design, and the directors, on his recommendation, adopted the Gothic as most suitable; it also afforded the best accommodation, it is stated, and was the most economical; effect being aimed at by outline alone. The stone of the neighbourhood is the material indicated for the buildings.

\* The Builder, No. 699.

† Compare the Builder, Nos. 658, 663, 669.



SELECTED DESIGN FOR BISHOP-AUCKLAND TOWN-HALL, ASSEMBLY ROOMS, AND MARKET.—MR. J. P. JONES, ARCHITECT



THE UNION OF ARCHITECTURE AND SCULPTURE.\*

HAVING touched cursorily on some phases of the union of sculpture and architecture in the ancient days of the Egyptians, Assyrians, Greeks, and Romans, I will proceed to those of modern times. I will, however, my space will restrict me to a still less adequate mention. But I would, previously, make a few remarks on some principles which are practically in the union of sculpture with architecture.

The geometric decorator, or sculptor of decoration, as distinguished from the sculptor on stately proper of the human figure, is well aware, when he has to fill a space in harmony with the surrounding features, that he must set out with selecting a geometric skeleton of just device, or scheme of general guiding lines, on which to construct his composition. I do not, however, notice that this principle is always equally or adequately recognized in the profession of sculpture proper—in which, nevertheless, it is equally essential to good effects.

In the arrangement, for instance, of the sculpture for a classic tympanum, this consideration, after the choice of the subject, has the first claim for attention. In this case of the tympanum, no scheme of general arrangement, perhaps, is superior to that of the circle in the centre, pretty nearly tangent to the base line, and to the apex of the roof, and then flowing off in waving and harmonious lines towards either end. On this the composition would be conducted invariably, like a circle, or conventional forms, as regards balance and play of line, and yet informed with the variety of human form and vital action. I would, however, by no means intimate that this special scheme of guiding lines, in the centre, with wavy lines waving off on each side, is the only one applicable to the sculpture of a tympanum. On the contrary, I merely put it forward as one of which the effect is harmonious, and consonant with the spirit of the space it occupies—as thus:—

The mission of a roof is to cover over, as it is the mission of the pillars beneath to support. Thus the pillars, by their fluting, support the tympanum, and, on the other hand, is the gable of the roof, and shows its spread, and therefore the forms which occupy it should partake of the same spreading character in their composition and arrangement, as the pillars, beneath, have that of the evil effects of confining the pillar lines upward, and we have good reason to accept as the case with the sculpture of the tympanum of the Parthenon.

Also within the tympanum, the metopes, the Parthenon treatment affords examples of a perfect harmony between the groups as sculpture and their decorative effect, as regards the architecture.

The frieze also encompasses the temple beneath the colonnade with a zone of perfect architectural decoration, at the same time that it is unsurpassed as relief sculpture.

In all these several cases there is no compromise. The two arts moved on hand in hand with perfect ease and pleasantness, like two young and loving sisters. I will now say a few words as to statues and groups in relief sculpture, as regards architecture.

By statues and groups in relief, I mean those so intimately bound to stand by themselves and apart, in contradistinction to those in relief, which are attached to a background, or those statues which, being arranged as in a tympanum, partake of the nature of relief.

All such statues as I speak of now, as in the round and apart, may be regarded as final in architectural form. One of the most common of these is the vase, not in direct connection with architecture, and also in gardens of geometric plan.

Vases are of various proportions: some of these are tall, and some wide, which fits them respectively for different situations.

Now we shall find that various of the best statues, in different situations, afford the noblest contours. Let us instance as one example the Venus of the Medici. This, in the principal view, as regards general arrangement, takes the contour of a long ovate or egg-like form with a top and base—or in other words, that of a tall vase.

From this we may turn to its antipodes in human form—the Hercules of Glycon—or as it is commonly called—the Hercules Herculeus. This statue is a geometric contour, somewhat like a cone, but still like a vase, only wider at the foot than the Venus, so as to give the look of geometric quality.

Both these statues, diverse as they are in character, may be considered architecturally as having a common quality—as being both statuettes, vases, or vase-like statues; and this quality no doubt had a large part in obtaining for them that wide popularity which they have ever enjoyed. In ancient art they were more rare than any other statues, greatly no doubt because they came in so comfortably as final and architectural elements, came in so comfortably as final and architectural elements, as to recollect this when designing a figure, that a pleasant geometric contour is one passport to fame.

In modern art, the well-known group of the Rape of the Sabinas, by John of Bologna, yields a good instance of a vase-like form with a serpentine line of decoration round it, like a vase with a wreath of flowers.

As regards, however, tall vase-like forms produced by sculpture proper, perhaps no better example exists among Greek or modern works than the well-known classic group of Cupid and Psyche. You may turn it round in all directions, and yet in each does it preserve that taper, all directions, which renders so elegant a figure, and so apt as an architectural enhancement, and this without transmuting or fettering its grace and action.

Do not for that taper, statuettes vase-forms: now in relief sculpture, the Sibyl, and other figures, are highly desirable in connection with architecture, is most generally gained in sculpture by seated statues. The Lorenzo made by Michelangelo, and seated, is a fine example of this. Also the beautiful work of the Pisa, and so on, and so on, as an architectural enhancement, and this without transmuting or fettering its grace and action.

Another of the most important and valuable geometric forms for sculpture is the pyramid, instanced in the Laocoon, and also in groups on the summit of triumphal arches, which are somewhat of the tympanum form of group, freed from the bounding architectural lines at the top. This was attained in Roman art by the group of four horses, and the general or imperator standing super-eminently in the centre, as also is supposed to have been the case with the occupying the statue of that king there occupying the case.

A great deal more remains to be said on this subject, for which I have not space now. However, it may be

safely accepted, even as regards sculpture *per se*, that a statue is ever the better for geometric symmetry of composition, and for more useful architecturally.

I have already, as you have recognized, brought in one or two modern instances to assist as illustrations of the general question; nevertheless, take it altogether, dating from the time of the construction of modern art has not been so thorough-going in the union of the arts as in previous periods. The brevity therefore forced on me by my short remaining time will be the more excused in treating the question in more modern days.

The monstrous abuses of the late Roman Empire especially, brought vast discredit upon statues, and in the fourth and fifth centuries, there arose in the Greek Church, a sect of enthusiasts, called emphatically, Iconoclasts, or Image-breakers, from "eikon," an image, and "klasto," to break, who, founding their indignation upon a false reading of Scripture, went about smashing every statue they could by their hands on, and of course did not have any made. These, therefore, as you may conceive, were not very good times for sculptors, whose profession, for some centuries, was depressed in consequence. Eventually, however, the intellect of Europe saw through the falsities of these ideas, and sculpture arose and attained great perfection in the Italian school.

The Mohammedan portion of those who lit their "lamp of architecture" in the modern art, have never got over their prejudices. Their prophet had told them they could make no statues except under the penalty of having to find souls for them at the day of judgment, and a sufficiently ludicrous and absurd story, and yet, nevertheless, one which has proved sufficient to frighten sculpture out of Islam to this day.

Pope's law, however, however, "The noblest statue of mankind is man," is especially applicable to art, and assuredly no style of architecture can be of the highest rank which does not amicably and cordially unite with painting and sculpture of the human form. Thus Mohammedan and Saracenic styles which ignored it altogether, and even, never, in dignity and expression, take rank beside those which welcome it in the fullest degree, as the Greek and Italian.

Byzantine architecture was not much enhanced with sculpture originally, because of the prejudice I have already mentioned; nevertheless, our own grand and broad Norman and Gothic arches, like the Durham Cathedral, which is an offspring of that style of the early church we call Byzantine, this style is, I conceive, full of undevoted harmony, with the highest class of sculpture and sculpture, in its simple, grand, free, stable, and Anglo-Saxon, and offers a large scope to combined art.

Having now no time for the just consideration of the Italian combination of the arts, we will proceed to Gothic,—that exquisite, varied, and picturesque style, so dear to landscape, which, when produced with most felicity, seems more like coral spires and stalactite caves, wrought by gnomes and faeries, than the work of men's hands, and which has enriched modern Europe with so many picturesque and charming compositions. Elegant picturesqueness is indeed its great characteristic; and this is by no means confined to its youth and freshness, but is at least equally striking in its age and decay. One loves, indeed, Gothic in all her phases,—in her cry-talline completeness, and in the gray rain, in her sculptured vaults, tremulous with music, and streaming with rainbow tints, from her storied windows, and in the mouldered base, beleeked with ivy and wild grass, and must, save the voice of the owl.

Also, may peculiarly say, that no country surpasses these isles in the beauty of Gothic architecture. Yet we must not, when it is tested by a question such as this of to-night, allow our enthusiasm to run away with us.

This style has received great accession of force of late, by having been adopted by various men of great talent of this day, and adopted exclusively, yet we must not allow this accession to carry us too far. Gothic has its great and varied beauties, yet, as it is, and as it has existed, up to the present time, it has also its great shortcomings.

When a question like this of the union of the arts, comes before us, so important to their advance in this country, it is essential to treat it openly and without reserve, and it were duplicity on my part, invited as I have been by the Architectural Committee, to treat the subject, if I were to belie my convictions, or shrink from expressing them, even if what I say may not in all quarters be acceptable.

The whole course of our argument teaches us the propriety of the union of the arts. Do we not all believe that they should meet and be a mutual aid like sisters? For my own part I believe in the perfect harmony of the arts on the same level, and as a direct consequence, that no style of architecture cannot be of the highest class, unless it will unite cordially with the highest class of painting and sculpture.

I believe the different arts thus afford a mutual test of excellence, and that the proof of high excellence existing among them, is when they are perfectly free and unrestrained in each other's company. Now comes the important question,—can Gothic architecture offer this unconstrained welcome to the sister arts? or, in other words, "Is Gothic architecture in harmony with the highest class of painting and sculpture?"

This special question has been pretty well winnowed during the latter part of the year in an architectural periodical. On September the 9th, I first asked this question in the terms I have just used.

The result of this was, as you understand, a variety of correspondence, for not one-half of which the Journal could find room.

If it may be alleged that judgment was allowed to go by default, I could not help that. For my own part, I simply gave on asking my original question in various ways,—"Is Gothic architecture in harmony with the highest class of painting and sculpture?"

At first there was some indignation expressed at my asking such a question at all, and it was replied to, point-blank, that Gothic architecture was in perfect harmony with the highest class of painting and sculpture. Examples, however, seemed to be all on investigation, and a retreat was sounded into Upper Italy; among examples, however, in which it was evident that neither the painting, sculpture, nor architecture were of the highest class. Some of the instances attempted to be brought in answer to my question were peculiarly unfortunate, as those of the Angels of the Lincoln spandrels, which were, as sculpture, highly laudable, but as architecture, were certainly here in the Architectural Museum open to the close view of the public, when we heard no more about them.

That there are some fine examples of Medieval Gothic sculpture is undoubted, and this is especially the case with recumbent figures on tombs, which by being less closely connected with the structure, are less constrained by it.

Also it must be acknowledged that the earlier and simpler styles of Gothic are more favourable to the introduction of high art than those which are most elaborated. Yet it is equally certain, and without going into details, I am sure it will be allowed, that there are no specimens of Gothic sculpture at all equal to the sculpture which grew up in consonance with the art of other styles,—as the Greek, Roman, and Italian. Now, what is the occasion of this? I do not think difficult to reply.

In these styles—Greek, Roman, and Italian, architecture is a "Lady Bountiful" in her hospitality to her relations. "Come in," she says, "my dears; make yourselves quite at home; do as you like; sit here; stand there; do not stand upon ceremony; be quite unconstrained; the house is your own; follow your own inspirations." This is what architecture says on welcoming her sisters at the door of her Roman, Italian, or Inigo Jones's mansion. But it is a very different thing at the door of her Gothic house; her note is quite changed then. Then it is, "I am very glad to see you indeed; but you must behave yourselves; you must be staid and demure; you must stand upon ceremony; or you must bend your neck so to accommodate an arch; and you must be highly pre-occupied and even on gold grounds if you wish to be quite in the way of the house. And you (speaking to Sculpture) must be an English and architectural, which is pretty nearly the same as saying you must be constrained, archaic, and unattracting.

Indeed, as a general rule, it may be said, that in the purest and most characteristic, and most thorough development of Gothic, the paintings go into the windows of the sculpture into the niches, where the one is transparent and the other in duration; and where, in consequence, instead of vital and individualized works, they become only secondary,—not on a level with the architecture, but quaint, cramped, and conventional.

Even with a recollection of various of the sculptures of the Cathedral of Wells, Lincoln, Ely, and Westminster, I think I must acknowledge that the best examples of Gothic sculpture I know, are modern. Those of Gertrude of Louvain, but a few years deceased, various of the casts of whose excellent works were at the Crystal Palace at Sydenham, and are now at a stockport, some of which, especially as I love fairness, and that both sides should have their best illustrations, I have been lately, to my regret, unable to see. I am, however, in vain, to get up a subscription and buy for the Museum.

These works, however, excellent as they are in spite of difficulties, most clearly evidence and illustrate the efforts of a great genius working under circumstances which will ever be the case while Gothic continues what it is, and sculpture tries to work to its phase.

This is a blot on the escutcheon of Gothic, and it behoves the Gothicists to strive to wipe it out. I admire Gothic architecture, I do not hesitate to affirm that if that style, as at present constituted, were to come into being exclusively,—for, mind you, it is only its exclusiveness I object to,—in this country, it would be to the vast and direct disadvantage of the higher qualities of the sister arts. It behoves all art-lovers of extended views to regard this attentively, and the architect and artist especially to look to it.

The adoption of the Gothic style—now many years ago—for the new Houses of Parliament, admirable as a work of genius as that elaborate structure is, has already been a great injury to art. How different would have been the result, to painting and sculpture had those houses been, instead of some broad, simple, enduring style, like that of Inigo Jones or Sir Christopher Wren, whose styles are quite as much beloved to this country as any other style, and the elements of which are the common heritage of man, especially of European man. How far nobler and more congenial would then have been the scope afforded to the sister arts!

I am telling a truth,—a truth which finds its response, I believe, in the mind of every painter and sculptor who has worked for that building, which, in its way, nevertheless, is one of the finest in the world. I believe it an correct in saying that the architect himself is not answerable for the adoption of the style, but that it was imposed on him.

But now let us take another and a more agreeable phase of this subject in considering, merely for the time, what might be the best for the interests of Gothic, *per se*. We have heard much of late of a new Victorian style of Gothic, which is to be, of this, the nineteenth century, fresh, new, and which is to surpass all others. The prospect is pleasant, hopeful, and inspiring, and in regard to it I would venture to submit a proposition—whether there could be a better clue towards originality than that which Gothic has never as yet thought it worth while to trouble herself about, viz., the seeing if it cannot be thoroughly fair, and liberal, and cordial to her sisters?

I would, indeed, take this opportunity of again putting publicly this important question to the art lovers and workers of Britain. If Gothic architecture is at the present day really to advance, would not one of the best inspirations of her fresh career be to try and see whether she cannot welcome and foster the highest development of the sister arts with the same perfect freedom, scope, openness, heartiness, and cordiality, as the styles of Greece, Rome, and Italy have already done? For then, and not till then, do I conceive, will she prove herself to be of the highest class of her own art.

There is one other point in which I wish to call attention before I conclude. A point also, I conceive, of great importance to the progress of the arts considered in its mutual relation, and that of their union: I mean that of a universal Museum of art.

This may, from its wideness, appear at first a vague term, but I will explain what I mean. I mean by it a museum in which should be set forth clearly how man has built in all ages and climes.

This might be well effected by means of a collection and exhibition, on a grand scale, of drawings and models of completed edifices, arranged sectionally and chronologically, beginning with Egyptian, Cyclopean, and so on, and coming down through all the styles of ancient and modern time, to the present. These should be set forth with suitable explanations and illustrations of the most varied kind as the museum advances.

It has, fortunately, now become the fashion, and I hope something more, the sentiment and feeling of the people to discuss architecture, its style and meanings, and yet of those who discuss in the drawing-room, and in the portion who could stand even a school-boy exaltation on its history and details!

\* See p. 198, ante.

As regards the workman also, what opportunity has he of gaining this knowledge at present? Yet this Universal Museum of Architecture, which I sincerely trust will be such information so easily before him that he would be able, within the hour or two he could spare, on one visit to attain, so as to carry away with him a general knowledge of "how"—as I have said, "men have built in all ages and climes."

Thus all classes would be benefited. I have spoken, at various times, myself, to some of all classes nearly, on this subject, and the answers have been, with almost exception, to the same effect, that "it was what would be individually most welcome to each person."

Also, it is a great gratification to me to be able to acknowledge here, the ready indulgence that this view received at once from the committee of the Architectural Museum, who have already endorsed it with their distinct approval. Also, I may add, that the Department entertain the proposition with favour. Nothing, however, has as yet been done practically, except as regards the Gothic part of the subject.

But the very soul of the idea, and the value of its realization, exists in its universality, which would rest on the fact of each style of architecture being represented clearly and fully under equal advantages of location and light; and that each style should be illustrated with photographs, &c., of details and examples of such paintings and sculptures and decorations as are proper to each, or copies in small of them, so that the visitor might compare the advantages and qualities and beauties of the different styles fairly and freely.

The history of architecture has been said to be almost the history of the world. It must also be recollecting that architecture is, as it were, the very backbone of art, on which so much of its form depends. Painting and sculpture are directly affected by architecture, and even pieces of metal work or majolica porcelain depends in degree on the time when it was made, and the apartments to which it was to be an adjunct.

Wherever, therefore, this Universal Museum of Architecture were erected, it is evident that it should be in close connection with the arts of painting, sculpture, and decoration, and that art-education to which it will be the best guide.

It is true that the realization of this idea requires space and funds. There is, however, space around to build, if Government and the public would fund the funds. I would desire to say here, by way of parenthesis, that I am in no way connected with the Department of Science and Art, or with the Architectural Museum, and am only speaking as one of the public. To resume, even if it is also that this idea of a Universal Museum of Architecture is one which has not hitherto been carried out in any other country, and that it remains for Britain to do first, as she did the first great international Exhibition of the world, Britain is slow to move—proverbially so—yet, when she does move, she generally does things well. I hope this will be the case with the Universal Museum of Architecture.

To conclude: at the commencement of this address I spoke of architecture, painting, and sculpture as having voices. Perhaps it were by closer simile, and more of the former as the symphony, and of the latter as the vocal accompaniment—architecture as the instrumental music, and painting and sculpture as the human voices that accompany it and give it speech. Let there, at any rate be harmony between the arts—if possible on the highest level—but at any rate let there be harmony; and when in presence of a grand triumph of architecture, painting, and sculpture combined, let us regard it, and listen to it, and drink it in, as we do the storied strains of Handel, Haydn, Beethoven, or Mozart—

"Music married to immortal verse."

Nothing at least can illustrate and emphasize better to the true and Catholic love of art, of all the arts the advantage of their Harmony. — JOHN BRILL.

#### THE ORNAMENTAL SCULPTOR, HIS PATRONS, AND THE PUBLIC.

Of all the decorative arts the one with which the people of this country are least acquainted is architectural sculpture. This may appear strange from the fact that there are voluminous specimens in our principal thoroughfares, crowning in playful grace, inviting the gaze of the curious, but they are not regarded. City gentlemen, in their breathless haste, have no time for works of art. The consequence of this apathy of taste is, that buildings are finished, the carvings executed, criticised and admired by a few concerned, and soon forgotten as things without existence, except by a few of those unknown individuals whose livelihood depends on the production of similar works, who for their own instruction or pleasure stroll occasionally to those spots in their artistic researches.

There are gentlemen who delight in the great masters, talk of the antique, admire exquisite wood carvings, and revel in periods of architecture; who can give you accurate dates of all transitions from the Egyptian through all styles, and who have learned by rote all the changes from the Early Saxon to the fifteenth century, and yet are perfectly ignorant of the works of modern times; men who talk of Grinling Gihbons, and never bestow a glance at the beautiful sculptures of St. Paul's. Then there are architects, professors, and critics, the latter whose business it seems is to

\* Mr. Bell is probably aware that the desirability of such a museum has been long urged in our pages; and even earlier, that is before the foundation of the present Architectural Museum, by Mr. Godwin in a correspondence with the late Lord Northampton, the desire then being to induce the trustees of the British Museum to commence such a collection. Mr. E. B. Lamb, too, if we recollect rightly, wrote on the subject. The architect who reported to the Government Department of Art, in 1857, took the same view: see their report in our volume for 1859, p. 614.—Ed.

find fault with all artists and artistic productions, without imparting instruction to any one. The former, instead of pointing out the faults or beauties of existing modern works, for the information of the public, are continually engaged in controversies on the different styles of architecture,—a subject to which there can be no conclusion unless by annihilation of Gothic or Classic, one having as much right as the other to be used and admired.

In order to make the position of the ornamental sculptor understood, it should be stated that these seeming patrons of art retard the growth of talent by their feeble efforts to promote it. Before our national artists can be made to shine, it must be the province of gentlemen who practise architecture or lecture on sculpture, either by profession or for pleasure, to instruct the public in the practical parts, so that they might better judge; for one-half of the people of this country have not the slightest notion how the works of art in question are produced. There is scarcely a carver who has not in his time been asked, when producing a piece of work, if it can possibly be in the solid, or how the projecting leaves or other ornaments are stuck on.

Even gentlemen of the Architectural Museum, in their laudable desire to promote this branch of art, make great mistakes by being too narrow in their limits, and too much confined in the scope they allow to art-workmen. Instead of teaching him by an elementary process, they should discover his present capabilities, which can easily be done by reference to modern sculptures, such as the Assurance Office, King street; the Bristol Bank, and other sculptures recently executed in the City. They may then know that there exist many men with far greater talents than any who have yet competed for prizes at the Museum, and who, if a wider field were open to them, would be glad to contribute specimens of their art which would be worthily so excellent a place of exhibition, and alter the opinion of the public, who take for granted the specimens there to be the best modern art of its class the country can produce. If those gentlemen were to offer prizes for the best pieces of architectural carving, without confining it to any style, period, or subject, there would no doubt be a ready response from a number of men who would submit works of an original and probably superior class.

That there are many horrid abortions amongst the modern works must be granted, but the existence of such works as the carvings at Badmister Church, Margaret-street Church, Greenwich Catholic Church, Bourne-street Church, new church and other works at Halifax, Ely street, Shadwell Court, and hosts of other specimens in the metropolis and provinces go far to prove it is not entirely the fault of the carver (and that at least there are some architects who manage rightly), but the negligence or incapacity of individuals in authority in not putting the work into the hands of real or competent artists. The practice of giving the work to any applicant who will do it cheapest, without requiring a guarantee of his competency, is amongst the grievous wrongs which affect the ornamental sculptors of England. And until architects consider the sculptural portions of their designs important enough to be reserved for their own disposal, instead of connecting them with the builders' contracts, we shall continue to have masons, and the drones of the profession, that are only fit to follow and assist, supplanting the legitimate carver, and bringing into disrepute his works, the result of which is a prevailing opinion, that the English are far behind in works of art, and the frequent employment of foreign artists.

The above being a statement of the position of the English ornamental sculptors, I beg that in justice to them you will insert this letter.

CHARLES GRASSBY, Carver.

#### CITY OF ELY WATERWORKS.

In addition to the communications of which we spoke in our last, we have received one signed "Baldwin Latham, Surveyor of the local Board, Ely," wherein the writer says:—

"The works there are so constructed as to be supplied with water from natural gathering-grounds, the catch-water drain of Caudle Fen forming the boundary of one side of the works, from which a pipe is laid to the filters; but it has been found by experience that the water is of a quality very inferior to that taken from the river Ouse, and consequently is but seldom used. There can be no doubt that the local Board only abandoned the idea of supplying this city exclusively from gathering grounds, from a thorough

conviction, after due experience, that Mr. Lee's scheme was altogether insufficient for the purpose, and from necessity took themselves to the river as the best and most abundant supply that could be procured in the neighbourhood at the least expense to the rate-payers.

The original estimate of 25 gallons per day for each inhabitant, for every purpose of public and private use, giving 170,000 gallons per day for the whole population, has been found here as in many other places very far below what is actually required,—a fact now well known to most engineers; and in this city, a quantity of not less than 900,000 gallons per day has to be pumped up by steam power for the general use of the place. This increased demand has, of course, increased the consumption of coals, and will necessitate some material alterations and additions to our works.\*

#### COMPETITIONS.

*South Myton, Hull.*—We are informed that Mr. R. Blessley's design has been selected in competition for St. Luke's Church, South Myton, Hull, by the Committee of the Hull Church-Building Society, and is to be carried out under his superintendance.

*Croydon.*—The first premium for the Croydon burial-ground and chapel has been awarded to Mr. E. C. Robins, architect.

#### A FOREIGN COMPETITION.

A CORRESPONDENT says there is a competition open to all countries, for a new Palais de Justice, in Brussels: first prize, 10,000 francs, second, 6,000—any style! It was mentioned officially in the *Independence* of the 50th of March. Designs are not to be full-size sketches, and are to be sent in to the Ministère de la Justice, Brussels, before the 1st of August next.

#### MASTERS AND WORKMEN.

If properly and fairly managed, much valuable information will be gathered by the Parliamentary inquiry which is at present going forward on this important subject. There is, however, one thing which we hope will not be omitted: this is the examination of a few intelligent and practical working men belonging to various trades. Without doubt the secretaries of trade societies are well fitted to supply a vast amount of useful information. Still, without the perhaps rough and homely expression of the views of the actual workers, this subject will not be properly placed before those who have the power of forming, or at any rate suggesting, Courts of Conciliation, which may be the means of improving the feeling between the employer and the employed, and preventing strikes, which are so injurious and destructive to all, not only those immediately concerned, but many others connected with various interests.

#### SCHOOL-BUILDING NEWS.

*Cley (Norfolk).*—The new British schools recently erected in this town were opened on the 29th of February. They have been built from designs prepared by Mr. John J. Davken, of Ilott, architect, and under his superintendance. They are in the Elizabethan style. The walls are of rubble, 20 inches thick, faced with stones gathered from the beach, having bands of red brick-work, with moulded brick ashlar work round the windows and door frames, and to every internal and external angle of the building. The accepted estimate was 453l., with the old materials. The schools accommodate 110 children. The principal school is 45 feet 6 inches, by 18 feet wide in the clear, with a class-room attached, 13 feet 6 inches by 12 feet, fitted with gallery. The infant school-room is 18 feet square, with gallery to ditto 12 feet by 11 feet. The walls of both schools are 13 feet high. There are also three porches to the several schools, 6 feet by 6 feet. All the main timbers of the roof are exposed to view, and are wrought and stained. The desks and seats, with all the joiners' work, are stained and varnished.

*Farnham.*—The new national schools here are now completed. They were erected to hold, according to Government measure (6 square feet for each child), 150 boys and 120 girls. Mr. J. Colson, of Winchester, was the architect. Messrs. Chinnocks, Chichester, were the builders. The total cost, including fittings, apparatus, &c., amounts to 2,305l.; the builders' contract, 1,890l.; the grant from Government, 1,050l.; voluntary subscriptions, 777l. 17s. 6d.—The

\* A second letter from the same gentleman, in reply to "Dan," was too late for attention this week.

National school-rooms at the village of Wreckham, about one and a half mile from Farnham, are nearly finished. The cost of building them amounted to about £900, towards which the Government granted 500*l*. The remainder was made up by voluntary subscriptions. The rooms will hold 210 pupils, by the Government measure, 6 square feet for each child.

**Worcester.**—The new additions to the school-rooms in St. Paul's, the Blockhouse, says the local *Herald*, are nearly completed, and, together with the church to which they are attached, form an important nucleus for the rapidly-increasing population and newly laid out streets of that district. The principal school-room adjoins the old one, from which it is divided by a movable partition, so that both may be thrown into one, or kept separate, as the requirements of the school may render necessary. It has an open roof of stained wood, with a steep pitch, and is lighted by three-light windows, with trefoil heads, the south window having freestone mullions and alternate coloured brick in its arches, which is also the case with the heads of the doors. There is a room for the infants' school, and class-rooms up-stairs, besides a residence for the mistress. A large play-ground has been enclosed, and its iron railings were presented by a firm in the city. The exterior effect of the buildings, however, is very far from complete: the bell-turret is not yet erected, and the old schools, which are particularly ugly and badly proportioned, are not yet made to harmonize with the new buildings. This want of completeness is chiefly owing to the small sum granted by the National Society, and partly to certain red-tape restrictions. It is hoped, however, that some day the plan, as designed by Mr. Hopkins, the architect, will be thoroughly carried out. The present addition to schools, alterations of old schools, land, walling, &c., have cost about 940*l*.

**Holmer (Hereford).**—New national schools have been erected and opened in the parish of Holmer, near this city. The edifice is in the Elizabethan style. The cost of the land, building, fences, &c., was 450*l*. The school has been erected from the designs of Mr. J. H. Evans, of Hereford, architect. The contractors were Messrs. Morgan & Price, of Hereford.

**Great Horton (Yorkshire).**—The Wesleyans have just completed the erection of some school-buildings in Paternoster-row, Horton, and the Episcopians are employed in completing another building for the like purpose, near the Episcopal chapel. The Wesleyan schools were publicly opened on Shrove-Tuesday. The schools, from the designs of Mr. Samuel Jackson, architect, will accommodate 500 scholars, and comprise an infant school for children of both sexes under seven years of age, a mixed school for children above that age, with a sewing department for girls, and four class-rooms. The schools are one story in height, and are built in the Italian style of architecture. The residence of the master and mistress, two stories in height, is detached. The cost of the building, including the land, is 2,500*l*.

**Clun.**—The trustees of the Clun Hospital intend erecting schools for that district, together with residences for master and mistress. The building will be erected with stone of that neighbourhood, and is to be commenced immediately. The designs are by Mr. Edward Haycock, of Shrewsbury, architect; and the contract is taken by Mr. John Millington, of Oakengates.

**Tranmere (Cheshire).**—The foundation stone of new national schools, in connection with St. Catherine's Church, Tranmere, has been laid. The Catherine's Church, Tranmere, has been laid. The site is on the Holt. The schools are designed in the Tudor style, and will consist of rooms for boys, girls, and infants, so as to accommodate in all from 300 to 400 scholars. The material will be of brick, with stone dressings. The roofs will be of open timber work, dressed and varnished. Mr. Walter Scott, of Liverpool, is the architect; and Mr. Hogarth, of Rock Ferry, is the builder.

#### PROVINCIAL NEWS.

**Windsor.**—The new roads round Windsor, according to a western paper, are going to ruin in consequence of an unfortunate misunderstanding between the Windsor surveyors and the agents of the Crown. They are said to be now becoming dangerous, and injurious to conveyances of every description.

**Cardiff.**—The following tenders were received for the erection of the new station-house:—J. Griffiths, Newport, 2,751*l*. 10*s*., or with some alterations, 2,551*l*. 10*s*.; W. Smith, Roath, 3,528*l*. 13*s*. 6*d*.; A. Cbambers, Cardiff, 8,898*l*. 17*s*. 6*d*.; James & Price, 3,501*l*., if stone used instead of brick, 3,275*l*.; if Portland cement used

instead of Bath stone, 3,107*l*.; J. Webb, Cardiff, 3,696*l*.; R. Hughes, Bristol, 3,947*l*.; D. Jones, Cardiff, 3,589*l*. Mr. Winstone held that the tender of Messrs. James & Price was inadmissible, as it was hampered with so many conditions. The tender of Mr. John Griffiths was accepted.

#### EXCAVATIONS FOR THE CITY RAILWAY IN THE YORK-ROAD (MAIDEN-LANE).

The works here are steadily progressing under the hands of a numerous band of workmen. From the upper part of the King's-cross station an excavation is being made through the centre of the road, which, as the opening is dug of sufficient size, is arched over and then covered with hot pitch and the materials of the road. The crown of the arch the day crops out to within about 18 inches of the present surface; on this is a layer of red baked clay, and then broken granite. On the east side the quantity of granite and other materials extends to a depth of about 5 or 6 feet: in parts below this are the brick foundations of buildings, then black, poisonous-looking soil, and indications of sewers of an imperfect description. The labour of getting through this material is very great.

In the centre of the road, at a considerable depth, it is necessary to remove the large sewer which has been for some time in use, a new one having been made down the east side of the road close to the foot-path. The removal of this sewer seems to be anything but a wholesome process: a heavy, deadly smell comes from the opening, and the workmen seem to be oppressed with the gases amongst which they work. Although the day is clear and bright on the surface, the breath of the workmen may be seen below in the same manner as on a foggy November morning. The proper ventilation of underground railways ought to be an important consideration. The polluted condition of the soil shown in parts of this work,—and it is nothing here in comparison with some other quarters,—points out one of the causes of the ill-health of towns, and shows how necessary it is, in the formation of new neighbourhoods, to provide by proper drainage and by careful scavenging that what may be called the skin of London may be kept clean and wholesome.

So far as we have been able to learn, nothing of any great curiosity has been brought up. Several ragged workmen examine anxiously the throwing up of each spadeful: they rake amongst it, and break up pieces of concrete, &c., and are rewarded for their pains by the discovery of bones, rusty nails, and fragments of iron; should they light upon matters of greater curiosity, it is to be hoped that a careful chronicle of them will be kept.

#### CAST-STEEL BELLS.

We have been asked more than once where steel bells can be obtained. Such questioners we are forced in ordinary cases to refer to our advertising columns; but as this branch of industry is comparatively new, we depart from our rule and mention Messrs. Naylor, Vickers, and Co., of Sheffield,—the more readily too, because this firm desire to make an offer through our columns. The cast-steel bells, which are described as being much cheaper than bells of the ordinary composition, are at present little used in England: the consumption as yet is confined to the United States; and Messrs. Vickers, desiring to have an opportunity of placing a peal or a single bell (of not less than 1,000 lbs. weight) in some church in a central position in London, are willing to sell, at a reduced price, and subject to approval when hung, a single cast-steel bell, or a peal, for a London church in a central position, to the first person that will order from them.

#### ARTISTS' GENERAL BENEVOLENT INSTITUTION.

The anniversary dinner held on Saturday last was more numerously attended than has been the case for some time. The Right Hon. W. E. Gladstone presided, and advocated warmly the interests of the Institution. He was a little too metaphysical in his speech, but made one or two happy points. To the toast of the "Army and Navy," Sir Roderick Muroison responded. The Earl of Stanhope proposed the health of the chairman, pointing to him as an instance of what ability in even a younger son would do. "The Royal Academy" was replied to by Sir Charles Eastlake. "The Societies Established for the Promotion of the Fine Arts," proposed by Mr. Godwin, was responded to by Mr. Hurlstone;

"The Artists' Annuity and Benevolent Funds," proposed by Mr. Creswick, R.A., and replied to by Mr. David Roberts, R.A., and several other toasts followed. In addition to those already named, the assembly included the Hon. E. Stanhope, Mr. Charles Landseer, Mr. F. R. Pickersgill, Sir Charles Barry, Mr. S. Smirke, Professor Donaldson, Mr. T. H. Wyatt, Mr. Hardwick, jun., Mr. Egg, Mr. Frith, Mr. Elmore, Mr. Horsley, Mr. Millais, Mr. O'Neill, Mr. E. W. Cooke, Mr. W. F. Pollock, Mr. John Murray, Mr. Farrer, &c. The subscription list, read by Mr. Phillips, the honorary secretary, was a large one.

#### THE LATE MR. ROBERT STEPHENSON AND THE NEWCASTLE HIGH LEVEL BRIDGE.

SIR,—While the scientific world has to mourn the loss of two of the greatest practical engineers whose works have ever contributed to the glory and improvement of the whole civilized community, it is certainly much to be regretted that the mistaken attempts of injudicious friends and admirers of departed greatness should seek to invest their memory with false claims to which they themselves never pretended, thereby detracting from their real merits, and depriving humbler aspirants to public favour of the small share of honour justly due to them.

In the month of October, 1840, I was engaged by Mr. T. Storey, engineer to the Great North of England Railway, to assist his son, Mr. Storey, jun., in laying out the line of railway from Darlington to Newcastle, and preparing plans and estimates for the works of the same. I had been previously engaged for nearly two years under Mr. G. Stephenson, on the North Midland Railway, from Derby to Leeds, and while there one of the gentlemen of Mr. G. Stephenson's staff, under whose orders I was for some time acting, was Mr. A. Ross, at present engineer to the Victoria-bridge, at Montreal.

I joined Mr. Storey's staff, at Rusby Ford, Durham, October 29, 1840, and assisted Mr. Storey, jun., and Mr. Sowth, of Newcastle, in laying out the line to Newcastle. During the progress of the survey, Mr. Storey, sen., met us once at Chester-le-Street, and asked me if I thought myself competent to design several large bridges for the projected line, more particularly the High-level Bridge across the Tyne. This was about the 12th of November, 1840. Mr. Storey showed to me a design for this bridge by Mr. Green, of Newcastle, architect, the main feature of which was the adoption of laminated timber-ribs, a novel mode of timber construction, introduced (I believe) by Mr. Green himself, but which Mr. Storey did not approve of. This fact will serve to show that the project for crossing the Tyne upon the high level was no new idea, but had been for some time past in contemplation.

It must also be observed here that Mr. Storey himself belonged to that class of old-fashioned engineers who considered bridge building the duty rather of an architect than an engineer, and never attempted to design the larger works upon his own railway: in proof of this I may mention that the large bridge over the Tees, at Croft, on the line of the Great North of England Railway from York to Darlington, was designed by Mr. N. Welch, of Newcastle, and his name was engraved on the stone parapet of the bridge.

I readily undertook to prepare the designs in question, having for many years made bridge building my chief study, and when with Mr. G. Stephenson had opportunities of copying the designs and specifications, and witnessing the construction, of many large works of this character, although none equal in magnitude to the proposed High-level Bridge.

After the survey was finished, I commenced at Mr. Storey's office, St. Helen's, Auckland, designs for the following works, viz.:

One large timber viaduct, of one large and two smaller spans, across Shindliffe Grange.

One ditto, of three equal spans, across Chester Burn, at Chester-le-Street.

One ditto, of one arch, across the river Wear, at Durham.

Three ditto across the river Tyne, at Newcastle,—namely, one of stone; one of timber, with stone piers; one of cast-iron, with stone piers.

The main features of all these three last were the same: each design was intended to convey the railway across the river Tyne at a sufficient height to allow vessels of moderate size to pass under, and they were all intended to accommodate carriage as well as railway traffic.

Upon my completing these designs, Mr. Storey, mistrusting his own individual judgment, sent

them to Edinburgh, to a professional gentleman whose opinion he appeared to value highly: his name, I believe, was Byrne, but he was quite a stranger to me.

On the 21st of January, 1811, Mr. Storey, in consequence of some dispute with the directors of the Great North of England Railway, resigned his appointment as their chief engineer. Some disputes occurred between Mr. Storey and the company, relative to the delivery of his plans, papers, &c.; but this was ultimately arranged, and the whole given over as a temporary measure to a young engineer, formerly one of Mr. Storey's pupils. His name was H. Whitwell: he was a member of the Society of Friends, and nephew to Mr. Bachhouse, the banker, of Darlington.

Shortly after this, Mr. L. Stephenson was appointed the chief engineer to the railway company, in place of Mr. Storey, and the entire office at Darlington delivered over to his care: this was about the end of February, 1811.

As, however, the company, from want of funds or some other reason, was induced to postpone their works for an indefinite time, I left their employ on April 29th, 1811; and came to London, where I got an engagement under Mr. W. Cubitt, of Gray's-inn-lane.

From this date all connection with the Great North of England Railway ceased, and I had forgotten all about my designs, until I saw, many years afterwards, in the *Illustrated London News*, a large drawing of the Newcastle High-level Bridge, then just completed under Mr. Stephenson's direction, and I at once saw that it was an exact copy of one of the designs I had furnished to Mr. Storey many years before, and resembled it in every particular, even to the very foundation, as I afterwards learnt, when working drawings of the bridge were published.

The reader may form his own opinion upon this subject, which is merely a statement of facts; but, were Mr. Stephenson still alive, I feel certain that he would never have attempted to deprive one of the humblest professors of our noble science of the small amount of merit due to his exertions.

Upon a future occasion I shall have a few remarks to make upon the Tabular Menai Bridge.

EDWIN E. MERRALL, Civil Engineer, Madras.

#### CHURCH-BUILDING NEWS.

**Diss.**—The New Baptist Chapel recently erected here has been opened. Mr. Spurgeon preached in a tent on the opening day; and on the ensuing Sunday the architect preached two sermons in aid of the chapel fund. The new edifice, which is calculated to hold 650 persons, has been erected at a cost of about 2,000*l.*, between 500*l.* and 600*l.* of which remain to be liquidated.

**Stroud.**—The premium of 20*l.* offered for plans for the new church at Stroud has been awarded to Mr. Bland, of Birmingham. Some delay has arisen, it is said, from the difficulty of making a selection, on account of the excellence of one or two other plans.

**Bristol.**—The committee for the restoration of St. Mary Redcliff Church, in an advertisement in the Bristol papers, draw attention to a letter from S. W. Lucas, esq., of Birmingham. It will probably be recollecting that in a former letter Mr. Lucas offered to give 500*l.*, provided nine other persons would contribute a similar amount. The committee were not successful in obtaining the required number, and on informing Mr. Lucas of the fact he not only sent 500*l.*, but offers to contribute a further sum of 100*l.* annually for five years, on condition that the promise of a further sum of 800*l.* per annum is obtained. The committee, therefore, solicit the co-operation of those who can afford to help them. Four persons have already, we are glad to hear, intimated their willingness each to contribute 100*l.* for five years, and several others have promised smaller amounts.

**Plymouth St. Mary.**—The church of Plymouth St. Mary, Devon, has been re-opened, after having undergone a thorough restoration and repair. Of the sum required for re-roofing, re-paving, and general restoration, 1,000*l.* were levied by a rate of 2*d.* in the pound, two-thirds of which were borne by the owners and the remainder by the occupiers of the lands, the rest being made by subscriptions and special donations.

**Over (Cheshire).**—The foundation-stone of the new church at Over, which is to be erected almost entirely at the cost of Lord Delamere, by whom it will also be endowed, and which is intended as a memorial to the late Lady Delamere, was laid on Friday, 23rd March. The church will be of Geometrical Gothic design, and will consist of nave, chancel, north and south aisles, with a chantry and vestry on the north side of the

chancel, and a tower and spire (110 feet high, to receive six bells) erected at the south-west angle. Accommodation will be provided for 550 people, and sittings mostly free. The erection of a parsonage-house is said to be also contemplated by Lord Delamere. The total cost of the church, everything complete, is estimated at from 5,000*l.* to 6,000*l.* It is expected to be roofed in, and the tower and spire erected before the end of the present year; and it will be completed and ready for consecration in the spring of 1861. Mr. John Douglas, jun., of Chester, is the architect; and Mr. R. Beckett, builder, of Hartford, has received the contract.

**Stoke Bishop (near Bristol).**—The church of St. Mary Magdalene, Stoke Bishop, has been consecrated. The building is in the First Pointed Gothic style, from the designs of Mr. Norton of London, and consists of a nave, south aisle, and chancel, with sitting accommodation for 336 persons, about 90 free. Additional accommodation can be provided for 100 persons. The nave is 54 feet 6 inches in length, by 22 feet wide, the south aisle being of the same length, and 13 feet 6 inches wide. The chancel is 24 feet 6 inches by 17 feet, and terminates at the east end in the form of a polygonal apse. On the north side, and immediately behind the organ (which is by Mr. Bevington, of London), is the vestry-room. The chancel arch windows and the principals of the nave are throughout carried by columns of polished slate. The clerestory is formed of coupled lancets. The roof is in open timber work of stained deal, varnished. The cost of the building, according to the contract, was 2,300*l.* The three apse windows of the chancel are filled with stained glass by Messrs. Clayton & Bell, of London, and represent nine scenes in the life of our Lord. One was presented by Mr. Phippen, one by Mr. Penny, and the third by subscription. Two more stained windows for the south aisle are promised by two ladies of Stoke. Over the altar is a piece of sculpture, representing the supper at Emmaus, and executed by Mr. Farmer, of London. The floor of the chancel is ornamented with tiles, inlaid with Paisleywax stone; and the altar standards are by Mr. Singer, of Frome. The pulpit, font, capitals, corbels, &c., were carved by Mr. White, of Bristol. The whole of the work has been carried out under the superintendance of Mr. Wilkinson, the clerk of the works. When the necessary funds are forthcoming it is intended to erect a spire, of the height of 150 feet: the present windows, also, will be superseded by lights of stained glass.

**Barnsley.**—At a recent meeting of the local Board of Health, the tenders for the erection of a new cemetery were considered, and the necessary work let as follows:—Mason's work, Mr. T. Richardson, of Bretton West, at 1,390*l.* 14*s.* 9*d.*; joiner's and carpenter's work, Mr. Henry Harrison, Barnsley, 435*l.* 13*s.* 7*d.*; slating, 139*l.*; plumbing and glazing, 8*l.*; ironwork, 50*l.*; Mr. W. Brown, Barnsley; plastering, Mr. W. Barker, Leeds, 7*l.* 14*s.*; carving, Mr. Mawer, Leeds, 80*l.*; painting and staining, Mr. Chas. Rogers, Barnsley, 30*l.* 8*s.* There was a difference of upwards of 700*l.* between the highest and lowest tenders for the mason's work. Lightning conductors, &c., and extra excavations were not included in the tenders. The estimated cost for these is about 140*l.* The total for the whole of the works amounts to 2,437*l.* 10*s.* 4*d.*, being considerably lower than the Board calculated upon. The foundation stone of the above building, according to the *Leeds Intelligencer*, is to be laid on Easter Monday.

#### THE PAINTER-STAINERS' COMPANY AND DECORATORS.

The *Leader and Saturday Analyst*, which has commenced a new career, restricting itself to original papers, urges that there is life yet in the City trade Corporations, and thus notices one effort that is being made to revive it.—The able and intelligent master of the Painter-Stainers' Company, one of the most ancient of the City guilds, has put forth a plan which is certainly likely to arouse the attention and excite the efforts of the operatives engaged in house-painting and decoration, which he very properly styles art. He seems to have thoroughly mastered his subject, and has not forgotten, with any antiquarian *diletantisme*, to revive obsolete ceremonies or forms, or even usages, but comes at once to utilizing the powers and means of the Guild to modern requirements. We cannot better show his plan than by his circular addressed to his own trade.—The powers of the various Guilds are not maintainable under their

by-laws, and it must be acknowledged they have fallen into desuetude, and operate in restraint of trade. I consider, however, by substituting emulation for coercion, that the Guilds (especially those where skilful handicraft is required) might yet maintain as bodies a firm and useful position in society; and my suggestion for effecting this, as relates to this company, consists in inviting the workmen, artificers, and artists, connected with painting and decoration, to submit their works annually to public inspection; their merits to be judged by competent persons. The public exhibition of such works would take place at the company's ancient hall."

#### DECISIONS UNDER THE METROPOLITAN BUILDING ACT, 1855.

"NECESSARY REPAIRS."

**Marborough Street.**—Thomas Roberts, of New Ormond-street, Queen's-square, builder, was summoned before Mr. Bingham, by Mr. Charles Sliegh, surveyor, under the Metropolitan Building Act, "for that he did put up and erect a shop-front to the east wall of the house or building, No. 4, St. James's-street, which street is of a width greater than 30 feet, and which said shop-front projects more than 10 inches, to wit, 2 feet and  $\frac{1}{2}$  inch, whereas the said Act doth enact, that no such shop-front is to be erected, and the cornice thereof should not project more than 18 inches, and the defendant had not amended the irregularity, as required by notice, given by the district surveyor."

Mr. W. W. Donalson took the case on the part of the district surveyor; and Mr. Sliegh defended.

Plans of the building were laid before the court. Mr. Donalson stated, that by the 26th section of the Building Act, clause 1, a shop-front was not allowed to project, in a street wider than 30 feet, more than 18 inches, and the cornice not more than 18 inches, from the external wall. Said shop-front was wider than 30 feet. The shop-front complained of projected 2 feet and  $\frac{1}{2}$  inch, which was contrary to the express provision of the Act. He thought the case so clear that, unless he had seen the plan and counsel taking to defend, and a surveyor also, he should not have supposed there was an answer to it; but as it was so, there must be some points which had escaped his attention. He however, understood that the 8th paragraph of section 26 was relied upon, and that it would be contended that the shop-front did not extend beyond the general line of fronts in the street; and a plan had been prepared by the defendant's surveyor, which showed how he considered the general line of fronts to be, and to prove that the shop-front did not extend beyond that general line. He (Mr. Donalson) would call the attention of the master to the fact that shop-fronts were excepted out of this 1st clause, and it applied only to porticoes and other projections not being shop-fronts. Perhaps the defendant might think that he might bring his case within the 8th section of the Act; but here the whole front wall and the original shop-front had been pulled down and removed, and he would not contend that the 8th section of the Act brought any relief, unless it could be shown that the work done was a necessary repair not affecting the construction of any external or party wall. Here it was not a repair, but a reconstruction,—a new external wall altogether, and he submitted that an order should be made for amending the irregularity. Mr. Mayhew proved the re-erection of the new front wall, after the total demolition of the old, from the roof to the ground, and the fact that the shop-front with the brackets for the cornice 2 feet 2 inches, he submitted, was greater than the limits in the Act, which expressly lays it down that the greatest width shall be 30 feet the maximum of a shop-front projection shall be 18 inches and no more, and the cornices or brackets 18 inches and no more, unless it could be proved that the external wall, in consequence of the re-erection of the provisions of the Building Act, he had called on the defendant, and wanted patiently to have the same properly altered, but nothing was done, and hence the present proceedings.

Mr. Sliegh said that in the absence of the Legislators who framed the Metropolitan Building Act, with all its intricacies and anomalies, it was a very difficult task to get a correct elucidation. It had been truly remarked, that no man, with all its inconsistencies and absurdities, was able to define its own Act; but of that part of it, bearing upon the present case, he would take a common-sense view.

Mr. Bingham observed.—A common-law sense view, which would clearly establish that this was not a case contemplated by the Act. It was satisfactory to him to hear the learned gentleman, in his opening remarks, instance the very clauses which would supply the answer for the defence, though in his doing so he had somewhat misapprehended, as the adage had it, "the cart before the horse." He had referred to the 26th section before considering the preceding sections 9 and 10, of necessary repairs. The question really was, whether this particular building was still the old one with repairs, or now a new one? To him it was a new one, and he submitted, notwithstanding the fact that the premises secured and the fabric was not a new building, and no such amount of pulling down had taken place as would make it so. He would refer the learned gentleman to read *pari materia*, and the context borne in mind, particularly in this case, the 9th, as to the exception of necessary repairs, and then the 10th may be altogether ignored. That section defines what extent of pulling down and rebuilding he deemed a new building, but there the exception in the 9th section steps in as "necessary repairs."

Mr. Bingham said, "Occupants of premises sometimes take down one-half a building for purposes of ornamentation."

Mr. Sliegh.—But in this case it was not so, but alterations were made for the safety of the premises, which warranted the course pursued by the defendant, and "necessary repair" was the fully answer to the summons. The front wall was of precisely the same nature as the old one, new material only being substituted

for that which was dilapidated. Nor could it be said that the new facade, or ornamental finish of the stall-board or shop-front, exceeded the general hue of similar buildings...

Mr. Marsh Nelson, in evidence for the Defendant, stated that it was intended originally to alter the roof only, but the front wall was found so defective, that it was necessary to pull it down. The foundations remained, but the wall had been reconstructed in the same form as before.

Mr. Bingham delivered on the following day this judgment:—"I have carefully considered the various clauses of the Act, and have viewed the premises with a brother mason-trader, and we have agreed that, it having been satisfactorily proved that the work objected to was the rebuilding of an external wall for the purpose of necessary repairs to the structure, and that such repair did not affect the construction of the external wall, inasmuch as the apertures for door and windows were in the same position and of the same size as in the old wall, and the projection of the new wall was not more than half an inch, if at all, beyond the projection of the old wall, and, in fact, as nearly as possible, the same space,—the work objected to falls, therefore, within the exception in the 9th section of the Metropolitan Building Act, 18th and 19th Viet. c. 122, and the summons has not been satisfied, at all events, to a greater extent than half an inch, which, in strictness, ought to be planned off."

THE STONE OF THE NEW HOUSES OF PARLIAMENT.

THE remarks I made at the meeting of the Society of Arts, on Wednesday, 29th February, about the decay of stone at the Palace of Westminster, were not intended to make a charge of neglect against the contractors. I am really, with all my anxiety to admit that on all occasions, at every meeting on the subject of the quarries, or on the supply of Auston stone, both Mr. Grissell and I have evinced the utmost desire to assist in procuring the highest qualities, as met by working them about to commence; therefore I regret exceedingly that my observations should have been construed as a charge of neglect against those gentlemen, who no doubt possess the highest qualities, as met by business generally, although they may not be the best judges of the most suitable kind of stone to be used for the exterior of an elaborate edifice. I sincerely believe that, as far as lay in the power and judgment of all concerned with the supply of stone, there was a desire that none of an inferior quality should be sent to Westminster. Mr. Grissell and the public should be informed that Mr. C. H. Smith, and the other commissioners, who strongly recommended, "at the onset," not only that some fit person should occasionally inspect the quarries, but also that a properly-qualified individual should frequently, perhaps two or three times a week, examine the stone at Westminster, with full power to admit or reject any of the blocks. But such recommendation was entirely discarded by the Government authorities at Whitehall-place. There might have been some difficulty in finding a more qualified man to undertake such supervision: no mere chemist, mere practical stonemason, nor mere anybody else, could have performed the duties creditably to himself and advantage to those who employed him; it must have been a man possessing a certain amount of general practical attainments, conjointly with long practical experience in the selection of the kinds of stone, and in the actual handling of the mallet and chisel. No doubt of such persons were to be found, had they been sought for.

By far the greater portion of the stone appears to be of a good and durable quality; and it is worthy of especial notice that the carvings show scarcely a trace of decay, although the whole length of the river front there is a series of heraldic sculptures, executed in stone originally weighing perhaps five tons each, with rampant animals as supporters, carved in a very bold relief, consequently, more exposed to the varieties of frost and thaw, rain and sun-shine, than mouldings or plain surfaces; yet all these large stones are as free from decay as when they were just cut by the carvers. This may seem to infer that the workmen, or the principal carver, exercised considerable discrimination in the choice of the blocks; that is, to take such as would cut and work freely, or appear to be of one uniform quality throughout their entire mass; and we now have the best possible quality. In one of Mr. Grissell's paragraphs he states "that the stone supplied for the Museum of Economic Geology, and the Amicable Assurance Office, came from the same quarry as that of the House of Parliament, and without any greater care or particularity of selection." This surely is quite in favour of my view of the case, namely, that most excellent and durable stone is to be obtained from the same quarries, and all that is requisite is a properly-qualified person to select it. And further, he says that "the stone supplied to the buildings in Lincoln's Inn was expressly selected by a practical mason sent from London by the authorities who had charge of those buildings." In this case we have positive proof that the mere practical stonemason was thoroughly afit for the important mission entrusted to him, and the working used was not so much to blame for want of discrimination as the authorities who gave him the appointment.

Mr. Grissell thinks it would have been more becoming, had he adopted the recommendation of Professor Auston, that the best stone being always the most crystallized. Mr. Grissell will refer to our Parliamentary Report of 1859, which was long before the appearance of Mr. Auston's writings, he will find that we repeatedly, and strongly, recommended the use of those stones which are most crystalline. Mr. Auston also stated that we were desirous to go to another quarry in the same neighbourhood, which was not of the same quality of stone as that which had been experimented upon by the commissioners. In answer to this assertion, I can state that after our first report of inspection, in the autumn of 1858, which was referred to the Order of Works in March, 1859, I again accompanied Sir C. Barry and Dr. William Smith, in the month of August following, to examine and report upon

the newly-discovered quarries in the neighbourhood of Bolsover-moor. I likewise, in August, 1853, proceeded with Sir H. T. De la Beche, to examine and report especially upon the Auston quarries. On each of these occasions, fair average sample blocks were procured, forwarded to London, minutely examined, and mechanically and chemically experimented upon, in order to compare their physical properties, with samples from other quarries, and from old buildings in the neighbourhood, in a manner precisely similar to the mode adopted on all former occasions connected with the Parliamentary Commission, in its researches and investigations for good stone. C. H. SMITH.

Books Received.

Lectures on the History of England, delivered at Chorleywood, by WILLIAM LONGMAN. Lecture II. London: Longman & Co. 1860.

THE series of lectures of which this forms one was prepared by Mr. Longman for delivery to the "Chorleywood Association" of workmen and laborers, near Watford. The association is in itself an interesting one, of which some account is given on the cover of the book. The author has greatly extended the two lectures already published, beyond the limits to which they were restricted in delivery. The matter is very ably put together, in a way which could not fail to prove both intelligible and interesting to the particular audience to whom it was addressed, as well as to the general reader. The lecture before us gives an account of the feudal system, and the origin of the laws and government of England. It is illustrated by some pertinent engravings, the largest being one of an ancient tournament, in colours, from one of the Cotton MSS. in the National Library.

A House for the Suburbs. By THOMAS MORRIS, M.L.B.A. London: Simpkin & Co. 1860.

To sketch "A House for the Suburbs," "socially and architecturally," was a good idea; but Mr. Morris has not made as much of it as it was capable of. However, we will not be exigent, but contenting ourselves with this gently-urged objection, will speak of what the book is, rather than of what it is not. Its staple consists of plans and a view of a family house, with its out-buildings and accessories; and the author also gives a block plan of a house and ground near Wimbledon-park, Surrey. In connection with this he says—

"Houses of medium size in London, though of considerable pretension externally,—such as those in Regent street, for example,—occupy less on an average than the twentieth part of an acre. Semi-detached houses near the metropolis, of the yearly value of a hundred pounds, have seldom more than a quarter of an acre allotted to each; and the engraved block plan of a house near Wimbledon Park, Surrey, is put forward to show the scope afforded by a site of 100 feet wide by 220 in depth, and containing therefore 22,000 superficial feet, or just about half an acre.

I invite attention to these statements the more earnestly, from a conviction that many people, proposing to reside in the suburbs, demand an extent of land very much greater than their actual objects necessitate; and, when they come to count the cost, think there must be some league to keep up the price. They may thus be able to define their wants more exactly, and will do well to bear in mind that the occupation of unnecessary land is a positive evil, entailing endless expenditure, and inducing slovenliness.

The style adopted for the house is Jacobean. In the plan the kitchen adjoins the dining-room, an arrangement which would be found objectionable, especially in summer.

The volume, which is well got up, is inscribed to Mr. William Railton, architect, with whom, for many years before Mr. Railton's recent retirement from practice, Mr. Morris was connected.

VARIORUM.

"LONDON at a Glance: an illustrated Atlas of London" (Hodgson, Paternoster-row) is a very useful novelty. It comprises thirty-six maps in sections, a key map of all London, an alphabetical index of 7,000 street references, and a general index of public buildings, hotels, places of amusement, &c. By making reference to the street-index, the name of any street wanted may be readily found, together with the number and even the portion of the plate containing it, so that all hunting through one large map (often very indistinctly lettered) is completely obviated. The names of the streets on the plates are plain and distinct; and, so far as we have seen, the maps or plates are correct.—Book the third of "The Graded Series of Reading-Lesson Books for all Classes of English Schools" has been issued by Messrs. Longman & Co. The lessons appear to have been well selected; they comprise descriptive travel, natural history, historical narrative, and miscellaneous matter; and the whole forms what we might almost call an interesting story-book for youth.—"The Friend of the People" appears to be prospering. The number

for the 31st of March, we observe, contains an article on Operative Associations, in which some account is given of the "Rochdale Equitable Pioneers' Society," which has been fifteen years in existence, and therefore affords a good criterion of what can be done with such associations when discreetly managed. The Rochdale began with a capital of £251, and a shop rented at 10s. In 1859, the funds were 27,060s., and the profits 10,730s.—this, too, be it observed, all the while that both members and the public are provided with good wholesome articles of food, &c., at wholesale prices, with the addition only of a small profit to represent the interest on the capital employed, expenses, and depreciation of stock. The Association met with strong opposition from "the trade" of shop-dealing middlemen, who everywhere consider that they have a vested right in a portion of every mouthful consumed by the poor as well as by the rich; nevertheless, by prudence and good sense on the part of the members and their management, all such opposition was overcome at Rochdale, as it, doubtless, may be everywhere else. The Association, we may add, have now a library of their own, a large four-mill, &c., and lately they erected a drinking-fountain, after the design of that in Regent-circus, London. The establishment of such an association offers a lesson to the working classes generally, and shows how much more profitable a use they might make of their spare cash than in throwing it away in thousands of pounds upon strikes.—Two interesting "Reports" have been forwarded to us from Bristol,—one the "Fifth Report of the Red Lodge Girls' Reformatory School, Bristol, with the Rules and Principles of Management;" and the other, the "First Report of the certified Industrial School, Park-row, Bristol." The latter has been opened under Mr. Adderley's Industrial Schools Act of 1857, and has special difficulties to cope with; but it is to be hoped it will speedily meet with the success it so well deserves. The presiding genius of both appears to be a business-like and liberal lady, named "Mary Carpenter, Superintendent," who not only prepares the able reports themselves, but squares the accounts like a skilful book-keeper, as she must be.—The April number of the Gentleman's Magazine contains, with much antiquarian and biographical intelligence, a continuation of Mr. Scott's "Gleanings from Westminster Abbey," fully illustrated.

Miscellaneous.

PROPOSED FOOT-BRIDGE AT RICHMOND.—Some time ago we expressed a strong opinion against the policy of the Office of Works in refusing assent to the landing on the Crown lands. After a tedious negotiation, the Government have given in, but only on condition that the promoters purchase up the Crown ferry at Isleworth (half-a-mile distant) for the modest sum of 1,200l. Thus, this ferry-right will cost very nearly three times as much as the bridge itself. A public meeting has been held in Richmond to raise subscriptions for the purpose, the Hon. Robert Bourke taking the chair. Addresses were delivered, and resolutions were unanimously passed that the proposed foot-bridge, as a work of general utility, was deserving of the financial support of the population both on the Surrey and Middlesex sides of the river. The entire cost of the undertaking will be under 2,000l., the greater portion of which will be absorbed by the Crown for the ferry-rights, and thus end a long discussion on a vexed question.

VALUATION OF NEW BRENTFORD.—At a meeting of the vestry on Friday last, to name a professional man for the survey and valuation of the new docks recently constructed at Brentford, and also the contiguous portion of the branch of the Great Western Railway from Southall, the appointment was given to Mr. John Davis Payne, who surveyed the parish of Isleworth, Hounslow, &c.

MONUMENT TO BISHOP BLOMFIELD.—It is stated that this work in marble is to be executed by Mr. Richmond, the miniature painter. The Art-Journal, with just indignation, says,—"We imagine the next fact to startle the art-world will be a tender from Mr. Fribb to build the new Foreign Office, or perhaps one from Sir Charles Eastlake to construct the new docks in the Isle of Dogs. Such circumstances would be scarcely less astounding than the employment of a portrait-painter to erect a monument, during the lifetime of Mr. Foley, Mr. Calder Marshall, and a few other 'capable' sculptors of Great Britain." It seems to be a delight to some in authority to insult English sculptors.

**LECTURES IN THE BROMPTON MUSEUM.**—A course of lectures, addressed principally to teachers, on the best methods of acquiring and communicating knowledge in various branches of science, will be delivered at the South Kensington Museum on the following Mouday evenings—16th, 23rd, 30th April, 7th, 14th, and 21st May, 1860. The first will be on "Practical Plane and Descriptive Geometry, and their application to Mechanical and Machine Drawing, and Practical Architecture," by Professor T. Bradley.

**ADVERTISE!**—Sir: I am convinced, if persons who manufacture materials used in erecting buildings would advertise their wares, a much larger business would be the result. I have been seeking information for some weeks about the various kind of tiles made for covering flat roofs, and for the best method of making flat roofs water-tight at a cheaper rate than lead. I have also wanted information as to the best principle for fire ranges, and the heating or warming of rooms. I visited, a fortnight ago, the exhibition at the Architectural Museum, in London, expecting to see everything used in the building trade, but, after paying 1s. for admission and 6d. for a catalogue, I was surprised to find little more than the Photographs, which, no doubt, were good, but not what I wanted. Cannot you give a few hints on this matter that will be useful?—ENGINEER.

**THE BIRKENHEAD DOCKS.**—The works committee of the Mersey Dock board have recommended the construction of two graving docks at Birkenhead—one of 85 feet, to cost 70,850*l.*, and one of 50 feet, to cost 52,120*l.* The committee also recommended that 10,000*l.* should be expended on engines and pumps, and 9,600*l.* on walls and sheds; the total cost being 142,000*l.* After a lengthened discussion, on the 20th ult., the recommendation of the committee was confirmed.

**CAST IRON IN CHINA.**—At the last meeting of the Manchester Literary and Philosophical Society, Mr. Wm. Fairbairn, the president, exhibited two large pans of cast iron, procured by Mr. Worthington from China, where they are used for boiling rice. The metal, which was, at the strongest part, only one-tenth of an inch in thickness, possessed considerable malleability. The president remarked that the art of making such large castings of thin metal was unknown in England. There are still things we cannot do, and more we do not know.

**SIX-FEET VOLUNTEER GUARDS (32ND MIDDLESEX).**—We are asked to mention that this corps will drill at Allen's Riding-school every Monday evening until further notice. It is established with a view to meet the requirements of men whose stature, being above the average height, renders their appearance in the ranks of ordinary-sized corps somewhat awkward, and who might therefore be disinclined to fall in. Since the return from Hythe of the captain commandant, the Hon. T. C. Brasco, the corps has made rapid progress to efficiency. The uniform is of the national colour, and, at the review by her Majesty, will present a striking contrast to the greens, greys, and drabs. Such of our readers as are of the standard height, and want a corps, should join the "Six Footers" forthwith.

**PARTIAL DESTRUCTION OF A RAILWAY STATION.**—On Tuesday morning, a portion of the iron roofing over the Victoria Station of the London and North-Western Railway, at Manchester, fell in, through a train coming in contact with and breaking one of the cast-iron pillars supporting the north-west corner of the roof. This pillar was exceedingly near to the line of rails, and, in shunting a train, one of the carriages got off the rails, and came in contact with it. The loss to the company, it is believed, will be about 1,000*l.*

**ROYAL ITALIAN OPERA HOUSE.**—Mr. Gye has issued a very attractive programme for the coming season, embracing all the old favourites and many new names of reputation. "Fidelio," "Stradella," "La Favorita" (with new scenery), "Le Nozze di Giannetta," are announced, in addition to the repertory of last season, and "Le Prophète" is to be revived. In addition, four grand concerts, one, if not more of them, to be given in the Floral Hall, are promised, to which all subscribers to the Opera will be entitled to admission.

**IMPROVEMENTS IN ABERDEEN.**—We learn from the Aberdeen papers that the directors of the Aberdeen Town and County Bank have resolved to erect a handsome building for carrying on their business in Aberdeen. It will be erected in Union-street, opposite Market-street. Designs were submitted from five local architects, and those sent in by Mr. Mathews, of Aberdeen and Inverness, have received the first premium. The building will cost from 12,000*l.* to 13,000*l.*

**RAILWAY TRAFFIC RETURNS.**—The traffic returns of railways in the United Kingdom for the week ending March 17, amounted to 457,980*l.*, and for the corresponding week of 1859, to 416,120*l.*, showing an increase of 41,860*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 190,955*l.*, and for the corresponding week of last year to 176,593*l.*, showing an increase of 14,362*l.*

**A REMARKABLE PROPERTY OF IRON.**—In 1856, says a contemporary, Mr. March, an able chemist connected with the Royal Arsenal, discovered that it was an invariable rule with iron which has remained a considerable time under water, when reduced to small grains or an impalpable powder, to become red-hot. This he found by scraping from a gun some corroded metal, which ignited the paper containing it, and burnt a hole in his pocket. The knowledge of this fact may account for some spontaneous fires and explosions. The tendency of moistened particles of iron to ignite was discovered by the French chemist, Lemary, as far back as 1670.

**THERE IS NOTHING NEW UNDER THE SUN.**—I think the following facts will be interesting to your readers at the present time, when the rifle is the topic of the day. The carbine with which Hamilton of Bothwellhaugh shot the Regent Murray, in 1570, is preserved at Hamilton Palace. It has a brass barrel the same length as the Enfield rifle, and the bore is of the same diameter, and, what is most singular, it is rifled nearly in the same manner as the Enfield. The power of this rifle appears to have been great, for "the ball, after passing through the body of the regent, killed the horse of a gentleman who was riding on the other side."—WM. BURNS.

**SCIENCE AND ART DEPARTMENT.**—The Lords of the Committee of Council on Education desire to afford the greatest facilities to teachers of science and navigation schools in obtaining the best instruments, apparatus, &c., for giving instruction in science and navigation, towards the purchase of which the Science and Art Department is authorized to pay 50 per cent. of the cost; and they consider that the fullest opportunities should be given to manufacturers in all parts of the kingdom for supplying such apparatus. At the same time it is necessary that the Science and Art Department should have some guarantee that the apparatus and instruments are of good quality and moderate in price, and they have therefore laid down certain rules and conditions, which have been published and circulated.

**PRESERVING WOOD.**—All fence-footings, gate-posts, garden-stakes, and timber that is buried in the earth, may be preserved from decay by the following simple process:—Take 11 lbs. of blue vitriol to 20 quarts of water; dissolve the vitriol with boiling water, and then add the remainder. The end of the wood is then put into solution, and left to stand four or five days; for single, three days will answer; and for posts 6 inches square, ten days. Care should be taken that the saturation takes place in a well-pitched tank or keyed box, for the reason that any barrel will be shrunk by the operation so as to leak. Instead of expanding in an old cask, as other liquids do, this shrinks them. Chloride of zinc will answer the same purpose, but is dearer.—*Manchester Courier.*

**NELSON COLLEGE, NELSON, NEW ZEALAND.**—The chief stone of this building (in fact, the only one, for the edifice is to be of wood, on account of liability to earthquakes) was laid on the 7th of December last, by the governor of New Zealand. The architect is Mr. Beaton. The building will form two sides of an inner court or quadrangle, 117 feet by 60 feet, on the south-west side of which will be ranged the domestic offices. All the roofs will be covered with galvanized iron tiles, and have leaden guttering. The contracts for the whole building, exclusive of the foundation, amount to a sum a little beyond 7,100*l.* A tower will project from the centre of the principal front, and, rising above the main roof, will give additional prominence to that portion of the building, while large bay windows will give character and projection to the wings. The principal front will be 142 feet in length. An open corridor or loggia will screen the chief apartments from the sun's rays, and afford depth and shadow to that portion of the structure. The return elevation, or that towards the north-west, which will be 82 feet in length, will correspond with the wings in the north-east front, and have a similar bay window in the centre. The end elevations will be of the same character. The three principal entrances will have open archways and recessed porches with semicircular arched windows, projecting on corbels above. The style adopted is the Elizabethan.

**SALFORD TOWN HALL EXTENSION.**—At the meeting of the Salford town council, on the 28th of March, the town hall and markets committee, with reference to the alterations and extension of the Salford Town Hall, reported that the contract of Messrs. Henry Southern for carrying out the proposed work amounted to 5,625*l.*, which they recommend should be accepted. The committee hoped to realize 400*l.* by the sale of the old materials, so that the sum necessary for the work would not exceed 5,500*l.*; and this would cover any alterations they might in the future think it necessary to make on the proposed plan. The contract of Messrs. Southern was accepted.

**ARCHITECTURAL EXHIBITION.**—The exhibition will be opened next week. We have been asked to postpone further notice till then, and of course comply.

**"MACHINERY FOR OBTAINING AND APPLYING MORNY POWER."** A patent taken out by Mr. John Coates, of Lower Shadwell, engineer, after specifying certain central pillars, working-beam, fly-wheel, oscillating cylinder, &c., states that "the hollow-centre pillar or main support is connected at bottom with a ram, the plunger kept regulated by a suitable weight attached to a chain passing over a pulley, and a crane may be applied to draw back the plunger, that water may be admitted without pumping. The opposite or solid end of the working beam has a balance weight attached as a counterpoise to the weight of the cylinder. The cylinder, the tubular portions, and the trough are filled with water, and the working of the piston causes the alternate admission and expulsion of the water, thereby putting the engine into motion." The specification states that there may be two rams, "so that, while one is at work, the other charges the ram cylinder with water to obtain the power."

**TENDERS**

For New Warehouses and Drying-Sheds, White's-gardens, Bermondsey; Mr. Geo. Elkington, architect:—

Wilson	£7,463 0 0
Rider	7,190 0 0
Myers	7,189 0 0
Coleman	6,985 0 0
Wells	6,980 0 0
Willis	6,705 0 0

For New Warehouses, Houndsditch; Mr. T. C. Clarke, architect:—

Jauch	£5,996 0 0
Lucas	5,995 0 0
Paterson & Fotheringham	4,939 0 0
Brown & Robinson	4,709 0 0
Payne	4,666 0 0
Brown	4,619 0 0
Lawrence & Sons (accepted)	4,320 0 0

For a Vestry-Hall and Offices for the parish of St. George's, Whitechapel; Mr. Andrew Wilson, architect. Quantities supplied:—

Wood, Gravesend	£5,580 0 0
Hocken	5,319 0 0
Wood, Mile-end-road	5,309 0 0
Hack & Son	5,287 0 0
McLennan & Bird	5,000 0 0
Widlen	4,999 0 0
Hill	4,892 0 0
Blackburn	4,984 0 0
Wilson	4,974 0 0
Hart	4,829 0 0
Ennor (accepted)	4,675 0 0
Raby	4,631 0 0
Glenn	4,590 0 0

For Great Queen-street Schools; Mr. W. W. Pocock, architect:—

George	£3,293 0 0
Clematis	2,574 0 0
Sutton	2,540 0 0
Fish	2,511 0 0
Porter	2,496 0 0
Todd	2,476 0 0
Piper & Son	2,100 0 0
Smith	2,399 0 0
Coswold	2,384 10 0
Downes	2,399 0 0
Richards	2,314 0 0
McLennan & Co.	2,283 0 0
Batterbury	2,279 0 0
Rudkin	2,109 0 0
Glenn (accepted)	2,109 0 0

For the first part of a House of Mercy, Wolverhampton, for Mr. Wearing; Mr. E. Wehby Pugin, architect. Quantities supplied by Mr. Marples:—

Branston and Gwyther	£2,134 0 0
Beveringham (accepted)	1,909 0 0
Smith (without fittings)	1,895 0 0

For a House and Stabling at Rochampton, for Mr. P. Penley; Mr. C. Lecy, architect. Quantities supplied:—

Avis & Sons	£2,032 0 0
Nicholson	1,930 0 0
Adams & Sons	1,874 0 0
Evans, Brothers	1,800 0 0
400 0 0	2,380 0 0
399 0 0	2,273 0 0
...	2,260 0 0

For a Lecture-hall at Wreatham, Suffolk; Mr. George Glover, architect. Lowest:—

Hubbard & Co.	£1,034 3 0
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# The Builder.

VOL. XVIII.—No. 897.

*Metropolitan Communications, and Street Railways.*

THE Metropolitan Board of Works being now, pending the experiment, relieved from some of the duties of that great undertaking which was most pressing, it may be well to draw attention to certain objects for which the Board was constituted, that are scarcely less important even than the sewerage, to the improvement, or, we might say, the preservation, of London. Facilities for inter-communication are more needed for this than for any other capital; but they are here probably, the most out of proportion with local requirements and

those of business; whilst the disposition of the routes and streets of London generally, is as unfavourable to effect, and to the beneficial results on health and mind which come from external impressions, as to the first-named objects of the planning of any accumulation of buildings. We are, of course, aware that the efforts to secure timely attention to the subject are not only those which we ourselves have made, and that the Metropolitan Board have under consideration a considerable number of new lines, such as had been proposed at various times; as well as that they have now commenced works like the new line of street on the Southwark side, and completed others, as the short street from King-street, Covent-garden, which may prove of great value in relieving the present crowded thoroughfares. That they are not actively doing what is sufficient to stop the pressure of difficulties and increasing evils, however, we conceive is admitted by themselves; and they have achieved in preliminary arrangements, comparatively speaking little beyond printing a schedule of requirements, and items of estimate for streets, and expressing regret at their want of funds. That the whole work of improved metropolitan communications is multiplied in costliness at every year's delay, and that it must be done, or the effects become at last very serious, or in a national point of view, has been said again and again. It is fully perceived by those who have thought on the subject. The efforts of the Board, however, appear in print,—or, may we say, are as plans,—whilst companies are able to proceed towards the formation of railway stations, in the centres of London, which may be useful as represented, in diverting traffic from particular lines, but which have never been considered in relation to the plans spoken of, nor the latter with the stations, and which, to say the least, will introduce in central localities a condition of things beneficial to the companies, but that may not be understood by the public,—that is to say whether prospectively advantageous, or unfortunately the reverse. It would require constant attendance at committees to know what is the actual state of the several schemes for absorbing large areas in London, as these lines and stations: we know only that the Metropolitan Railway, chiefly an underground line, is in progress, that the Charing-cross Railway

is a substantive undertaking, and what else of the same character may have been to be learned from the ordinary channels; and that on the other hand, the appropriation of about fifty-three acres of land, and the stopping up or absorption of about forty-two public ways, besides the spanning of about seventy such ways with arches, offer themselves to the Surveyor to the City Commission of Sewers as reasons for a report which he presented at the beginning of the year, recommending the commissioners to dissent from the whole of the projects causing these changes; and that similar objections to two of the schemes, one of which proposed a terminus near the Bank, and the other a viaduct across Ludgate-hill, obstructing the view of St. Paul's, have procured an adverse report from the Improvement Committee, to the Court of Common Council. As to the Charing-cross Railway, we know that the line is to cross the river by a bridge,—which, if the view in the *Illustrated London News* be correct (though, as to the number of openings, we believe it is not so), will be a tasteless structure,—whilst we do not know how adequate approaches can be obtained (and having regard to the slight ascent at the western extremity of the Strand), without the removal of Northumberland House, much less without there be more than a widening, by removal of the houses on each side, of Hingerford-street. The "limits of deviation" would allow the removal of the whole of the houses in the Strand from Villiers-street up to and inclusive of those on the west side of Craven-street, and, therefore, inclusive of buildings which are now being erected. Let us however, assume this railway to extend, for the Kent lines, to the station at London-bridge, or generally to lines southward of London, and include the line for which a station is being formed at Pimlico, as serving the object desired,—which is that of dividing the traffic of each line over several metropolitan stations, rather than the opposite principle—the junction of the traffic of several lines at one station, which seems to be that of the Metropolitan Railway. Even in this view of those which will remain probably for some time chief lines for suburban and pleasure traffic, the lines southward of the Thames, there is much reason to apprehend that the station at Charing-cross will cause inconvenient crowding in the streets at that point, and to believe that generally a system of large central stations in towns, in lieu of feeding lines converging from many quarters to the main depot of each line beyond the town, would not be the best for the street communications, or the cheapest and best, having regard to the interests of shareholders. The only difficulty in the way of extension of the principle shadowed forth in the two stations of the Brighton company, is one, whatever it might be, affecting passengers in a change of carriages; but this, added to the first conveyance to the district station, would probably be preferred to a long drive to a central station, with the intolerable inconvenience and delay of existing streets. We believe that, whilst it is perfectly correct to view the system defective, which makes the getting from some parts of London to the London-bridge or the Eastern Counties station as long a business as getting to Brighton itself or Cambridge, the object desired would be best served by confluent or feeding and by girde lines; and that the original plan of having great stations, with the depôts and workshops, beyond the limits of towns, was in the main correct. Would it not be possible to remove now much of the business carried on at such stations as those at Euston-square and Camden-town, or even that which has been often thought too distant at Paddington, to localities where ground is less in demand for houses, unless those of the workmen, as in the case of Wolverton and Crewe, and so to benefit both the town and the company? Even at New-cross the ground occupied has become valuable. But the confluent and girde lines both would require to be designed with special reference to localities of the town; and thus far, the wants of London by any confluent lines southward, and by the North London railway in the opposite direction, are insufficiently served. In principle, then we may say, a much greater

number of termini of lines confluent to the one to the place of destination would be needed, whether lines for locomotives or of a different character. Whatever conclusion may be made as to the obligations and interest of the companies, the reader will agree with us that a system which leaves the positions of railway stations to be fixed on without reference to the ordinary streets, or leaves the streets as they were before they became the feeders to the trunk line, must be wrong.

There ought to be, therefore, on paper, a comprehensive plan of London and its suburbs, with the sites marked of all such stations of railways to the country, as are likely to be needed for some time to come, and with required street improvements suited to these centres, and to those of the markets, theatres, and other resorts of the ordinary carriage traffic. If such a plan exist, it is much to be regretted that the means have not been found for one of the improvements that must surely be indicated on it—the street so often proposed to connect Old-street and the Bethnal-green-road; and which would be so nearly the same as the chosen line of the Middle-level sewer. Other most important improvements, long suggested, however, remain in abeyance whilst opportunities go by; we may name the improvement of Chancery-lane, the removal of Middle-row, Holborn, and the formation of the street from the west end of Cheapside, starting from a spot where new buildings have been allowed to be raised. We speak not of the obstruction, moderated though it be, which has, after all exertions, been allowed to the view from the south-east, of St. Paul's, except that it is one for which somebody assuredly should "hang."

It is clear that however we divert a portion of the traffic from one station to another,—by a new line and termini partly, and partly by a new street,—there are wants of intercommunication daily growing in London, which require to be grappled with in a different manner. The existing routes east and west are all too narrow, and others north and south are wanting; and the tendency that there is to convergence and a crash of traffic as in Cheapside, should be moderated by well-devised plans to secure the objects meant to be obtained by Cannon-street and Gresham-street, but not served by the tortuous course and narrowness of, and the turns from Holborn and Newgate-street to the one, and the want of regulations for the course of the London-bridge Station omnibuses in the case of the other. Be it assumed, however, that these latter points are settled, the confluence of much of the traffic over London-bridge, and the crowded state of that thoroughfare, must continue until plans are matured, and all the works completed, having for object the provision of streets and railways directly from western London to the Kent and Surrey lines. It was this view which led us to see the necessity for preservation of the route of Westminster-bridge, and for a still further provision of crossings of the river. Any plan would be defective which did not go to equalize and connect the opposite shores of the river; Southwark with Belgravia and the most distant localities, or others where obstacles intervene; and this we have shown is needed, as well on grounds which are those of social equalization and pertain to morals and police, as on those which are most considered by men of business.

A radical change is required in the plan of London, both as regards the lines of route, and the width of those which are principal. New bridges and railway branches, and the lines by the side of the river when the embankment is completed, will effect much; but many alterations are wanted at the areas of the great centres; and we mention those of the theatres amongst the number. No building like any of the theatres or Exeter Hall should be allowed in future unless completely isolated, not only in order that there may be the proper number of doorways to it, but that the inconvenience which there is for carriage traffic may be avoided. Fortunately, Covent-garden and Drury-lane theatres are placed in a quarter where there is not much traffic except in connection with them, at night time; otherwise the inconvenience would be intolerable with what-

ever efficient control of the police-force. As it is, it is to be regretted that Mr. Sydney Smirke's plans,<sup>9</sup> followed elsewhere in many particulars, have not also been followed by the removal of buildings lying between Bow-street and Little Russell-street, where Mr. Smirke proposed a quadrant space and piazza—the theatres then to be in sight of one another. The general plan only falls short of the present requirements, and inasmuch as it does not meet our principle of dealing with the whole area of London. The same short-coming was characteristic of the application to architects for the street plan to accompany the designs for the Government Offices. In all the designs in the several cases, including those of Gwynn and of Sir Christopher Wren, as also those of Mr. Penethorne, we perceive, leaving out of consideration the new element of the railway stations, that there were the same objects thought of; some of which, like the opening of Lincoln's-Inn-fields, remain to be made; and others, like the prolongation of Bow-street, and the line of Gresham-street, in intention the same as one of the lines of Wren's plan, have been completed in a bungling manner. What is wanted to prevent the perpetuation of the same fatality, or dominance of private interests to obstruction of improvements is the acceptance of their obligations by the Metropolitan Board. Let this be followed by the publication of plans to which general assent could be looked for, as desirable improvements; and we think with this condition, and some slight assistance from the national exchequer, which perhaps is due to a metropolis, as for the general advantage, Londoners would bear the infliction of a rate meant to remove the serious inconveniences which they are under, and to prevent those looming in the distance. Let the Board then, having the *mens conscia recti*, or that their plans are well devised, and will attain the end, proceed not on their present principle, which, for example, would involve a certain cost in maintaining houses in a case like that of the course of the Piccadilly branch of the Middle-level Sewer through Great Turnstile, whilst a street for carriages there has been constantly asked for, but with spirit and determination such as that of a railway company. It is due, however, to the Metropolitan Board to ask for them both the favour of Parliament which is shown to a company, and the active support, scarcely yet manifested in many cases, of the Government. Whether the best system will be one contemplating to treat for premises that are in some cases of enormous value, or to form new lines and gain some return, may be left to the judgment of surveyors. The direct lines required most would probably be found to run through property of inferior value, and with judgment might repay the bulk of the expenditure. In the case of New Oxford-street, the comfort of the previous inhabitants was not cared for; and, therefore, as we know, evils have been retained in the neighbourhood of the new buildings, which have been since unfavourable to the rents and property; moreover, in our opinion, the external character of buildings could now be made, whilst productive of effect, conducive to the importance of the street in financial returns. The mistake of Endell-street, both as to the line and the retention for many years of one side with low-class houses, would hardly be repeated. Supposing the embankment lines be viewed as those of new communications, east and west, has it ever been considered how much property might be improved in the streets which would lead out of these lines? It may be too much to expect that the waterside property would be improved; though we think it has been clearly shown that goods could be craned into the warehouses, or wheeled across the carriage-ways, without interruption to traffic, and that therefore the property would not be deteriorated. We have little more to add respecting the portion of the plan wherein would be made provision for railways such as are worked by locomotives. Girde lines at a sufficient distance from London,—say the Croydon and

Epsom line might form part of one, or that through Reigate and Dorking, should such be the distance,—would be very important in the defence of London, as would be a general coast line, natural obstacles not intervening, in the defence of the country.

But it is beginning to be understood that great as is the development of the system, there is still much to be done to extend the uses of the railway mode of communication in districts which lie out of the main routes, as well as in the streets of towns themselves; and into this part of the question we shall enter in a subsequent article.

#### ON ARCHITECTURE AS DEVELOPED BY THE VARIOUS RACES OF MAN.\*

THE subject to which, on the invitation of the committee of the Architectural Museum, I propose to invite your attention, is "The Ethnology of Architecture," that is, architecture considered according to its development among the characteristic varieties of the human race; in other words, the modes in which some of the various races of man have expressed themselves in architecture.

You have had many proofs, in the discourses delivered here, that this art of architecture has been studied chronologically, historically, geographically, nationally, but scarcely yet by the aid of ethnology. On the other hand, ethnology, the study of the varieties of the human race, has been viewed by the light of physiology—the science of the structure of man; by the light of philology—the science of language: it has yet to be studied by the light of art.

After a few prefatory observations on the scope and complexity of the subject, the lecturer proceeded.—

In the first place, then, I propose to notice how art is calculated to aid ethnology, and what art is best able to render said.

Next, to bring forward a few facts respecting the distinction of the types of mankind, and to show the permanency of some of these types.

And next to group the varieties of man in such a manner as to exemplify what I have called the ethnology of architecture.

The science that, under the modern name of ethnology, investigates the varieties of the human race, that marks their permanency and their influence on human destiny, and seeks to explore their origin;—this science has, as I have remarked, summoned, first, physiology to its aid, and scrutinized, with laborious care, the peculiarities of the structure and of the external anatomy of man. It has next appealed to philology; and, as speech is the primary and characteristic product of the human intellect, it has sought alike, in the delicate refinement of civilized expression—the magnificent instrument of social intercourse employed by *Bachylus* or *Demosthenes*,—and in the uncouth tones of the naked savage, to gather materials for generalization, and for the establishing of great and interesting truths.

It appears to me that there is yet another path by which to explore the domains of ethnology, and that a path peculiarly interesting to us—it is the path of art. Here truly there is much, almost everything, yet to be done, and doubtless much that will repay our labour.

Many considerations unite in making art a most efficient guide in ethnological investigations. I believe that in art man strives to express his relations to external nature, to his fellow-men, and to his creator.

Art is also, let it be noted, especially *human*. In instinct man is excelled by the lower animals, in intellect by higher orders of created beings, but in art he is alone. If, then, it be acknowledged as a vehicle of human thought, it must also be an index to the peculiarities of the mind that shapes the thought.

Now, these mental peculiarities are marks of distinction of race: by the records of art, then, we may justly reason in ethnological inquiries.

I have purposely used the term art in the general sense, meaning all, not merely mechanical, that we ordinarily include in that expression; but it must be obvious to slight reflection that the more directly art emanates from human thought, the better will it be fitted for my present argument. Now, of the three commonly known as the fine arts, viz., painting, sculpture, and architecture; painting finds its materials in the de-

lineation of form, of action, and passion, that actually exists, or in the conception of such as might exist in life, in the exhibiting the harmonies of colour, or in the interpretation of the aspects of external nature; sculpture, though more abstract, yet deals with forms that are conceivable in life; not so architecture,—it alone has no archetype in external nature—it is therefore more directly the emanation of man's own individuality, either the product of his necessity—even of his fears,—or of his luxury, or of his religion. Architecture, then, among the fine arts, is that best fitted to tell us somewhat of the peculiarities of the races of man.

In the ordinary or popular sense it is not then an imitative art, but in the higher and truer sense, in which the greatest authority, Aristotle, uses *mimesis*, embracing poetry and music, it is also contained, as being the embodiment of a mental conception, the changing a brain-image to a tangible reality.

It would be beside my present purpose, even did time permit, to enter on any detail of the peculiarities and distribution of the varieties of the human race; but I must bring forward briefly a few facts respecting their present occupation of the face of the globe.

If you will turn with me to the map of the world I can more readily indicate the prevalence of the characteristic types of man.

[The lecturer showed the distribution of the chief varieties of man, and by means of diagrams and casts pointed out their distinguishing peculiarities, mentioning the classifications of Blumenbach, Cuvier, Pritchard, Zeune, &c. He then noticed the permanency of some of these types, and traced them to very remote epochs, from the evidence of ancient authors and monumental records. He then continued:—

It thus appears that the lapse of 4,000 years has not produced variation in those types which, happening to be the subject of art record, are still recognizable by us. We might justly infer that many other of the types now existing could then and previous to that remote period have been found, but in default of artistic record, of which you will perceive the paramount value for this purpose, we cannot make the assertion positively.

I do not mean to enter on the question of how or when these great distinctions of race which we have seen to be durable originated. I am not yet prepared to state it as my belief that the primeval races of men were placed on the earth at various epochs and under various conditions of existence. Our present knowledge, although pointing to some such conclusion, is perhaps not quite sufficient to establish it, but I may in passing remark that such a conclusion, should it be established on scientific evidence, would no more militate against the truths contained in Scriptural revelation than do the acknowledged facts of astronomy or geology against Biblical statements with which at first view they may not appear to coincide.

Were it requisite for my present purpose, I should not hesitate to beg some attention to this weighty question respecting the primeval inhabitants of the earth, though it be vexed by infidel sarcasm on the one hand and well-intentioned theological opposition on the other, for I find that we have a right to claim for science a public and patient hearing if her assertions while opposing commonly received impressions are made for the sake of truth.

But it is for the present sufficient that I have exhibited a brief sketch of the argument which appears to me to establish the antiquity, and so far the permanency of the chief varieties of the human race, and having done so we may advance to our next point—the grouping these races in such a classification as may best aid our present inquiry respecting their artistic capacities.

I propose to distinguish into three groups, marked by characteristics of mental organization, three principal developments of the human race.

1st. Those races in whom the sensuous faculties prevail.

2nd. Those of higher organization in whom the intellectual powers begin to exert a greater influence.

3rd. Those of the highest organization in whom the moral faculties have gained their full energy, and the balance of the three powers is just.

The object of my classification is to inquire more conveniently whether these groups have severally recorded themselves in the art of architecture, and if so, with what comparative success; and thence to draw some conclusions as to the nature of the faculties employed in the service of the higher arts.

1st. The group I have named sensuous. This includes the whole of the Nigritian family, the

\* "Suggestions for the Architectural Improvement of the Western Part of London," 1841.

\* Read by Mr. R. H. Smith, B.A., at the Architectural Museum, Wednesday, April 4th.

African, excepting Egyptians and Nubians in the north, and Caffres in the south.

It includes also the Polynesian races, and, as a distinction based on mental characteristics, it should, perhaps, truly, embrace all who have sunk to the degradation of savage existence.

The question before us is, what architectural art has been developed by this vast and ancient group of the human race.

Art of a certain character they have: an art of surface decoration—an art that works by a seeming instinct, and which I therefore propose to name *sensuous* or *instinctive*. It is well shown in these carved paddles from New Zealand: it pervades the art of all nations whom we call *savage*: it has none of the hesitation incident to reflection: it seems to be guided by some such law as controls rather than guides the operations of the lower animals: yet it is absolutely true in principle, and can, as we shall see, unite with the highest effort of art, and contribute to the perfection of the latter. But in architecture this group have effected nothing.

The art which emanates from the nobler faculties is above their organization: they are incompetent for it: they have existed without it; and, according to all evidence, no myriads of years would so alter their nature as to create in them the power to produce it.

Let them blend with other races: let them come, as we shall presently observe, into association with a higher type; and they can learn somewhat and imitate a little, and contribute another and distinct quality, which is capable in due subordination of enhancing the higher art; but of themselves and from themselves no work of the great art of architecture can arise.

Pass, then, in the second place, to the group whom I have marked as exhibiting the power of the intellect to control the sensuous nature. In some, the majority, the balance between the two powers seems ever to vibrate—the animal nature ever *sensu* the intellectual. Yet, as a group, I mark in this division the chief section of the yellow races,—the Turanian, the Mongols, the mixed Turkish race; also the Arctic types, the Samoiets, the Esquimaux, the Tchukki, the Laps—not the Finns; also the American group and the Aztecs; also the Thibetans and the Chinese.

Widely indeed differing in intellectual vigour and in progress towards civilization; some, perhaps, more properly falling within my first group; but yet having certain characteristics in common.

One of the most remarkable phases of civilization that the world has known—the Chinese—comes within this group: the Japanese, subject, perhaps, to some external stimulating influences, are also included within it. I do not ignore the advance in certain kinds of art which these people have made,—their admirable skill in surface decoration, their innate sense of colour, their appreciation of certain harmonies of design, whether in form or in flat ornament; neither do I disregard their discoveries, long before any western efforts, of much that we are apt to arrogate to ourselves as proofs of European invention,—their knowledge of the compass, of printing from wood blocks, of the use of gas for lighting, their manufacture of gunpowder, of paper, &c.

Yet what has this second vast group accomplished in architectural art? The reply may seem almost paradoxical: their nature is beneath the power needed for the invention and development of great art: they have done almost nothing.

Yet I shall be reminded of the vast structures of the Chinese, their mighty towered walls, their forts, their bridges, &c.

These erections I take to be proofs of my argument; evidences of the inherent distinction of race and the incapacity of vast groups of mankind, despite great mechanical ingenuity and considerable intellectual power, of attaining true architectural art.

They are indeed builders, and in the working of stultish material are altogether unsurpassed since the days of the Egyptians; but their building is but an evidence that the heart of the people is not in their work; their heads and their hands, their busy brains and dexterous workmanship may be there; but architecture, the living art that tells of the sense of beauty and fitness, and the majesty of the conceptions that start from the kindling imagination,—this is absent.

They have their palaces, a sort of monumental gateways, often elaborately decorated: they have the tee or pagoda, at times a striking and most picturesque structure: these are architecture, but these are borrowed; neither are indigenous—they are of Indo-Iranian origin, and therefore come from a higher type of the human race. Moreover,

in Chinese bands they have been so far modified as to depend for their effect mainly on that surface decoration which, as I have observed, is an instinct among the less highly organized races of man. The great nine-storied Tee, called the Porcelain Tower, was the most notable example of what I mean. Pieces of its material which I have seen show that it was faced with a terra cotta coated with a stanniferous glaze; and, though more than 400 years old, these fragments exhibited an uninjured surface. As the building was upwards of 200 feet high, the effect of this brilliant glaze was, as I have been assured, very striking. This surface ornament is the *chaou de bataille* of Chinese builders. The museum here contains some extremely interesting illustrations of their use of these various coloured and effective glazes.

It is needless for me to mention other sections of this the second great group of the human race:—their scale is descending, till they blend in common inferiority of organization with the races that preceded them.

The last group we have to consider is that in which the highest organization is exhibited by the just balance of the sensuous, the intellectual, and the moral or spiritual powers.

We have noted that the types in whom the lower faculties exert a chief control are incapable of the art for which we seek: we have seen that even in a higher organization, when the intellectual nature begins to sway the instinctive, indigenous architectural art is scarcely found: we must now look further, and discover a power that can command the intellectual nature to its service, and strengthen itself for its efforts by the vigour of the sensuous instincts also. This power is alone found in the moral, the spiritual, the religious tendencies of man's nature.

I would guard myself from the appearance of asserting a dogma respecting what under the present conditions of human thought is scarcely conceivable,—a system of so-called natural religion: I merely desire to keep in view the distinction that is ever durable between the three powers of man's nature; and, as different degrees of relative prominence belong to each of these in different types of mankind, I look for results in proportion.

As we approach, then, the highest development of human faculties, it might become us to pass, as it were, in review, the architectural expression which man's nature has found for itself in all ages and countries where its powers have been adequate to the effort; but, besides that this would be manifestly beyond the limits of many dissertations, it is here also the less necessary while addressing an audience who have had the advantage of attending the course of lectures of which this paper of mine is the conclusion.

This last group of the varieties of men includes the Iranian type, embracing, mainly, the Caucasian of Blumeimbeck.

It comprehends the Arian races, Hindoos, Persians, Armenians; also the Semitic races, the Arabs, Jews, &c.; also the European races, excepting the Laps.

Thus the sources of the civilization of the world are now before us. From the Semitic race has come religious civilization: from the western branches of the Arian type has emanated material civilization. The forms of physical structure that are deemed most perfect are among these races. The moral and mental energies that have left the deepest and most abiding tracks across the path of time have come out from them,—whether the Hebrew, the Greek, the Roman, or the sudden enthusiasm of the Mahomedan.

We have now to consider whether these races, in whose original organization the higher faculties have been given the fullest sway, have sought in their architectural works an expression of their nobler nature, and how far they have succeeded.

We must in this inquiry be prepared to keep in mind that, if human nature be at all truly, as I conceive it to be, reflected in art, we shall not discover any instance of its higher powers expressing themselves without some alloy of the baser faculties; but where the effort can be traced, and a tendency towards such expression is marked, there we are justified in an acknowledgment of the more noble motive.

We shall also see that the dominant nature of those types possessing higher organization, having subordinated to its will the other lower races, has yet almost unconsciously yielded somewhat to their instincts, and allowed a trace of their nature also to betray itself in art, the original conception of which would have been utterly beyond their powers. It will be, therefore, convenient to bear in mind the classification of all art-effort, no matter by what type of man developed,—under sensuous or instinctive, moral or spiritual,—as ethnology hears a re-

markable witness to the prevalence of these motives, mingled even through and through this last group that I have proposed.

The first witness we summon is the Egyptian. And it may well seem strange to us that the most ancient architecture on earth should be that which, among the Christian styles, bears the most remarkable witness to the prevailing sway of man's spiritual nature. The characteristic which separates the Egyptian from all other ancient architecture—a characteristic the grandest that architectural art can possess—sublimity,—has never been surpassed, never perhaps been equalled elsewhere in any age or in any country.

We have seen that this art of architecture, if it have any life in it, is the expression of the heart, the mind, even the instincts of the nation, at the period. What, then, in Egypt, led to this marvellous art of theirs? They were, beyond all other people of past ages, swayed by three motives,—the conviction of futurity, the certainty of judgment, and the hope of immortality.

Their religious system, their government, their social habits, their daily life and occupations, are more or less known to us chiefly by monumental records, and such evidence illustrates the testimony of their architecture. It is needless for me here to enter into detail respecting the extraordinary monuments that remain in Egypt, and upon which our reasonings are based. Diagrams, photographs, &c., have made you familiar with their general character; but I am assured by those who know them well that no description, however vivid, and no illustration, however graphic, can realize the effect that these marvellous works are capable of producing.

Their gigantic scale has doubtless much to do with this; also their material, most durable in its nature, and difficult of workmanship. A sense of stability and of repose, then, is among their characteristics,—“by their own weight made stand fast and immovable, looking tranquility.”

This effect of repose is also partly produced by the use of the massive lintel instead of the arch, by the sloping jambs, by the skill with which sculpture is employed without breaking up surfaces, by the large proportions of the columns, and the general simplicity of the forms.

Beauty of design, as we commonly estimate it, was not the object of these architects, though it be often wonderfully secured by them; but they built to appeal to deeper things than mere external beauty—they seemed to defy time, and measure the strength of their structures against eternity,—and truly, when we reflect on their works, the revolution of centuries and the flight of ages seem to be put aside like a very little thing.

Minds of a low type of organization could not have thought such thoughts of futurity and immortality. Had we, therefore, no evidence of what the race was, or any knowledge of its physical characteristics, we should be able, by a sort of comparative anatomy of architectural art, to form at least some conception of what it must have been: we should, at least, have known, without hesitation, where to class it as a type among the three groups I have proposed. The sensuous, deficient in intellectual and spiritual nature, could not embrace it: something beyond the coarseness of sense is wanted. The intellectual, still deficient in the moral and spiritual, could not reach it: something beyond the address of a mere intellect is needed. The third alone, where the balance of powers is fully adjusted, could be sufficient for such a race; and great, indeed, might such a nation be, could the human heart be preserved incorrupt.

But the majesty and sublimity of the forms of their architecture are not alone to be noted: the ornament with which it is enriched seems to me to convey another ethnological truth; this ornament is perhaps the truest in principle that ever adorned architecture. I allude not alone to the sculpture which Mr. Bell so skillfully explained in his lecture, but also to the system of coloured decoration and conventional treatment of natural forms.

To enter into detail would carry me too far, and would not be very requisite here, where materials to justify my assertion, as far as books and illustrations can do so, are at hand.

Now this completeness of surface decoration has been always found, as I have already observed, among that first division of the human race which I have designated as the sensuous group: a sort of instinctive sense of colour and adaptation of form to flat treatment is their art-possession.

Since, then, we find these qualities so remarkably combined with the grand conceptions of Egyptian architecture, could it be that they were

the art-inheritance of another type, a lower organized race, who gave way before the greater vital energy of the superior, but who, with the true persistence of race distinctions, continued to exist as a substratum and have left, on the imperishable records of their conquerors, a memorial of their nature also? I think this is so; and were there time now to extend the inquiry, I feel that curious illustrations at least, if not proofs, might be brought forward.

Ethnology at least tells us this, that three distinct types of race, two of them going to my third group and one of them to my first group, existed from remote antiquity in Egypt.

We require, as I have endeavoured to show, representatives of the highest group to realize by any possibility Egyptian architectural art, but we have also seen that there is evidence of the working of a lower type in the character of the surface decoration. This lower type the ethnology of the country also supplies us with: it is the Nigritian type,—capable of executing in great measure the coloured ornament for which their instinct, as it were, fitted them, but incapable, as we have seen, of rising higher.

The nobler art was supplied by the two other types; the Semitic giving the religious aspirations, and the other, an Arian (?) form, giving the amazing mechanical and constructive skill.

[After some further observations on Egyptian art, the lecturer regretted that his time would not permit him to enter on the curious questions that arise with regard to the ethnology of Greek architecture, and also stated that it had been his intention to have brought forward as an illustration of his views,—as a chief architectural witness,—that style, the greatest that had arisen since the Christian era, and, in truth, the greatest among all as an exponent of man's higher nature,—the Gothic,—and to have shown how deeply seated in the distinctions of race, and how profound are the springs from whence it has drawn its sublimity and glory,—he continued.—]

To follow in detail the questions that arise from the various developments of architecture under this third and chief group of the human race would carry me beyond my prescribed limits. I may, however, be allowed, before I conclude, briefly to recapitulate my argument, by concluding you that, having first indicated this almost untrodden path of architectural ethnology, having touched on the variety, number, and distribution of the types of mankind, and having shown the permanency of some at least among them from periods antecedent to history, we then classed these types under three primary divisions, according to their mental organization, and showed that it was not null, in the combination of mental characteristics, the moral or spiritual element began to exist as a controlling power, that architecture properly so called was developed.

If I have ventured to assert the supremacy of art in the region of human thought more decidedly than is wont to be done, I think an audience here may well be disposed to receive such statement with indulgence; and if any think that my view implies an undue exaltation of the art of architecture as an expression of man's mental being, I can only say that had time permitted, I think I could have shown further cause why this chief art, the parent of decoration and the nursing mother of painting and sculpture, should be so regarded; and I am persuaded that any earnest consideration of this subject would lead to the conviction I have stated, that architecture cannot develop its highest efforts except among those races of mankind in whom not alone the greater qualities of the intellect are exerted, for this is obvious, but among whom also there is an effort to give expression to the aspirations of man's moral and spiritual nature.

Thus it is, as has been often noted, that architecture's greatest efforts have been in the service of, or associated with, religious belief; and, where the characteristic of a nation is the absence or the feebleness of such conviction, there, as in the vast Chinese empire, architecture is almost powerless.

What are the aids at present offered to those who think and work towards the study of this art? It must be confessed that at present there are scanty efforts, very earnest efforts, have been made with excellent result by the gentlemen by whom I am surrounded; but something more than individual effort is needed. I am one of those who trust to see established a national institution,—a Museum of the Architectures of all Nations,—where this art, so long left to be comprehended by accident or inspiration, may be worthily taught and nobly supported.

True, a museum, however rich or comprehensive, cannot supply the majesty of the Egyptian

the symmetry of the Grecian, the beauty of the Indian, the solemnity of the Gothic; but it can supply vast stores of knowledge respecting them. The reproducing of ancient works, the illustration of detail, and the example of ornament,—these can aid us to realize, can make the dim shadows in our minds take substance, can make our images feel more palpably before us, can clothe the dry bones of our skeleton thoughts with flesh and blood, can breathe upon them the spirit of that intellectual and spiritual life of which I have spoken, and make them arise an exceedingly great army.

#### THE ARCHITECTURAL EXHIBITION.

THE *conversations* of the Architectural Exhibition was held on Tuesday last. The rooms were not so crowded as last year on the first opening of the galleries,—about 600 persons, including ladies, being present; but the formal business being judiciously curtailed, the evening passed very agreeably for those who were of the company, amongst whom, however, we did not see more than a small proportion of the heads of the profession. Professor Cockerell, in the chair, called the attention of the visitors to the works exhibited and to the contrariety of character as regarded style, and referred to the death of Earl de Grey, who had taken the chair in previous years. Mr. Edmeston, one of the secretaries, for the treasurer, reported a satisfactory state of the finances, inasmuch as the expenses of last year had been in great part met by proceeds of the Exhibition itself; and the period was evidently approaching when the subscription fund might be dispensed with. He also referred to those advantages not of a financial character which are derived through the sale of season-tickets, in the interest taken by the public in the exhibition and lectures; and then mentioned the intention of the Society for the Encouragement of the Fine Arts, to award a premium for a work of architectural design in the present Exhibition or that of the Royal Academy. Mr. Lamb proposed a vote of thanks to the chairman, and the visitors proceeded to the refreshment-room, or to inspection of the drawings.

The drawings exhibited this year are about 350 in number, fewer than there have been in previous years; and in the number mentioned, there is scarcely the amount of interest that might have been looked for. Not only are leading architects, as heretofore, barely represented, but the younger men do not appear in the usual quantity and importance of their contributions. It is true, now, as it has been previously, when we have endeavoured to prevent misconception on the point, that the Architectural Exhibition cannot fairly represent the actual condition of architecture, much as it could be desired that it should do so. Those who are most engaged in making the condition, are those who are least able to give attention to the preparation of finished perspective views. Much more, however, might be done than we have evidence of, or have had; and this more must be done if the Exhibition is to be maintained and made to foster, as we have always urged it might, powerfully, the advancement of our art in public estimation. Towards that aim, the display of showy, coloured, drawings is not essential; we are not sure, indeed, that it may not operate in the reverse direction to that desired; and if architects could be induced to see the serviceableness to themselves, of a record of each of their executed works, in the form of a sheet of small-scale plans, elevations, and sections, with sketch-view, as key to the whole, they would be able to contribute to the educational objects of the exhibition, with reverse of harm to themselves, and in the form from which the public may derive most of the particular information needed and chiefly desired to be conveyed. Whilst perspective representation of whole buildings, however, should never be deficient in the galleries, there should be not wanting drawings of details, as doorways and cornices. The exhibition has not advanced sufficiently of late in any of these directions towards its objects, though we are glad to find, as before, in many cases, means of gathering the information which can be conveyed by small plans.

It is, perhaps, rather hard upon the committee, who have exerted themselves much hitherto, to ask them for further exertions; but there must have been something defective in the management of this year, which there has not been before, and which must be corrected, if the Exhibition is to continue. The resident secretary has been, unfortunately, taken ill. Erroneous impressions, as we have often said, are apt to reach the public through the notices in the newspapers, of architectural drawings. Few but those in the constant

habit of examining such drawings,—few architects,—we might even say few who are asked to adjudicate professionally in competitions,—know how great is the difference between gathering the impression from the representation of an architectural design, and receiving one from an historical or landscape painting. One object, the painting, is before the eye,—albeit it may deserve dwelling upon long; the other, the design, may be truly considered as realizable only in the mind, after a laborious process of collecting and putting together. It is impossible, therefore, that a number of architectural designs can be done justice to critically, in the same time as would be given to the number of pictures, and we have therefore argued this with our contemporaries of the daily press, and have striven to give the attention ourselves. We do not, however, this year, find the committee working with us thus for the advancement of the art, and public education, in the manner desired. Contrary to the custom of former years, the representative of this journal has been refused admission which he required previous to Tuesday last, for that deliberate examination that we say is needed for architectural drawings; and the results of which in the case of the annual exhibition, are meant by us to be such as form part of the advancement of our profession and art. Though every year, with the approval of the committee, as we have understood, and to the advantage of the undertaking as we know, we have given a short preliminary notice, like that given the week before last, the notice this year has only resulted in the course to ourselves which we have spoken of. We need only add, after an explanation which was due to our readers, that if the committee think that by placing difficulties in the way of our duties, they are promoting interests of their undertaking, and of the profession, we are of a different opinion.

Before noticing individual works in the galleries, there is very little in the way of observation on the general features of the art displayed, that we need repeat or that could be held applicable more to the present collection, than to the exhibitions of previous years. That novelty is an absolute desideratum in art, and yet that novelty is one of the easiest procurable things; that *velut* (never more required than now), are "not the fetters of genius;" and that they are "fetter only to men of no genius;" that caprice and whimsicality are not taste; that eccentricity is not beauty; that mere style is not art; that polychromy is not architecture; that any separate features, however good, cannot produce the result without grouping; or that the presence of one or two of the attributes of good architecture, such as truth of construction, render not less needful the rest;—these and other points have been put forward, and we have perceived have produced some effect,—though more in opinions expressed in papers read, than in designs which are sent to Conduit-street. Our readers also know both the value which we attach to exhibition of drawings sent in architectural competitions, and that the few contributions to the exhibition in Conduit-street, or allowed by limits of the galleries, can in no degree be taken as a substitute for the complete exhibition in each case. Our professional friends, we might say, would gain a better notion of the designs for the Manchester Assize Court and Cambridge Guildhall from the extended notices which we gave, than they can in either of the cases from the small proportion of the drawings in the exhibition, are those which are least explained by plans. We plead guilty to a constant iteration of the importance of careful *planning*; because we know the matter requires to be dwelt upon yet more, both for the end of convenience and that of taste itself. We will, however, leave the competition drawings which there are, with one or two others, in the first room, and notice such works as the restricted time afforded has allowed us to examine,—not precluding ourselves from filling up any important omissions afterwards. The east gallery, we should state, does not this year contain any drawings, but is devoted to manufactured articles, some of which have been before exhibited. Similar repetition occurring in other parts of the galleries devoted to the manufactured articles, the interest in the general exhibition is reduced by the circumstance. It would be well to think of this, as also of the fact that the importance of the special exhibition of materials and inventions in the later part of the year, is reduced by having the same objects on both occasions. This department of the present exhibition, however, will deserve a separate notice.

The work to which we are attracted first in order, is perhaps that which most claims inspection of the drawings shown. We named it, with others, in our former short notice. It is (95) the "Offices and Sale-rooms, 9, Mincing-lane, City," by Mr. John Whitehead. The drawing is a very good one, by Mr. R. Dudley, though the building is shown necessarily differently to what is the appearance in the narrow street. It has four stories of windows; and these windows are coupled, or have a mullion formed of architraves, and are crowned by cornice mouldings. The windows of the first-floor have in the centre over the cornice, a peculiar feature somewhat resembling a small semicircular broken pediment, combined with ornament of foliage and a bird. The carving, which appears unusually good, and includes work to the central doorway, and to all the windows above, is by Talmie, from the architect's designs. It is shown by photographs in No. 187. The front is divided, too equally in the height for view from a distance, by a cornice above the first floor; and the whole is terminated by a *cornicione*, with trusses, and by a balustrade. The chimneys are carried by piers, the lower half rusticated, between the windows.—Passing over a score of drawings of various buildings, or decorative works, of old date, on the Continent, or merely naming their authors, Messrs. Vaughan, Christopher, and Eastlake, we come to a "Design for a Church in the neighbourhood of London" (118), which is by Mr. J. H. Brown. Though the garish effect of the drawing is as unfavourable to the effect of the design, as is the coldness of certain other drawings to the designs in their cases, the design here displays a good treatment of the materials, red brick, with dark-coloured bricks, and stone coims, weatherings, and tracery, the brick being very properly used in the spire as well as elsewhere. The plan has a very wide nave; and narrow aisles only provide the space for alleys or ways to the seats. Mr. Street, in a design which we may be able to speak of, seems disposed to adopt a similar arrangement; and it would be well to take it into consideration in future church-planning, to get rid of the objection of obstruction by the nave piers, which results from the copyism of the general Medieval plan.

There are one or two designs for churches near at hand, but we take the next drawing in order (119), "Works in Progress, Caterham, Surrey," by Mr. R. M. Drew, designs of the red brick and stone, picturesque, Gothic class, and which are good of their kind. In one of them the red brick is used for coims, and the filling in is of the Nutfield stone, as in the mode of building common in southern flint districts. The stone of the neighbourhood mentioned, like the better known material of Godstone and Reigate, might be more used in London, at least in undressed work.—Mr. W. C. Reed's "Proposed New Offices of the National Provident Institution" (120 and 121), is full of matter from the Italian and French styles, but is wanting in combination; and Messrs. Ford & Meyer's "Design for the Proposed Alterations and Additions to the existing Town Hall at Newcastle-under-Lyne" (122), is very inferior to another of their works (288), a "Design for the Wedgwood Institute proposed to be erected in Burslem." In the first design, which is of red brick and stone, Italian character, the tower at the end is too much like that of a church, and one of the worst periods, as that of the City churches after Hawksmoor's time; and the interruption of the entablature of the pilastrate in the flanks, so that the arches of the upper windows are within the attic, is not pleasing. An alternative arrangement for the attic, in the other design, with semicircular openings without dressings, and stripes of colour, however, is not altogether in harmony with the other portions; probably from the want of perpendicular lines. Otherwise, or with exception of some details in the culminating feature of the main front (the sort of feature which architects not unfrequently mismanage), the design last instanced is not a bad one. The details, many of them, like the cornice of the attic, are good in intention; and the portico, with internal columns, is in some respects well planned. In the title to a design (39), in the west gallery, for "Public Rooms and Baths with private Residences at each end," made for the Lytham competition by the same architects, but not submitted, an alteration in the instructions, which made the design useless, is very properly adverted to.—Mr. E. C. Robins, besides his design (318, in the west gallery) for "The Tabernacle," which we engraved after it had been selected by the competitors, and a design (68, in the same room), one of the three selected "for Croydon Public Hall and Literary Institution,"

which at least is equal to that in progress, has two designs. The first (123) shows the "Premises of Messrs. Hunt & Tanner, No. 215, Upper Thames-street." More might have been done in this case with the materials used. The other, the "Design for the Exeter Branch of the Devon and Cornwall Bank, to which the first premium was awarded" (347) is amongst those of which we have been unable to take note.

The "Studio and Residence of J. R. Swinton, esq., Warwick-square, Belgravia" (124), by Mr. George Morgan, has a plain but effective general character resulting from the outline developed from the plan, which has an angle of the ground cutted off, the area being enclosed by a balustrade; whilst the portion of the building thereat, which in the ground story provides a room with ends of semi-octagonal form, is carried up to a roof lofty and square on plan as to the part over the centre, and having the roofing over the octagonal portions butting out. The materials are red and yellow brick and stone; the window dressings, Italian, being of good character. The porch at the side would have been better without the duplication of square piers or ante, or with columns in one or more of the same positions; for, the form square on plan can never have the elegance of the circular shaft, even elongated as it is here,—a defect which the Greeks generally endeavoured to overcome by having the ante different in the faces, and which a great authority on classical architecture said should be concealed by coupling with the ante, a column.—Mr. E. P. Anson, who has several sketches, and a design one of those of the competitions already referred to, is the author of the design of the "Almshouses in the Wandsworth-road," of which a drawing (125) is exhibited by Mr. A. Blake. They are red brick and stone, and Gothic, with mullions to the windows, and relieving arches over the heads.—The house at "Sennoville, Bushey-heath, Herts" (126), by Mr. J. Candy, completed last autumn, is not remarkable for any particular feature of the design; but the catalogue supplies particulars of materials and cost which may be useful, and would have been more so had a plan been afforded or had only cubical contents been stated.

The works by Mr. J. K. Colling, of which drawings and photographs are exhibited, are of a middle merit. The most important of the works, forming portions of a building already known as from his hand, are the sculpture-gallery and picture-gallery at Hooton Hall, Cheshire. In one of the photographs (185) there appears a perspective of 200 feet of central arcade—the arches rising from columns; and in the other, there is a segmental ceiling with bold ribs springing from trusses, and with coffers and lunette spaces filling in at the sides. The ornament about the archivolts and architraves; the sculpture over the doors, and the scroll friezes, are altogether excellent; and Mr. Naylor, along with his architect, deserves praise for the contribution to the good art-work of our day which has been made. Mr. Colling's Alterations and Additions at Rangemoor Hall, Staffordshire, for Mr. Bass, M.P., shown in No. 127, resemble in style the Italian work of Hooton Hall; but they have merits of their own; though the features, in red brick and stone, can only be described as those of a two-storied house with a Mansard roof and highly decorated dormers, and a balustraded terrace, Roman Doric porches, and a square tower having a leaded ogee-capping.

Here, having broken the ice of our labour, we must leave off to resume in a future number.

RAINFALL IN ENGLAND.

FACTS FOR ENGINEERS.

THE thoroughly sound and practical character of the article on the above subject in your last impression but one induces me to think that the following tables will be acceptable. They are prepared from statistics in my own possession, and are, I believe, at least as free from error as is possible in so extended a series. It is much to be desired that those who possess "complete years" observations should publish the results, especially in those localities where the annexed tables are most deficient.

In furnishing the table of "Total Rain for 1859," I have only used one place of decimals, as I believe that is quite near enough for practical purposes; the means for the districts have, however, been computed from the true values. The divisions are the same as adopted by the Registrar-General. It has always appeared to me (as an outsider) that the most important point, as far as engineer-

ing interests are concerned, is to determine the probable *maximum fall* in the *minimum time*. In questions of water supply averages come into play; only let "average" imply at least twelve years' observations, for there are many cases in which the rainfall of one year is nearly double that of the next.

I am sorry that it is not in my power to give more information respecting heavy falls; perhaps, if you urge the point, this matter may be more attended to in years to come.

FALL OF RAIN OVER ENGLAND IN 1859.		
	London.	Inches.
Greenwich	.....	25.9
Battersea	.....	28.2
Wandsworth	.....	29.5
Whitehall	.....	24.6
Guildhall	.....	23.4
St. John's wood	.....	30.7
Camden-town	.....	28.3
Mean	.....	27.235
South-Western Counties.		
Truro	.....	43.1
Penzance	.....	39.0
St. Minver (near Fudstow)	.....	33.9
Plympton St. Mary (near Plymouth)	.....	56.7
Exeter (High-street)	.....	34.1
(New North road)	.....	29.3
Barnstaple	.....	44.2
Bridport	.....	26.0
Tiverton	.....	43.6
Little Bridy (Dorset)	.....	35.0
Mean	.....	39.131
South-Eastern Counties.		
Ventnor (Isle of Wight)	.....	33.0
Osborne (Isle of Wight)	.....	31.5
Worthing	.....	30.5
Fairlight (near Hastings)	.....	24.2
Aldershot	.....	30.7
Sandhurst College	.....	23.7
Reading	.....	37.6
Reigate	.....	33.0
Luton (near Maldstone)	.....	29.6
Utfield	.....	33.5
Buxted Park (Sussex)	.....	34.8
Maresfield (Rectory)	.....	31.3
(Porest Lodge)	.....	31.4
Chichester	.....	28.9
Glynde (near Lewes)	.....	34.8
Mean	.....	30.204
West-Midland Counties.		
Clifton (near Bristol)	.....	36.0
Gloucester	.....	23.3
(Clarence-street)	.....	24.6
Mean	.....	27.967
South-Midland Counties.		
Oxford	.....	27.1
(Rose-hill)	.....	28.9
Hartwell (near Aylesbury)	.....	21.3
Royston	.....	25.3
Cardington (near Bedford)	.....	22.4
Aspley (near Bedford)	.....	34.1
Mean	.....	26.65
Eastern Counties.		
Norwich	.....	24.3
Holkham	.....	25.6
Dunmow	.....	25.0
Mean	.....	25.337
North-Midland Counties.		
Leicester	.....	26.5
Belvoir	.....	23.1
Derby	.....	24.5
Nottingham	.....	22.4
Mean	.....	24.118
North-Western Counties.		
Cartmel (Lancashire)	.....	44.7
Liverpool	.....	25.6
Stonyhurst	.....	46.6
Clapham (Lancashire)	.....	37.8
Mean	.....	38.664
Yorkshire.		
Wakefield	.....	33.2
Leeds	.....	26.3
Scarborough	.....	14.0
Mean	.....	24.560
Northern Counties.		
Kerdal	.....	48.3
Wray Castle, Windermere	.....	66.2
Ambleside	.....	64.3
The How, Troutbeck	.....	94.0
Keswick	.....	66.9
Whinlatch Hall, Vale of Lazon	.....	59.7
Mirhouse, Bassenthwaite	.....	50.9
Silloth	.....	39.8
Carlisle (50 feet above ground)	.....	28.2
North Shields	.....	41.1
Burwell	.....	27.2
Allenheads	.....	50.1
Mean	.....	54.932
Summary.		
London	.....	27.235
South-Western Counties	.....	39.131
South-Eastern Counties	.....	30.018
West-Midland Counties	.....	27.967
South-Midland Counties	.....	26.565
Eastern Counties	.....	25.337
North-Midland Counties	.....	24.118
North-Western Counties	.....	38.664
Yorkshire	.....	24.560
Northern Counties	.....	54.932
All England	.....	31.857

Lake District

Table showing the Greatest and Least Monthly Fall of Rain in 1859.

Place.	Greatest.	Least.
Greenwich	September 31	January 0.3
Batavia	June 4.2	January 0.9
Wandsworth	June 4.4	January 0.7
Whitehall	September 3.6	January 0.6
Guildhall	September 2.8	January 0.6
Camden-town	September 1.0	January 0.8
Truro	October 6.1	July 1.9
Penzance	December 8.2	June 0.6
Plympton	September 7.7	June 0.9
Exeter, N.N.R.	October 4.4	June 1.1
High-st.	October 4.7	July 1.0
Barnstable	September 5.3	June 1.5
Bridport	August 3.6	June 0.6
Tiverton	October 6.2	July 1.3
Little Bridy	October 5.1	June 1.1
Yeaton	November 5.4	June 1.9
Osborne	October 5.1	August 1.1
Worthing	November 4.8	August 0.5
Fairlight	November 4.3	May & Aug. 1.0
Hastings	November 4.6	August 0.8
Aldershot	September 3.0	January 1.0
Sandhurst	September 3.3	January 0.7
Linton	October 4.9	January 1.0
Uckfield	November 5.7	May 1.0
Buckstead Pk.	November 6.0	May 0.6
Maresfield R.	November 4.8	May 1.1
F. L.	October 4.4	June 0.8
Glynde	October 5.5	July 1.1
Clifton	March 4.7	February 1.6
Gloucester	September 3.6	January 1.2
Clarence-st.	June 3.8	January 1.3
Oxford	August 3.5	January 0.8
Rose-hill	August 4.6	January 0.7
Harwell	August 3.9	January 0.8
Royston	October 3.4	January 0.7
Cardington	Aug. & Oct. 2.7	January 0.7
Apley	August 3.6	January 0.8
Norwich	April 3.6	January 0.5
Holkham	April 3.9	January 1.0
Dunnow	August 5.0	January 0.7
Leicester	September 4.6	February 1.2
Belvoir	June 3.9	January 0.8
Derby	August 3.7	May 0.5
Nidmington	June 3.9	May 0.8
Liverpool	August 4.9	May 0.8
Clapham	September 5.6	May 1.0
Wakfield	July 5.3	January 0.7
Leeds	June 4.6	July 0.7
Scarborough	September 4.5	November 0.4
Silloth	November 5.7	May 0.1
Carlisle	September 5.9	May 0.1
N. Shields	September 8.2	May 0.2
Bywell	April 4.8	May 0.2
Alnheaden	March 7.8	May 0.1

Heavy Falls of Rain during 1859.

Wandsworth.—June 12th, 2.17 inches fell during a thunder-storm (say in about 2 hours).

Camden-town.—June 12th, 1.009 inches fell during the same storm, of which .855 fell in 1 hour and 20 minutes. September 26th, 1.655 inches fell between 4 p.m. and midnight.

Tottenham.—September 26th, 3.30 p.m., to September 29th, 9 a.m., 1.616 inches.

Helson.—September 12th, 1/2 an inch fell in an hour.

Truro.—October 26th, during the day, 2.40 inches.

Bridport.—Largest amount on any day, August 10th, 0.9 1/2 inch.

Clifton.—March 11th, 2 p.m., to March 13th, 2 p.m., 3 inches.

Gloucester.—June 5th (in 1 1/2 hours), 1.6 inches. Southampton.—September 26th, 2.15 p.m., to 4.30 p.m., 2.05 inches.

Aldershot.—September 26th, 3.30 p.m., to 27th, 3.0 a.m., 2.8 inches.

Uckfield.—October 25th, in the afternoon, 0.9 inches; between 9 p.m., November 5th, and 8 a.m., November 6th, fell 1.25 inches.

Manchester.—March 11th, total fall, 1.016 inches; between 8 a.m. on 7th of August, and 8 a.m. on 8th, there fell 1.894 inches.

Silloth.—April 2nd, total depth, 1.749 inches.

Carlisle.—Largest fall in any 24 hours, 0.33 inches (in March). G. J. SYMONS.

THE BUILDINGS AND THOROUGHFARES OF PARIS.

THE first pavilion of the secondary block of the Halles Centrales, on the side of the Rue des Bouvaires, is at this moment completed and surrounded by lightning conductors; and the flagging and asphalted of the pavements are to be commenced forthwith. The course of brown Vosges stone, on which a brick plinth will rest, the only portion of the building not in cast or wrought iron, is being laid.

The scaffolding which masked the view of the Fountain of the Innocents has been just removed, and notice can be taken of the intelligent manner in which this graceful specimen of the Renaissance has been restored. There only remains to be completed the lower basin of the monument, on

which, the Naiads and has-reliefs, by Jean Goujon, have been replaced with all the care possible. At the same time the works of the square, in the centre of which stands this fountain, are being pushed forward actively. Already the ground is enclosed by an iron railing, and has been partially levelled and filled in with vegetable mould for the different plantations.

The Western Railway of France, having applied to the Government authorities for the suppression of the atmospheric system now employed on the Saint-Germain Railway, has ordered that an *enquête* shall be instituted, to ascertain whether the ordinary mode of traction by locomotives may not be preferable.

As to the railway thoroughfares through Paris, the following is a short account of what has been proposed from time to time during the last few years and lately. One plan consisted in the establishment of a railway on a level with the principal streets, with an up and down line of rails, level crossings, &c., and in every respect conformable to the general arrangement of railways as now constructed. It is easy to perceive that the continual traffic of vehicles of all sorts rendered this project very difficult, if not impossible, of execution. A second plan was proposed (though more rational), more expensive, and attended with many inconveniences. This was the underground system of railways in line with the principal thoroughfares, worked by locomotives in all directions. Other schemes were brought forward, among which was one, some time ago, of laying down a system of rails upon the principal streets, such as now exist on the "American," so called, railway from Paris to Versailles, by the side of the Seine, and to St. Denis and St. Cloud. This fourth plan uses horses instead of locomotives, and succeeds admirably in a deserted thoroughfare; but, where circulation is more active, these carriages, it is urged (necessarily of large and unwieldy bulk), would block up the streets and cause much loss of time, especially in bad weather, when stones, macadam, and mud would lend their aid in choking up the groove, and render them impracticable in crowded thoroughfares.

A railway on colonnades was next proposed, on each footpath or pavement of the large streets, on cast-iron columns, and travelling in different directions on each side of the thoroughfares, so as to avoid points, or crossings, &c. The damage likely to accrue to the houses by this last project is difficult to be repaired, especially as they are not calculated to bear the incessant vibration of passing trains.

A last proposal was to carry the lines of railway on retaining walls, or viaducts, in the middle of the large streets, leaving the sides free for the ordinary traffic, and crossing streets, &c., by bridges, as is usual, to avoid impediment to circulation.

The jury of expropriation have been lately occupied in valuing and purchasing the lands and houses, for the extension of the Boulevard de Sebastopol, on the left bank of the Seine, starting from the Rue neuve de Michelieu and the Lycée of St. Hyacinth—St. Michel.

As to the awards of the jury within the last few days, they were in three classes or sections:—First, nine proprietors of houses, who could not treat amicably with the municipal authorities. The total amount of offers was 557,100 francs; 1,065,600 francs were claimed, and the awards amounted to 510,000 francs. The shopkeepers, who suffered by the sales, and were the best recompensed, were:—A *Marchand de nouveautés*, No. 131, Rue de la Harpe, with an unexpired lease of twelve years, at 7,000 francs a year; offered by the town, 55,000 francs; claimed, 275,000 francs; awarded, 175,000 francs. In the same house the proprietor of an eating-house was awarded 25,000 francs, having only five years and a half of lease to run; the offer being 6,000 francs, and the demand 70,000 francs. A pork butcher, in the Place St. Michel, asked 70,000 francs (lease to run seven years and nine months); offered 20,000 francs by the town; awarded, 45,000 francs.

In the second section there were six cases, amounting for offers to 1,105,500 francs; claims, 1,943,200 francs; awards, 1,405,000 francs. Among those sufferers were:—an apothecary, Place St. Michel, with a lease to run twelve years and a quarter; rent, 5,000 francs a year; offered, 40,000 francs; demanded, 150,000 francs; awarded, 100,000 francs;—a porcelain dealer, with seven and a half years to run, at 2,500 francs a year; offered, 15,000 francs; demanded 80,000 francs; awarded by jury, 40,000 francs. The same sum was awarded to a bookseller, who demanded 92,000 francs; the offer being 14,000 francs.

THE VALUE OF FEMALE LABOUR.

THE FEMALE SCHOOL OF ART IN GOWER STREET.

I HAVE been looking forward unsuccessfully to see some champion of woman's rights take up the cudgels for the Female School of Art in Gower-street. When one hears of an institution being threatened with immediate dissolution, such an institution having faithfully and effectually performed the purposes for which it was established, and still carrying on successfully the object which led to its origination, there appears to me to be a *prima facie* reason for regret at the period which is apparently about to be put to such a career of usefulness.

The Female School of Design, which originated in 1847, is now one of the most successful schools of art in the kingdom. It has always had for its teachers a singularly talented set of ladies, whose pupils have won for themselves highly honourable positions. By means of this school, Miss Gann (the present head mistress) tells us, that many young ladies, whose circumstances necessitated their seeking remunerative occupations, have not only been able to find such occupations, but, by means of the skill acquired in the school, have been enabled to contribute to the wants of those who were dependent on them for support. If this be the case, and there is no reason for doubting it, in the operation of the school a step has been made towards the solution of a very great problem, viz., in what channels and by what occupations young females of the middle and lower classes may exercise their faculties and their talents with advantage to themselves and the community.

It is, therefore, with some astonishment that I hear of the edict having gone forth from "My Lords of the Committee of Council on Education," through the authorities at South Kensington, that this school must be closed unless some individuals come forward and supply the necessary funds for its future conduct; the annual grant towards its support from the Department of Science and Art being about to cease.

We all know that the Department of Science and Art had, and still has, for its object, the making of schools of design self-supporting schools of art; so that in withdrawing the grant to this school, with a view to its becoming self-supporting, the Department is only following its instinct. If this school cannot provide for its own continuance and support, as well as other schools of art, it should, according to the Department's rules, cease to exist.

But now comes the question, "Do other schools of art provide for their own continuance and support without direct grants from the Department of Science and Art?"

I will take the schools of art in the wealthiest towns in the kingdom, where, if anywhere, schools should be self-supporting.

In 1859, the amount of aid afforded by the Department to—

Birmingham was	£438 0 9
Glasgow	549 2 0
Manchester	703 0 0
Sheffield	567 13 0

£2,257 15 9

Is it in fostering a spirit of self-support, that the Department awards 2,257 15s. 9d. to the four towns above mentioned, which are perhaps the wealthiest in the kingdom, and withdraws a slight grant from the Female School of Art in Gower-street? I am ready, if necessary, to prove by the Department's own returns, that the Female School is more successful than any of the four schools to which the national funds are so largely contriuted. There is not, then, in withdrawing the grant from the Gower-street school, the plea of want of success: its only crime seems to be that it has succeeded too well.

I observe that before the edict of "My Lords" was transmitted to Miss Gann, Mr. Burchett, who was the director of the classes in Gower-street, and the head master of the school at Kensington, was withdrawn from the first office, and it was conferred upon Miss Gann. It is evident that this was part of the plan; so that on the shoulders of defenceless women should rest the task of getting out of the difficult position which "My Lords" had placed them in. I suppose "My Lords" thought that the cry for help would reach the public ear in a tender chord, and be more effective in its results when coming from these defenceless ladies, with the acknowledged claim of great success in previous work. It would at any rate have been only decent to have allowed the head master at South Kensington to continue with the Gower-street school in its distress, and not to have

withdrawn him when evil was about to come upon it.

The Gower-street school has great claims on the public. There is something supremely noble in the work of these ladies, who seek to conduce to the general welfare of society by using for its refinement and prosperity those great talents with which God has endowed them. We are indebted to them for a great and glorious example of patient and persevering study, of practically demonstrating that there are branches of industry where females may find a fitting employment. This is a problem which has vexed society much, and, in one department of industry, by the courageous example of the ladies in Gower-street, it has been solved,—solved by those who are now deserted and abandoned by "My Lords."

In bringing this matter before the public, I hope you will understand that I am actuated by no personal motives. My information on the subject has been drawn solely from the statements which have appeared in the public press, and from the Department's own blue-books. I do not know one individual at Gower-street, or of those who, under the name of "My Lords," have left them to their fate. I am not in the slightest degree connected in any way with any one concerned in the matter; but perhaps I know more of the circumstances of the case than many of your readers who may feel interested in the subject, and who may wish to see it in a straightforward light.

It seems to me that the public is always greatly interested in a question involving the solution of a difficulty. It has seen a great difficulty triumphantly solved in the case of female labour by the pupils of the Gower-street school. By the withdrawal of the grant to the latter (which certainly does not amount to half that which is given to any of the four schools before mentioned), the opportunities of affording useful employment to young females may be withheld, and certainly will be, unless the Department reverses its decision, or the public comes forward with liberality, and with subscriptions.

But it seems to me that the public has a right to do what it likes with its own money; and I ask, is it consonant with public feeling that the Gower-street school should be abandoned for the sake of 200l. per year, whilst four of the richest towns in England are drawing public money to the extent of 2,257l. 15s. 9d. for the same purpose as that for which the school in Gower-street is refused a fraction? If the latter be deserted on the self-supporting principle, *à fortiori*, the former should be.

I believe if "My Lords" considered the matter in this light, they would not now break up and destroy one of the best schools of art in the kingdom. If the people of England, who pay the taxes and provide the public money for the support of schools of art,—if all the taxpayers of England—were polled to-morrow, I believe that the majority would be in favour of abandoning Manchester and Birmingham to its own millionaires, and in awarding part of the public money thus saved to the noble little band of females in Gower-street, who are now consigned to their fate. Will the public allow this?

I feel that this is not a personal but a public question. Government offices are too apt to regard such a matter in the former spirit. But, instead of pool-pooling the question, and calling it impertinence in any one to bring it up, let them answer it.

WALTER SMITH.

ANCIENT HERALDRY.

SYMBOLISM having reigned in Egypt to the extent known to us, it is somewhat surprising that it was not earlier adopted in the Middle Ages as a means of expressing individuality, more especially as it was so freely laid under contribution as a means—if not the end—of ecclesiastical decoration. Heraldry was not called into practical use till the twelfth century, although there were certain instances of particular families bearing devices as early as the Conquest. The Crusades are generally supposed to have been the exigency which brought the system to perfection, for it was imperative that the various leaders of a marching army, composed for the most part of volunteers, should be easily recognized. In an age when scarcely a man in a thousand could read, what means were so distinguishable as symbols? It is not exactly known by what process of thought or custom arms came to be considered hereditary; but at the commencement of the thirteenth century we find them descending, with the owner's estate, to his heir; and from that time down to the reign of Henry VIII, they indicate the pre-

cise possessions, whether acquired by inheritance or dower, of the bearer. In this respect, modern heraldry has departed from its ancient meaning, inasmuch as it now shows descent only; whereas, in older times, it denoted territorial possessions.

This subject has been most agreeably brought before us by Mr. W. H. D. Longstaffe, in a paper written with much learning and evident research, entitled "The Old Heraldry of the Percys," in which the writer has, with careful hands, outspred to the light of day the banners of that martial race. It is something to see, even in print, fac-similes of the badge and arms of Hotspur; and more, to find after "young Harry Percy's spur was cold" that his "gentle Kate" gartered his severed limbs, and was permitted to bury them in York Minster. His badge was a locket, not the receptacle of a tress of golden hair, as we would fain have believed, but a kind of clasp or fastening. Terrible to many a Scot was the sight of the pennonelle bearing this simple device; and satisfactory to us to know that, when Douglas surprised the Percys at Newcastle, and rode away with Hotspur's banner, vowing to hoist it on the highest tower of his castle, it was pursued and regained with his famous war-cry, "Percy! Percy! Espérance, Percy."

The treatise throughout bears evidence of great labour. The banners of a race of chieftains were not to be found chronologically arranged, covered with must and dust, in a carved oak chest. The various arms were to be sought on tombs, on stained glass, on seals, and in more than one instance, on fonts; or descriptions of them were to be searched for in monkish chronicles, MSS., and pipe rolls. The evidence at once gives us a glimpse into quaint old Stow's cabinet of historical curiosities. At the end of a history of the early Percys in the Harleian MSS. is the following note:—"All this I took out of a fyre rowle conteyning a pedigree of the kings, and of other noble men. Which rowle bath John Stowe of London. Which as it should seem was made by a monk of Whithy." Another time we have a transient view of a similar martial spirit possessing the country to that by which it is now animated, in the incidental mention of the various standards, banners, and pennons, prepared for the siege of Turwin. It is curious to note the minuteness with which the proper colours and devices were considered. "Two coats of arms for my lord, of satin, viz, crimson, blue, and green, with his arms beaten upon it, in fine gold, in oil colours; thirty scutcheons in metal, wrought in oil colours upon buckram, with my lord's whole arms in a scutcheon to be set upon my lord's tents when set up; 300 scutcheons in metal, within the garter, wrought upon paper, to set upon my lord's own lodgings. . . . . White cressants, set upon red and black paper, for my lord's servants' lodgings. . . . . 11 yards of red cloth, for three gowns for three chaplains that went over with my lord; 3 bends of white saracen and green, with 6 cross, 6 rose, and 6 cressant for the said three chaplains," &c. Other evidence calls before us tender and more touching scenes. A true-hearted lover relinquishing his mistress, Anne Boleyn, that she might be Queen of England; and after devising his lands to the king for some heart-lacerating reason, now ward for all time unfathomable, dying broken-hearted the same year that saw her beheaded; then a great armed crowd before Wressel-gates, shouting, "Thousands for a Percy," and soon after a sadder crowd at Tyburn, when the Pilgrimage of Grace was avenged. The result is an interrupted series of armorial ensigns, fully made out from the William de Perel, companion of the Conqueror, and founder of Whithy, who dying at Jerusalem, "his heart was brought into England according to his request; for, in the abbey of his foundation, he had willed it to rest,"—from the "Field azure five mill pykes or," of tibi staunch and pious knight, to the shield of the modern Percys boasting its 392 quarterings. The main interest of the family thus illuminated is centred in the north, although the Percy crest, the lion on the parapet of Northumberland House Strand, is an object of familiar interest to Londoners.

The poetry of the Tudor period is sufficed with heraldic allusions, and most of the prophetic revelations of the numerous professors of sorcery were couched in terms made still more ambiguous by their heraldic disguise. The poets of those days sang of the nobles, whose deeds they celebrated, not so often by name as by their cognisances:—  
"The Westmerlande hall and man in the Moone,  
The beare (Dadley) hath brought their braveris down."  
Again:—

"The six blouddy axes in a bare feilde,  
Sheweth the creste of the red man,  
Which hath devoured the beautiful swan (Buckingham),  
Mortall enemy unto the white lion" (Surrey).

The manner in which religious enthusiasm expressed itself by heraldic means is too characteristic of the times to be passed unnoticed. The principal monasteries possessed banners on which were stitcheb holy reliques, and which with much ceremony were carried into the field of battle to ensure victory. When the Earl of Surrey marched to give James IV. of Scotland battle at Flodden, he led his army through Durham, and, after attending mass at the cathedral, received the banner of St. Cuthbert from the hands of the prior. This banner was "a yard broad and five quarters deep, and the mether part of it was indented in five parts, and fringed and made fast all about with red silk and gold; the said banner cloth was made of red velvety on both sides most sumptuously embroidered with flowers of green silk and gold, and in the midst of the said banner-cloth was the said holy relique," i. e. the corporax cloth which St. Cuthbert had used to cover the chalice when he performed mass in his lifetime. As early as the reign of Stephen the banners of St. Wilfred of Ripon and St. John of Beverley were displayed on the field, and in the time of the Edwards and Henrys the banners of St. Edward the Martyr and Edward the Confessor were frequently unfurled.

The national banner had a religious origin. It was the custom of nations, as of individuals, to place themselves under the protection of a particular saint. St. George was invoked for England, and his white banner bearing a red cross was always foremost in the field. When Scotland and England were united under the government of James I. he directed that the cross of St. Andrew should be amalgamated with that of St. George; and when Ireland was annexed at the beginning of the present century, the cross of St. Patrick was added. Hence our "Union-Jack" is composed of an ordinary cross and two saltier-crosses; that of St. Andrew, white upon a blue ground; that of St. Patrick, red upon a white ground. Long may it "scatter our enemies."

So long as the army continued to be made of feudal contributions, heraldry continued to remain an art of vital importance. It is easy to imagine how next to impossible it would have been to tell one knight from another when cased in armour, had each not displayed a device on his shield or a crest on his helmet. When no longer a necessity the study of heraldry declined, yet its influence is felt in common parlance still. People say of a *parvenu* that he does not know who his grandfather was,—a statement that would lose half its pugency without its heraldic interpretation. The son of the first possessor of arms is but a gentleman of second coat armour, the grandson merely a gentleman of blood; but the great grandson is a gentleman of ancestry.

VICTORIA CROSS GALLERY.

MR. DESANGES has added a number of pictures to his gallery, in the Egyptian Hall, Piccadilly, and has opened it again to the public. The additions are mostly records of brave deeds in connection with the Indian mutiny. The earlier paintings, it will be remembered, illustrated actions in the contest with Russia. England has reason to be proud of her sons who participated in these doings, and there must be thousands who will be gratified at seeing these deeds represented. Mr. Desanges has confined himself to no aims, but represents alike the slinking private who "abouts" a man about to drive his bayonet into his officer, and afterwards charges the enemy "singly;" an officer in command directing an attack; or a dandy, with glass in eye, who walks coolly across the open under heavy fire to bring in a wounded private. Devoted to the graces, as Mr. Desanges had previously been, he had here an entirely fresh walk to follow; and, though criticism would not be difficult, and there is, notably, a want in some of the pictures of forcible expression, the devotion and ability displayed deserve the approval of the public, and will, we hope, gain for the artist tangible reward.

FALL OF A CHURCH BELL.—During the ringing of the bell of the church of Chitenu Male (Ile-et-Vilaine), recently, for divine service, a creaking noise was heard, and immediately the bell fell heavily into the church from a height of about 40 feet. In its fall it struck the head of a young woman, who, with her husband, had just entered the church, and so injured her that she died in a few hours.



An East End Tea Garden: with Salubrious Outskirts.

### HIDDEN DANGERS.

AN EAST-END TEA-GARDEN.

The risks that people run every day, without knowing of their existence, are often much greater than those which give them the greatest uneasiness. They are frightened by a squib that cannot hurt them, and sit contentedly week after week on a barrel of gunpowder with a lighted fuse within an inch of the lung-hole, not believing in the danger till they find themselves blown into the air.

Some years ago, when looking to the state of the banks of the Thames near the outlet of the Fleet-ditch, we met with an artist, whose business kept him employed in the City, walking along the dirty margin; and on asking what could have led him to such a locality, we were answered, that he had "just stepped out to get a breath of fresh air." You may see other artists among the willows overshadowing the luxuriant docks and other herbage on the banks of stagnant brooks or ditches. Pent-up Londoners seek recreation in most unwholesome places, without reason or consideration of the risk they run. Children not long ago were taken regularly to be aired in the reeking graveyards of the metropolis; and people of rank and fashion still overcrowd certain ill-ventilated theatres and concert-rooms. Old-fashioned tradesmen still visit nightly for recreation the coffee-rooms and parlours of antiquated "publics," where, while discussing politics and parish affairs, through the want of ventilation and space, the atmosphere is little short of poisonous.

Some rush to Boulogne for the sake of health; others to sea-side towns and fishing villages, where ventilation or drainage has not been thought of, and where the shore is strewn with putrifying fish and other refuse. Without, however, going further just now, let us glance at one of the suburban "tea-gardens," where, on Sundays and holidays, Londoners, with their wives and families, may be seen evidently taking a great deal of enjoyment and moderate refreshment. On the roofs of taverns where a view can be had over green trees and fields, large numbers assemble to enjoy the air. From Baginbode-wells the tea-gardens of the north of London have marched to Islington, Camden-town, and Kentish-town; thence to Hampstead, Hornsey, and elsewhere; and now they are springing up in more distant parts. Rosherville and many other places are now made almost as convenient by railway as Hampstead and Highgate formerly were. In these tea-gardens the caged Londoners and their children take their pleasure in bowers and arbours: they walk in shady places, and amongst beds of flowers; in some instances minstrelsy and singing enliven the scene. We will not severely criticize the artistic taste displayed in the decoration of some of these places, but would consider how well or ill they are adapted for the purposes of health. Some are properly situated, and removed from offensive matter; but in others, sanitary care has been so much neglected that health must suffer rather than be improved by a visit. Look at our picture of an East-end Tea-garden: view the black stagnant ditch, which, hidden by trees from the view of the pleasure-seekers, girdles the bowers, arbours, and grounds, and stretches away like a huge black serpent towards newly erected buildings. Avoid such tea-gardens, and the proprietors will find it to their benefit to provide healthful arrangements, and perhaps advertise not only the pic-

turesque beauty and other attractions of their domain, but that "every care has been taken to make the sanitary condition of the ground complete, drainage having been carefully attended to, and all offensive matter removed from the neighbourhood."

It is not surprising that we should find the multitude ignoring sanitary laws when we see a body like the Metropolitan Board of Works, supposed to represent the intelligence of the metropolis, permitting flagrant violations of these laws and of the teachings of experience for long periods of time, apparently without any attempt even to limit their endurance. Some weeks ago we gave expression to complaints of the time during which the sewers were kept open in parts of the Fulham-road, to the great annoyance and danger of the inhabitants. We now hear bitter and most just complaints of the inhabitants of the Paddington district, where similar operations are going on. Before some of the houses in Hyde-park-square, for example, the sewer has been open more than a month, and the air has been poisoned by most pestiferous gases. We can speak of our own knowledge, of the occurrence of a violent outbreak of diphtheria in one of the houses so situate, sacrificing most dear life and the happiness of survivors. A heavy responsibility rests on the officers of the Board of Works, who allow of such perilous proceedings without more stringent precautions, or permit the slightest delay in such works.

How long must we wait for the teachings of dire experience to have effect?

Next year, 1861, the results of the census will show the effects of the sanitary improvements which have been made since 1851. We shall find that in certain districts the duration of life has been greatly extended, and that throughout the nation, in consequence of beneficial changes, a large per-centage of deaths has been prevented, and that the people, the great strength of the nation, have much increased.

The census, which can occur but a few times in the life of any man or woman, is a sort of national stock-taking of materials, which are more precious than fine gold and jewels, whereby we see the advance or decline of various classes, and the growth of intelligence.

In the palaces of royalty, in the halls and castles of the nobility, in the snug homes of the middle classes, and in the cellars and garrets of squalid rookeries, the army of numerators will take their notes. In hospitals, in prisons, in overcrowded barracks, in lunatic asylums, in workhouses, on ship-board, in hives, in barns, under the shelter of hay and corn stacks, under arches, and in other strange places, the people will be sought out, and arranged in a proper position in the startling pages of the registrar-general. Although knowledge is making progress, there are still unfortunately widely-spread masses of ignorance wherein the task of collecting the information for the purpose of giving a faithful account of the extent and peculiarities of our population is difficult; and, viewing strongly the importance of obtaining full and correct particulars, it seems to us that increased powers should be given by Parliament to those employed.

We look with anxiety to the forthcoming report, which will enable us to compare, with those of previous years, the rates of mortality in districts where changes have been made, and which will show how human life can be saved, and so gain increased attention to sanitary laws.

### MONUMENT IN ST. GEORGE'S CHAPEL, WINDSOR, TO THE LATE DUCHESS OF GLOUCESTER.

This memorial, erected by her Majesty as a tribute of respect and affection to her beloved aunt, as the inscription records, forms an interesting addition to the various attractions of the ancient royal chapel in Windsor Castle. It has the advantage of an excellent situation in the south aisle of the choir, immediately at the back of the Medieval painted screen behind a portion of the stalls, and which is shown above the monument in our engraving.

The new design, which is the production of Mr. Scott, consists of an altar-tomb projecting from a kind of retable with sculptured panels. These latter represent the four acts of mercy, viz., "Clothing the naked," "Feeding the hungry with bread," "Relieving the wearied traveller on his way," and "Visiting the sick bed;" the first of which is the least satisfactory, and the last the most so. The whole of them, however, show much refined feeling, and are creditable to Mr. Theed, by whom they were executed. Like most of the tombs they are of very pure statuary marble. The borders round and separating the sculptures are filled with mosaic patterns in various materials, but principally choice marbles, such as Lungueloe, Broccadillo, Sienna, Bardillo, &c.; intermixed with green and red serpentine, and light Irish green marbles. The slab and plinth of the tomb are of dark reddish serpentine, which has a mahogany aspect in contrast with the white marble, not altogether pleasing. The slab is inlaid with a floriated lily cross in brass; and also a scroll border in the same material, which is again employed in the two inscription panels on the front of the tomb. This portion of the work was entrusted to Skidmore, of Coventry. The sculptured panel between these inscriptions exhibits the family arms of the late duke and duchess, while the sides of the tomb, and the retrous under the bas-reliefs, are filled with lozenge-dispersing, containing, alternately, the heraldic luges of England, Scotland, and Ireland.

The following is the inscription on the edge of the marble slab forming the top, occupying the sides and front:—

"This tomb has been erected by Queen Victoria, as a tribute of respect and affection to her beloved aunt, Mary, Duchess of Gloucester, Anno Domini, 1859."

Within the panels already described are the following inscriptions. In the first:—

"In the vault below are interred the mortal remains of William Henry Duke of Gloucester, born 25th November, 1743; died 23rd August, 1805. Maria Duchess of Gloucester, born 3rd July, 1739; died 29th August, 1807. The Princess Caroline Augusta Matilda of Gloucester, born 24th June, 1774; died 14th March, 1775."

The second panel contains the following:—

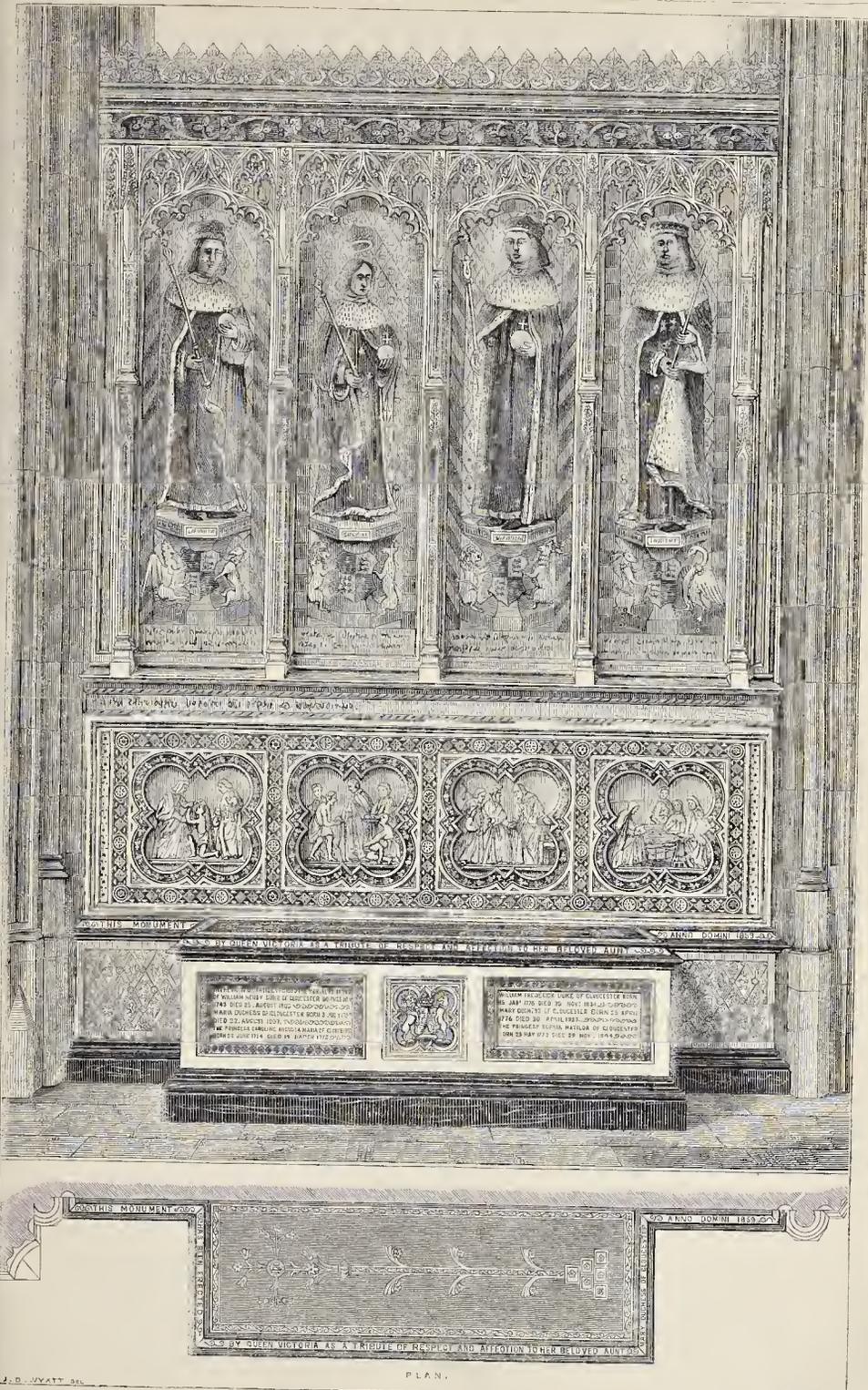
"William Frederick Duke of Gloucester, born 14th January, 1775; died 30th November, 1837. Mary Duchess of Gloucester, born 25th April, 1776; died 30th April, 1857. Princess Sophia Matilda of Gloucester, born 29th May, 1773; died 29th November, 1811."

On the screen behind the tomb, the paintings are as follows, beginning on the left hand:—King Henry VIII., King Edward V., King Edward IV., and Prince Edward, son to Henry VI. This latter is reported to be the only portrait of the prince extant. Along the foot of the panels runs this Latin inscription:—"Orate pro Dno Olivero Kyng, juris professo, ac Illustris Edwardi principis Regis Henrici Sexti, et Serenissimorum Regum Edwardi Quartii, Edwardi Quinti, et Henrici Septimi, principii Secretario," &c., with the date 1492.

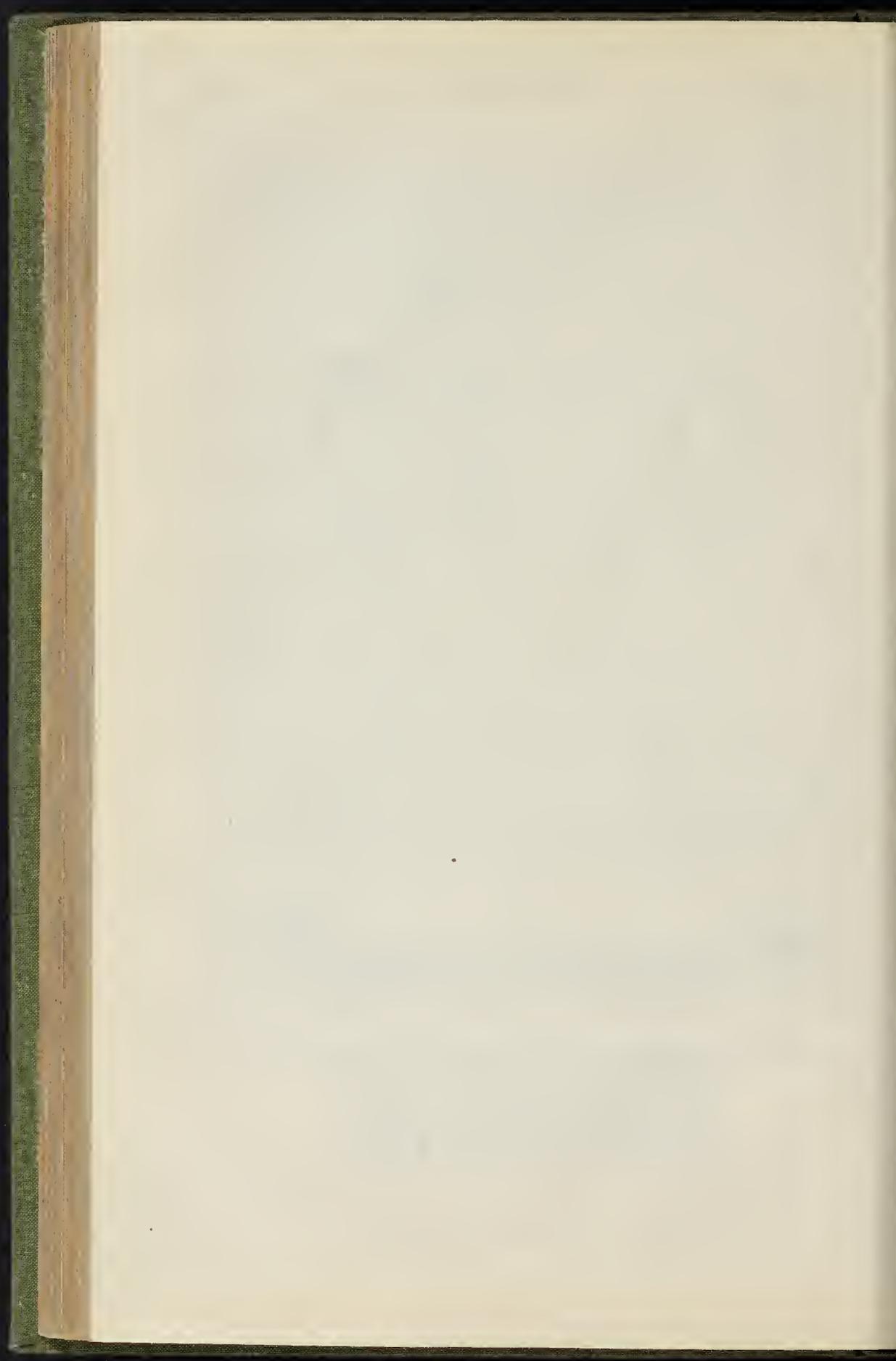
### LIVERPOOL CEMETERY COMPETITION.

AMONG thirty sets of designs, we understand, were sent in. At the last meeting of the Burial Board, the following were named as the successful designs:—First prize, 100*l.*, "Industry;" second prize, 50*l.*, "Sydenham;" and third prize, 30*l.*, "I try to win." On opening the sealed envelopes, it was found that the first premium had been gained by Mr. T. D. Barry, 47, Bedford-street North, Liverpool, and 10, Lincoln's Inn-fields, London; the second by George Henry Stokes, 7, Pall-mall East, London; and the third by John Wimble, 11, Union-court, Old Broad-street, London. It was next moved by Mr. Jackson, and seconded by Mr. Thornely, "That there are many points of excellence in the following designs, viz., 'Charon,' 'Utinam ut obtineam,' 'Perseverando,' 'Gottesacker,' and 'Spero Meliora,' which, in the opinion of this Board, are deserving of high commendation." Carried *nem. con.*

The cemetery comprises an area of 97 acres.



MONUMENT IN ST. GEORGE'S CHAPEL, WINDSOR, TO THE LATE DUCHESS OF GLOUCESTER.  
 MR. G. G. SCOTT, A.R.A., ARCHITECT.—*Mr. Theal, Sculptor.*



**SYMBOLISM IN REFERENCE TO ART\***

**Light.**—From the consideration of **Life** in its general and special, animal and vegetable forms, as sources of symbolism, we pass to the consideration of **Light**. Here, also, we must begin with the Orientals. The subject of light, even carry us off from this world into those poetic and theological regions, where life, and light, and love are eternally and inseparably united; but we must leave alone for the present the Heavenly Hierarchy and the Kingdom of Angels, which have little or nothing in common with the orders of archangels, other than a rising scale from the lower to the higher, from the more humble to the more elevated, and are especially associated in the mind with places of prayer, and often appear among the pictorial and plastic ornaments of ecclesiastical edifices.

In the worship of intellectual light, or reason, the *aurora*, as the visible source of light and life, came to occupy an important place in religious raptures; temporal rulers, regarded as the delegates of Deity, came to receive the titles of sons and descendants of the sun. Thus the kings of Egypt were called "Sons of the Sun," and the kings of Persia were styled "the children of the sun." The Emperor of China is *Tien-tse*, the Son of Heaven; and the imperial family are called *Tien huang*, significant of their celestial descent. (See \* Morrison's Dictionary.)

The *light* steps in to confirm the idea of a rising scale to the West, through the Christian emperors of Constantinople, who are occasionally represented with a celestial globe, or orb, as also several of the German emperors, who were styled "the sons of the sun," and the Emperor of Russia, who is called "the son of the sun."

The fathers of the Christian Church, who are named in the "New Sun." In the Roman Church, the *ostensorium*, containing the *hostia*, or sacred wafer, appears as a radiating sun, and the outer portion of it is so called.

Philology leads us to confirm the idea of a rising scale from symbolism, and shows that all divine persons are very properly distinguished by glories, since the word *divine*, in Latin *divus*, is derived from the Sanscrit root *div*, to shine.

Dr. Durandus has a remark on church windows that they symbolically transmit the light of the true sun—that is, God—into the hearts of the faithful.

Our pointed Christian architecture, with its clerestory windows, is here symbolical of the truth that "Light has come into the world." A symbolism is shown still more in some cathedrals in France.

This subject, as associated with the saints, that it may be referred to the next chapter, which treats of them and their symbols.

The light was held to be symbolical of love, is shown, by the conventional use of the symbol of the dove, which, figured by a dove, was associated with it by the sacred writers, and the Holy Spirit, so aptly distinguished by the agents in nature, *Life* and *Light*, when separately combined, and that their influence through architecture, sculpture, and painting, as also through the sister art of poetry, has descended from the most remote antiquity, to a tolerably connected series of representations, down to our own day, it remains only to point out how our national Christian architecture derives its forms and proportions from the principles already laid down.

The symbol of life, even of life eternal, has been traced from the earliest period of monumental history, along with the equilateral triangle, the symbol of the generation of all things, of the source of all life, of Siva, of Osiris, and of all truths in nature.

Nor has their union been confined to the earth; man, whose life, derived from sensible objects, are reflected to him from the heavens, as the subject of his speculation, has transmitted these images also to the stary firmament, and, in the southern hemisphere, the constellation of the cross shines with surpassing splendour along with the equilateral triangle.

But it is in reference to that intellectual and Christian heaven of the soul, to which the Church on earth is the type and prefigure, that we must now consider the symbol of life, and its ancient confirmation of the equilateral triangle. And surely nothing can be more in harmony with nature and revelation than, in Christian temples, where the great doctrines of life and immortality are taught, not as mysteries to the initiated only, but as the plainest of facts are preached openly to all, that the architecture of these sacred edifices should in its forms and details be regulated by those symbols which from the earliest times have been used to express them—the cross and the equilateral triangle.

In Christianity there is a gathering in, as it were, of all truth that has been scattered through the world from the day when first man left the planet, and went spilling on its course, the habitation of human beings, rejecting in its light and in that style of architecture to which the growth and development of Christianity in its palmy days gave rise, we recognize in its structure confirmation of the fact in the principles that prevailed and regulated the whole.

Our cathedrals, and the great Christian temples in France and Germany, and some in Italy, are built in the form of the cross, and the equilateral triangle has regulated the general proportions of the elevation, and often of its details. This has been shown by Cæsar Casarianus in his translation of Vitruvius, of whose ingenious observations Mr. Hawkins, in his History of Gothic Architecture, has given an account.

Brown Willis, in his preface to the second volume of his "History of Architecture," p. 8, has noticed that in most of these stately edifices the height was equal to the breadth of the body and side aisles. Arguourt, also, has mentioned this in reference to certain Gothic façades (Tav. xlvii, figs. 21, 22). The cathedral of Salisbury and Westminster Abbey are certainly designed, says Mr. Hawkins, on a system of triangulation; and there cannot, I think, be a doubt that the triple ratio has regulated the principal features no less than the details of our most perfect examples of Christian architecture.

These principles have been tested and successfully applied more recently by various architects. The best account I have met with of them is in a paper read by Mr. White, at the anniversary meeting of the Ecclesiastical Society, June 2nd, 1853, and printed in the fourteenth volume of the *Ecclesiologist*. Mr. White states, "The figures applicable to the setting out of Medieval buildings are these—1st, the square; 2nd, the equilateral triangle; 3rd, certain arcs described upon diagonals and bases of the same. We are chiefly concerned here with churches;—now the length of the nave being given, we can, by dividing it into bays, and setting up upon each bay equilateral triangles, or certain subdivisions of the same, show an accurate method of setting out its breadth, the length and breadth of the chancel, and other proportions of the ground plan. Upon the ground plan thus obtained we can, by the employment of certain angles, set up points for the heights of the several windows and arches, the roofs of the several parts, the stages of towers, and every thing else; and, when all these heights have been set up, we can then, and not till then, proceed to work out the relative widths of the windows and other minor parts, with every detail, even to the plan of the jaubs and mullions, and the section of mouldings." In fact, as Mr. White observes, "the equilateral triangle appears to be the basis of the proportions employed in the most beautiful of all our styles,—the intricate and traceried first pointed." The paper is well illustrated with drawings and diagrams.

Since these remarks were written, I have seen a paper in the *Builder* (March 3rd) on the application of harmonic angular proportion to Gothic architecture. The remark to the effect that the equilateral triangle appears to control all the proportions of the ground plan in Medieval buildings, and especially their choirs, corresponds with the result of my own observations on paper; the same principle may be applied to the choirs of some other cathedrals not in the Gothic style. But it would seem from the statements of Mr. Hay that this triangulation forms only a part of what he calls "the harmonic law of Nature."

On this subject I cannot enter, but he affirms, and I dare say he is perfectly right, that it has been to the satisfaction of many gentlemen here present, that this law is as applicable to the finest Doric temples of the Greeks as it is to our Gothic cathedrals—for the canons of beauty in art are, no doubt, as fixed from as fixed principles as are the phenomena of Nature, although it is the reward of patient study and industry alone to discover and appreciate them.

The united Christian architecture thus becomes itself a symbol, and a very significant one, with which its sculpture, paintings, and ornamental features all conspire to create a consistent and edifying whole.

The inspiring of a Christian philosophy, and of Christian feelings, light, air, and heavenward in its tendency, rises up with a spirituality entirely its own, and, though we cannot subscribe to the dreams of Durandus, we cannot withhold from it the entire credit of that symbolism it so perfectly conveys.

The enlightened Greeks in their sacred edifices combined, to the utmost of their ability, on philosophical principles, the *grand*, the *beautiful*, and the *true*.

The *grand*, as displayed in form and arrangement.

The *beautiful*, as manifested in form, proportion, arrangement, and colour.

The *true*, as shown in the construction, in the character of the building, its materials, and workmanship, in which nothing false, nothing meretricious, nothing unmeaning, found a place.

Our pious forefathers, with a conscientious integrity, and fully carried out these principles of the Greeks, and in the noble monuments they have left us of their Christian magnificence, have shown how the *grand*, the *beautiful*, and the *true* may receive from Christian motives their highest development.

H. C. BARTON, M.D.

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**PROPOSED OFFICES IN LIVERPOOL AND THE LIVERPOOL ARCHITECTURAL SOCIETY.**

The following is a copy of the memorial forwarded to the Liverpool Corporation from the Liverpool Architectural Society. The interest of the question discussed is general.

Mr. Mayor and Gentlemen.—The Liverpool Architectural and Archaeological Society desire very respectfully to draw the attention of your honourable body to a matter immediately within your control, directly affecting the interests of the members of the architectural profession practising in this town, and, as it appears to the Society, also bearing on the interests of the ratepayers and general community, viz., the employment of the officers of the corporation upon public works, particularly such as are of an architectural character, other than those for the direction and conservancy of which they hold their appointments. While recent occurrences with respect to the proposed public offices have led the consideration of the Society strongly to this subject, they desire that it may be understood that the present representation has reference also to the matter at large which has been the subject of frequent comment in the profession for some time past. The course objected to appears to the Society to be impolitic, as depriving the town of a choice among the general body of architects, either by selection or competition, and unfair towards the architects resident in the town and contributing to the local taxation and the expenses of the local establishments, as it not only excludes them from many opportunities of legitimate practice, but fixes on them an implied stigma of professional incompetence, by the selection of those not in architectural practice for the direction of works towards the cost of which the resident architects, as ratepayers, contribute, and for the execution of which they may justly claim to be entitled at least to compete.

The practice seems unfair towards the ratepayers of the borough, as it deprives them of a part of the services of the officers so employed, as preventing the proper and exclusive employment of the latter to the duties for the performance of which they receive liberal salaries, and further, as it renders most improbable the proper execution of such additional work, if the special duties of the officers be duly discharged, and obliges much of it to be deputed to other and probably very inferior hands.

It seems far more impolitic on the ground of economy, as such additional employments are often made a plea for oblations to the employment of the officers engaged on them; such additions being likely to take the shape of permanent increase of salaries, while the cost of the additional assistance necessarily employed bears a considerable

\* See p. 195, ante.

† See the leuconographie of M. Didron—either the Paris edition, in quarto, or Bohn's translated edition.

able proportion to the charge for commission in ordinary architectural engagements.

It appears unfair towards the officers so employed, as placing them in an illudious position towards the members of a profession with which they are in frequent and intimate communication, and whose respect and esteem they possess in their official positions, and as likely to occasion them discredit in a professional light, by obliging them to erect buildings to which it is impossible for them to devote the time and ability necessary to render them creditable to themselves, the profession, and the town. It would appear either that the emoluments of the corporation officers are too great for the duties they have to discharge, or the diversion of a large part of the emoluments of the officers from those duties must be injurious to the public interest. The salaries attached to these offices are liberal, and seem to authorize a claim for the devotion of the whole time of the officers to their special duties, and there appears no reasonable ground either on the score of their insufficient occupation by those duties or of the impossibility of obtaining other efficient architectural aid, for the employment of such officers on works palpably foreign to those for the direction of which they are engaged.

Entertaining these views, the Liverpool Architectural and Archaeological Society desire in conclusion most respectfully to present to the deliberate consideration of your honourable body their decided opinion that the buildings required for the public service of the town, or erected under the control of the corporation, should be made the subjects of selection of competition among the architectural profession, and that the resident architects should in such cases receive at least the consideration due to them as contributors towards the burden of the necessary local taxation.

I have the honour, &c. &c.,  
On behalf of the Liverpool Architectural and  
Archaeological Society,  
H. F. HARRIS, President."

The subject, as we intimated would be the case, has again been under the consideration of the Town Council; and after much discussion it was finally resolved,—

"That the Council, whilst adhering to the opinion repeatedly expressed, that the concentration of offices for municipal business is desirable, do not feel themselves competent, with the information now before them, to decide that the plans now submitted are the best that could be devised—resolved, that therefore those plans be referred to a special committee, the said committee to consider the same, with power, if desirable, to call for other plans, either by competition or otherwise; and to recommend to this Council, with the least possible delay, such plans as they may think will best afford the required accommodation, and secure the efficient and economical discharge of public business."

In course of the discussion, it was stated by Mr. Pictou, architect, that the Corporation had spent on the site, up to the present time, the sum of 141,000*l.* for an area of 17,936 square yards, being 7*l.* 18*s.* 4*d.* per square yard; and that deducting 2,553 square yards for streets, there were left 15,383 square yards for which they had paid at the rate of 9*l.* 3*s.* 3*d.* per square yard. Of this area, he added, 5,983 square yards would be available for sale, and he estimated the price which the Corporation would obtain for this land at 4*l.* per square yard. Mr. Jeffrey, however, who moved the amendment which was finally resolved on, dissented from Mr. Pictou's mode of estimating the cost and disposal of the site.

#### CHELSEA CONGREGATIONAL CHURCH.

A CHURCH for the congregation of the Rev. C. Hooper has been built in Markham-square, King's-road, Chelsea, and with the vestries occupies the whole of the northern side of the square. It is in the style of the second period of Gothic architecture. The plan is slightly cruciform, having transepts projecting about 5 feet from the body of the building. A prominent feature of the exterior is a tower with spire rising from the west side of the southern transept to the height of 133 feet from the ground.

The ground-floor of the tower has a stone groined ceiling, and is the principal entrance to the church, being formed into an open porch, protected by wrought-iron gates.

The walls of the building are constructed of Kentish rag-stone, with bricks inside. The joints of doors and windows, their mullions and tracery, as well as the spire, and all mouldings and ornamental work, are of Bath stone. The roof is open-timbered, in one span, plastered underneath the rafters; the plaster being tinted to harmonize with the stained work throughout the buildings.

The pulpit projects out from the organ gallery, situate at the east end, in an arched apsidal recess.

The organ and organ front have been supplied by Messrs. Bishop & Co.

The walls are stuccoed inside with blue-lime lime, the finishing coat being prepared with sand obtained from the Lee Moor China Clay Works, Devonshire, by the architect. This sand (which is decomposed granite) contains a large quantity of mica mingled with the quartz and a small proportion of felspar.

The windows are glazed with cathedral glass.

The church is lighted at night by means of gas jets and lamps, executed by Mr. Rotwell, of Cleveland-street, Fitzroy-square.

The building is warmed with hot water supplied by Mr. Smith, of Teater-street, Finsbury; and ventilation is provided by means of dormers in the roof, and also by the windows.

Accommodation is provided for 618 persons on the ground-floor and 502 in the gallery, making a total of 1,120 adult persons. Below the church arrangements are made for a girls' and boys' school, with class-rooms, &c.

The building has been executed by Mr. Myers, under the direction of Mr. J. Tarring, architect. Mr. Acornb was the acting clerk of the works. The total cost, including approaches and enclosures, is about 5,000*l.* The carving was done by Mr. Ruddock.

#### BRITISH WATER-COLOUR PAINTINGS BELONGING TO THE NATION.

THE commencement of a permanent collection, to illustrate the rise and growth of water-colour painting in this country, has been made in the Government Museum at Brompton, under the superintendence of Mr. Redgrave, R.A. The number of such works belonging to this country is at present but small, and they are chiefly by the earlier masters of the art, including specimens of what is called stained drawing. Mr. Redgrave says of this branch of the art, in his introduction to the "Inventory,"—

"Its nature and quality will be understood by examining the drawing No. 417, by Mr. A. Rooker, executed in 1729; No. 449, by Wm. Hearne, executed in 1724; and that by Wm. Payne, No. 381, probably about the same date: all these works are more or less topographic in character, and are wrought precisely as I have described. If we, at the same time, compare with them the figure drawing No. 118, by Julius Cæsar Ibbetson, executed in 1795; No. 439, by N. Pococke, executed in 1794; that by Webber, No. 446, executed about the same date; and that by Alexander, No. 453, executed in 1796, we shall have a fair idea of water-colour drawing as it stood just before the great movement that was to raise it into a national art."

In our last volume\* we spoke of the foundation of the Water-Colour Society, and gave the names of the original members. The works of some of these will be found in the present collection. Several drawings of more modern masters have been kindly lent by Mr. Lewis Pocock and other collectors. We shall return to the gallery hereafter.

#### HALIFAX.

THE building of the new town-hall was commenced on the 2nd instant. The contractors are as follows: masonry and bricklaying, Mr. Thos. Whiteley, of Leeds; joiners' and ironmongers' work, Mr. Joseph Bedford, Horton-street; the founders and smiths' work, Mr. Henry Grissell, of London; plastering and slating, Mr. A. Bancroft, Winding-road; plumbing and glazing, Mr. George Walsh, Northgate; and painting, Mr. James Farrar. The above works have been contracted for at an aggregate cost of 23,320*l.*

We learn from the local Courier that for the proposed cemetery nine sets of designs were received. Mr. Milner, the designer of the Halifax People's Park, obtained the first premium of twenty guineas. The corporation was unable to decide as to the superiority in the merits of the plans submitted by Mr. Gay, of Bradford, and Mr. Barry, of Liverpool, and ten guineas were voted to each, the design to become the property of the corporation.

For designs for six shops proposed to be erected at the top of the New Market Place, three sets were sent for inspection, and two awards were offered. The first, ten guineas in amount, was given in favour of Mr. Ralph Nicholson, Southgate; and the second, three guineas, to Mr. Chas. Horsfall, of Albert-street.

#### BUILDERS' HOIST.

INVENTIONS AT THE SOCIETY OF ARTS.

THE contrivance for raising materials mentioned in our last notice of the progress of the "Machinery Works" (p. 194), is Johnson's "Builders' and Contractors' Hoist." One of these machines, it is stated, will raise in general works 20,000 bricks in a day, at a cost of 6*d.* per thousand for every 50 feet rise, saving about one-half the usual cost of labour. A hoist 40 feet high, complete, costs about 26*l.* A model may be seen in the present exhibition of the Society of Arts, No. 497. The "windlass at the bottom is fitted with patent waded wheels," or sheaves, which play off the rope as fast as it is taken in.

The collection of articles recently invented, or

patented, now on view in the Society's House, seems somewhat smaller than it was last year, but contains many items deserving attention. The room is not well adapted for anything like a classified exposition, and is, moreover, dark. It is to be hoped that, before long, the Society will take steps to obtain premises better suited to their objects and now high position.

#### MARBLES.

IN the report of proceedings before the Institute of British Architects, references are made to the Parian, Verd Antique, and Carrara marbles. May I be permitted to observe that the Parian may be regarded as a different material from any of the marbles found in Carrara. The Parian is of coarse granular formation, likely to be durable in any atmosphere; and the Carrara being of a finer grain, is susceptible of a polish for chimney-pieces, and other internal decorations, for which it is not likely the Parian would be so suitable.

The marble of the arch to which Mr. C. H. Smith alludes is Sicilian, and not generally identified with Carrara.

With reference to the Verd Antique, the prominent difference between that of the ancients and any specimens produced in modern times is, that the former, in the intersection of colour, is so blended that the line of demarcation between the beautiful green and the adjacent colour is not perceptible; they shade into each other; whilst the modern greens show a distinct line, through which neither of the colours passes. This may be seen in the green marbles from Monna and Galway, as well as in the Egyptian green occasionally brought into use.

READER.

#### STAINED GLASS.

Covey.—Two new windows have been erected in the old parish church of St. Michael. The one at the east end of the north chapel is not a memorial window. The balance of the fund raised for the Queen Dowager memorial windows has gone towards this window; but the amount was not sufficient, and has been made up by donations. The three principal subjects are: The Women at the Sepulchre on the morning of Easter Day; The Resurrection of our Lord; and His appearing to St. Thomas and the other Apostles. There are also the Angels and the Roman soldiers. Over the north door a window has been put in by Mr. Henry Masters, of this city, in memory of his late wife. The subjects are four angels holding scrolls, with inscriptions from the *Te Deum*. At Holy Trinity Church, a parishioner has supplied the funds for filling the tracery of the window at the east end of the north aisle. The window contains St. Matthew, St. Mark, St. Luke, St. John, and the tracery is filled with the symbols of the Evangelists. The whole of the above glass is from the works of Messrs. Heaton and Butler, of London.

#### PROVINCIAL NEWS.

Weymouth.—The drawings and plans for the erection of a new building for the purposes of the Weymouth Middle School, says the *Dorset Chronicle*, have been completed by Mr. G. Crickmay, who has been entrusted with the preparation of the architectural designs. The building will be of the Elizabethan period, and constructed of red brick, with Bath stone dressings. It will also be furnished with a bell-turret. The lower story will comprise an entrance-hall, a staircase, and two class-rooms, 23 feet by 16 feet, and 30 feet by 23 feet respectively. The school-room, 60 feet by 30 feet, will occupy the upper story. The tender of Mr. C. E. Semman, for the execution of the works at 1,350*l.*, with 60*l.* for old materials, has been accepted. The remaining tenders were—Mr. S. Brown, 1,408*l.*; and Mr. A. Williams, 1,400*l.*, each allowing 50*l.* for old materials.

Marlborough.—Proceedings have been taken towards building a new wing to Tottenham-park House, Marlborough, the family residence of the Marquis of Ailesbury, the cost of which will not, it is said, be under 40,000*l.* A chapel of ease is likewise in progress for the use of the household.

Elvaston Castle.—Extensive alterations are in progress at Elvaston Castle, the seat of the Earl of Harrington. The works consist of a remodelling of the east wing to correspond with the south front. The entire wing is to be raised an additional story. The works were commenced by the late Mr. Robert Bridgort, of Derby, and are now being carried on by his son, under the direction of Messrs. Giles & Brookhouse, of Derby, architects, who have also been entrusted with the restoration

of Wasingley Hall, Huntingdonshire, a seat lately purchased by the Earl of Harrington.

**South Shields.**—The new Mechanics' Institution, erected in German-street, at the end of King-street, South Shields, is now nearly completed. The new institution, as described by the local *Gazette*, is in the Italian Romanesque style, built of red brick, having a frontage of dressed stone. The first floor is the hall, 80 feet in length, by 40 feet in breadth, and 32 feet in height. At one end it has a gallery, elevated 12 feet above the floor of the hall, and supported upon ornamental iron columns. The hall, which will hold 1,000 persons, will be lighted by two of Pierce's solar lights, each of which has eighty-two jets. The want of a hall to accommodate a large meeting has long been felt in South Shields. The access to the gallery of the hall is by a staircase, ascending from the landing of the main staircase. At the top of this staircase, on the left, opposite to the gallery door, is a room, 80 feet by 24 feet, running the entire length of the building, above the class-rooms and staircase. This room is intended for a museum. The building has been erected by Mr. Joseph Wright, of South Shields, from plans drawn by Mr. John Wardle, jun., architect, Newcastle-upon-Tyne. The cost of the building will be about 3,000*l.*

#### ARCHITECTS AND BUILDERS.

I AM a tradesman who supplies materials to that class of builders who are not rich enough to pay the whole of their accounts without first receiving certain portions of the money due for work done at buildings undertaken by them. I am, consequently, much interested in the dealings and relations between builders and the architects, from whose hands all certificates for payments must first come. I may, it is probable, be somewhat prejudiced through the inconvenience I frequently suffer from, and which I shall presently allude to, on the matter. But as I am confident I am right in the main, and as I know for certain that nearly every middle-class builder in this part of the country agrees with me, I venture to ask you to permit a few remarks on the subject to appear in your columns, which are well known to be devoted to the service and welfare of all classes of persons connected with building operations.

My complaint is, that architects seem to be prejudiced against their property due to the tradesmen under them. They do not treat builders with the highest and courteous consideration which is their due, when they have fulfilled their contracts and engagements with honourable fidelity. Architects do not, apparently, regard prompt payments to builders to be an important part of their duty; and gradual neglect seems, at length, to have led the profession to lay down the breach of duty as a permanently wise rule, and to deem it not only prudent, but really right, to delay as long as possible the granting of certificates for work done. Time, they appear to think, will test the work, and save them from much risk in passing it quickly as properly and efficiently done. Time saves the exercise of judgment; and architects gain as much profit as it is possible for their own safety, but at the expense and frequent ruin of the builder. At this present moment I know of half a dozen instances of downright injustice and hard-heartedness on the part of architects. One of the profession in London, of highly-respectable standing, has surveyed and passed some buildings in this neighbourhood (Chester) as quite satisfactory, and requiring nothing further to be done at them by the contractor; yet, since before Christmas, he has not only neglected to write out the certificate for which he has been applied to by letter above a dozen times, but he has actually not had the courtesy to acknowledge receipt of the unfortunate builder's communications, and appears to have no conception of the misery and loss he is unwittingly inflicting upon the victim of his position. The builder in question cannot travel a couple of hundred miles to personally dun him; nor has he the wish to do so, because he has been informed that more work is proposed to be done upon the same estate, and he desires to keep in favour with all officials concerned, in order to secure it for himself if possible. In another case, a provincial architect has measured work, and expressed satisfaction with it, above three months since, yet has not calculated it up, or granted certificate to the contractor, though pressed nearly every day for it, and a law-suit seems to be the only resource left for the unlucky builder to recover his money through. In another instance the architect says, he has had no time for many weeks to examine work completed. And so on in

numerous cases within my knowledge, architects evince a callous indifference to the just claims of builders and contractors against whom they advance no charge of inefficient or bad work. If any dispute existed, or any difference of opinion, readily admit some justification might be reasonably given for delay or inattention. I do not, however, refer to these instances, I allude exclusively to cases wherein no dispute is in existence, and wherein no other cause for delay can be observed, save pure laziness, arrogance, or negligence.

My own opinion is that this apathetic negligence of architects, to give it as charitable a term as possible, arises from the too great an idea they are fostering within their minds of the exalted, theoretical, high-art nature of their profession. They are so keenly intent upon looking up into and studying the high heaven of speculative art and theory, whereat they are straining their eyes and imaginations to discover the true lines of beauty, strength, and style, that they have nearly forgotten the importance of the common business portion of their duties. They pore over learned works, listen to refined and speculative lectures, discuss with acumen the claims of rival styles of architecture, until, like many lawyers and ecclesiastics, they become dreamy students and enthusiasts, fonder and prouder of theories and principles than of the rude practice and adaptation of them to the living wants of their day. When lawyers are more wrapt up in worship of the beautiful principles of law than in pleasure of settling mean worldly disputes, poor clients are sacrificed for illustration of the grand principles. So when architects are too devoted to theory, they forget in the pride of their profession their everyday duties to society; and I think if they would exchange to a certain extent the speculative study of books for a direct, honest attention to the practical portion of their duty, they would fulfil their office between the employer and the tradesman with much greater advantage to all concerned with building operations. A thorough initiation at the beginning of their lives into the theories and mysteries of their profession is absolutely needful; as much so as with doctors; but afterwards, I think they ought to be as practically wise as doctors, and devote themselves to the full application of their knowledge to the service of life, to gain a thorough business conception of what is required from them, a precise apprehension of the characters of contractors engaged under them, a resolute habit of getting work done well and quickly, a rapid way of deciding correctly upon the merits of works when done, and a steady resolution to bring about a speedy and business-like conclusion of any matter under their charge. Conduct after this nature would not only highly gratify gentlemen and builders, but would bring the profession into good repute with tradesmen generally. As it is, however, architects are regarded more as obstacles than helps, and I am sure are losing ground in the estimation of the public. The eternal discussion ever going on in the body concerning fundamental principles and styles does not tend to generate a high opinion in the minds of spectators of the value of their theories; and I therefore see nothing but genuine, practical, business-like service and benefit, to sustain the profession in the high estimation it deserves to be held in. Perhaps some of your readers may take a hint from my humble suggestions, and, by hastening on the common business of life, do good service to tradesmen like myself, to builders, to employers and proprietors, and to the profession of architects generally. I am sure I write honestly, and state conclusions drawn from my own trade experience.

A TRADESMAN.

#### MASTERS AND WORKMEN.

THE remarks in last week's *Builder*, upon the propriety of other workmen besides secretaries of trade societies being examined before the committee of the House of Commons, must, one would imagine, receive the assent of every thinking person. Without a doubt there are many intelligent men, unconnected with trades' unions, competent to give an independent and unbiased opinion upon the proposed councils of conciliation. Whether, however, such men will be called upon to express their views, appears to me to be very doubtful. Although one of the foremost social reformers of the age has declared that "none could tell so well what would suit, and serve, and please a class, as men of that class themselves," yet we know that so far as a practical recognition of the truth thus enunciated is concerned, very little has been done. Committees of inquiry investigate, social science conferences discuss,—but

how rare to find the originators and conductors of such inquiries seeking information from thinking, observant men in the humbler walks of life, whose common-sense practical views, formed amidst the toils, trials, temptations, and contingencies of industrial life, deserve the most careful and candid consideration of those who are professedly striving to benefit their poorer brethren!

It is to be hoped, sir, the day is not far distant when working men generally shall take a more prominent part, not only in the discussion, but the practical realization, of measures calculated to benefit their own order. I hope this, because of a conviction, strengthened by every-day experience, that all the efforts, schemes, and organizations of our would-be-elevators, will avail but little unless this *self-helping* element be introduced. In this conviction, as a member of the great industrial community, I claim more than the *propriety*,—I claim the absolute right of the working man being heard upon a topic so pregnant with results to himself, his family, and his class. If these councils of conciliation have been the means of averting strikes with their thousand evils, if they have preserved reciprocal feelings of respect between employer and employed amongst our more excitable brethren across the Channel, surely the same means would be as applicable to the far more thoughtful and less impulsive Englishman. We boast of our civilization and social progress; but is it not high time the barbarous and irrational mode of settling disputes by strikes were superseded? These councils of conciliation appear to me to be just the thing we want; therefore I hope the conservative spirit of employers will not stand in the way of a fair trial of this peaceful principle.

WILL JACKMANE.

#### CITY OF ELY WATERWORKS.

MR. LATHAM, in his letter mentioned in our last, denies the statement of the correspondent who signed himself "Dan," and gives figures to show that the cost of pumping one million gallons of water with the old engine is *4*l.* 18*s.* 8*d.**, and with the new engine, *4*l.* 10*s.* 7*d.**

If "Dan" be wrong, it must be intentionally, as his position is such that he must have the command of correct information. We cannot attempt to balance the statements, and must leave the matter in the hands of those who are locally interested.

#### "BEDWAY" OF BUILDING STONES.

BATH STONE.

IT has been my lot to have some experience with Bath stone, and I believe that the genuine article from Combe Down quarries will not decay rapidly when exposed to atmospheric influence.

The upper part of the tower of this church was rebuilt a few years ago. The battlements and embrasures are coped with the usual projecting mouldings (there is also a string course) wrought at Combe Down. Not an arris of it has yet been affected.

Stone from the same quarries has been extensively used about some new schools and master's residence in this village, where there are many projecting mouldings. Though the work was only finished just before the late severe and early winter set in, and of course was in a green state, yet I do not find that the frost has had the slightest effect upon any of the projections, nor on the pointing, done weathered fashion, with fine blue lias lime and coal-ash mortar.

I believe every stone is properly bedded; they were handled by experienced workmen; and the work being done under my own superintendence, I would not allow a stone to be laid on its wrong bed, if perchance its dimensions otherwise suited the required purpose.

The dark veins cross the bed at right angles; and, by observing these, the bed is easily detected, and should be insisted upon when Bath stone is used.

There are many lovers of beautiful design and workmanship in the oolite localities, as you, sir, must know, though built say 400 years ago, which still retain much of the sharpness almost of new work. To instance one, Biton, Gloucestershire, built of the hard and coarse lower beds of oolite from Lansdown. The projections of the carvings and noses of the moulding are still in a state of comparative perfection. But the atmosphere of the country is very different from that of the smoky metropolis. Besides, we may be pretty sure that the stones were well selected, and the work undertaken without the modern marring system of *competition*, and without any undue letting, hurrying or driving the workmen (which

only makes the matter worse), or entrusting it to the cheapest hands, who are sure to scamp the work.

H. T. ELLACOMBE.

Rectory, Clyst St. George.

Portland-place was the first building in London where Bath stone was used: there any one may see how it has stood the weather, and how it is bedded. The work was done by Bath masons, and bystanders were astonished to see stone worked with carpenters' tools; so I have been told by old men. I believe the stone was supplied from Combe Down.

H. T. E.

I believe Mr. C. H. Smith's observation on the bed-way of building stone to be perfectly correct, and that it is no easy matter for the most experienced person to decide offhand which is the proper bed of the stone as it comes from the quarry. If the proprietor of a quarry would instruct his quarry-man to put a chisel mark on the stones as they are quarried it would obviate many a mistake which is now made, and a foreman of masons should pay equal attention when the stones are wrought and worked.

A SUBSCRIBER.

#### THE STONE OF THE NEW HOUSES OF PARLIAMENT.

Sir,—I am quite willing to accept Mr. C. H. Smith's remarks in your impression of last week as an *unavoidable* but, says Mr. Smith, "I am not disposed to consider Sir M. Peto and Mr. Gristell as the best judges of the most suitable kind of stone to be used for the exterior of an elaborate edifice." I beg to assure Mr. Smith that neither Sir M. Peto nor myself ever presumed to exercise any judgment in the matter. The quarries having been selected by Mr. Smith and his honorable coadjutors, our duty was simply to execute the work entrusted to our care, and in this respect we believe we have faithfully and creditably performed our part of the engagement.

Mr. Smith goes on to say, that by far the greater portion of the stone appears to be of a good and durable quality, and he instances the large blocks of carving throughout the whole of the river front, as strongly evidencing the least sign of decay, and which he thinks arises from the workmen, or the principal carver, having exercised a considerable discrimination in the choice of the blocks, selecting such as would cut and work freely, and were of one uniform quality throughout.

In the above reasoning Mr. Smith is entirely mistaken, as the whole of these large blocks were obtained from various parts of the quarries, where the sizes could best be obtained, and were in no case selected by the talented carver Mr. John Thomas, who had charge of that portion of the work, but were got invariably more with regard to size than to quality. The result of which goes to prove that the more thoroughly the stone is exposed to the action of the wind, rain, and sun-shine, the less liable it is to decay. I may add also that all these stones are fixed the reverse way to the bed, and I believe had they been used in more sheltered situations, would not so strongly have commended themselves to Mr. Smith's kind notice and consideration.

T. GRISSELL.

#### THE "BUILDER'S" LAW NOTES.

**Railway Shares.**—A person bought railway shares and deposited them with a broker, who afterwards became bankrupt. Proof was at first admitted, allowing the value to be estimated by the price paid by the purchaser; but this was subsequently reduced to the value of the shares at the time when the owner demanded possession of them.—*Be Morgan*.

**Land-Tax and Rent-Charge.**—When a tenant agrees to pay a rent "free of all out-goings" he is not entitled to deduct land-tax and title-commutation rent-charge, although these are landlord's burdens.—*Parish v. Sleeman*.

**Bonus on Shares.**—A person bequeathed shares in a company and died between the time of the declaration of a bonus on the shares and the time appointed for its payment. This bonus was held not to go to the legatee of the shares, but to form part of the testator's general estate.—*Loch v. Venables*.

**Patent.**—A part of a patent may be assigned, separately from the other parts, and the assignee may sue in respect of the infringement of such part without joining as plaintiffs those whose interests are confined to the other parts.—*Dunnell v. Mallett*.

**Building Land.**—*Mortmain*.—A lady made a grant to trustees of two acres of land for the purpose of there being built thereon a church, parsonage, schoolhouse, and residence for schoolmistress. The deed was duly enrolled, but it remained in the lady's possession until a short time before her death, and the possession of the land had not duly changed. The lady made a will reciting this deed of gift, and bequeathed sums of money for the erection of the buildings and the endowment of the church. The deed of gift has been held void under the Mortmain Acts, and as the legacies were connected with the deed they were also held to be invalid.—*Fisher v. Brerley*.

**Banking Company.**—A joint-stock banking company cannot legally commence business until all the shares are subscribed for and half the amount be paid up. A bank commenced business without complying with the law in this respect, and a person took shares understanding that all

had been rightly done. On the winding-up he was held liable to be bound as a contributory, it being held down that the law is for the protection of customers, not of shareholders.—*London and Eastern Bank, re Longworth*.

**Directors of Companies.**—Directors of companies cannot enter into contracts with the company; but a mere advance of money is not against the law. Contracts with a director are valid, however, if sanctioned by a general meeting of the company.—*Re Baker*.

**Allowance to Insolvents.**—A creditor at whose suit insolvent was imprisoned, having omitted to pay the allowance ordered to be paid, the insolvent was discharged from custody.—*Re Guy*.

#### HOUSE AGENCY CASE.

*Stevens v. Daniels*.—Messrs. Stevens & Sons, of Upper King-street, Bloomsbury, summoned the defendant to the County Court in St. Martin's-lane, for commission for letting his house in Gower-street. They stated that, on seeing bills in the windows, they had applied to know whether they would be allowed commission if the house were let through them, to which defendant replied in the affirmative. They, thereupon, took down the bill in one window, on which was printed "inquire within," and substituted one of their own, leaving the "inquire within" in the other window. Observing afterwards that the house was let, they called and asked the tenant whether she had not received one of their cards to view, to which she had said yes, and that she had called at their office. The tenant, on being called on plaintiff's behalf, denied having said so, and stated that she did not know where their office was. She went into the house from seeing the bill "inquire within," and produced the correspondence which resulted in her taking the house. In this Messrs. Stevens did not appear at all. This was plaintiff's case. The judge said there was no case at all, and dismissed the summons.

#### MAGISTRATE'S DECISIONS UNDER THE METROPOLITAN BUILDING ACT.

*The St. James's-street Case.*—The absurdity of referring *Building Act* matters to police magistrates has long been fully apparent; they are wholly incompetent to deal with questions requiring professional knowledge. The Act itself is defective in every particular, badly drawn, stringent and lax, indeterminate in point of law, and absurd in being capable of any amount of modification.—nothing defined, nothing clear.

Whether the district surveyor had any *locus standi* or not; whether the work constituted a projection extending beyond the regular line of front; whether such regular or defined line existed at all,—I am not about to argue.

The matter in question went off upon an issue which can only be considered as ludicrous in the highest degree. The magistrate decided that a wall taken down, reconstructed in every particular, rebuilt in fact, was only a repair, *not affecting the construction*, although it was in evidence that the wall was wholly reconstructed.

This decision would provoke to laughter even a committee of builders anxious to evade and defeat the Act as far as they could. We must have a competent tribunal to decide vexed questions in building matters, such as a Metropolitan Building Court or *Jurés de bâtir*, we had better fall back upon the very clear and able Act of 1844. Repair is not rebuilding or reconstruction, but, as clearly stated in the committee of the House of Commons, applies only in cases of superficial or surface repair, not affecting the construction; repairs affecting the construction, such as rebuilding, being in no way exempt. Then, cases taken to police magistrates decide nothing, nor have they any weight; they are the crutches of unskilled men, who might as well be called upon to decide Admiralty cases. Police magistrates deliver wholly conflicting decisions: what other result was to be expected?

A SUBSCRIBER.

#### WAVY WINDOW-GLASS.

As this is the age of improvement in everything connected with the building of houses, both as to comfort and also appearance, I should like to draw the attention of your numerous readers to the subject of *window-glass*, for in this we seem quite at a stand-still. Formerly, when sashes were made in twelve lights, we could get crown-glass put in, but when the duty came off glass, and cheapened it, the public taste ran for larger sized squares to look through, and consequently crown-glass had to give way to sheet. It is true we now have large squares, but a very bad appearance; and it matters not whether the glass is made in this country or in any other, it is all alike having a hammer-looking surface, consequently driving us to the expense of *plate-glass*. Now, sir, what I should like to know is, cannot manufacturers give sheet-glass the even appearance of crown-glass; and if not, cannot they make crown-glass larger, so as to enable us to get the squares we want for the present style, namely, squares about 46 by 30, or 40 by 32? This is a subject well worth the attention of window-glass makers;

such glass would command a most extensive market; for the complaints of the sheet-glass are universal, whether it is 21 oz. or 16 oz., no matter, the surface is always wavy when the light falls on it.

W. F.

#### THE POLITICAL ECONOMY AND TENDENCY OF STRIKES.

MR. H. FAWCETT, Fellow of Trinity Hall, Cambridge, delivered an address upon this subject, last week, in St. Martin's Hall, to an audience composed for the most part of members of the working-classes. He was introduced to the meeting by Sir J. Kaye Shuttleworth, who presided on the occasion. He expressed his dissent from the opinion that strikes ought to be regarded as producing effects entirely bad, and his belief that their tendency was to bring about social relations between the employer and the employed very different from those which at the present day existed. The terms "capital" and "wages" he briefly explained, remarking that it was impossible to raise the general average rate of the latter throughout the country unless the former were increased, or the number of those competing for employment was by emigration or some other means diminished. Touching then upon the question whether the number of hours which the recipients of wages should work were simply regulated by custom, or the will of the capitalist, or by laws which could not be arbitrarily set aside, he stated it to be his opinion that, although it might be quite possible for a number of labourers entering into a sudden combination to procure for a short period the same amount of wages for nine hours' work as they had previously done for ten, yet, inasmuch as the accumulated fund from which the remuneration for their labour was drawn would in consequence be diminished, they must not hope to succeed in obtaining permanently the same amount of wages for less work. Capital and labour were no doubt opposed to one another as things at present stood, but identity of interest between them might, he thought, be effected by making the labourer a participator in the improvement in his master's trade,—a result which the power to combine, he thought, irresistibly tended to bring about. The lecturer then proceeded to dilate on the advantages which the existence of co-operative establishments such as those at Leeds and Rochdale was calculated to confer on the labouring-classes, and the great benefit which giving them increased interest in their employers' success by the means which he had indicated would be likely to produce.

#### PATENTS CONNECTED WITH BUILDING.\*

**STOVES AND FIRE-PLACES.**—*J. Taylor*, Stream-hill, Surrey. Dated July 13, 1859.—The patentee combines with stoves and fire-places, constructed in a manner similar to what is described in the specification of his patent, dated the 2nd of May, 1858, air-passages or flues through which air is caused to pass. The air, in passing through these air-passages or flues, becomes warmed, and in this state is allowed to escape into the room, as described. The patentee remarks that stoves or fire-places combined according to other systems, with air-flues for the purpose of supplying warmed air to rooms, may advantageously be set as described, with ornamental slabs having perforations formed in them, through which the air, when warmed, is admitted to the room.

**APPARATUS FOR CURING SMOKY CHIMNEYS AND PREVENTING DOWN-DRAUGHTS.**—*C. Hagan*, Tower of London. Dated July 6, 1859.—This invention cannot be described without reference to the drawings.

**CONSTRUCTION OF WALLS.**—*J. Taylor*, Roupell-park, Stream-hill, Surrey. Dated August 8, 1859.—The patentee introduces into the wall, at a short distance above the ground line, two layers of tiles made of non-absorbent material. Each of these tiles is made of a length equal to the thickness of the wall, and of a width equal to the length of an ordinary brick: it is thickened at the edges on each side, so as to form a thickened border or flange projecting up from the general surface of the tile. The first of the two layers of tiles is laid with the thickened flanges projecting upwards, the length of the tile being in the direction through the wall, and the second layer of tiles is laid with its length in the same direction, but with its thickened flanges projecting downwards, and so that the plane surface between the two borders of each tile of the upper course rests on the flanges of

\* Selected from the *Engineer's* lists.

two adjacent tiles of the lower course. The width of each of the flanges is made somewhat less than one-half of the width of the space between the flanges, so that when the tiles are built together, as already explained, spaces are left between the flanges of the tiles, which effectually prevent the passage of damp along the joints between the tiles, and they also serve to admit air underneath the floor, to do which air-bricks are commonly employed.

**APPARATUS FOR HEATING AND WARMING BUILDINGS.**—*H. J. Newcombe*, Shenley, Herts. Dated July 30, 1859. This invention cannot be described without reference to the drawings.

**BUILDINGS OR ERECTIONS TO BE USED FOR HORTICULTURAL OR OTHER PURPOSES.**—*T. G. Messenger*, Loughborough. Dated August 1, 1859. This invention relates principally to hot-houses, and other erections constructed of glass and wood or metal, or with roofs and sides of glass and wood, and other erections constructed of glass and wood, first, in the use or employment of light rafters in lieu of strong ones, the same being supported by a tensile rod; secondly, in making the entire length of the building or erection without a division; and, thirdly, in the use or employment of apparatus for opening any part of a building or erection the entire length at once.

**SELF-ACTING WATER-CLOSERS.**—*J. Hewitt*, High-street, Sheffield. Dated August 3, 1859. The patentee proposes to introduce two levers with fixed or adjustable fulcra, both of which levers are actuated by the seat, and act upon the ends of a cross-bar as rigid as may be consistent with lightness. This bar acts upon the lever-wrunk or piston connected with the flushing apparatus. The invention cannot be fully described without reference to the drawings.

## Books Received.

### VARIORUM.

1. "The Principles of the Working of Vulgar and Decimal Fractions and Duodecimals familiarly Explained," by the Rev. John Eynns, M.A. (Fenny, Lincoln's-in-fields), the object is to enable learners, however young, to become familiar with the principles on which the rules for working vulgar and decimal fractions are constructed. For this purpose an easy and homely method of illustration has been adopted, which appears to be very suitable to the object in view. — In "The Elements of Geometry Simplified and Explained, with Practical Geometry and Supplement," by V. D. Cooley, A.B. (Williams & Norgate, Hendon-street, Covent-garden), an attempt is made to reduce the 173 propositions of the first six books of Euclid to 36 propositions, and so to form a short road to a knowledge of the elements of plane geometry, more likely to be traversed with actual interest and benefit, in the midst of a multiplicity of other pursuits, in this fast age of ours, than the more compendious and circuitous route of Euclid, through which "the Greek philosophers used to beguile many long hours." — "Observations on the Best Means for Cleansing the Sewage of Large Towns, and a Description of his Patent Plan of Subsidizing Pool," by Thomas Walker, of Birmingham, is a tract urging the preference of such a subsidizing pool as that described to any mode of filtration. The patent pool has a sloping bottom, and the sewage enters on a level with the bottom of the deepest part, and passes up the inclined plane while the subsidence is going on, and it reaches the shallowest edge, where it has sufficient exit. Mr. Walker speaks of three hours as sufficient to clear the water in a pool of proper dimensions. — An endeavour is being made to procure the means of restoring the church of Great St. Mary's, Cambridge, the principal town and University Church, as appears from a tract entitled "Remarks on the Present Condition and Proposed Restoration of the Church of Great St. Mary's," by H. B. Luard, M.A. (Maenillan & Co., Cambridge). This church, in its present state, is regarded as "a model of everything a church ought not to be" and it is to be hoped the endeavour to render it what it ought to be will prove successful.

## Miscellaneous.

**LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.**—A general meeting of this society was to take place on this Thursday, in the Middle Temple Hall, and papers were to be read. The Parliament Chamber, Library, and Church were to be visited, and afterwards Bridewell Hospital, Stationers' Hall, and the Public Record Office, for the purpose of seeing "Domesday."

**FURTHER FALL OF THURSTON CHURCH.**—The disaster to this church on the night of the 18th ult. has been followed by a further demolition; and the necessity for rebuilding the whole edifice, except the chancel, is now placed beyond a doubt. Since the fall of the tower and western arches, Mr. Farrow had been engaged in removing the ruins and shoring up the remaining walls and arches; but Mr. Hakewell, the architect, on examining the masonry and timbers, had come to the conclusion that it would be necessary to take down the whole body of the church, when his opinion received a decisive verification on Wednesday before last, when the remaining arches of the south aisle fell, bringing with them the roof of the aisle and nave, and crushing the pulpit, desk, and seats beneath the ruins. All that now remains of this church is the chancel, with three arches of the north aisle, and the outer walls as far as the porch, with the porch itself. About 6000 were recently expended in an attempt to prevent this catastrophe, and 2000 more were about to be laid out, partly in undoing what had been done. It is said the tower was considered, sixty years since, to be in an unsound state.

**LUNATIC ASYLUM FOR THE CITY OF LONDON.**—The proposed asylum is to be built at Stone, near Dartford, Kent, from the design of Mr. J. B. Bunning, the architect to the corporation. The building is to contain 154 male and 168 female lunatics. According to the *City Press*, the main building will consist of a centre and two wing buildings, with communicating corridors, three stories in height, except the extreme ends, which are to be occupied as infirmaries, and will be two stories high. The centre portion of the building will contain an assembly and dining hall, chapel, committee-room, reception and waiting rooms, matron's and assistants' rooms, kitchen, sculleries, store-rooms, servants' bed-rooms, and the warming and ventilating apparatus. The eastern wing is to be appropriated for the males, and will contain, on the ground-floor, a day-room, and single rooms for twenty inmates, with exercising corridors and lavatories, and other requisite accommodation. The one-pair floor will be arranged in the same manner as the ground-floor, and will accommodate the same number of inmates. The two-pair floor will contain associated dormitories only, and will accommodate forty-six inmates. The western wing is to be appropriated to the females, with similar arrangements as to the eastern wing, and is intended to accommodate one hundred inmates.

**THE NEWCASTLE-UNDER-LYNE SCHOOL OF ART.**—The annual meeting of the friends of this school has just been held in the Institution Lecture-hall, Newcastle, under the presidency of Mr. William Murray, one of the members for the borough. The attendance was so numerous and respectable, says the *Staffordshire Advertiser*, in reporting the meeting, that it was hard to believe that so valuable an institution had to contend with a paltry debt of less than 300*l.*, and that the amount subscribed in the town in aid of the pupils' fees had not averaged more than 17*l.* during the last two years. The report stated that the master as having received instruction in connection with the school in 412, being an increase of 112 on 1853; at the Central school, 89, showing an increase of 29; Grammar, Orme's, National, and British Schools, 323. The number of medals awarded by the Department during the past year amounts to 15,—3 national and 12 local medals. The meeting was addressed by the chairman, and by Mr. Hammersley, head master of the Manchester school, also by Mr. Smith Child, the president of the school, and various others; and the prizes were distributed by the chairman.

**BATH ABBEY CHURCH.**—Certain alterations and improvements in the Abbey Church are contemplated, with the view of providing increased accommodation and convenience for the congregation. With this view the rector consulted Mr. Scott, who suggests the screen which at present divides the nave from the choir should be removed and re-placed at the west end. The organ to be removed to the north transept, the pulpit to be placed against the north-west column, which now supports the tower, and the desk at the south-west. The galleries to be altogether removed. The font to be placed near the south-west door, and the communion rails to be extended as far as the west end of Prior Bird's Chapel.

**ARTIFICIAL STONE.**—Messrs. Pavin de Lafarge, Viviers, Ardeche, propose to employ a compound of quartz and clay as a substitute for sandstone. The dry portion of the compound is finely-powdered quartz, and the wet of aluminous earth. The mixture is cast in moulds, and then subjected to the requisite pressure.

**OPENING OF AN INDUSTRIAL SCHOOL IN HOLBORN.**—The West Central Day Industrial School was opened last week in Titchbourne-court, Holborn. The Rev. Emilius Bayley, rector of St. George's, Bloomsbury, presided. The Rev. S. H. Parkes, one of the honorary secretaries, in a short summary of the object and plan of the institution, said:—"The object we propose to attain is to afford industrial training, food, and instruction, both religious and moral, to the destitute though not homeless lads that throng about the west central postal district of London. We propose to receive them between the ages of 10 and 15, and to give them work and wages, which will supply them with money for clothes, and to train them to some industrial occupation. They will receive two meals a day, a substantial breakfast and dinner. The boys will all be recommended by the superintendent or secretary of the ragged schools in the district, and they will further be compelled to attend the night and Sunday schools, from which they are recommended, and thus the connection already existing between the boys of the ragged schools will not only be unbroken, but more strongly cemented." The Institution should have the warm support of the district.

**THE LOCH KATHINE WATERWORKS: A DECEPTIVE CONTRACT.**—An awkward verdict has been returned by an Edinburgh jury against our water commissioners (says the *Glasgow Gazette*). It seems a Mr. Adamson, one of the contractors, was either unable or unwilling to proceed with his contract, in consequence of the ruination which he saw it would bring down upon him. He therefore threw it up; but he did so on this special ground, that he was deceived or misled, and he repaired to the Court of Session to seek a large sum of damages, or a large amount of money he alleged to be due to him for work performed. The commissioners resisted this action. They toughly contended that Mr. Adamson entered into this contract—about the Mugdock Tunnel, we think it was—with his eyes open, and that they owed him nothing, or next to nothing. He re-asserted his plea that they had deceived him; and on that plea an issue was made up on the following fact:—"Whether by fraud, or wilful misrepresentation, or essential error, the pursuer (Adamson) was induced by the defenders (water commissioners) to enter into the said contract, to the loss and damage of the pursuer," &c. The jury returned a verdict for the pursuer or plaintiff in the action.

**THE LATE SCAFFOLD ACCIDENT AT HANOVER-SQUARE.**—A lengthened investigation into the cause that led to the death of Jacob Brightman, and serious injuries to Henry Cooper and John Maloy, workmen in the employ of Mr. Foxley, builder, King-street, Golden-square, took place on Saturday before Mr. Bedford, the coroner, at St. George's Hospital. The circumstances attending the accident were shortly these:—On Tuesday morning four men, including the above named, were at work on a scaffold, erected at the top of a well-staircase, at 22, Hanover-square, when a pole 12 feet long (the ledger) suddenly snapped, causing that part of the scaffold on which the men stood at once to give way, and precipitated them, one of whom miraculously escaped, from the great height on to the floor of the hall beneath. It appeared that Maloy, one of the sufferers, and Patrick Moran, both labourers, erected the scaffold, under general instructions from their employer (Mr. Foxley), without any overseer over them, and that the pole which broke and caused the accident was very much decayed, and cracked to have been previously broken, it being examined all the way through, and a nail driven in as if to hold it together. The jury returned the following verdict:—"That deceased met his death by falling from a scaffold, one pole of which was unsound." The coroner severely animadverted on the conduct of Mr. Foxley, for allowing such inexperienced men to erect a scaffold, without proper inspection from a more experienced person, thereby jeopardizing human life, and remarked that very great carelessness had been shown in the choice of such a pole.

**IRONMONGERS' CIRCULAR.**—Sir: As your journal has more to do with ironmongers than any other periodical, I beg to point out the inconsistency of a circular published in the City. The proprietors are only warehousemen, selling brushes and mats: they never weighed up or sold a thousand nails in their lives, yet their great feature is to criticize and use the most insulting language to those who differ from them. Ironmongers in general are a gentlemanly class of men, who would scorn such language out of mere wanton mischief and because they get a few to advertise in their journal.—AN OLD IRONMONGER.

**THE GLASGOW CATHEDRAL WINDOWS.**—A large and influential meeting has been held in the Trades' Hall, Glasgow, relative to filling the windows of the Glasgow Cathedral with stained glass manufactured at Munich, to the exclusion of home enterprise and genius. The meeting resulted in a unanimous vote that a memorial should be sent to Her Majesty's First Commissioner of the Board of Trade, petitioning against the unpatriotic treatment which has been shown to native talent in this anti-national scheme. A long correspondence of the Committee for the Decoration of the Cathedral has been published in several of the local newspapers. Mr. James Ballantine, of Edinburgh, as we some time since stated, has finished a large window to the order of the late Mr. Houldsworth, and insists upon his right to erect it. On the other hand, the Duke of Hamilton, who has had his window completed, will not allow it to be erected, unless the committee guarantee that the original agreement to have only Munich windows be faithfully carried out. The Messrs. Baird, of Gartscherrie, who have erected the west window, also protest against any departure from the original agreement. Mr. Ballantine and the committee both appealed to the Board of Works, and a letter, of 16th February, from the Office of Works to Mr. Ballantine thus closed the correspondence.—In all the public proceedings of the subscribers, a universal consent appears to have prevailed that the windows should all be printed in the same style; and the decision of the committee that they should be ordered from the royal factory at Munich seems to have been generally accepted as a condition under which subscriptions were offered. Under these circumstances, the First Commissioner considers that there is just ground for maintaining that the admission of the window in question would be a breach of the general understanding, and that he must decline to give the authority demanded.

**PLASTERERS' STRIKE.**—A movement has been on foot at Hastings and St. Leonard's for some weeks past among the plasterers, who have been trying to induce their masters to lessen the hours of labour on Saturdays without reducing their wages. The project having failed, between thirty and forty of the men made a "strike" on Saturday last, and are now walking about out of employ. The rate of wages which has been paid is 6d. an hour, and the men applied to leave off on Saturdays at four instead of half-past five. Matters to this effect had been nearly arranged at some places, but the principal builders, including Messrs. Howell, Parks, Pattenden, and Kenwood, have strenuously declined to accede to the proposition, and the above is the result.

**MONUMENTAL.**—The model of the intended statue of General Sir Henry Havelock, in Trafalgar-square, has been completed by Mr. Helms, the sculptor, and has been exhibited in his studio. The figure stands about 12 feet high. The statue is expected to be placed on its site, the eastern side of Trafalgar-square, in the month of August.—The Durham monument to the late Marquis of Londonderry will shortly be completed. The pedestal is constructed of stones from Penser Quarry, some of them weighing between seven and eight tons. It is said that Signor Monti has been successful in delineating the features of the late marquis, who is represented as colonel of a Hussar regiment. The horse is twice the size of life, and the horse and figure are about 15 feet high, which, taking the base as 15 feet, will make the statue 30 feet high. The work is of copper, formed by the galvanic plastic process.

**BLACKBURN EXCHANGE COMPETITION.**—Pray, Mr. Editor, would it be a fair question to ask the Blackburn Exchange committee why they advertise for designs for their proposed new buildings? Do they really mean to not honourably? If so, are the designs which have been submitted to them to be paid for in any way? Or may we expect a second edition of the Over Darwen affair? If this could be known it might be a saving of some 500l. or 600l. to the profession, as well as of a great deal of vexation. I should advise my brethren of the T-square to wait till some more definite promise is given before moving in the matter.—ON DR.

**BRUSSELS PALAIS DE JUSTICE COMPETITION.**—Since last week I have obtained a copy of the *Independence* of 30th March, and in which I find, further, that the programme of specifications is to be had on application to the Department de la Justice, Brussels. As I said, "On ne demande aux concurrents que des *avants-projets sans métrés dessin, ni détails d'exécution.*" There is also a third prize of 3,000 francs. Designs are to be sent in before 1st August next, without names, but with notices and letters accompanying as usual.—W. T.

**CROYDON CEMETERY COMPETITION.**—We mentioned, last week, that the first premium for chapels, lodges, gates, and walls, was awarded to Mr. E. C. Robins. The second premium was awarded to Mr. H. Dawson, of Dupree Hill, Croydon; the third to Messrs. Carter & Evans, of Philpot-lane, London. The first for laying out the ground was awarded to Mr. Robins. The second to Mr. C. H. Mann, of Croydon-common.

**NEW MATERIAL FOR CHURCH FLOORS, &c.**—An invention which, it is said, seems likely to come into general use for the floors of churches, is mentioned in the Paris journals as having been discovered by M. Duchatel, of Granville. It is hardened by some chemical composition without fire; it is not likely to crack, nor will the colour on the surface be liable to be worn away, as it will take any colour, green, blue, &c., quite through its entire thickness.

**PHOTO-ZINCOGRAPHY.**—A *fac-simile* of a manuscript of the time of Edward I, copied and printed at the Ordnance Survey Office, under the direction of Colonel Sir Henry James, R.E., by means of the photo-zincographic process, has been presented by the *Photographic News* to its readers. One of the most important practical applications of photography yet made is that of the reduction of manuscript plans of the Ordnance survey of Great Britain and Ireland. The results obtained, in the economy both of time and money, are said to be as remarkable as they are important. Previous to the application of photography to the reduction of the plans to the several scales required, the only means available were the pentagraph, worked by a staff of skilled draughtsmen. The photo-zincographic process possesses a signal advantage over the anastatic process, inasmuch as by the latter only printed documents, &c., could be copied; whereas, by photo-zincography, written documents, maps, plans, logarithmic tables, &c., may be reproduced by a process at once simple and inexpensive.

**STREET ARCHITECTURE OF MONTE VIDEO.**—A set of plans for a corn exchange and other buildings, forming a block of about 50 feet broad by 140 feet long, has just been despatched, a coding to the *Birmingham Gazette*, to the city of Monte Video, in South America, by Mr. Emspon, of Birmingham. Provision is made on the ground-floor for a range of lofty shops, above which are placed an hotel, entered from a passage between the principal shops, and an exchange, the entrance to which is placed in front of the building. The exchange, which is to be fitted up as a music-hall, is 60 feet by 40 feet and 40 feet high, is decorated, and is lighted by a range of lofty windows. Two elevations accompany the plans, the one Classical Italian, intended to be worked in stone or cement; the other Romanesque, with Italian details, to be carried out in white, red, and blue bricks, inlaid with bands of encaustic tiles, and finished with a cresting of metal-work. A main feature of both elevations is a campanile to be used as a clock-tower; this rises to a height of 105 feet.

**DIRECTIONS FOR LETTERS.**—In 1854 I exhibited at the Society of Arts Exhibition of Inventions a system for the more expeditious direction of letters. I proposed that each county should have a number, and each post-town in the county a number also; therefore, instead of directing Mr. Jones, High-street, Bradford, Yorkshire, you would simply write Mr. Jones, High-street, 15, 6; 15, being the number for Bradford, and 6, the number for Yorkshire. The advantage would be in rapidity of directing and facility of sorting for transmission.—A TIME-SAVER.

**TRAFFIC RECEIPTS.**—The receipts of all railways in England and Wales, for all sources, for the half-year ending June, 1859, was 9,989,459l., of which 4,168,417l. was derived from passengers, 3,276,622l. from passengers' luggage, &c., 168,182l. from the mails, 3,476,328l. from general merchandise, 1,601,658 from conveyance of minerals, and 219,998l. from live stock.

**PRESERVATION OF POSTS.**—W. Howe, of Alleghany Co., relates, in the *Genesee Farmer*, an experiment made to test the comparative durability of posts set as they grew, or top end down. He says:—"Sixteen years ago, I set six pairs of bar posts, all split out of the butt cut of the same white oak log. One pair I set butt down, another pair one butt down the other top down; and the others top down. Four years ago, those set butt down were all rotted off, and had to be replaced by new ones. This summer I had occasion to reset those that were set top down. I found them all sound enough to reset. My experiments have convinced me that the best way is to set them tops down."

**TENDERS**

For the erection of schools and teachers' residences, for the parish of West Derby, near Liverpool; Mr. H. P. Horter, Liverpool, architect. Quantities supplied by Mr. J. Longrigg, Liverpool:—

Isaac Denton	£4,950 0 0
G. Thompson	4,652 0 0
W. Jones & Co.	4,503 0 0
Thomas Stone	4,284 1 10
J. Robinson	4,960 7 0
J. Huirroughs	4,312 12 0
J. Barber & Jumps	4,137 0 0
R. Barker	4,116 0 0
Wilson & Jones	4,100 0 0
T. Urmon	3,920 0 0
W. Tomkinson	3,823 17 11 1/2
Nicholson & Ayre (accepted)	3,809 0 0

Deductions for materials of old parochial chapel:—  
Reduced Tenders.  
Thomas Urmon . . . £125 0 0 = 23,394 8 0  
W. Tomkinson . . . 145 0 0 = 3,238 17 11 1/2  
Nicholson & Ayre . . . 93 17 0 = 3,213 3 0

For new house at Hampstead, for Mr. E. Bond (of Gilwies), Mr. Farnell, architect. Quantities by Mr. Wallis:—

Extra for white Facings.	
Patman & Potheringham	£2,144 230 14
G. Myers	3,123 90 0 0
Fish	3,640 60 0 0
Clowther	2,984 50 0 0
Jackson Shaw	2,969 00 0 0

For a Farm-house and Homestead at Easton Grey, near Malmsbury, for Mr. G. Aham Smith; Messrs. Money & Son, architects, Newbury. Materials included:—  
Lansdown, Malmsbury . . . £2,200 0 0  
Brown, Tetbury . . . 1,775 0 0  
Watts, Chippenham (accepted) . . . 1,580 0 0

For erecting a detached villa in the Amhurst-road, Lower Clapton, for Mr. T. Naakes; Mr. F. G. Widdows, architect:—

Burton	£1,955 0 0
Brown & Robinson	1,838 0 0
Glen	1,800 0 0
Hill	1,756 0 0
Sargeant	1,767 0 0
Tobey	1,596 0 0
Wheen	1,437 0 0
Raby (accepted)	1,406 0 0

For national schools, three class-rooms, master's residence, outbuildings, and fence walls, St. John's district, Mansfield, Nottinghamshire; Mr. C. J. Neale, architect:—

Dennetts	£1,578 0 0
Sill	1,495 0 0
C. Lindley	1,380 0 0
Valance	1,476 0 0
Frisky	1,461 0 0

For alterations and additions to Summingdale Church, near Staines; Mr. Street, architect:—

Oades & Son	£1,575 0 0
Hardy & Son	1,384 0 0
J. & R. Lawrence	1,468 0 0
Hollis (accepted)	1,095 0 0

For the completion of a pair of semi detached villas, for Mr. R. Hallett, on his estate, Knighton, Birkchurst-hill, Essex; Mr. J. H. Rowley, architect:—

Swell	£932 0 0 1
Grandman	680 0 0 0
Rivett	593 0 0 0
Davey	569 0 0 0
Edwards	460 0 0 0
Burrows	459 0 0 1

For building two houses and shops at New Brompton, Kent, for Mr. Henry Ringe; Mr. J. H. Andrews, architect, Rochester:—

Pankhurst	£689 0 0
Jennings	618 10 0
Elley	615 0 0
Croak (accepted)	598 10 0
Hicks, Jun.	545 0 0

For repairs at All Saints' National and Infants' Sunday Schools, Islington; Mr. Dobbin, architect:—

Kitchener (accepted)	£145 9 0
Whishire & Sadgrove	145 4 0

**TO CORRESPONDENTS.**

Deceiving Builders.—Can any of your correspondents inform me of a simple process to remedy the decay of brickwork executed with bricks insensibly burnt. Can any colourless preparation be obtained?—  
Respectfully,  
W. T.

The Stone of the House of Parliament.—We have received several letters on this subject, some from operative masons who were engaged on the work, but they do not present sufficient fresh information to lead us to return them.

R. E.—O. J.—"Good Words" (shall be looked to)—Dr. H. D. the proposed arrangement is not novel. Mr. John Pary, amongst others, prepared a design on a similar principle. We may, nevertheless, express if an opportunity occurs, F. J. W.—H. T. E.—A. Noddy.—F. G. T.—G. B. M.—T. C.—J. H. M. (certainly not objectionable, quite the reverse).—Ebor.—H. B. & Co. (the cartoon of great window in Alnwick Castle is by Mr. Drew. The glass was painted at the Royal Works in Munich).—J. F.—E. J. P.—A. J.—A. H.—D. M.—G. B. N.—B. H. O.—R. B.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

# The Builder.

VOL. XVIII.—No. 898.

## Stoneware Pipes, and Stoneware generally.

IN the 11th, at the Society of Arts, Mr. Edwin Goddard read a paper on "Stoneware," with especial reference to Lambeth. Mr. Apsley Pellatt presided; and there was a strong muster of those who have been most active in the manufacture. Of its enormous importance it is scarcely necessary now to speak. Years ago we made

Drain and pave,  
rhyme with  
Raise and save.

One of the speakers on the occasion in question, who said the advance of civilization is in a great measure dependent upon the improved manufacture of earthenware, as applied to sanitary purposes, scarcely exaggerated. Proper drainage lengthens life and lessens sickness, and stoneware pipes are playing a most im-

portant part in sanitary progress, putting on one side, just now, the increased productiveness of land through the adoption of a similar course.

In our volume for 1857,\* we gave some particulars of the Lambeth potteries, the mode of manufacture pursued there, and the extent of the trade that had grown up. Mr. Goddard's paper, and the discussion which followed, supply fuller information. We must content ourselves with some of the leading features, confining ourselves first to the paper:—

"I have been unable," the reader said, "to ascertain with certainty at what date stoneware was first made in Lambeth: it is certain, however, that three generations ago the little trade there was then principally in what is called Delftware; indeed, the last indication in the shape of a Delft signboard, if I may so call it, has quite recently been removed from Mr. Still's pottery in High-street, in building new premises. As far back, however, as 1570, we find potters crying aloud for protection. Stow, in his Survey of London, speaking of the potters, says:—'About the year 1567, Jasper Andries and Jacob Janson, potters, came away from Antwerp, to avoid the persecution there, and settled themselves in Norwich, where they followed their trade, making and galley paving tiles and apothecaries' vessels and others very artificially. Anno 1570, they removed to London. They set forth in a petition to Queen Elizabeth, that they were the first that brought in and exercised the said science in this realm, and were at great charges before they could find the materials in this realm. They beseeched her, in recompense of their great cost and charges, that she would grant them house room in or without the liberties of London by the waterside.'

In the year 1688 two brothers, of the name of Elers, came from Nuremberg, and located themselves in Staffordshire, the then seat of manufacture. Here they stayed for about twenty years, practising their trade with the greatest secrecy, and subjecting themselves to considerable annoyance thereby. With all their precautions of building a high wall around their premises, and employing idiots to do their labour, they could not succeed in keeping secret their manufacturing process, and about 1710 they removed in disgust from Staffordshire to Lambeth or Chelsea. Others affirm that their removal was in consequence of persecution on account of the volumes of smoke emitted from their kilns, and inseparable from the manufacture: if so it may be inferred that Lambeth was more indulgent than at the present day. 'Too often,' says a writer of 1837, 'does research develop instances in which the existence of many of the arts has depended on police regulations;

\* Vol. xv. p. 169.

FIG. 1.

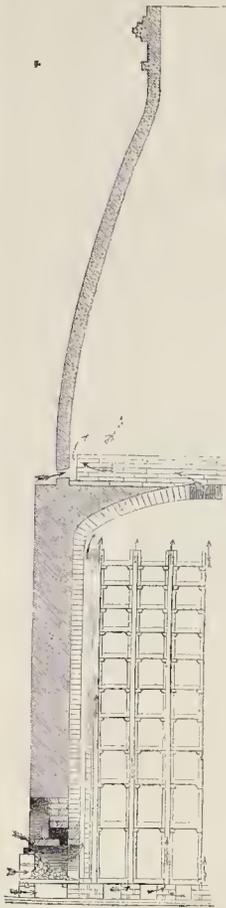
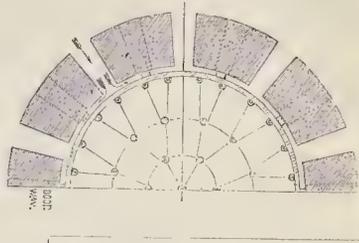


FIG. 2.



the trade prevented. The potters then in Lambeth were in number some six or seven, working some sixteen small kilns of 7 or 8 feet in diameter, the produce of each kiln being under 20l. worth of ware, the principal articles made being blacking bottles, ginger-beer bottles (very extensively made still), porter and cider bottles (not so largely made now), spruce-beer bottles (gone, with the beer, quite out of fashion), ink bottles (more used now than ever), oil bottles, pickle jars, bunting jugs, &c. A few chemical vessels were also turned out well from one kiln belonging to an eccentric individual, whose chief boast was to drink a gallon of beer a day, and do without rest on Sundays. The introduction of new blood and energy, however, induced an active competition, and soon sent them to other fields, and stoneware was found to be just the thing for articles which were previously unthought of, but which now, with others, form standard products. The trade gradually assumed a healthy vigour, and steadily increased up to the period when the Board of Sewers discovered the advantages of stoneware drain-pipes, and the subsequent overwhelming demand for them completed what energy and enterprise had begun, and brought the trade up to its present position."

When speaking of the manufactured goods introduced, Mr. Goddard mentioned filters, the necessity for which is still ignored by the mass of the public. Their introduction to any extent is due to the celebrated George Robins, and the quantity made for him and scattered broadcast through the land is surprising. The utmost means of Messrs. Stephen Green and Doulton & Watts were insufficient for a time to meet his requirements. The filter trade is still a very important item in the Lambeth potteries, and large numbers are annually exported. He referred to a company, upon the point of forming, to supply a cheap filter at a rent of a few shillings annually, to be placed in the cisterns of the house to be supplied. It is a vessel of stoneware, of a simple form, having a pipe attached, with tap to draw over the side: it is filled chiefly with animal charcoal, arranged to filter quickly.

"The clay best suited for making stoneware is brought from Devonshire or Dorsetshire, and recently a deposit has been found at Farnham, in Surrey; the main supply, however, is from the two first counties. Cornwall sends a small portion of prepared clay, which, though principally used for chinaware, is, nevertheless, in a degree, employed in Lambeth. The best quality of stoneware clay is found at depths varying from 20 to 50 feet from the surface. After cutting through an upper deposit of waste mould, &c., 10 to 40 feet thick, we reach a very aluminous bed of clay, about 3 feet thick, called 'Tough Tom;' beneath this is a bed of a very useful clay for the common kinds of ware, from 5 to 10 feet thick: to this succeeds 4 to 5 feet of 'domestic' clay, used in the north of England very largely for whitening stone steps, &c., which brings us to the stoneware clay proper, from 10 to 16 feet thick. Beneath this is the tobacco-pipe clay, formerly used for the same purpose as the best white clay is now, until about some forty-five years ago, when, at the suggestion of Mr. Duggan, the London proprietor of the stoneware clay, Mr. Stephen Green's father introduced it as a substitute for the tobacco-pipe clay, which it has now quite supplanted. I may here add that to Mr. Stephen Green is due the introduction of the string wheels, the moulds for bottles, and the turning lathes before alluded to."

After describing the pug-mill and the mode of working the clay, he said,—

"At the commencement of this paper I stated

and manufacturing industry, also the manufacturer's welfare, has been rested on the frail basis of the caprice of a magistrate. Driven by ignorance, prejudice, jealousy, to a distance from materials, workmen, or market, some manufacturers continue to endeavour to surmount the obstacles which oppose their progress, and maintain a disadvantageous struggle with the difficulties of their situation.' To the brothers Elers is ascribed the introduction of the salt glaze. How long they practised in Lambeth or Chelsea: whether they were the founders of the trade, or whether the before-mentioned Andries and Janson were there before them, I have been unable at present to ascertain. A backward flight of forty years, however, will suffice to show how rapidly the trade has since been developed. I am sorry that the little time which successive snatches from business really amounts to has not sufficed to allow me to fill up the intervening century.

Forty years ago commerce had not received those aids and appliances which steam was destined to bring it: railways were only looming in the distance: the cheap postage might have been an embryo in the brains of the suggester, but no more: conveyance of all kinds was very slow and expensive, and necessarily operated strongly against so cheap an article as stoneware: raw material was not so readily obtained: salt, an important article to the stoneware potter, was taxed to an exorbitant extent—it then cost more pounds per ton than it now does shillings:—a tax, moreover, was upon all goods of a certain size, and free trade had in no way blessed the land. In the face of these impediments it is not to be wondered at that the market was limited, and a healthy expansion of

that my remarks would chiefly, if not exclusively, apply to stoneware, or salt-glazed ware. As, however, the more fastidious taste of late years has almost ignored the use of salt-glaze for articles of domestic use, the present appearance of Lambeth ware is not of stone, but of a dipped glaze. This kind, called 'double-glaze,' from being glazed by two processes, one inside and one out, ensures a uniformity of colour which cannot be produced in the salt-glaze; and whilst the latter, from its being part and parcel of the vessel itself, is the best, the former is thought to have a better appearance. It is secured by dipping the article into a composition of glass, Cornish stone, and other ingredients, fusible at a high degree of heat. For large vessels, this is, of course, impracticable; nor is it adapted to resist the action of acid to the same extent. Now the heat to fuse these ingredients is about the same as that required to convert salt into a glaze,—hence the simple plan of throwing salt into the kiln.

The constituents of the clay being about two-thirds silica and the remainder alumina, with a little alkali, when the kiln is at the highest (suppose about 1,900 deg. Fahr.), the ware is in the condition requisite to take up a certain amount of the soda contained in the salt vapour. The two combining, not only deposit a surface of glaze on the vessel, but the glass thus formed permeates the interstices of the fine particles, thus becoming incorporate with the body, as is easily seen under a lens."

In describing the kilns used in Lambeth, he mentioned a recent invention, being patented in 1858, by Mr. John Cliff, of the Imperial Potteries, Lambeth. The invention has for its objects, firstly, great economy of space; secondly, economy of fuel; and thirdly, the more thoroughly consuming of the smoke than by kilns of the ordinary kinds.

In the accompanying woodcuts, figure 1 is a vertical section of half a kiln of this kind, and figure 2 a plan.

To effect the economy in space there is built within the lining proper of the kiln, and at various distances from it (according to circumstances), a second lining from the floor to the level of the commencement of the arch of the kiln, leaving an annular space round the entire kiln (supposing it to be circular), from the base or floor line to the spring of the dome: at the base of this circular flue, and at intervals, are holes to connect it with a hollow chamber under the floor of the kiln, in which floor are left a number of holes at proper distances, over which are erected a series of perpendicular flues, terminating on a level with the before-mentioned inner lining, or slightly above it by the means of variable lengths of hollow pillars and collars of larger diameter, as shown. These variable lengths of pillar and collar allow of constructing quarry floorings across the kiln at any desired height, and thus utilize a large amount of space hitherto impracticable. The floor of the kiln and the top tier are fitted close, so that during the burning no flame, smoke, or draught can approach the ware, thus effecting a rapid accumulation of heat within the kiln to the point required, and by the removal of one quarry opposite the door or entrance to the kiln, and four or five slabs from each tier of the middle row (supposing the kiln to be circular), the kiln can be filled and emptied with an amount of ease and rapidity not attainable in the ordinary mode.

To effect the combustion of the smoke, cold air is introduced by means of an opening from the front of and on the top of each fire arch, behind the burning fuel. The smoke in its passage up the narrow annular flue, and up the hollow pillars, by being so much divided, and having to travel over so much more than the ordinary heated surface, is more efficiently consumed, and is again met at its exit into the funnel by streams of atmospheric air passing in at openings through the base of the same.

A kiln of this description, 14 feet in diameter, will burn 100L worth of ware with about eleven tons of coals, whilst a man, with four boys in turns, may set, burn, and draw it once every week, at a breakage loss of about 9 per cent.

"The improvements in machinery, &c., made to meet the increasing demand for stoneware, have of course helped its extension; and in the laboratory,

for sanitary improvements, or domestic use, it plays an important part. I before remarked on the impetus the trade had received when drain-pipes in stoneware were adopted; now, as these have to conduct sewage containing the strongest elements of decaying and decayed matter, it becomes a primary necessity that the conduits should neither absorb, nor in any way retard, the flow. Accordingly, the first object of the Lambeth potters is to secure a thoroughly vitrified body with a perfectly smooth internal surface. Their system of glazing by salt had the advantage of securing these desiderata, inasmuch as no glaze could be formed if the heat was insufficient, therefore a pipe deficient in glaze would show that it was short of burning also. However, the mistake, which in the trade is too likely to be made, of considering low-priced goods as cheap goods, has been the means of bringing inferior pipes into the trade, so that many with partial burning and common clay are little better than a common red-ware pipe. Mr. Northen is admitted to be the original maker of pipes in Lambeth, and Messrs. Doulton, at the present time, are the most extensive. At one time there were forty kilns in Lambeth burning pipes; and allowing them to be filled with 9-inch, 6-inch, and 4-inch pipes, to the value in gross of say 50L, these kilns would be turning out nearly 600 miles per annum.

The present state of trade in Lambeth, when contrasted with its position at the period I commenced, affords a satisfactory picture. In place of some sixteen kilns, turning out each under 20L per kiln, we have now about seventy, turning out each perhaps on an average 50L. They consume upwards of 20,000L tons of coal, paying a corporation tax of say 2,100L per annum. The law requires this quantity to be burnt without smoke, and, after immense cost and labour, this difficulty may be called surmounted. Twenty-three thousand tons of clay are annually changed into useful articles, giving employment to more than 800 persons. The returns of the Lambeth potters cannot be estimated at less than 140,000L."

The paper concluded with the expression of an opinion, that every potter should be his own chemist, so far as his trade is concerned. He should have at his fingers' ends the qualities and actions of each element he has to use, composed and decomposed; and, when he is as perfectly *au fait* with his chemistry as he is at present with other branches, he will have added a new dignity to his ancient calling, and will enjoy his success all the more by having deserved it.

In the course of the discussion which ensued,—

Mr. Stephen Green said he thought the outline given of the trade as it at present existed, and as it had been developed during the last quarter of a century, was quite correct. There were various kinds of pipe-squeezing machines, but that most in use and most in favour, he believed, was the one patented by Mr. Spencer. Several of these machines were in use at Lambeth and elsewhere. The apparatus he rather preferred was something like an Archimedean screw, divided into several parts, and did its work very well. The advantage of that plan he considered to be, that the operation was continuous. There was no stoppage to fill the machine with clay. The screw carried the clay down, and the machine worked as fast as the clay was put in. He, however, believed it was not generally considered to be so good a machine as that patented by Mr. Spencer.

Mr. John Doulton addressed the meeting at some length, and amongst other things said the question had been started, what was stoneware? Mr. Goddard had adopted the definition given in the official catalogue of the Great Exhibition, which said, "Stoneware is a dense and highly vitrified material, impervious to the action of acids, and of peculiar strength." He thought that might be taken as a just general definition of stoneware. But it went on to say, "It differs from all other kinds of glazed earthenware in this important respect, that the glazing is the actual material itself fused together." That referred to the glazed stoneware,—one section only of the manufacture,—and he thought it wrong to call that only stoneware which was fused, in which a portion of the silica on the surface of the clay was fused by the salt. Stoneware was, in fact, a dense, impervious, sonorous material, and might be glazed or unglazed. With regard to the date of the introduction of this ware, although pottery was of most ancient date, he thought this particular description of ware was of modern origin. Formerly our pottery was of a porous nature, and

he believed, until within the two last centuries, no ware had been made in England except of that character. The rough description of ware was glazed with lead for a red colour, or with manganese for black; and no ware superior to that was made until the year 1788, when the brothers Elers came from Nuremberg, and settled in Burslem, in the Staffordshire Potteries. He thought the individuals previously referred to by Mr. Goddard brought the knowledge of debt-ware into this country, but the first introduction of salt-glazed stoneware was made by the brothers Elers, who commenced their manufacture at Burslem. It was true they met with difficulties in their manufacture, through the jealousy and suspicion of the people, and, perhaps, naturally so, for during the salting process the dense mass of white smoke was suffocating and hurtful to the chest, and the people, not being acquainted with the nature of the glazing, supposed it to be deleterious; consequently the brothers Elers left the neighbourhood, and came to London; but before this their secret of glazing had been discovered, and the trade was continued in the Staffordshire Potteries, and advanced in an important degree. He agreed with Mr. Goddard that a rapid advance, in this salt-glazing stoneware in London, had been made within the last thirty or forty years. He, however, did not think that Lambeth had always been the principal manufactory of salt-glazed ware. It thrived in Staffordshire for a long period, and he believed that the brothers Elers had made their ware at Chelsea and Fulham, before it was made in Lambeth; but that locality had now become the centre of the salt-glazed ware, although it had been but little developed until within the last twenty-five years,—in fact, only since the above-mentioned regulations had been removed. A duty was placed upon articles of a certain size, and it cost more to collect the duty than it realized to the Government. When these restrictions were removed, the trade made rapid advances. But there were other reasons for its advance. There was not only the introduction of spring wheels and lathes, but a great impetus was given to the trade by the manufacture of stoneware drain-pipes, as mentioned by Mr. Goddard. As to the kiln patented and used by Mr. Cliff, there was one remark made by Mr. Goddard with respect to that kiln, which he thought would not make his brother potters anxious to use it, and that was that there was about 9 per cent. of breakage. He thought they would prefer a kind of kiln which had not been described in the paper, which had slabs or cupboards throughout the kiln, from bottom to top, and which was the kind of kiln now principally used in Lambeth. As to Mr. Goddard's statistics. He had stated 20,000 tons of coals per annum as the consumption of the Lambeth potters, but he (Mr. Doulton) found that his own firm used 9,000 tons, and considering there were eight or ten other firms, it was reasonable to suppose that they used more than 11,000 tons between them. Thus as to the quantity of clay used, it was stated that 23,000 tons were used at Lambeth. His own firm used more than a third of that amount, and he thought that Mr. Goddard must have underrated the amount of trade carried on.

Mr. G. F. Wilson would add one word to the remarks which Mr. Stephen Green had made upon this branch of manufacture. As a neighbour of that gentleman in the "hud of darkness," he had the opportunity of hearing the opinions of two of the greatest chemists in Europe, Chevreul and Ebelmann, who went to this "dark" Lambeth with the object of going over Mr. Green's manufactory, and who stated to him (Mr. Wilson) that the perfection of the arrangements and the beauty of manipulation there put to shame the foreign manufacturers.

Mr. Robert Rawlinson said, having paid a good deal of attention to this subject, not as a manufacturer, but as a user of stone ware, he would offer one or two remarks. With regard to the method of mixing the clay, he had been through Staffordshire officially and non-officially, and he had observed what he considered the bad method of mixing the clay, and he was told that it could not be improved upon, and that no description of machinery would get the clay into so good a condition as the old-fashioned mode of slicing and wedging. With regard to socket-pipes, he dared say many people claimed to be inventors of earthenware socket-pipes; but he had been surprised, during his stay in Asia Minor, in 1855, to find Turkish and Greek workmen repairing an aqueduct leading to a hospital on the banks of the Bosphorus with this very description of socketed earthenware pipes, about 4 inches in diameter and 13 inches long. He found that de-

scription of pipe had been made there from time immemorial for water, and they were buried to the extent of thousands of miles in that part of the East, and probably in India. These pipes were exactly similar to the socket pipes now in use in this country. With regard to the use of pipe-making machinery, he thought they were upon the eve of great improvements. He did not know why architects should care about having fret-work in perishable stone when they had a material like stoneware, in which they could get ornamental forms, which, at the end of a thousand years, would probably be as perfect as they were at the present time. He also thought a great deal might be done with this material in Gothic tracery. He believed architecture had injured itself materially by the use of stone for purposes to which stone ought never to have been put; and one of the greatest mistakes of modern times was to be found in the use, in the Houses of Parliament, of stone cut into elaborate tracery, and exposed to the action of the elements on all sides, for it was already crumbling away. In reply to an inquiry whether any gentleman could inform him about what date the first earthenware drain-pipe was introduced,

Mr. Northern replied that, on the 9th September, 1845, he sent the first drain-pipe to the Board of Sewers.

Mr. Rawlinson added, that the form and quality of drain pipes had been a battle-ground with engineers. The Higginsons and the Little-endians of Lilliput were as nothing to the wars respecting earthenware pipes for sanitary purposes. He had laid, or caused to be laid, between 100 and 200 miles of pipes, and he believed the advance of civilization was in a great measure dependent upon the improved manufacture of earthenware, as applied to sanitary purposes. To show the extent to which this manufacture had grown, his friend Mr. Doulton told him, some time ago, that his make of pipes could not be less than from 6 to 12 miles per week, whilst some thousands of ordinary soil-pans were turned out from his manufactory in the same time. From this statement they might imagine what an extent of work was done. He held that, by the proper use of 30 or 40 yards of this material, they had one horse properly drained. He considered the proper drainage of one house was the lengthening of one life perhaps ten years, and a saving of an amount of sickness which he would not attempt to estimate.

Mr. Newton remarked that attention had been called by the last speaker to the question who was the first maker of earthenware socket-pipes. He believed that to Mr. Northern that honour was due. But Mr. Goddard having alluded to the fact that machinery had not been applied to this manufacture to the extent that might have been anticipated, he would refer to the name of Spencer, which had already been mentioned in this discussion. That gentleman had introduced a machine for socketing the pipe at the time it was made. By means of machinery the pipes were made of uniform size and fitted accurately one into the other; consequently they were much superior to those made upon the mandril. By the same patent, an improved quality of flower-pots was manufactured, and pipes 3 feet in diameter were turned out by it, which had never been obtained by any other process.

Mr. Goddard replied to some of the points raised, and said, as to the 9 per cent. of breakage in the patent kiln, that was perhaps an incorrect expression; he should have included bad and useless articles. He questioned whether Mr. Doulton turned out a 100% kiln of goods with less than that amount of breakage and had articles.

The Chairman, in winding up the discussion, and proposing a vote of thanks to Mr. Goddard, which was carried unanimously, said, looking at the price of coals and labour in London, and the price of the clay from Devonshire, the manufacturers of Lambeth must have a large amount of intelligence, industry, and machinery, to enable them to compete with those parts of the country where they obtained coals so much cheaper.

#### STREET-RAILWAYS AND TRAMWAYS.

At the close of our leading article, last week, on Metropolitan Communications, we arrived at the point of considering whether the railroad system, which in the country ought, if possible, to be extended to districts at present not served by it, could under some form be adapted to streets of London, so as to promote the object of getting rapidly from one part to another of the metropolis.

The whole question has been frequently taken up by us, and in letters which we have printed,

and in our volume for 1857 (p. 639), we noticed a pamphlet by Mr. Edmund Sharpe, architect, wherein the subject was lucidly examined chiefly in relation to the system for the country.\* The same question, with that of details of street-railways, having in the interim, been again taken up in our pages, another and a forcible statement of the points has just now been published in the form of a pamphlet by Mr. Charles Burn, civil engineer, which contains besides some useful calculations of cost, several illustrations of different forms of rail and way, designed by the author and others, adapted for streets †

It would be admitted by those who have heard anything of the street railways and tramways of New York and Philadelphia, or who have seen the use which has been made both by railway carriages and the omnibuses, of the rails along the line of Liverpool Docks, that rails or iron tramways for vehicles drawn by horses, may be laid in streets with great advantage to the traffic of the ordinary kind. An apprehension has prevailed in London that they are inapplicable unless with widened streets; and the objection seems to have led to the failure of the attempt made by a company to introduce a line on the New-road. The Marylebone people opposed; and their member, then Sir Benjamin Hall, procured the rejection in Parliament of what, with proper restrictions, might have become an important measure of improvement. It follows, however, from the success of the regulation of the traffic over London-bridge, that similar regulation which would be effected by the provision of rails, would be beneficial rather than otherwise in the narrow streets, provided the rails were not raised above the street level so as to interfere with traffic across them, and beneficial as now may be observed on the new Westminster-bridge. In New York, narrow streets as well as the wider streets, are made the route of the railway; though in some cases where the width does not suffice for two lines, one street serves for the line one way, and the next street for the return line. In narrow streets some provision of the kind is most useful to prevent noise and vibration, as well as splashing; and we may just direct attention to the fact that, whilst such lines make less dirt, and some are more readily kept clean than ordinary pavement, dust, with other finely divided matter from the streets, filling the air and respired by every one in towns, is a great source of disease.

The provision, whether of confined lines for locomotives, of street railways of any kind, or of iron or stone tramways, is not to be taken as rendering unnecessary the opening out and the widening of existing thoroughfares; but the railway principle, for horse-draught, should enter into the planning of all main streets, if not of every street. The horse-power even has an advantage in its favour over the locomotive, namely, that it is exerted on a different surface to that of the rails, and consequently has greater effects proportionate to it. Knowing the importance of the subject, we are glad to see that it is at length receiving the attention not confined to the pamphlet or our own pages. It has been discussed from time to time in the *Engineer*, in which journal many forms of rail suited to streets have been engraved. We lately noticed Mr. Haywood's Report to the City Commission of Sewers on Mr. J. B. Redman's scheme for iron tramways in lieu of those of granite which have been used in many streets, and in the Commercial-road since 1829-30, and are not found sufficiently durable. Mr. Redman's proposal, indeed, is merely for broad, flat, wheel-tracks, not for narrow rails suited to grooved wheels; but on all such surfaces, a horse can draw at least twice as much as upon an ordinary pavement. The advantages of duration and cost appear to be in favour of iron as compared with stone. At Liverpool, the omnibuses along the line of the docks have been some time furnished with flanged wheels, which, by a peculiar contrivance of India-rubber seating, adjusted themselves so that the carriages could be driven either along or off the line of rails. Some interference by those exercising control over the line having been made with the proprietors of the omnibuses, a scheme has been devised applicable to the principal streets of the town. The case of Liverpool is not alluded to by Mr. Burn; but we believe the proposal

is for a single line in the centre of each street, the omnibuses to move off it to pass one another or when required by the other traffic. If this be correct, it affords better answer to the objection sometimes made against the rails in streets than any we could otherwise find. Mr. Joseph Kineaid, in a report to the Messrs. Busby, proprietors of the omnibuses, speaks of the practice of the ordinary wagons, whilst on their proper side of the road, to keep one wheel on the rail when they can, to ease the draft. A similar practice exists in the city of London, as to the use of the stones or tramway next the kerb of a footway; but by the practice as in Liverpool, it appears neither kind of traffic is interfered with, and the drivers of wagons are induced to keep to their proper side. It is thought there would be advantages found on taking up the pavement to lay pipes, from the division of space by parallel lines.\*

The tramway on the new Westminster bridge is of the simplest kind, as required for the variable gauge of wheels. Should rails become general, a gauge would be chosen, and vehicles would be built with their wheels to fit it, as at New York. The bridge-way has the horse-track slightly above the level of the wheel tracks; but the whole must be regarded as temporary only. Mr. Burn has figured about a dozen different forms of rail, including one the same as that just mentioned, but nearly all are laid to be flush with the surface. The form which he himself proposes has a thick top flange of  $\frac{1}{4}$ -inch breadth, as the wheel track; whilst there would be no groove formed, as in all the other cases in the rail; but the groove would be cut out of the metalling or pavement of the roadway—the flange of the wheel being considered sufficient to keep the groove clear. Broad wheels, without flanges, would, we suppose, run on the narrow rail easily.

Although tramways are to be divided into two classes, those for ordinary vehicles, and those for flanged wheels, and it is essential that the ordinary vehicles should be, if not served, not interfered with by the system chosen, the object to be attained is that of horse-railways in streets, with all the advantages of a rail of the best description for such special purpose. Into the question both as regards streets, and the lines throughout Great Britain and the colonies, the author enters fully,—indeed, however, in one branch of the argument, to Mr. Sharpe, as he acknowledges. He begins by remarking the low rate of interest paid by English railways, resulting in great degree, from expensive branches; whilst there is want of railways, both in populous districts and those which are some distance from a main line. In one case, such as that of the London suburbs, the existing stations and branches are not sufficient; in the other case, construction of an expensive branch does not pay. Therefore, feeders, are required, which, with the carriages on them, may involve much less expense than ordinary railways per mile,—be those branches for locomotive, or as here chiefly proposed, for horse traffic. By using the common roads, on which to lay the rails, only deviating where there might be extraordinary activities, the chief expenses would be avoided. The lessening of weight by disuse of the locomotive engine, alone involves great gain.

Horse-railways have been carried out to a small extent in several European countries. There is a line from Paris to Versailles. We may add to the instances which Mr. Burn gives of street railways, that there is one at Genoa which is worked by locomotive engines. In the United States, more than 250 miles of the horse-railways in streets have been laid down, our author says. They have been often described lately. There are 90 miles in Philadelphia, and 70 miles in New York and Brooklyn. Gross receipts are three times more per mile than on the Eastern Counties line, and half as much again as on the London and North-Western. Working expenses are 70 per cent. of the receipts. Notwithstanding there is waste of capital, the companies pay from 10 to 14 per cent. An article in a recent number of the *New York Times*, after going into statistics, says,—“Now, we affirm, and we do not believe there is a single person who may read this article who will not agree with us, that the annual gross earnings of the city railroads exceed their cost, and that their annual net earnings equal 40 per cent. of their cost! Here, then, is a *place* exceeding any ever yet opened in California.” \* \* \* “The city railroad is as much an improvement, almost, upon the former mode of city locomotion, as were railroads over the old highway.” On one of the New York lines

\* A letter on Branch Railways, addressed to the Right Hon. Lord Stanley of Alderley, President of the Board of Trade, containing suggestions for the creation of a system of secondary railways for the agricultural districts.

† On the Construction of Horse Railways for Branch Lines in England and the Colonies,” 8vo, pp. 59. Six plates. London: John Weale. March, 1860.

\* “Remarks on Omnibus Railways,” by Joseph Kineaid, Jun., Civil Engineer. 8vo, pp. 16. Liverpool, February, 1860.

they carry passengers at the rate of 10 miles per hour; and the charge seems to be under 4d. per mile. The vehicles carry fifty or a hundred passengers; and are preferred to the ordinary omnibuses.

An experiment might first be made on one of the London roads to the suburbs. A Bill (which, from mismanagement that we have before complained of, we were not able to procure on sending for it) has been introduced in Parliament, by Sir Robert Ferguson, for facilitating internal communication in Ireland by tramroads; and we rather think there is some similar measure for this country, promoted by the "Anglo-French Improved Tram Railway Company," whose operations, however, appear to be intended mainly for France. Mr. Sharpe argued in his pamphlet that it was not necessary, and would not be judicious, to adopt the gauge of the main line in the feeders to it. This may be noted by those who have felt the difficulty we spoke of in our last article, the change of carriages; but that difficulty Mr. Sharpe will consider, and perhaps meet. Mr. Burn would have the gauge 3 feet 6 inches for country roads, and 5 feet 6 inches for the streets, having regard to the gauge of the new omnibuses, 5 feet 6 inches, and the requirements for horses' tread.

The central line might be all that could be accomplished in the present London streets. The necessity for allowing the ordinary vehicles space to set down next a footway, is not noticed by Mr. Burn. The expense of permanent way, stations, horses, and rolling stock, with compensation and contingencies, our author calculates as 2,250*l.* to 2,737*l.* per mile, according as one or another form of rail be adopted,—his own appearing to be the cheapest of three which are estimated. But this would be for single and country lines. For double lines in towns, the cost would be 5,000*l.* per mile; and he thinks that such lines might pay at least the highest dividend of those in the United States, or 15 per cent. For the interests of shareholders of existing companies, it would certainly be well to attempt the provision of these horse-railways as feeding lines.

When it is found that the accidents caused by vehicles to persons, in the City of London, are, in about one year, 223 in number, of which forty-nine have been of persons run over, and 118 those knocked down and injured, there is here sufficient reason for considering the subject of improved metropolitan communications, further than it has been pursued. The danger, however, is one thing, though it is itself cause of loss of time to pedestrians; but the state of the carriage traffic is a constant source of inconvenience in other respects. The whole subject of metropolitan communications should have at once the attention of the Metropolitan Board and the City authorities, as well for the reasons which we have alluded to, as with a view to the residence of the workman in districts that he might reach in the country, at lessened cost than on the present system, and under less deprivation of time. Mr. Pearson has seemed to think that the Metropolitan Railway would give the benefit, to the working man, for about 1*s.* per week. But much more than this new line, or than the availability of Charing-cross for half the number of the London-bridge passengers as computed, that is to say, something different, is, by London, required.

#### SANITARY PROGRESS.\*

SANITARY progress cannot possibly be either explained or discussed within a limited space. I can tell you some little of what has been done, of what is now in hand (within my knowledge), and of the vast amount of work to be done. As you are aware, I have taken part in the sanitary movement; but my desire is not to speak of myself, but rather to direct your attention to sanitary questions, and, if possible, to convey some practical information. Like all questions, the sanitary question presents its white and its black side, according to the point of view from which it is first seen. Like the knights in the fable, engineers have cried out "black," "white," and the war has been carried on to a most unwarrantable length. If the evil only fell upon the disputants, we might leave them to fight the question out, but much mischief is done to the general public. I was never an advocate for an exclusive use of earthenware pipes for sewers, neither have I been so foolish as to repudiate their use. Whoever can lay claim to the invention of earthenware pipes for sewerage and drainage purposes may justly feel proud; few

inventions are likely to prove more beneficial in the sanitary progress of the age. Earthenware pipes, true in form, thoroughly burned, and well laid, are far superior to bricks for sewers and drains, up to the capacity of the material. I do not use earthenware pipes beyond 18 inches diameter, rarely beyond 15 inches. I do not, however, say that pipes of larger diameters are not to be used. This must depend upon the material (clay), the make and the relative cost, as compared with brickwork. Small towns and the largest houses may be sewered with earthenware pipes far more effectually than with brick sewers, and earthenware pipes may be so laid as to make choking impossible.

A large amount of work has been executed in sewerage, drainage, and town improvements during the last ten years, and works of a similar character are quietly progressing in many districts. Town sewerage works may have failed in some places from defective design, from inefficient management, and, in certain cases, from natural obstacles,—quicksands, subsoils,—&c. There has also been some blundering in outlet works for disposing of sewage; as at Leicester, rivers and streams have been fouled; as at Croydon, Mitchin, Birmingham, Bradford, and manufacturing towns generally. One great good is, however, gained where sanitary works are properly carried out: the poor are more comfortable in their dwellings, and the public health is certainly improved. Those who repine at the tainting of streams and advocate "a judicious return to cesspools" should fairly weigh the sewerage question as affecting human life where human life is of most value. Foul rivers are no doubt a great evil, and inflict serious injury on property; but foul cesspools are a much greater evil, inasmuch as they destroy health and shorten human life. The Sewage Commission, it is hoped, will find a practical way of escape. This must not, however, be by returning to any practices which are proved to sacrifice life in towns. In proportion as cesspools have been abolished health in towns has improved and life been prolonged. Hot summers and a foul Thames have not seriously increased the mortality in the metropolis, but for the last ten years there has been a marked and recorded improvement, as may be seen by reference to the Registrar-Generals and City Officer of Health's returns. Some recent remarks in the *Revue Municipale*, Paris, require an answer, because the inferences intended to be conveyed are certainly erroneous and may mislead. It is truly wonderful how much may be written and said on any subject before any practical benefit is developed, and how plainly a fact may be presented to the mental vision and yet not be seen. The question is now discussed, whether the Paris of 1760 was more or less salubrious than the Paris of 1860, and the writer in the *Revue Municipale* comes to the conclusion that, in a sanitary point of view, the former was greatly superior to the latter. I am not going to deny the correctness of the conclusion that the proportionate mortality may be higher in the Paris of 1860 than in 1760, because this is a question of figures; and, if the annual returns are reliable, and if they show this to be the case, I accept the fact. But now for the statements and inferences of the writer in the *Revue Municipale*:—

"In 1760 Paris covered less ground, and did not contain more than 600,000 souls. There is now a population of 1,800,000,—that is, three times as many. Numerous gardens and open spaces of old Paris have been covered with buildings. In the new Paris, 103 narrow and dirty streets and lanes have been erased from the map, crowded churchyards have been closed, private slaughter houses within the city no longer exist, the streets are swept much better, the mud and filth removed both speedily and regularly, the supply of water is infinitely superior, the sewerage has been immensely improved, the houses which were built on the bridges in 1760, obstructing the passage of air and light, are now gone."

And yet Paris has retrograded in health and chances of life. If an enemy had said this, how terrible would have been the wrath of the Parisians! That it can be said with truth, is a fact so astounding and so momentous as to require further investigation, and, in some form or other, a sanitary work or works of real improvement. Englishmen have been told to look at Paris to learn how city improvements ought to be carried out; and Englishmen have looked and have admired, and wondered; but it now appears a wild sepulchre, and not an improved city, has been the object of "the world's gaze." The Parisian writer infers that the spread of building over the seventy-eight parks within the fortifications prevents the sweep of the pure country breeze. Then there are gas-works and leaking gas-pipes, exhaling a suffocating stench. "The water in the wells, not fit to drink, because it filters through the cemeteries and sewers of the city, is yet used by the bakers to make bread; and rich wines are weakened by it

for the market" (comfortable news, this, for the lovers of Parisian bread and wine).

"In 1760 there was not a single manufactory in Paris. Now there is nothing to be seen from the heights that overlook the city but a forest of high chimneys, all emitting volumes of a thick, pungent smoke," &c. And so the writer sums up that "the conclusion in favour of the salubrity of Paris in 1760 compared with that of the present day, need, therefore, excite no surprise." So much for the account in the *Revue Municipale*. To my mind, a most lame and dangerous conclusion, which, in itself, excites great surprise. But now for a few facts more on this momentous question. Paris has increased in its superficial area, in its population, and in its trade; but not more than London and many other towns in England; and, as to gas-works, leaking gas-mains, foul subsoil, and smoke-tainted atmospheres, we can more than match Paris in these nuisances; nay, we can fairly challenge, not only the capital of France, but all the world. Have we not London smoke and London fog? Look, also, at Swansea,—coal, smoke, and copper smoke; at Birmingham, and at the coal and iron district of Staffordshire, at Manchester, at Newcastle-upon-Tyne, and at the surrounding coal district. Then, have we not the foul Thames, and the far fouler river Tame at Birmingham, and rivers Medlock and Irwell at Manchester? In all these places, areas, once country, have been turned into town. We have also spent vast sums on street-widening, on new sewers, and on gas-works, and the Registrar-General says we are greatly superior in health and longevity in 1860 than in 1760, and that year by year, since 1845, the mortality in all our great towns has been reduced in proportion as improvements (abolition of cesspools) have been carried out in England. There has been this one important difference in the sanitary works of the two countries, and this has been mainly owing to the correct judgment of Edwin Chadwick. Cesspools have been established and are retained in Paris, but have, in thousands of instances, been abolished in England. Let any one glance over the early sanitary reports issued by the much and wrongly maligned General Board of Health, and they will find this doctrine over and over again enforced, namely, the cleansing, disinfecting, and filling up of cesspools; and, the immediate removal of all solid and fluid soil-refuse, from the vicinity of dwelling-houses by sewers and drains. The French sanitary practice has been the reverse of this. In Paris vast sewers have been made, but only to remove surface water, and vast cesspools have been constructed, and now exist, in full use, in which all the soil and urinal refuse is stored, to be emptied at intervals. But, fermentation and evolution of the gases of decomposition go on continuously, and the most perfect known means are used to concentrate these gases, by "hermetically sealing the cesspools." In a report on the cesspools of Paris, made in 1818, we learn that in early times the excavated cesspools, or pits, were constructed in the rudest manner, and cleaned out more or less frequently or utterly neglected, at the discretion of their owners. In 1819, a strict ordinance was issued on the subject, laying down stringent regulations both as to the structure of cesspools, fixed, and movable, and their mode of emptying. The execution of this ordinance is entrusted to the prefect of police. The fixed cesspools are masonry constructions, water-tight and air-tight. The cesspools vary considerably in fullness, evolving sulphuretted hydrogen gas: soap-suds are said to add materially to their offensiveness: ammoniacal vapours are given off—sometimes produce temporary blindness in the men employed to empty them. Such is a brief abstract relative to the Paris cesspools. The writer in the *Revue Municipale*, as quoted, does not, however, name them in the list of improvements effected.

All these cesspools are connected with closets, and the closets with the houses; the gases force a way into court, closet, corridors, and rooms, as most strangers find out when they visit Paris. The grand sanitary secret and sanitary blunder rest here, in these vast *pseudo-hermetically* sealed cesspools. An open cesspool may be dangerous to health; or, it may be merely a nuisance, because there cannot be concentration of the injurious gases; but the breath of a closed cesspool is most certainly death. There is, probably, something more in it than mere stink,—something electric. Who has not suffered from the terrible sensation in a Parisian hotel? The suffocating odour, which open windows and doors do not drive out, nor even perceptibly diminish; and, at some points, there is an invisible stream or ray of smell, which cuts the nostril, as it were, like a knife. Woe to the un-

\* By Mr. Robert Rawlinson, civil engineer, read before the Liverpool Architectural Society, April 14th.

fortunate individuals doomed to breathe in such an atmosphere: the year 1760 had nothing so pernicious.

In the narrow streets and foul gutters of the old city, the solid and slop refuse were thrown out to be dried by the sun, to be washed by the rain, and to be exposed to continuous dilution; so that, although sight and smell might both suffer, there could not be any gas so subtle, strong, and dangerous as that from the modern closed Parisian cesspool.

There are many opinions on sanitary matters at present, and probably no individual who has thought much on the subject is altogether right, or altogether wrong. One man asserts that putrid matter and foul smells are injurious to health, producing fevers and cholera; another boldly and stoutly denies these assertions, and points to many workers amongst nuisances, and recently to our foul rivers,—the Thames especially,—as proof that bad smells do not generate diseases in excess.

I have, during the last twelve years, examined many places in England, and I never found disease in excess without finding sufficient local cause. I have since then seen a British army, in hospital and in the field, suffering under the most terrible and fatal mortality on record, and chiefly from like causes. Last autumn I traversed a considerable portion of the north of Europe, visiting several of the capitals and towns,—Stockholm and Copenhagen, Gottenburg, Hamburgh, Cologne, and Hanover. These places have, like Paris, been vastly improved above ground since 1760; but with little, if any, advantages to health and longevity. I have no doubts as to some of the causes of the high rates of mortality,—they are cesspools and defective ventilation. Fresh air is dreaded as a mortal enemy. Man is a wonderful compound of animal and spiritual, and an infinity of things may tend to disarrange his marvellously refined, delicate, and complex organism; but he appears to require three things for the enjoyment of perfect health,—pure air, pure water, and wholesome food. Pure air and pure water are seldom obtained, and much food is eaten which is not wholesome, and yet men live; but they do not live out half their days. The "threescore and ten" of the Psalmist is cut down, for the mass of mankind, more than half. There are, however, many causes for this premature mortality. We may point to some of the most palpable; but who shall even indicate the whole? We can show that, as cesspools have been abolished in London, the public health has improved, and we can point to Paris for a contrary result.

The French writer to whom I have alluded should, however, take in a wider range for sanitary observation than the last century,—go back to "the good old times," the "middle ages." I remember reading of plague, of sweating-sickness, and of other forms of disease which swept, at times, more than a moiety of the population of Europe to premature graves; I have also read of the dreadful mortality which took place in hospitals and in goals in all the kingdoms known to civilized man, and have not only read of the improved condition of these places, but have seen something of these improvements. Cannot a city be made, approximately, as healthy as a goal? Cannot some portion, at least, of the improved health found in these places be assured to honest men? Fresh air, pure water, and wholesome food work sanitary wonders in hospitals and in goals,—why not in cities and in towns? I have long since learned that it is far safer to have no sanitary works in a town than to have cesspools and sewers full of fermenting debris. I have also learned that, in most cases, excessive disease is more due to foul air within the dwellings, and to the degraded habits of men, than to climate or to seasons. The causes of excess of sickness and mortality are within the dwelling—let it be neat, hut, room, house, or palace—rather than without. An atmosphere foul and offensive, but unconfined, may be breathed with comparative impunity, when a confined atmosphere will produce sickness and premature death. Nature and health require full freedom and endless motion. Sunshine, fresh air, and good water are the great requisites to health; overcrowding, tainted water, and hermetically sealed cesspools, are most to be dreaded.

We may notice some of the towns in England in which cesspools have been abolished, or in which a complete system of sewers and house-drains has been carried out; we do not care to parade a reduced death-rate as the result of such works, because many causes besides sewerage affect health; but we are assured that in all cases where such works have been wisely carried out, and are properly attended to, there is vastly

increased physical comfort, perceptible moral improvement, and a reduced death-rate.

**Berwick-upon-Tweed.**—This old town has been sewered and drained, and to a large extent, cesspools have been abolished. During a late extraordinarily dry season the waterworks ran short of water; but since the change in the weather, water has been in abundance, and sewers, drains, and water-supply go on satisfactorily.

**Birmingham.**—The town council of this important borough have, by resolution, determined to complete the main sewers, to channel unformed roads and streets, to cause courts and yards to be paved, and to enforce and regulate house and yard drainage. 100,000*l.* are required, and voted, to complete public sewers and outlet works. Within the town, portions of the rivers' beds are to be deepened, and intercepting lines of sewers, with storm-water overflows, are to be made. A new Improvement Act is to be obtained, to enable the local authorities to devise and execute sanitary works generally, as also to regulate new streets, new buildings, and to prevent any street or court arrangements which may impede ventilation.

**Brighton.**—Reports and estimates have been made for systems of sewerage for this important town. The town council are seeking to obtain a new Improvement Bill this session, so that the public may hope to find the entire sea frontage freed from sewage. Half measures will only add to existing evils. The town council, "by resolution," have adopted the Local Government Act (Public Health Act).

**Buxton, Derbyshire.**—A local board has recently been formed in this important sanitarium; E. W. Willott, esq., is chairman, and supported by his grace the Duke of Devonshire. Important extensions and improvements are about to be made: railways are in progress which will bring the town into connection with Manchester, and Lancashire generally, on one side, and with the Midland lines and branches on the other side. Large areas of land are laid out on the most liberal scale for building purposes: new streets are formed, ornamental grounds are laid out and planted, and moderate prices are asked for building sites. The local board are working in earnest: roads are being repaired and footwalks formed: seats are placed at convenient intervals, and the celebrated baths are undergoing alterations, enlargements, and repairs: plans and estimates have been obtained for a complete system of public sewers: the contracts have been let on favourable terms, and the works are to be completed in the streets by May next. Last summer Buxton was full to overflowing: in a few years the town will, no doubt, be much increased, and the duke will have the pleasure of seeing a thriving community, and, at the same time, will be adding considerably to his rent-roll. We may expect to see Buxton become a place of villa residences,—fashionable all the year round.

**Blackburn.**—The sewage question remains far from settled in Lancashire: the rivers and streams of the manufacturing portion of this county are little better than main sewers from their sources to their estuaries. Print-works, dye-works, cotton factories, gas-works, chemical works, bleach-works, foundries, and many other manufacturing works using water, abuse these streams without let or hindrance. The waters are fouled, and hoiled, and pumped, and puddled, until they are the colour of ink and the consistency of pea-soup. Town-sewers and road drains have direct communication, and, on the banks, ashes and rubbish of all sorts are tipped at will. Each man owning any portion of the stream claims "to do what he likes with his own." The loudest hawler for local self-government will not deny that the streams and rivers of Lancashire are a prime source of wealth to this vast community, and yet, for lack of a wholesome conservative authority to protect, regulate, and repair, there is great danger of realizing the fable of the goose and the golden egg.

**Bridgenorth.**—At this out-of-the-way seat of antiquity sanitary works have been carried out—sewerage and drainage and public water supply. Water is pumped from a well near the river Severn, but the demand has outrun existing means of supply. A new engine and pumps are to be erected, and water is to be drawn direct from the river Severn, because the water is softer and purer. There is some local taint of common salt in the existing well, sufficient to act injuriously in use. A sum of 5,000*l.* is to be borrowed, to repay sums taken up at large interest, and to execute the necessary works.

**Carlisle.**—Complete works of sewerage were carried out in this city, and have been in use

several years. Although the district is flat, and the outlet sewer and low parts of the city are liable to be flooded, the works answer their intended purpose, and every sewer and drain can be flushed out and preserved clean. The outlet sewer is upwards of a mile in length, having a fall of one in seven hundred. Land-floods rise 20 feet vertical above the invert. There are flood-valves and overflows, so as to relieve the low portions of the city. Mr. McDougal has arranged with the corporation for a use of the sewage, and with the agent of his Grace the Duke of Devonshire, for land on which to pump the sewage. There is no doubt as to the results proving beneficial.

**Cardiff.**—Extensive dock works are in progress near Cardiff; public sewers were commenced, but have not been completed. The sewers are large, and have comparatively flat inverts: several men are constantly employed within them to remove sediment and refuse. A new cattle-market and slaughterhouses have been established at Canton, near Cardiff, under the powers of a private Act of Parliament.

**Lea Hurst, Derbyshire.**—Miss Nightingale and her friends have recently erected schools at this place, which deserve especial notice. The schools are on the most approved plan, and can accommodate about two hundred children. In a separate building there are baths and lavatories, with the most complete sanitary appliances. The girls will be taught washing, ironing, and other home work, and each boy and girl will be encouraged to exercise personal ablution at short intervals. The fittings are by Messrs. Lamhart, of London, and give satisfaction. These schools, with their baths, lavatories, and sanitary arrangements, will no doubt serve as examples to others, and lead to general improvement. No expense has been spared in this case.

**Liverpool.**—Liverpool is not at ease with her waterworks: the supply is found to be deficient. Additional parliamentary powers are sought; to make new reservoirs to supply excessive water compensation. The main sewers have never been completed: there are outlets into dock basins, and there are large areas of land in the immediate suburbs in sadly neglected condition. Some of the out townships have obtained sanitary powers, and have executed sewerage works; but there are large and important areas covered with houses in which there are no public sewers. But if houses have drains, they also have cesspools. In Liverpool proper there are some thousands of cesspits, which have to be emptied over the surfaces of the yards, courts, and streets, causing fearful nuisances for the time, as any one may verify who will make a midnight inspection.

**Manchester.**—The waterworks in Manchester have not been completed. The sites of the reservoir embankments have proved unsound, and, consequently, water cannot be stored as was expected. The corporation are, in Parliament this session, to obtain powers to purchase certain water compensations, and for other matters. Manchester, like Liverpool, is a city of cesspools: they are emptied at an annual charge of about 17,000*l.*, but the sale of the manure brings back about half this amount, so that the cesspools cost near 8,000*l.* per annum, plus the extra deaths caused, and excessive sickness.\*

HEREFORD CITY IMPROVEMENTS.

THE works have been commenced here of the new general markets, for poultry, butter, butcher's meat, vegetables, and other miscellaneous articles, comprising also new warehouses for hops and wool, and a large room to the Guildhall for public city meetings. The market will be upwards of 200 feet long, and is to have a roof formed with curved and enriched wrought-iron principals, with skylight down the centre of each division.

Mr. John Clayton is the architect, and Messrs Beavan & Bowers, of Hereford, are the contractors. The amount of contract is 4,650*l.*, including value of the old materials. The following is a list of the tenders delivered:—

Welsh .....	£5,116
Beavan & Davies .....	4,698
Beavan & Bigglistone .....	4,620
Nihlett, Gloucester .....	4,587
Evans, Brothers, London .....	4,495
Beavan & Bowers (accepted) ...	4,341

SOUTH KENSINGTON MUSEUM. — In Easter week the visitors were, on free days, 17,772; evenings, 10,336; total, 28,108.

\* To be continued.

THE MONTHLY RETURNS OF THE METROPOLITAN DISTRICT SURVEYORS.

The superintending architect of the Board of Works has published his annual report on the examination of the monthly returns by district surveyors. He shows that the fees received in twelve districts vary from 57l. to 196l.; in nine districts they are from 207l. to 276l.; in eleven districts they are from 310l. to 399l.; in five districts they do not exceed 42l.; in eight districts they reach from 500l. to 600l.; and in ten districts the fees vary from 647l. to 1,079l. The total of these fees is 22,385l., received in respect of

15,558 works, of which upwards of two-thirds have commenced during the year. He says:—"The expenses of district offices amount to 4,902l., being a little in excess of those of the previous year. The fees remaining due for all arrears amount to 12,276l., and the sums abated and lost show a total of 1,755l. In former reports I have remarked that this state of matters is not satisfactory, as it indicates a large amount of unremunerated supervision; but, as those most interested have not apparently found a remedy, I can only repeat that the present result differs not much from previous periods."

List of Totals of Fees received by the Surveyors, arranged according to value.

Districts.	Gross Fees received.	Office Expenses.	Net Revenue.
	£. s. d.	£. s. d.	£. s. d.
Tower Liberty	67 6 0	22 0 0	35 6 0
Finsbury and Roperston	62 11 3	12 0 0	50 11 3
Rotherhithe and Batches, &c.	84 16 3	98 16 3	25 0 0
Stoke Newington	95 2 0	19 14 0	75 8 0
Fulham	117 3 9	15 10 0	101 13 9
Stratford and Brickton	125 6 9	17 10 0	108 16 9
St. George-in-the-East and St. Botolph	166 7 3	90 0 0	110 7 3
Greenwich	168 17 0	95 0 0	73 17 0
St. George, Hanover square (North)	171 10 3	65 0 0	106 10 3
St. Giles and St. George, Bloomsbury	182 11 9	35 0 0	147 11 9
Limehouse, &c.	187 11 9	21 0 0	166 11 9
Woolwich	196 15 0	109 16 0	95 18 11
Clapham and part of Battersea	207 0 6	52 6 0	154 14 6
St. Martin and St. Ann, Soho	216 0 0	12 0 0	204 0 0
Hammersmith	239 4 6	134 2 9	105 1 9
Whitechapel	241 19 6	47 12 0	194 7 6
Chelsea	259 8 9	85 0 0	174 8 9
Wandsworth and Twickenham	264 11 0	94 0 0	209 11 0
Hampstead	271 4 9	169 18 0	110 6 9
Barnsey	276 0 0	82 10 6	193 1 3
St. James, Westminster	276 2 0	64 0 0	212 2 0
Southern Division of City	310 7 6	No return.	310 7 6
Camden	332 16 0	239 0 0	102 16 0
St. Margaret and St. John, Westminster	348 10 9	36 0 0	312 10 9
Salford	348 15 0	39 0 0	309 15 0
Penze and Lower Norwood (part Lambeth)	349 6 3	51 10 0	297 16 3
North St. Marylebone	361 2 0	53 8 2	310 13 10
Holborn and East Strand	371 2 1 1/2	144 12 10	226 9 3 1/2
Fincham and Ebbwasi	371 15 0	12 0 0	359 15 0
Charlton, Lec. and Kilbrooke	380 19 3	37 0 0	343 19 3
Northern Division of City	383 2 9	115 0 0	268 2 9
Deptford	398 17 0	100 0 0	298 17 0
Western Division of City	410 12 0	129 0 0	281 12 0
St. Luke, Old Street, &c.	428 17 1	60 0 0	378 17 1
Eastern Division of City	449 9 9	116 0 0	333 9 9
Southwark, &c.	412 4 3	56 0 0	356 4 3
Hackney	500 9 0	277 0 0	223 9 0
Mill and Old Town	507 6 6	90 0 0	417 6 6
Bermudez, &c.	509 13 9	95 0 0	414 13 9
Bethnal green	518 2 0	95 14 0	422 8 0
Belgrave and Pimlico	534 5 6	85 0 0	449 5 6
South Kensington	553 19 0	122 4 0	431 15 0
South St. Marylebone	558 2 3	148 2 0	410 2 3
East Islington	599 8 1	142 0 0	457 8 1
Lambeth, South Division, &c.	647 2 1	148 10 0	498 12 1
Lewisham	652 11 0	165 0 0	487 11 0
North Kensington	676 9 0	294 15 6	471 13 6
West Islington	705 14 9	81 14 8	624 0 1
Bow and Poplar	702 14 3	101 10 0	601 12 5
South Islington	801 13 3	225 0 0	576 13 3
Shoreditch and Norton Folgate	813 18 7	172 0 0	641 18 7
St. Pancras	914 7 6	No return.	914 7 6
Newington, Central Lambeth, and Battersea	994 19 0	78 0 0	916 19 0
Paddington	1,079 19 9	100 0 0	979 19 9
	£22,385 9 2 1/2	£4,901 19 10	£17,483 9 4 1/2

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of this society was held at the rooms in Conduit-street on Friday evening, the 13th; Mr. T. Roger Smith, vice-president, in the chair. The Chairman, in introducing the subject of discussion for the evening "Modernism in Art," a paper on which had been read by Mr. Hayward, at the last meeting of the Society, said that the paper might be more correctly styled one on the truthful expression of architecture at the present day, inasmuch as the writer, avoiding the excesses and distortions, had looked only at the wants and requirements, of modern times. A person who now sets about to design had at once peculiar advantages and especial disadvantages. He had the disadvantage of different styles being ever before him, the production of former times, which, by presenting an inducement to copy, tended to destroy originality. He had the advantage of being able to judge by the experience of past ages, and enlarge his ideas therefrom. A new spirit had undoubtedly crept into art, literature, and architecture, which he would term the Romantic. He believed that Goethe, or, perhaps, more certainly, Scott, had introduced it into literature, and the ecclesiologists into architecture. The result of the constant struggle between the several schools was that features of different styles were being combined, out of which we would form one of our own, a style singularly beautiful and harmonious. Gothic would probably be the basis, but we would draw from Continental Gothic, Italian, and even Grecian. New materials were at command; and the progress, though slow, would, however, encourage us to expect a modern

style, such as would correspond with the requirements of our day. Mr. Druce remarked that the idea was apparently in general forgotten that the architects of each style worked upon that one which was modern to them. Each of us in our designs should study the bent of his mind, and adopting that style to which he had a peculiar leaning, adhere to it: by this means he would be more likely to attain to eminence than if he worked from several styles. Painters set the profession an example in this, for the most successful of them, adopting the principles of a particular school, rigidly followed them throughout; and some architects had, by working out the geometric, for instance, attained to more success than they could have arrived at had they taken pieces from all of them indiscriminately. The men of the nineteenth century should recollect that the style which they were introducing into buildings would impress the writers of a future day in the same way as the edifices of past ages had worked upon the imagination of those whose writings charmed us, and should be induced accordingly to design such structures as would delight a coming age. But instead thereof we had fallen into distortions and affectations which tended to retard the progress of art; for the ignorant and the prejudiced, pointing out as models the buildings which bore this depressing, founded thereon arguments by which to depreciate modern architecture, though the truth was that the profession had long ceased to recognize such deformities. The approximation of the present period to a style of its own was to be seen in a plain bold building, such as are now put up, with natural foliage, and pointed and Gothic arch used

indiscriminately, and Classic details closely resembling the Early Renaissance. Mr. Johnson said that he almost despaired of a style peculiar to the present time arising in England whilst there were so many previous ones from which to copy, and that much could not be accomplished of an original character, as long as the battle was hotly carried on about the merits of older styles. A compound of English and of foreign Gothic with an absence of expensive moulding seemed most adapted to modern times, and afforded opportunities for colouring, the introduction of which into buildings he thought of much importance. Mr. Herring remarked, that a style which would be likely to prove successful at the present time must be of a utilitarian and naturalistic character. All previous ones were applicable to the buildings of their own times, but inapplicable now. A quantity of ornament was at the present day unsuitable; but if getting rid of superfluity, we adopted such natural decoration as would catch the eye and be suited to the materials at our disposal, we should accomplish something. Iron and glass, for instance, have lately come into use, and are procurable at a cheap rate. If we adhered too rigidly to the styles of older times, we must lay aside such suitable materials in designing buildings. In the introduction of ornamentation we should look to the purpose for which the structure was intended, nor should the nature of our materials discourage us from attempting decoration; as oven slating could by the judicious intermixture of slates of a red and of a blue hue be arranged to produce effect. Iron had not as yet been used to advantage in construction, so far as decoration was concerned; for, instead of being shown as the main material from which the building was raised, it was concealed from sight, and covered over with wooden pilasters. Thereby Nature was set at naught who delighted in showing the means whereby she effected any result. He thought that the only sense in which a style peculiar to the nineteenth century would be attainable was to use everything in its proper place, and with its proper decoration. Mr. Lewis observed, in opposition to Mr. Herring's remarks on the manner in which Nature carried out construction, that she delighted in concealing from the eye the materials and the way whereby she effected her operations. The Chairman remarked, that Gothic had in England the advantage over every other style, as it alone had grown in this country to perfection; we had outgrown the others which had been introduced, but this one had taken root and become indigenous; it had, moreover, shown an aptitude in drawing to its aid foreign elements, and incorporating them with its system. With regard to the introduction of modern materials into architecture, he might be allowed to adduce, even at the risk of discussion, the utility of Portland cement as a surface to cover over brick-work in the London climate. When sensibly applied, it reflected more light than even white bricks,—a point worthy of consideration in narrow streets; it prevented damp from penetrating the other porous wall, and it avoided the expense and trouble of pointing, which the brickwork would otherwise require. There was, however, a serious drawback, that it encouraged bad brick to be inserted in buildings. Mr. Druce objected to cement being thus introduced, as the natural light seemed to have no effect upon it. Wherever stone broke and varied the rays of light, there was a dreariness and monotony of surface about the former; and the sun never seemed to catch it, as it did other materials. Mr. Herring thought that a good brick front would last much longer without pointing than a cement front would without colouring. Colouring must be put on in London within two years, and pointing every three years; whereas pointing would not be necessary for at least ten years. Mr. Johnson expressed a hope that the success of the discussion of the evening would encourage the Society to set apart separate nights for this purpose, on which particular papers, such as the committee should select, would be examined; perhaps a summary of the essay would be read in the outset and serve as a starting point. The proceedings then terminated. At the next meeting Mr. Norton will read a paper on "Mediæval Scripture." DRINKING FOUNTAIN MOVEMENT.—The new drinking-fountain, opposite the Eagle Hotel, City-road, Winchester, is approaching completion. The architect is Mr. Coles, of that city.

## SCULPTURE AND GOTHIC ARCHITECTURE.

In Mr. Bell's lecture on architecture and sculpture, delivered on the 28th of March at the Architectural Museum, and since printed in your columns, that gentleman pronounces the opinion that Gothic architecture is not in harmony with the highest class of painting and sculpture! I had hoped to see before this some authoritative reply to so injurious a statement,—a statement or opinion made without a shadow of argument or proof in its support. This being my view of the case, whilst more powerful advocates are silent, I feel bound to endeavour to call attention to the subject.

Mr. Bell, when he arrives at the province of Gothic architecture, does not find anything to indicate the application of the highest art of sculpture to that style in the works of the past, and, what is still more important, if his view is correct, does not think that any advance in the style will afford any more favourable result. He starts with the question, "Is Gothic architecture in harmony with the highest class of painting and sculpture?" and then, confining himself to some very general assertions in favour of Greek, Roman, and Italian architecture, the sum of his answer amounts to this;—that Gothic sculpture and painting have been and will be (in his own terms) inferior to that of the other styles, archaic and unnatural, quaint, cramped, and conventional.

Obviously it would be desirable to have it defined for us what is the highest style of art in painting and sculpture; probably time did not permit Mr. Bell to do this. There might be a very wide difference in such a definition from different quarters, and, therefore, in connection with the opinion pronounced by the lecturer, his definition would have been valuable.

The fallacy of the conclusion at which he arrives is evident, if we compare with the examples which his representative and well-known example of the Gothic. It was a deficiency in the lecture, perhaps unavoidable, that no example of Gothic architecture was described. Only two particular instances of the mode of application of sculpture were given. The Roman "Lady Bountiful," it appears, can show no subject "where sculpture has taken a greater part than in Trajan's column," and yet this design "is deficient in clearness and mental effect," and, he tells us, cannot be distinguished at all by the naked eye except just at the base of the shaft, nor is it an example to be followed. Rather unfavourable his for the greatest example of Roman architecture and sculpture in union. The other instance of the lecturer is from the Grecian, nor has he overestimated its value. The Parthenon, "a host in itself," he has so well described that we fully perceive the extent to which it is indebted to sculpture and the arrangements which the architects made for their brother artist; if, indeed, it be not the fact, as some say, that the sculptor designed the building, and, therefore, controlled the whole; which would make it probable, at least, that sculpture had a very free choice of her ground in this instance. The chosen arrangement placed one colossal and magnificent statue in the most important position within the temple, with, perhaps, other attendant statues of smaller size (the whole internal available space, divided into two unequal apartments, was only about 160 feet by 65). At either end, externally, a not very convenient form of frame in the tympanum was filled with colossal sculpture: in the external architecture, framed between the triglyphs, the metopes were filled with numerous subjects in the whole circuit of the building; and, within the peristyle, a narrow band of sculpture, confined between the mouldings of the entablature of the cella, completed the work allotted to this art. I draw attention to the fact that the sculpture was actually confined, and the unbounded profusion of which Mr. Bell boasts is not to be found in the example of his own selection.

If this had been its characteristic, it never would have attained the celebrity and homage which its real merits command. Profusion of ornament was never a characteristic of Grecian art. Having observed the extent and the mode of the application of sculpture in this celebrated building, let us turn to our own country; and who shall be found with hardihood sufficient to deny that in our cathedrals, and parish and abbey churches, we have buildings whose name is legion, affording in any single example far more space and opportunity for the introduction of sculpture than the Greek masters obtained in their most celebrated and favoured example. Out of our abundance we select for consideration Westminster Abbey. We are all so familiar with it, that the comparison I have proposed is readily understood. Certainly, in latter times, there has been some

belief in a "Lady Bountiful" here—her later guests would furnish, in number at least, all the temples and groves of Athens; but was ever hospitality more most outrageously abused? Let those imagine who can its noble walls as originally rich with every appropriate form of design, its stones teeming with sculpture, combining its simplest forms with most ingenious elaborations and subtle effects, cleared of the fearful barbarities with which the followers of Italian art (the men whom we are asked to regard as our masters) have desecrated them. Let them think of the pristine beauty and awe-inspiring effect of the noble array of monumental sculpture, the heroes and saints, kings, statesmen, and churchmen, with forms wanting in no accessory of marbles and precious metals, and shadowed by canopies devised to receive every form of grace which sculpture could conceive or art enhance, every attribute which mere cost could furnish, abundant and free to the artist's use, every effort of the most unwearied and patient labour lavished without stint. Let them imagine all this, and think of the dignity of the space, and the array of hands and minds employed to fill it, and then say where shall be found a more favourable opportunity, or a more gloriously successful instance of the union of the highest art than is presented in a true picture of the now obscured glories of this wonderful pile. In this and in a hundred other instances, daily within the reach of English artists, who shall venture to separate Gothic architecture from the sculptor's art?

There is yet another view to be taken of the subject. If Italian or Classic art (it is difficult to name it) be so much more favourable to sculpture than our native style, as Mr. Bell would have us think, how is it that its followers are now so justly lamenting the small measure of its accomplishments? Surely opportunities have not been wanting, not to mention important buildings of Italian style in our own day, and merely alluding to one of the last century, Somerset House, where, certainly, if ever invited, sculpture has not obeyed the call,—let us pass St. Paul's, architecturally alone one of the noblest works ever executed; but where is the sculptor's art, and where the painter's? What has the "Lady Bountiful" done here, why such cold hospitality? Strange that whatever there has been of Italian art has sought the Gothic shrine!

For myself, I blame not Italian art for deficiencies for which we ourselves as individuals, and as a people, are answerable. When sculptors study to produce what they really believe in, and when the people sympathize with the belief of the sculptors, we shall not want in the highest art, which assuredly no amount of repetition of Fames and Victories, of Neptunes and Tritons—in which no one believes, and which few care to understand—will ever produce.

GORDON M. HILLS.

## LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

The meeting was held in the Temple, as we mentioned last week would be the case, and various papers were read, including one by the Rev. T. Hugo, on the Domesday Book, to see which was visit was afterwards paid. Mr. Hugo said,—“The sources from which my information is principally derived are, besides some considerable knowledge of the record itself, the works of Bishop Kennet, Sir Harris Nicholas, and Sir Henry Ellis, the last of whom, in his most excellent introduction to Domesday, has presented us with a vast amount of information, derived from a study of many years of the precious original, and whose words I shall use on several occasions, from a consciousness that no better could be employed. Domesday was commenced about the year 1084, and was completed in 1086. It was formed by a transcript or abstract of the breviates, which were in the first place compiled from local information in the different counties, and subsequently forwarded by the justices to Winchester, where they were copied, rather, as it would appear, in a more contracted form than the retarus actually furnished, and placed in a consecutive series. The justices or commissioners had been appointed with full powers to collect information. Those for the Midland counties were—Remigius, Bishop of Lincoln; Walter Giffard, Earl of Buckingham; Henry de Ferers, and Adam, the brother of Eudo Dapifer. Before I enter into the mode by which these commissioners obtained the matter of their returns, a word may be necessary respecting the name of the record itself. It has at various times borne various appellations, as 'Liber de Wintoniâ,' 'Rotulus Wintoniæ,' and

'Liber Regis.' Its English name of 'Domesday' has been variously interpreted. By some it has been held to allude to the day of doom, from the minuteness and unsparring nature of its details,—“Quia nulli parcat sicut hec magnus dies Judicii;” while by others it has been said to derive its name from the fact that it was deposited in the king's treasury in the church of Winchester or Westminster, and in a particular place in one of those churches called 'Domus Dei.' It was greatly valued and kept under three locks and keys in the custody of the auditor, chamberlain, and deputy-chamberlain of the Exchequer. Soon after its completion it was removed to Westminster, was, in 1696, placed in the Chapter-house, and, down to a very recent period, remained there, till it has found a better and a safer place of deposit in the new Record-house attached to the Rolls Chapel.”

In the Temple Church Mr. E. Richardson, sculptor, pointed out the few remaining examples of Early English sculpture in the choir and "Round," viz. the heads of Henry III. and his queen, gilt, over the great east window, quite hidden. Two Saracenic and two Christian heads, *vis à vis*, at the springing of mouldings high up between the two churechs. They had received glass heads in the eyes and colour. He alluded with regret to the loss of all the original grotesque heads in the spandrels of the "Round," removed during the repairs of 1827, and the very inferior substitutes for them, executed by a quarryman, the originals being used up in the builder's yard for cart-wheel crushers. To show that the great restoration of 1812-3 was not faultless, he cited the removal of the effigies into a damp shed in Hare-court, for the six winter months of 1841, where they received much injury; and the re-interment of a beautiful incised Purbeck marble cross memorial, which, till Elizabeth's reign, adorned the pavement of the church.

## "CHRIST IN THE TEMPLE."

THOSE who are interested in the career of Mr. Holman Hunt, the painter of "The Light of the World," have known that he has been engaged for some years past on a picture of that incident in the life of the Saviour wherein Mary and Joseph, seeking him, found him disputing with the doctors in the Temple,—and when they saw him, they were amazed." This is now completed, and is exhibited in what is known as the German Gallery, New Bond-street. It seems to us to be matter for regret that it was not sent to the Royal Academy Exhibition, as well for the maintenance of the reputation of the British School of Art, as for the spread of the painter's own. Fear, however, of a bad light, the neighbourhood of damaging colours, or the regulations as to frame which would have prevented what the artist has considered it needed in this respect, may have prevented that step.

A picture like this, which, comparatively small though it be, has been thought over for years, demands at the hands of those who would criticise it a corresponding amount of consideration. Having seen it but once, hastily, on a "private view day," we restrict ourselves at this moment to the expression of an opinion which, indeed, may be deduced from what we have already said, that it is a work of very remarkable merit and great interest. The head of the third sitting doctor, the child, the beggar at the gate, the colour of the Saviour's robe, and the initiative skill shown in the painting of the marble floor, are the points which spectators will most readily admire, while the size and coarseness of the Saviour's feet and legs are the blot which will be to them the most obvious.

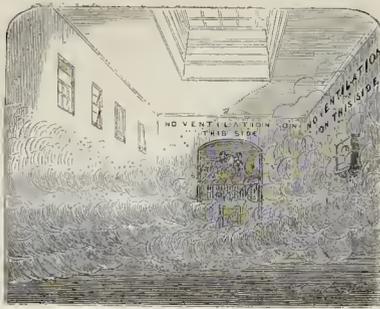
The course which, in lieu of simply providing pictures for the market, Mr. Hunt is taking,—devoting himself to produce the best work in his power, without reference to the time occupied, the travel and study necessary, or the probably small results in a pecuniary point of view,—claims our admiration and applause.

## VENTILATION OF THE METROPOLITAN POLICE COURTS.

BOW-STREET OFFICE.

AN old proverb says that "the shoemaker's wife often goes the worst shod;" and this will apply as regards sanitary matters: those who make the laws and others who administer them are often placed in the position of the shoemaker's wife.

In the police courts sanitary laws are enforced, and perhaps there are not many public establishments in which so little provision is made for the



The Condition of Bow-street Police Court made visible.

preservation of the health of those who are required to attend them. Let us, for instance, look at the old police-court of Bow-street—which is apparently little better than it was in those days when Sir Richard Birnie was often wrathful with the representatives of the public press, and in other ways allowed temper to exceed the bounds of discretion.\* The metropolitan magistrates are now very different from those of Sir Richard's days, and are distinguished generally for their sound judgment (hating always their decisions on building matters), patience, and kindly feeling to the unfortunate and miserable. Such men are valuable, and, with those who are engaged with them in carrying out important functions, should not be exposed unnecessarily to danger.

In winter the sanitary condition of Bow-street is bad, but in the heat of summer it is perfectly abominable. To those who have not visited this court, which is so generally known throughout the whole country, it may be necessary to mention that the entrance is not wider nor higher than the ordinary street-doors of the neighbourhood: very often round the entrance a crowd stops a portion of the small quantity of air which would pass that way. Inside the long passage which connects the clerks' and other offices are seats, and these, as well as the standing-place, are generally thronged by those who are called to attend cases or who have friends in trouble. Here may at times be seen congregated the very dregs of a great city, and a had sight it is. From one part of this passage leads a room in which the more select of the waiters are accommodated; another is the chief clerk's office; further on is the entrance to the court, in which the magistrate sits; a little to one side are the prisoners and those in attendance upon them. In these passages and rooms there is actually no practical mode of ventilation, and the consequence is that the most poisonous gases are generated by the pent-up crowd clad in dirt. The very approaches of the court are thus, for want of a little right management, so loaded with bad gases that no one can pass through with impunity.

The door of the inner court is kept jealously barred, and on knocking for entrance a small square hole, which is provided for the purpose of making a reconnaissance, is opened, and then, according to circumstances, the bars of the doorway are withdrawn or not. Enter, and you will find that if the approaches to the court are bad, they are salubrious in comparison with this important London interior. We have looked into the dwellings of the poor and careless, and noticed other neglected places, but are bound to say that nothing much worse than the condition of the atmosphere of this court of justice comes to recollection. At the time of our last visit a case of terrible crime had caused the court to be crowded. In the court are four small windows on one side, near the roof, and on the three sides there are no windows; in the centre of the roof is an opening which serves for light and ventilation.

As we have remarked, the door of the court is kept carefully closed. There are two other doors, one leading from the room in which the prisoners are detained, and another from an apartment generally crowded. These doors are also kept almost constantly closed, nor are there any gratings or open-

\* In some of the police-courts recently constructed the arrangements are better.

ings in the lower part of the court which would assist in passing the bad air through the opening in the roof. As the arrangement at present is, the temporary opening of the doors referred to serves simply to carry in portions of the heavy gas which loads the passages and rooms. The windows of the court have but little effect in clearing the room of the poisonous gas, which in such places is produced in large quantities. Carbonic acid gas is much more dense and heavy than the atmosphere: consequently, without proper arrangement for its escape at once when heated, it collects in dead corners, and near the floor. Every one knows of the "Grotto of the Dogs" in Italy, where carbonic acid gas, coming out of fissures, lies in layers near the ground, with the other and lighter air on the top, in the same manner as oil floats on water, so that a dog being near to the ground would die while a man could breathe.

The fumes of charcoal contain a large proportion of carbonic acid gas, and this causes the burning of charcoal to be so dangerous as it is in closely confined places. A case is related of a woman who was ironing in a confined room, and using a charcoal stove. As the charcoal burned the carbonic acid gas settled down towards the ground. Owing to the want of other air, the heavy gas accumulated higher and higher, until it reached the mouth of a little child, who grew giddy, and fell down almost lifeless. The mother stooped down to take up the child, and inhaling the poisonous gas, became giddy, and fell also. Fortunately assistance soon came, the windows and doors were thrown open, or mother and child would have died.

The poisonous gases in the Bow-street police-court are easily to be felt; and if we had, as we may one day have, the power to see the air which destroys life when in sufficient strength, and injures health when even in a diluted form, it would be observed in the ill-ventilated parts in thick layers, which decrease in density in proportion as pure air is forced amongst it.

The sanitary arrangements of the present court are most insufficient. The magistrate who sits here many hours of each day, fulfilling an important and difficult duty, is subjected to both inconvenience and injury, and so are all who attend. Surely the continuance of such a fever nursery in a public office is not creditable, in the face of our sanitary knowledge. The court might, doubtless, be improved; but the whole is so faulty that the building requires to be entirely reconstructed.

REFORM IN THE ROYAL ENGINEERS' DEPARTMENT.

THE Secretary at War, Mr. Sidney Herbert, has just issued an important paper, which we feel assured that many of our readers of some years' standing will peruse with a decided impression that it must be a leaf torn out of the *Builder's* pages. We would merely point to two of our leading articles, of date 26th July and 27th September, 1856, to go no farther, in order to refresh the memories of others on the subject. For these and other articles we met with no little obloquy at the time, but the Secretary at War's present despatch to the Royal Engineers' Department not only justifies all we have said, and shows that such defects as we pointed attention to actually exist in that department, but gives a well-grounded hope that the

time has arrived for the realization of adequate remedial measures. Whether these measures will take the shape of a thorough architectural and engineering education of young military officers, or the establishment of a responsible and recognized department of civil architects and engineers, remains to be seen. We have already expressed our opinion on that subject, and need say no more as to it at present.

The following are a few separate passages from a long despatch in a similar strain addressed by Mr. Secretary Herbert to the Department of Royal Engineers, and signed "B. Hawes:"—

"There is reason to fear that there are engineer officers who consider the duty of designing beneath their notice, and who are too ready to place in the hands of subordinates duties which engineer officers in most other services in Europe perform unassisted, and which are really among the highest functions of the architect or engineer, be he military or civil."

"Mr. Herbert wishes that the designs for new works should, whenever it is practicable, be prepared by an engineer officer, whose name should be attached to the design. When it is necessary to employ a civil member of the Department, he also shall sign the plan, and have the full share of responsibility which attaches to the designer."

"When the proper plan and dimensions are arrived at, care and judgment are required in selecting the most suitable material, and applying it in the mode best calculated to attain solidity at as little cost as possible. It is often bad economy to build in too temporary a manner, but the converse is also true. It may be cheaper to build every ten years in wood than to sink a large sum in stone. The best materials should be provided where they are required, but it is quite proper to use inferior materials when they will answer the purpose as well."

"Engineer officers should endeavour to make the case their own, and do for the public service what they would do for themselves had they to find the funds."

"Mr. Secretary Herbert feels confident that many officers of engineers do give him the assistance he requires, and all can if they will only make the attempt."

HOLY TRINITY CHAPEL, KNIGHTS-BRIDGE.

THIS chapel, formerly attached to a hospital belonging to the Dean and Chapter of Westminster, is about to be entirely rebuilt and enlarged, according to designs prepared by Mr. Raphael Brandon and Mr. Henry M. Eytton. The plan is a simple parallelogram, the internal dimensions being about 70 feet by 33 feet. The roof of the new chapel deserves attention, as being entirely new in its construction, introducing an entire range of clear-story lights on each side, to compensate for the want of lights in the side walls; the building being adjoined, on each side, by ordinary houses. These lights can be approached by external passages, so as to admit of their being opened, to afford ventilation, without having corridors hanging down internally. The height of the chapel, from the floor to the ridge, will be 65 feet. The new chapel will afford accommodation for about 650 adults, and is contracted for by Messrs. Dove, Brothers, of Islington, at the sum of 3,250l. The present incumbent is Dr. John Wilson, Head-master of St. Peter's Grammar School.

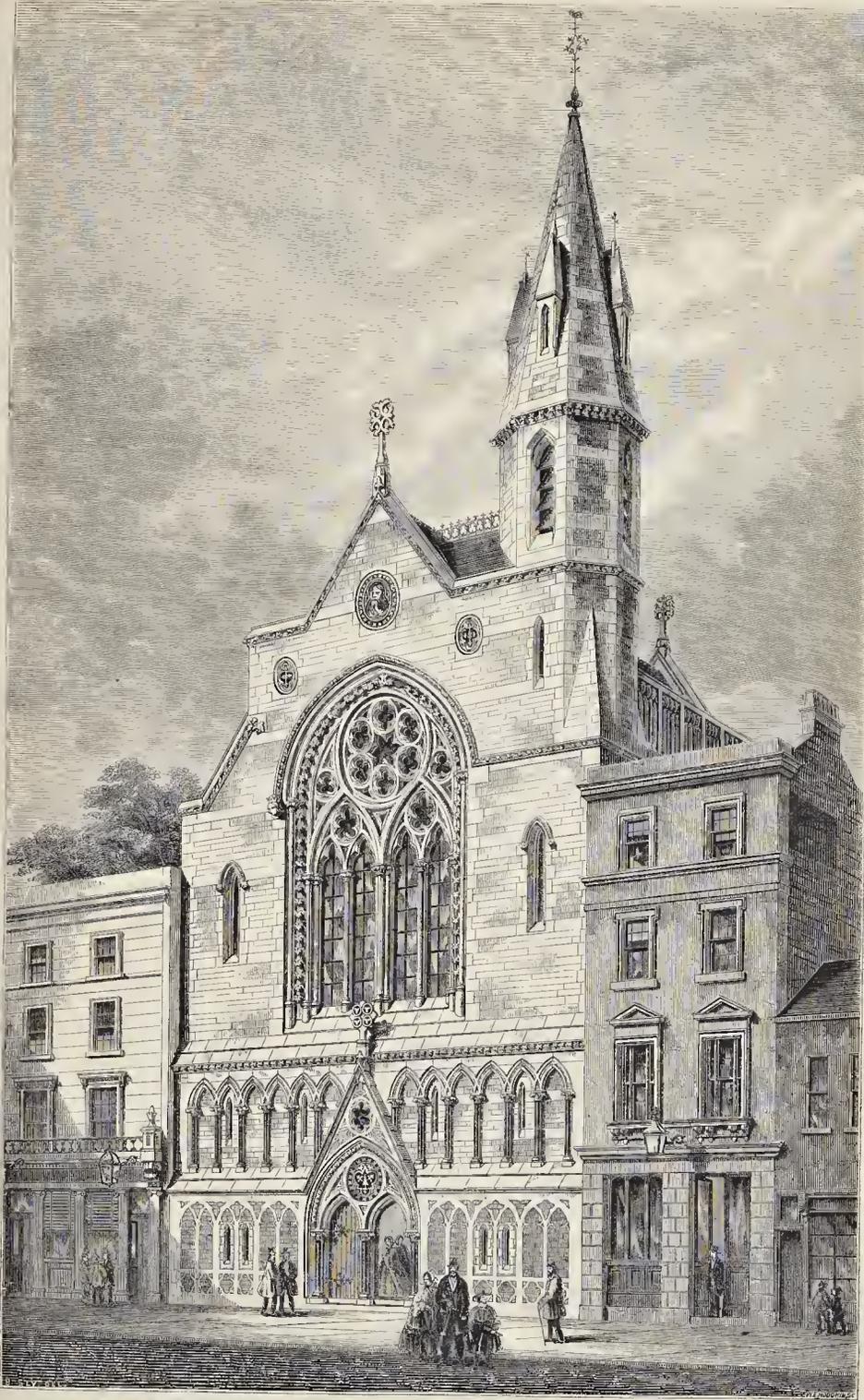
The chapel is of ancient foundation, and was rebuilt in 1699. The structure which has been taken down was for the most part of that period, but the front had been extended in 1789. Many of our readers must have noticed the quaintly-inscribed stone slabs under the upper windows, one bearing the words, "Rebuilt by Nicho Birkhead, Goldsmith, of London, Anno Dom. 1699;" and the other (the westernmost), "Capella Sanctæ Individuæ Trinitatis."

YORK MINSTER ORGAN.—The following appears to be an authentic statement of outlay connected with the restoration of this instrument, now completed:—

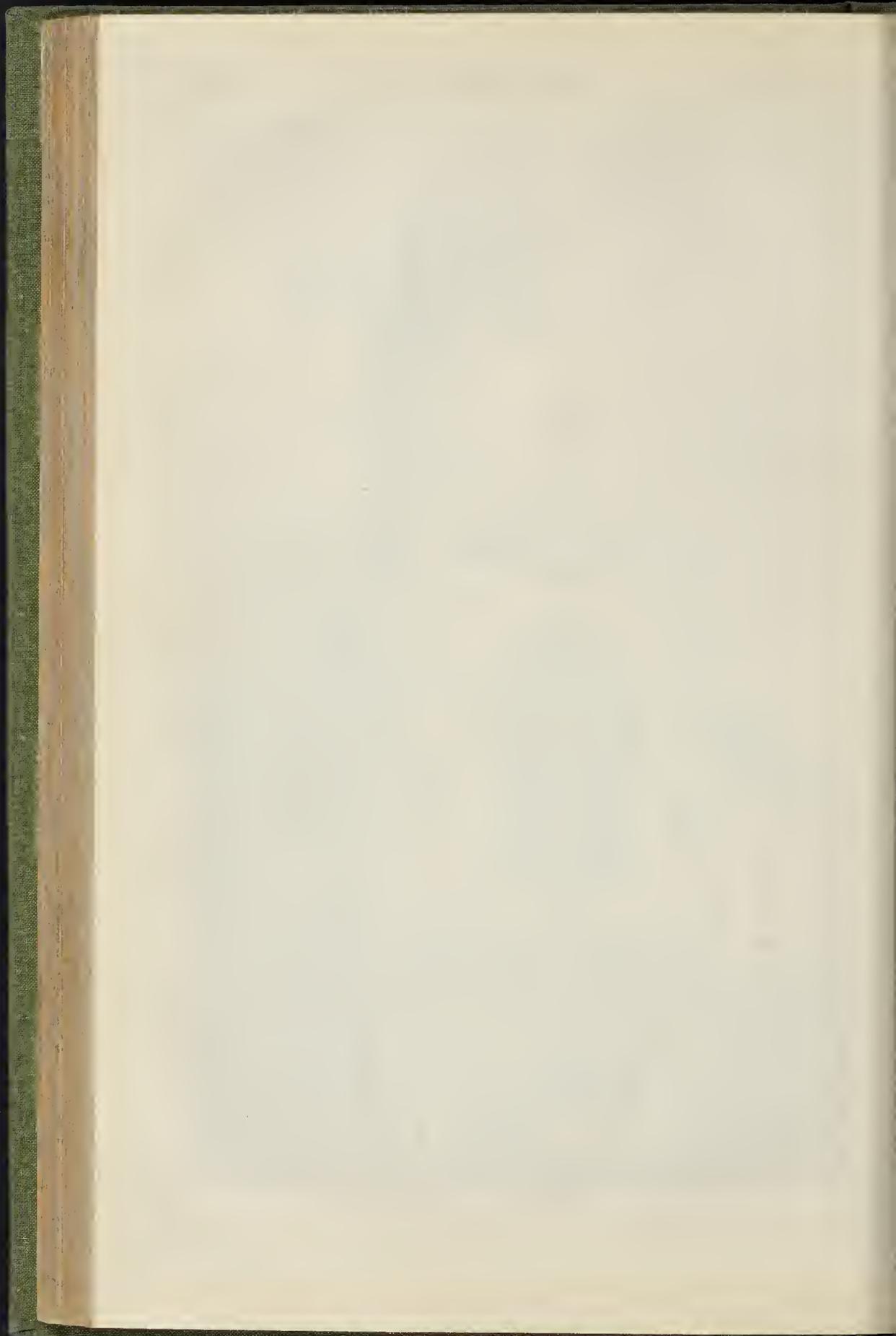
Messrs. Hill.....	£1,240	0	0
Messrs. Joy, for hydraulic engines....	178	0	0
For supply pipes from Water Works	69	3	0
Expenses at opening, Nov. 10, 1859	113	4	6

£1,600 7 6

\* A sketch of the front of the building will be found in Davis's "Memorials of the Hamlet of Knightsbridge."



HOLY TRINITY CHAPEL, KNIGHTSBRIDGE.—MR. R. BRANDON AND MR. H. M. EYTON, ARCHITECTS.



## THE ARCHITECTURAL EXHIBITION.\*

RESUMING our notice of the Exhibition in Conduit-street, we come to the "Public Hall Building, recently erected at Maldon, Essex" (129), by Mr. T. Rorer Smith. The drawing shows a structure of yellow brick, with white brick dressings, with window openings having semicircular heads, splayed eills, and shafts. The design pretakes a manner, in these features, which is too prevalent, namely, the repetition merely of short arch-headed windows; the effect of which is, in place of that from grouping, one of general heaviness. Perhaps the observer instinctively suspects darkness of rooms. Mr. Smith succeeds better in his competition designs, as well as in his "Stratton-Audley Park, in course of erection near Bicester, Oxfordshire," of which there are two views (256, 257), showing a stone-fronted Gothic mansion, with gables, mullioned windows, and a square tower with a wooden belfry-stage, and a slated roof capping.—Messrs. Banks & Barry's "Industrial Schools for the County of Middlesex," recently completed at Feltham (130), and illustrated in our pages some time ago, has defects similar in their nature to those of designs of the class of that first named in our notice; though they appear through another character of detail. Had the quantity of stone or other light-coloured material used as dressings with the red brick in the Feltham schools, been in less force here and greater force there, parts of the design intended to be prominent, and now dependent for the force solely on their bulk, would have operated in the effect as intended. The whole effect would have been taken up by the eye with greater satisfaction; would have followed from the principles which should regulate every work of design, especially one having many parts; and would have been pleasing rather than in some respects the reverse—from the lack of emphasis, and of the ordination and subordination of parts. The same architects also exhibit (131) a View of Schools proposed to be erected at Halls-ville, for the Plaistow and Victoria Docks Mission, a plain Gothic building, with belfry and porch of cupped arches.—Some meritorious designs for schools are exhibited by Mr. John M. Hooker. No. 134 is the "National Schools, Marden, Kent," erected, with the master's house, for 240 children, at a cost of £2400. This design, like the others, is Gothic. Red brick here is used, with thin bands of dark-coloured brick at regular distances, and duly subordinated; and roof principals appear externally, on the gables, in the place of hareboards. The "Design for National Schools, Charlton, Kent" (136), shows a stone building in the "Decorated" Gothic manner, with gables and a bell-turret. The design for the "Ariel Smith Memorial School, Hertford—selected in competition" (178), has yellow brick with bands of red, and is a good composition—the tower with spirelet only excepted, so far as resembling the distinctive character of the same feature of a church. Mr. Hooker also exhibits (185) "Parsonage House for the District of St. Andrew, Paddock-wood, Brencley," similar in style and in merit.

It is difficult to make a fair comparison between the designs for schools which there are in the Exhibition—amounting to a considerable proportion of the drawings; for, materials, locality, and size involve wide distinctions, which are generally made apparent in the result. Satisfactory is it in point of art, that the result is so. Mr. Edwin Nash's "Penge School for Infants, now erecting" (150), and Mr. Colling's "New Schools erected at Haslington, near Crewe, Cheshire" (128), are good specimens of the plain red brick class; and Mr. John Norton's "School-House and Teacher's Residence, Stoursey, near Bridgewater" (158), is equally successful in Gothic detail and grouping, for a stone building of a more enriched character. The drawing last named is cleverly coloured, without the appearance of much labour.—Mr. F. Warren's "Freeman's School, Wellingborough, re-erected 1859" (163), has more variation of colour, but not a better result; and the list of buildings includes the "Monk Bretton Schools, Church and Master's Residence—cost 5000," Gothic, Early "Decorated," of grey stone with white dressings (171), by Mr. J. G. Stapleton; and the "School at Weston-super-Mare" (176), of similar materials and style, but better in effect, by Mr. Hans Price. Also near the drawings mentioned, is a view (172), of the "Walsall Blue Coat and National Schools," by Mr. H. Cooper, a large group of buildings erected at a cost of 5,000; in the same style, but of red brick with dark-coloured bands, with stone dressings, gables with crosses and finials in ironwork,

and a tower with a lantern stage and a slate covered spirelet.—Mr. E. W. Godwin's "Design for proposed National Schools, St. Philip's, Bristol" (152), is a three-story building, suitable for a town, and it is marked by considerable skill in the grouping and originality in the details. A basement of closely-set and plain, narrow openings, concealed in the flank by the enclosure wall; a principal story of two-light windows as subordinate in a continuous range of arches with enriched archivolts and parti-coloured vousoirs; a top story of square-headed windows under the eaves, and a gable of low pitch with peculiar finial, and a cusped window, circular, under an arch, together with the contrasted rough walling and dressed eaves, are the principal features. A square tower, with plain stone pyramidal capping is at the side. The same architect exhibits a drawing (153) of "Portion of the New Works, Stavertown Church, Devonshire," wherein the native marbles have been used in shafts to the new windows, which are of "Decorated" character, and the external walling of loose material has been covered with rough-cast,—a description of finish which it is well to note, is to be found of old date, more frequently than some archaeologists may be aware of. He has also a cleverly designed elevation for a carriage manufactory (310). To the execution of this work, or that substituted, some passages in professional experience are attached, if we may judge from the entry in the catalogue and the photograph (311).

In the arrangement of the drawings on the walls, that of grouping the works by the same author together, has been adopted (as the numbers we have given, have shown) to a considerable extent: and it might with advantage have been followed universally. It would, however, be a good plan in future exhibitions, to group the designs in classes according to the subject; or should that be not feasible, from the practices of different classes in the same frame, there might be a division of the catalogue, secondary to that of the order of numbers, which would assist the study of the exhibition, and promote those educational results which we have so often adverted to as the best objects of an annual gathering of drawings. Indeed, it would be possible, by attention to the catalogue, and to the regulations for exhibitors, to make the Exhibition of immense service to the profession, as well as to the public. We are by no means complaining of what has been done since first we adverted to omissions and requirements. On the contrary, information of the most useful character is now supplied by exhibitors in response to the "regulations." The printing of the catalogue, however, might be further improved in points which are within the duty of an ordinary reader for the press. Authors' names, or explanatory matter, are sometimes arranged on the page, so that it is not immediately observed which number of a drawing is referred to. Also, architects might be asked to state cubical contents, and of each part of their design involving difference of work. Sections not being given, plans and the statements of total cost, are comparatively of little service for certain objects.

We have admitted that the grouping of subjects would, for various reasons, be useful only to a limited extent in chronicling the architectural progress of the year: it would, however, be of value sufficient to be worth the trouble, and would be the nucleus or precedent for such an exhibition as we hope ultimately to find in Conduit-street. We cannot supply the want ourselves in the time allotted to us. We may, however, group together one or two of the drawings of churches designed, or lately erected. Mr. Dudley Male exhibits (137) "North Pickenham Church, Norfolk; as proposed to be rebuilt," a very ordinary "Decorated" structure of grey stone, with light stone dressings. Mr. G. Goldie has "Six Studies for the new Roman Catholic Church, recently completed at Lanark" (143), and "Six Sketches for Works in Progress" (144). The Lanark Church is Geometric "Decorated" in style, and has a prominent bell-gablet at the east end of the nave; whilst there is also a square pyramidal-capped tower at the west. The interior is most deserving attention; the piers have slender shafts attached on the face, to carry statues; the arches are chamfered for the ball-floors; and the baptistery, inclosed by a dwarf screen, is well treated. The dwarf screen, of masonry, to a chancel, is now generally adopted in place of the rood-screen; and we certainly think, with as much propriety in point of art,—art which should not adopt forms where there is no longer the use or the symbolical meaning,—as

in the view of what is distinctive in the Protestant ritual. Of Mr. Goldie's "Works in progress," Ballymunt Church, Mayo, is of that Geometric "Decorated" character, or that before the advent of tracery, which is in favour with an increasing number of church architects—not only for plain churches, but those which admit a considerable amount of decoration by colour and in furniture. The Priory Church, Bergholt, Suffolk, however, is Romanesque, with square tower. The church at Yarm, Yorkshire, is Early English, of red brick and stone, and has an apse, and a peculiar, but effective, slate-capped bell-turret at the side. The sketch of the interior of this church shows that the dwarf-screen, or inclosure, is found suitable even for the Roman Catholic ceremonial. The best of the designs is that of the church at Ipswich. It is of red brick and stone, with a *flèche* on the roof, marking the junction of the nave and chancel; and internally has stilted arches, and a timber roof, with the trusses coupled and boarded over, and ornamented with quatrefoils.—The building which is shown in No. 154, "Markham Square Congregational Chapel, Chelsea, now erecting" (154), by Mr. J. Tarring, was described in our last number. It is a cross church of Late "Decorated" character, with tower and spire, buttresses, and pinnacles. The design sadly wants crosses or something to terminate the gables; and generally it is one of those which "slunning faults" would only drive to "sleep." Works of this class now, indeed do want something of the often-spoken-of novelty. May we not hope for the result of mental effort, divest of the eccentricity and *biarrierie*. Our Mediaevalists have much to learn yet, to escape each born of the dilemma on which they are apt to cast themselves. We take this opportunity to name (155) "Tingewick Rectory, near Buckingham," a Gothic, stone, mullioned, and gabled building, by the same architect. The "Mausons in Gore-road, corner of Prince Albert's-road, Kensington" (146), also by Mr. Tarring, with Italian details, are more pleasing in the drawing than in execution, probably, in the latter case, from the use of cement and the defects of some of the details,—as the trusses in the *corniches*.

We were speaking, however, of churches; and near the drawings last named are two designs which will not fail to be contrasted, both having octagonal lanterns and pinnacles at the springing of the spire, but treated very differently. Of the two, the one, No. 157, "St. John's Church, Bedminster, Bristol," by Mr. J. Norton, and the other (173) a "Design for the proposed Rebuilding of St. John's Chapel, Bedford-row, on the old foundation," by Mr. Garling, we prefer the latter, because the octagon is made to serve the union of the tower and spire; whilst the former design has the octagon rising too high, or not high enough, for the tower pinnacles, and has the spire merely set on the octagon. In Mr. Garling's design, the finials, or spirelets of the pinnacles, and the spire, spring from the same level: whilst, in the other design, the cornices or mouldings do not range. Mr. Norton adopts gables to the bays of the side aisles: Mr. Garling has a different arrangement without buttresses, and has circular cusped window openings over the main windows of the aisle. A polygonal apse with tall windows, the tower flanking it, plays an important part in the effect.—"St. John's Church, Lamsford, Herts" (179), by Mr. D. Brandon, shown in a clever sketchily coloured view, groups well, and has some good features of detail: but it might pass for an old church; and, so long as that is by far the most prominent attribute of a building, we hold the design cannot be accepted as in every respect satisfactory, or indeed, as at all the illustration of art architectural. In a like category we are compelled to include Mr. Burgess's "Proposed Cathedral to be erected at Brisbane, South Australia," shown in photographs from the drawings: nay, this design seems to us to go farther in a wrong road, being treated as though the use of windows were not to admit light. The proportion of aperture to enclosing arch is so small that the mouldings and other parts of the arch do not preserve their desired "semblance of use." The elevations appear as if copied from an old manuscript; still there is much in the design which, could our objections be got rid of, would go to constitute a very suitable building for a locality where elaboration of detail would, from costliness or difficulty of execution, be out of place. The building has a square tower, with saddle-backed roof, placed at the south-west angle of the plan. The interior is by far the best portion of the design. There is a passage-way, all round, in the thickness of the

\* See page 228, ante.

walls, at the level of the window sills of the aisles, and a similar way, guarded by balcony rails, to the clerestory. The rear-arches of the clerestory are coped, the windows themselves being chiefly crenel.

We have not named many of the drawings of old buildings, attention having been given chiefly to those designs which we have thought useful for some point or other of suggestion to new matter or new train of thought; but visitors to the gallery should not pass by Mr. P. R. Wilson's "Interior of the Church of Saints Peter and Paul, Breuckelbourn Priory, Northampton, as supposed to have been decorated in the olden time" (197). The shell of the building only is existing. The "Restoration of the Centre Panel of the ancient Retinulum of the High Altar at Westminster Abbey,—the Figures by H. S. Marks; the Architectural Portions and Decorations drawn by R. Edgar, under the direction of G. G. Scott, A.R.A." (195), will likewise be interesting in the antiquarian point of view—from which we are not disposed to exclude an appreciation of what is beautiful, and is also useful towards fresh combinations. How far our art has gone wrong by the way in which the polychromy of the Middle Ages has been revived, with sometimes excessive use of gold and inharmonious combinations of the primary colours, is a question suggesting itself from time to time, and which some day will have to be disposed of. Judging from the attention now given to church-furniture, however,—as in manufactured articles, and in the designs of architects of the Mediaeval school,—the elaboration and the colour, and the demand, continue, albeit contrasted with severity in the forms of masonry, as also of roof-timbering, which has hitherto been spoken of. We are not condemning use of colour, but only modes of its use.

We are not sure that Mr. Street's designs, to which remarks above might apply, do not, like several others on the walls, owe some effect to the cleverness of the drawing with pen, which could not be due to the architect. Certainly the student cannot be too careful in judging of effect from drawing alone,—whether the drawing be in tinting artistic or so only in ink,—or even though the drawing be at first appearance discouraging. Of Mr. Street's drawings, the first on the list is the "Bird's-eye Prospect of the Church, Parsonage-house, and Schools, recently erected at Boyne-hill, near Maidenhead, with Design for the proposed Steeple" (220). This large group of buildings, however, externally is remarkable for the judicious use of the darker-toned materials, or the harmony of general effect made consistent with use of materials of different characters. The tower is detached, and is crowned with the low lucarned haunch which Mr. Street uses frequently. St. Giles's Church, Oxford, now erected by the same architect, shown in two views (221 and 223), belongs to the same style of Early "Decorated" as the work last mentioned. Here the lucarne openings are enriched with tabernacles. The plan, we spoke of in our last as remarkable for the narrowness of the aisles. It is also remarkable for a gathering-in of the eastern bay of the nave next the chancel. The tower is placed over the western extremity of the chancel, from which the transept project, the north transept being appropriated as the organ-chamber. Distinctive character is given by the short massive nave-piers,—circular shafts with capitals and bases; and by the treatment of the wide rear-arches of the clerestory. There is a semi-circular apse; and the ceiling is wagon-headed, with a tie and king-post (slightly moulded and carved), without struts. The foliated ornament in capitals, and the reredos and other church furniture are tastefully designed, and, as we have said, skillfully drawn Mr. Street's "Grammar School and Vicarage House at Bloxham, Oxon, recently erected," of which portions are shown under No. 222, are in the same style. The former building has a cloister in which the openings are effectively treated as a range of arches with the shafts coupled in the thickness of the wall; and the latter has some of the windows square-headed with shafts in place of mullions, and a wide-projecting sill on corbels or blocks. —(The Chapel, St. Mary's Cemetery, Kensal-green" (224), by Mr. S. J. Nichols, has a porch of which the front is formed by an arch carried on detached columns, and in the western end there is a novel combination of a large floriated cross with the window.

—Mr. E. W. Pugin's churches for Northampton and Cork, are the best works we have seen from his hand; and if carried out as shown, they will be very elaborate. The view, of the exterior, of the Northampton Church (291), shows a lofty building, "Decorated" in style, having a tower and

spire joined in a cluster of pinnacles, and a polygonal apse with tall windows. The view, internal, of the church at Cork, of St. Peter and St. Paul (292), for which there are designs by other architects in the West Gallery, has a rich open-timbered roof with side spaces over the clerestory windows, groining in a peculiar manner. The chancel and apse are very effective; though, as a chancel arch is omitted, there is not sufficient framework to the vista or picture which is presented.

—Mr. W. Slater's "Church of St. John, Mozgerlangen" (303 and 309), is one which resembles an old church. It has an apse, and a square tower, with slate-covered spire over the western portion of the chancel. A similar character pervades the interior of the church of St. George, Bassterre, St. Kitt's (306), erected from the same architect's designs, unless in the arrangement of the chancel, which in its plan advancing into the nave, and the use of the dwarf screen, reverts somewhat to the original type of the Church of San Clemente, at Rome. Mr. Slater also exhibits an interior (307), and an exterior view (308), of Sompthing Church, as restored by the late R. C. Carpenter. The sheet, with fourteen Northamptonshire towers and spires from churches restored by Mr. Slater (305), at first conveys the impression that the restorations have been general, and have included the towers, which in some of the cases, we have reason to believe is not exactly the case.

We have not yet finished.

#### A WORKMAN'S WORDS TO WORKMEN.

At Salford there is a Lodge of Operative Carpenters, and an attempt is made at mutual instruction. One of the members, Charles Barnett, a young carpenter, a member of the Trade Union, but who does not agree as to the way in which it is conducted, read a paper to his fellow-members not long ago, from which we make some extracts:—

The destiny in life of the skilled mechanic is much more influenced by his *second education*, that of his apprenticeship, than by his *first*, that of the school, and yet it is to the school that the importance is regarded as attaching, and we never hear of the other. But it is in this latter and most important part of our education that it is to be feared we, as a body, are deficient. This may be a hard and unpalatable statement to many; but I would ask you, is our position such as becomes the followers of such a handicraft as ours? Are we held in that high estimation by our fellow-countrymen which the nature of our daily employment would warrant us to expect, or them to place us?

In a word, are we, as a body, art-workmen, or merely men getting through our work? If we answer from our own experience, we shall be compelled to say, however reluctantly, that, as a body, we fall far below that standard to which it is our bounden duty to aspire, and to which the public have a right to expect us to arrive.

And with whom does the fault rest? In answering this question, it may be I shall stand almost alone among you. But I most solemnly declare I believe it to be with ourselves individually.

It is to be feared that the remarks of one of the first architects of the day is too true when he says that it is possible to point to individual workmen, of an intelligence and of aspirations not inferior to those of the workmen of any other country, and perhaps of more indefatigable powers of application; but, as a body, I fear we must admit that our building artizans are not eager to shorten their hours of labour than to improve their hours of leisure.

It seems to me that we look too much to external power to raise us, instead of heartily receiving, and each for himself, having a lively apprehension of the truth that no application of external power alone can raise a man, or any body of men; that power must proceed from within.

The utmost that laws can do, whether enacted by an imperial legislature, municipal authority, or voluntary associations, is to remove external obstacles from our path: progress in that path must be the result of our own efforts. You know the old saying, "That one man may lead a horse to the water, but a hundred cannot make him drink." So it is in our own case; laws may smooth our path, but it is beyond their power to make us walk in it, save by our own will and effort.

If we wish our trade to occupy its proper position, and our handicraft men to be rightly esteemed, we must take care that each member is estimable.

This should be the great principle on which the education of the workshop should be founded. That the honour of the craft does not depend on the laws by which it is protected, but upon the intelligence, the skill, and the manly bearing of each individual craftsman. Let but these qualities be developed in our brethren, and no laws could be made, either by Parliaments, by masters, or by ourselves, that could oppress us; and, simply because we take away the will to do it.

Intelligence, skill, and manly bearing are the levers which must raise us (if we are to be raised), as they have been the means which have raised every other profession that is high in public estimation.

Hitherto it is to be feared that we have depended too much, for our protection and progress, upon laws and regulations of the common body, instead of individual effort; mistaking, as it seems to me, the removal of obstacles for actual progress.

In what has been advanced, many of you may perhaps think that I have spoken severely, but is it true? And if there be any lack of that intelligence, skill, and manly bearing so necessary to render any body of men respectable and respected, what can we do towards developing in ourselves and training our younger brethren in the qualities upon which we rely so much stress?

The matter seems entirely in our own hands; and in our trade societies there is an apparatus admirably fitted for the purpose, and this adaptation to our wants will be found, not in changing the purpose for which our societies were intended, viz., mutual protection, but by adding to them the far higher object of so assisting in the training their members as to render each one self-respecting. Not only would I have our trade societies use their influence to protect us in our privileges, with reference to the masters, but also add to that moral and intellectual training.

It should be the care of the trade that every apprentice should have the means and opportunity placed before him of acquiring those habits of industrious and persevering application which are necessary to the attainment of a sound knowledge of his business in all its parts. He should have the means of associating with the older members of his craft, that by their example he may continually be incited to labour to acquire that skill in his craft which would enable him in his turn to become an honour to his trade and an example to others.

Our society should have, at least in every large town, its public room open and known to the world as ours. This should be the trade home of the young artisan. There should be class rooms in which should be taught, by members of our own body, every branch of a sound English and technical education. There should be rooms for reading and conversation, with convenience for lectures and public meetings of our body. There, also, we should have opportunity of being assisted by our wives, our children, and sweethearts, to join us in our festivities.

Our society would thus be before the public; the objects which we sought would commend themselves to the approbation of the public, and in just such proportion as we attained the object in view, in just such proportion would the trade rise in public estimation.

Our society thus being brought openly before the public would be freed from the suspicion with which, however we may think the fact, it is now regarded by so large a portion of our fellow-countrymen, and then no longer should we see in public advertisements, "No society man," as a recommendation for the higher positions of our trade.

Being thus public we should be freed from the danger and temptation of using the society for other purposes than those its publicly avows.

No longer should we have large bodies of our fellow workmen standing about our doors, each would see that in joining his fellows he would best advance his own interests, and most effectually assist the progress of his fellows, not by coming to the society would soon come to be a mark of disgrace, not only by ourselves, but the public generally, as it would be evidence that the man was deficient in those qualifications which would render him worthy of being a member of the society. While thus acting in accordance with the liberal principles of the age, we should secure a great measure of the advantages of the old trade guilds, which, according to the time in which they were founded, had fulfilled the purposes for which they were instituted.

Thus kindly feeling and charity would be diffused among us. We should pursue men to whom beneficence would be a pleasure, and we should be having made their first step with us.

To be united with us would be an honour,—to be separated from us a disgrace.

There is much good sense in these observations.

#### SERPENTINE WATER SUPPLY.

The committee which suspended the works in progress for filtration and perpetual revolution of the identical element now contained in the basin, has come to the conclusion that the plan adopted by the late Government, and now so near completion, was in error, but they have left the question open as to the mode of treating the bottom, as to the source from which the fresh supply is to be derived, and as to the no less important consideration—who is to carry out the project.

It is suggested that a copious supply may be had by gravitation, from a spring accidentally tapped by the contractor of sewers, near the Great Western Railway Terminus, and that from a point only 300 yards distant from the repudiated filtering beds; and of this there seems to be little doubt, since the strong current which issues into the sewer at that point would fill a 4-inch bore. This water at present runs to waste, and might be much increased if such measures were taken as produced the enormous quantities in Orange-street, or in Duck Island.

The surface elevation in Spring-street (so called) is 80 feet, the source being 20 feet lower, and immediately over the clay stratum; and the level of the Serpentine being 50 feet above high-water mark, a fall of 10 feet would remain. So far the facts are proven, but the task remains, how to win the fullest supply from the Paddington bed, and how to conduct it to the site of the new abortive works.

Wasted funds, and the suppression of a contract for 17,000*l.* drew forth some animadversion, and might have occasioned regrets. The works must be paid for, and the engineer's commission also; but any new project or altered plan can be carried out only upon the same provisions, whoever the engineer or contractor may be. The materials on the ground,—the filtering beds, and even the scum-pans, need not be wholly lost; but the execution of the amended system ought to be entrusted to the most practised and approved of professional experts; and, in this unhappy case of all others, *detur digniori*.

If, as seems probable, the desired supply is obtainable at the point indicated, a very large amount would be saved in conduit pipes from St. James's, as well as in mechanism to force the water a distance exceeding two miles; but of the sufficiency and expediency, the best judges must judge those parties who have already exemplified such professional skill by drawing forth from untried repositories those fountains and streams which have stood the test of years and of searching investigation.

What portion of the works now unfinished may remain incomplete, or whatever the expenditure or a bootless object, is of little weight. To finish had design would only create further obstruction, therefore, the sooner the right one is commenced the better.

As to the condemned works, there can be little doubt but that they originated in a predilection of the late Chief Commissioner in favour of Mr. Hawkley's ingenious scheme; and it is only right to correct here an inference formerly given to the *Builder*, "that the devastation of the river borders was caused by some underling," by stating that the express order was given by the Chief Commissioner himself.

#### NEWS FROM DUBLIN.

THE report of the Collector-General of Rates probably the best statistical authority extant, clearly testifies the rapid progress of the Irish metropolis within the boundary; and the southern suburbs are considerably extending. With exception of Arran Quay and Rotunda wards all Dublin is stated to be "improving." The Four Courts new (extension) buildings cause "a considerable addition to be made to the city," although the assessment is proportionately affected owing to the demolition of old business houses. Trinity Ward is much improved, and "the attractions of new buildings, such as the Kildare-street club, and the Turkish baths in Lincoln-place, are very remarkable." More dwellings have been raised in late years in Church-road and the vicinity of Minions-street than could have been anticipated from the nature of the site, it being not long since considered an *irreclaimable swamp*. Various English residents—traders—have erected dwelling houses and offices (for the majority of which Mr. Lyons was the architect) in this locality, and other works are projected. As an evidence of the increasing value of house property, which at the north side had fallen to a low ebb, the collector states that "a tenant in Mountjoy square, who let £600, to be relieved from the responsibility of his lease, now feels it an advantage to be allowed to remain in possession from year to year at his old rent of 110*l*." Further, "a house in Rutland-square (at end of Sackville street), purchased in the unnumbered Estates Court for 400*l*, has been sold for 1,100*l*." A furnished house in Merrion-square was lately let for six months for 350 guineas.

We may add that the streets are being newly paved, sewered, and spacious footways of granite gaggings substituted for the narrow and irregular lanes hitherto in vogue. The unoccupied houses in 1859 were fewer by 101 than those of 1858. Old-fashioned and dilapidated structures are giving way to the modern architects and builders. There is hope that the filthy lanes and alleys, so numerous *still*, may disappear, and that the sanitary requirements essential for common decency will receive immediate attention.

The Spring Agricultural Show, at the Royal Dublin Society, was held last week, and bore a favourable comparison with those of preceding years. Numerous English and Scotch manufacturers exhibited agricultural, mechanical, and engineering appliances, amongst whom we noticed Messrs. J. B. Brown & Co., Cannon-street; Clayton, Shuttleworth, & Co., Barrett, Exall, & Andrews; Perry & Sons, Bilston; Haywood, jun., Derby; Morton, Liverpool; Morton, Leeds; Hornsby, Grantham; Fry, Bristol; Hernulewicz, London; Smith, Brothers, Glasgow, &c. The prize bull, Dr. McHale, is said to have brought 1,100*l*.

Messrs. Powis, James, & Co., of Watling-street, patentees of endless band saw machines, have had an important action tried at Dublin before the chief baron and a special jury, for 34*l*,—the price of a machine alleged to have been purchased by Johnna Boag, proprietress of saw-mills at Belfast. Plaintiff's case was substantially that the machine was *bona fide* sold to defendant, through her son as agent, conditional that it should remain on trial for one month, and, if not approved of, to be returned. The machine was retained for four months in a store-case unopened,

and defendant refused to pay. Defendant traversed the sale, and alleged that the machine was merely sent for exhibition, to induce purchasers. Verdict for plaintiffs. Counsel for plaintiffs, Messrs. Armstrong, Q.C., Hemphill, Q.C., and Sidney; for defendant, Sergeant Fitzgibbon and Mr. Faulkner.

The water supply question is solved, and the canals are to be the source; terms having been arranged with the Grand and Royal companies.

The project of connecting the North-wall quay with the southern thoroughfare of Great Brunswick-street, by means of a bridge across the Liffey, at the Custom-house, is assuming a tangible shape. A new patent balance rolling bridge, with longitudinal motion and double carriage ways, has been constructed over the George's Dock, by Messrs. Turner & Gibson, of Hammersmith Iron Works. Mr. M. Kenny, patentee. Width of water way, 47 feet. There are twelve rollers, or four to each of three main girders; also three cast-iron carriages, and bearing centres, one under each main girder, resting on lubricators, presenting on the elevation a parabolic curved form. Girders, 4 feet deep, 6 inches wide, with 15-inch flanges, top and bottom. At one end of bridge there is a counterbalance of five tons weight, and the opening is effected by lowering deflecting cams at one end, by a tilting apparatus at opposite extremity, and a driving gear nearly central. Mr. Forsyth is civil engineer. Cost, including masonry, &c., 4,000*l*.

We learn that new jetties, for shipping purposes, are increasing in numbers; that a second new graving-dock at North-wall point is in contemplation; and that the quays will be prolonged considerably beyond the light-house, and the river despoised.

#### SCAFFOLDING IN BELGIUM.

The following may prove useful, and tend to diminish the number of scaffold accidents. In this capital (Brussels), and generally throughout Belgium, all building is performed *overhand*, no matter what may be the nature of the material employed, whether cut stone, brick, or rubble. As the building progresses, the flooring joists are put in, and, by means of trestles placed on them, the work proceeds from story to story, all materials being carried up short ladders, and so on planks, to wherever they may be required. The results of this are threefold: first, it prevents any obstruction to the flagway, or street of a town; second, it reduces the expense of scaffolding materially; and, last not least, it almost entirely prevents the possibility of accidents, and the wholesale loss of life or limb which so frequently occurs: the work can also be quite as well executed, as the well-built houses in this city most fully testify, more particularly in the new part, where they are constructed with great regard to architectural appearance and ornament. Another particularly good and practical method pursued in this country is the universal plan of hanging scaffolds. In all houses and buildings, whether public or private, holes are left 5 or 6 inches square, or round, according to fancy: these are cased with cut-stone, or very frequently cut out of the solid, and placed at a distance of 8 or 10 feet from each other round the outside walls, between the ceiling of the top or attic story and the roof, a space which in this country is made very useful, being boarded, and serving for drying clothes, holding lumber, &c. These holes are either left open, which is most useful for ventilation, or are stopped by a plug of wood, on the head of which is usually placed some ornament according to taste. When it is required to point, clean, or paint the outside of the house, which, by the way, is most generally the custom here every summer, small beams which fit these holes are pushed through, and made to project some 6 feet, or more according to the width of scaffold required, leaving about as much inside the loft, or "grenier," as it is called, where the end is firmly secured to the floor or joist by a cramp of iron screwed down for the purpose. From these beams frames 5 or 6 feet wide, and 15 or 20 feet long, indeed, as long as may be required, are hung. These frames seem to be only ladder poles, sawed down the middle, and connected by means of cross-pieces of timber mortised through, and pinned outside to prevent them from spreading. These are placed at distances of 6 feet, and across them planks are laid, on which, sitting or standing, the workmen, beginning at the top, continue their work to the bottom, shifting the planks from cross-bar to cross-bar as they proceed. Access to these scaffolds is obtained from the windows of

the house, as there are no ladders or other communication with the ground used, which is another great advantage derivable from these hanging contrivances, as it quite prevents the possibility of robbery. All materials which may be required as the work proceeds are either pulled up from the ground, or obtained through the windows. To avoid risk to the passer-by, it is commonly the custom to hang a cross bit of timber to within a few feet of the ground to give warning of what is going on above. By means of these hanging scaffolds, the expense of long scaffold-poles, ropes, put-logs, and ladders, are avoided, to say nothing of a very great saving of time in their construction, as they can be hung out in a few hours. When I was mentioning the various uses to which the "grenier" is subjected, I forgot one whose great importance will, I trust, excuse my adding to the length of this already too long protracted letter. Access to all the floors of the house is attainable from it; and in each floor an iron frame is firmly built, in which a door is hung, more frequently double ones, the inside one being hung so as to shut down tight across the flue, prevent all draft, and with the help of a wet blanket at the bottom, extinguishing any fire in a few minutes. These doors also assist much in the sweeping of the flues, and quite prevent the necessity of going out on the roof, and the consequent frequent breaking of slates, as well as danger to the persons employed. I trust these few observations may be of use to our builders and contractors, and may prove the means of saving many lives. I would just remark that the holes for these hanging scaffolds can be made easily, and at little expense, in existing houses, and would greatly facilitate the cleaning and painting the fronts of our metropolitan houses, adding thereby much to the freshness and cheerful appearance of our towns. L. H. KING HARMAN.

#### PROPOSED TESTIMONIAL TO MR. C. C. NELSON.

At the meeting which was held on the 3rd inst., at the Rooms of the Royal Institute of British Architects, Mr. Sydney Snirke, R.A., in the chair, letters were read from thirty-two members of the Institute, expressing their warm approval of the object proposed, and agreeing to assist in carrying it into effect. On the motion of Professor Donaldson, seconded by Mr. Godwin, it was then unanimously resolved, that a testimonial be presented to C. C. Nelson, esq., as a grateful expression of the high appreciation entertained generally of his very valuable services, the time and constant attention that he has bestowed upon the responsible duties of his office, and of the honourable and courteous manner in which he has, with his colleagues, conducted for ten years the affairs of the Institute. It was further resolved, that each subscription should not exceed one guinea. A committee was appointed to carry out the objects of the meeting, and since then about sixty guineas, we believe, have been subscribed.

#### PROVINCIAL NEWS.

*Romford*.—The various improvements in drainage, &c., so long required, are now, says the *Cheshamford Chronicle*, to be proceeded with by the Local Board of Health; and, to enable them to do so, they intend borrowing between 6,000*l*. and 7,000*l*.

*Maldon*.—The new public hall here has been opened. A public hall, mechanics' institution, and private dwelling-house are embraced in the undertaking. The edifice has been raised for the Maldon Public Hall Company by Messrs. Spurgeon & Sons, of Maldon, from the designs and under the superintendance of the company's architect, Mr. T. Roger Smith, of London. The new building occupies a site on the north side of the High-street, near the Town-hall: it is of brick, has a frontage of 43 feet 6 inches, and the total depth from the front wall to the back is 115 feet. Each side of the hall has five windows. The dimensions of the hall are 36 feet wide, 66 feet 9 inches long, and 32 feet 6 inches high. It will seat upwards of 400 persons, independent of the accommodation on the platform.

*Clifton*.—Another project has been broached for completing the suspension-bridge across the Avon, which will unite the two counties of Somerset and Gloucester. The matter, it is said, has been taken up with spirit. This structure was commenced, as many of our professional readers may remember, by the late Mr. Brunel more than twenty years ago, and upon it upwards of 40,000*l*. were expended up to 1843. The roadway of the proposed bridge is 550 feet in length, and 220 feet above high-water mark.

**Liverpool.**—The local papers give an account of new business premises named Compton House, which have been enlarged so as to extend over a site of about 3,222 square yards in Church-street, Leigh-street, and Bassett-street. The new buildings have been erected from a design by Messrs Haigh & Co., builders. Mr. Dempster was the stonemason; Messrs. Smith & Son were the bricklayers, Messrs. Lingard and Merrick the painters, and Messrs. Goodall & Son the plasterers and decorators. The style adopted is a free adaptation of the Italian, and comprises a frontage of 55 feet, which is carried up five stories, or 60 feet above the level of the street line, the whole being executed with stone from the Grinshill quarries in Shropshire.

**Gloucestershire.**—There is going to be a lighthouse erected on the Ilanors, says a local correspondent. There are some dangerous rocks on our south-west coast. The stones are brought on the E. in the town. The Trinity Board has the management.

#### CHURCH-BUILDING NEWS.

**Threekingham.**—A restoration of the church here has been effected under the direction of Mr. E. Browning, of Stamford, architect. The freestone of the nave, pillars, and arches has been cleaned, and the windows of the south aisle have been restored. The porch has been restored, with a new open-timbered roof. The ancient bench ends of the church have been reproduced in English oak. The floor of the church is of encaustic tiles. The recumbent figures of "Lambert de Trekingham" and his wife have been partially restored, and set on a plinth of plain stone. The outlay on these and other restorations up to the present time, has not exceeded 500*l*. Much, however, remains to be done to the bell frames and the tower and spire.

**Braintree and Bocking.**—The chancel of the church has now been restored by the trustees of the Felsted Charities. The sum of 240*l*. was at first voted for the work, but the roof was found in so dilapidated a state that it had to be entirely removed, a great portion of the cast wall pulled down, and the whole of the east Perpendicular window taken out. Under the superintendence of Mr. Chancellor, of Chelmsford, a new oak roof has been put upon moulded trusses, supported on oak corbels, with purlins and braces,—the whole having been worked out of English oak. A five-light Geometrical tracery window has been put in. The walls have been scraped down and restored, in the course of which some curious old mural stencillings were discovered. The whole of the works in the chancel have been carried out by Messrs. Parmenter & Son, of Bocking, at a cost of about 400*l*.

**Newport (Essex).**—The church of Newport, the tower of which was entirely rebuilt about two years ago, has now been renovated. The south porch was restored at the sole expense of W. C. Smith, esq., at a cost of 220*l*. The new works also included the insertion of a south window and doorway and windows at the sides,—all of Caen stone. Mr. Smith was likewise at the expense of re-flooring the church with deal where the seats are usually placed, and the laying down a pavement of red and black in the aisles—repairing all the interior stonework of the pillars and arches at a cost of 139*l*. All the old deal pews have been cleared away, and forty-six new open oak benches placed in the transepts and aisles, at an expense of 106*l*., also paid by Mr. Smith. The central area of the church is occupied by 150 chairs, free to all. In the chancel, the old pews have been removed and stalls of carved oak, with poppy heads, substituted,—six on each side. The Early English octagonal font of Barnack stone has been restored at the expense of Mr. Brown, of Lynn, the contractor for the works, and placed, according to the original plan, on six black marble columns. A decorated window has been inserted in the south aisle, the gift of Mr. Shirley, one of the churchwardens, and Mr. David Skipper, of Newport. A new roof has been put on the north aisle, at the expense of the Rev. J. Chapman, vicar of Newport, and Mrs. Chapman; and since the rebuilding of the tower the parishioners have entirely roofed the nave of the church with oak (a *fac-simile* of the old roof), and rebuilt the clerestory walls, inserting eight new stone windows of three lights each, with cusped heads,—the work, including the Westmoreland slates for the roof, costing 657*l*. 10*s*. A new stone pulpit, supported on marble shafts, from a design by Messrs. Jekyll, of Norwich, architects, has been given by W. C. Smith, esq., at a cost of 45*l*.

**Chelmsford.**—The small memorial chapel at the New Church Cemetery is now completed. The

design was by Mr. Chancellor, of Chelmsford. The chapel, which stands at the head of the long walk leading to the main part of the cemetery, is in the Early Decorated style of the Geometrical period, and is built of Kentish rag with Bath stone dressings. A gabled bell-turret, surmounted by stone foliated cross, rises over the centre of the doorway at the southern end, and contains a bell, 21 inches in diameter, by Messrs. Warner & Son. The interior is only 30 feet by 17 feet, the height 26 feet. The contract of Mr. Hardy, the mason, was 650*l*.; and the total expenditure has been little less than 800*l*. Over the door is a stained-glass window, with three quatre-foils. At the northern end is a three-light Decorated window, with shafts, foliated caps, and laces, filled with stained glass, representing the Resurrection, executed by Clayton & Bell. The inscription is "In memory of Haratia Louisa Glyn." The chapel has been reared at the cost of the her sisters, and the father of the deceased, assisted by her sisters.

**Kettering.**—A contract has been entered into with Messrs. Lewis and Hibbert, of Manchester, for a lightning conductor; and with Messrs. Taylor, of Loughborough, to re-cast the third bell.

**Over (Cambridgeshire).**—The foundation-stone of the new church at Over, which is to be erected almost entirely at the cost of Lord Delamere, as a memorial to the late Lady Delamere, was laid on Friday, the 23rd of March. The church will be of Geometrical Gothic design, and will consist of nave, chancel, north and south aisles, with chantry and vestry on the north side of the chancel, and a tower and spire, 140 feet high, at the south-west angle. Accommodation will be provided for 500, most part free. The total cost of the church, everything complete, is estimated at from 5,000*l*. to 6,000*l*.

**Milton.**—A new stained-glass window has been lately placed in the south side of the chancel in the parish church. The artists were Messrs. Hardman & Co., of Birmingham. The subject is the "Marriage in Cana of Galilee." The window was presented to the church as a marriage offering by a nephew of the rector's, and after the latter had been officiating at the wedding.

**Saundridge (Kent).**—A new church, parsonage, and schools are about to be erected at High Wyke, an outlying hamlet in this parish. A site has been presented, and the designs have been prepared by Mr. G. E. Pritchett, architect.

**Wolverhampton.**—The erection of Blakenall church is now about to be proceeded with, the necessary sum having been raised within about 200*l*. It will make the ninth church in the town of Wolverhampton.

**Liverpool.**—The foundation-stone of a Reformed Presbyterian Church (the first of the denomination in Liverpool) has been laid in Shaw-street, on a site of land opposite the Collegiate Institution. The site is 39 feet wide by about 120 feet deep, the whole of which area is covered by the church and vestries at the back; and, being close up to lofty houses on the south side, with the prospect of having similar houses, ere long, on the north side, the church, with the exception of large windows in the east and west gables, will be lighted entirely by a range of windows on each side of the roof. All of the edifice that will be exhibited to the street is simply the end elevation or gable, flanked by octagon piers, terminating in crocketed pinnacles, and pierced in the centre with a six-light window. The whole of the front will be executed in Minera stone, the quoins, mouldings, and other dressings to be polished, the walling to be in thin courses, pitched on the face. The interior of the church will be one apartment, 73 feet long by 35 feet wide, divided into seven bays, with arched principals of laminated timber, resting on stone corbels. Accommodation will be provided for 600, and the cost of the building is contracted for at 2,200*l*., by Mr. Morris, mason and joiner; Mr. Thomas Jones, slater and plasterer; and Mr. Thomas Holt, plumber, painter, and glazier. The Messrs. Hay are the architects of the structure.

**Eccles.**—On the 6th inst. the new Congregational chapel at Eccles, near Manchester (Messrs. Poulton and Woodman, architects), of which we gave views and a description on 17th December last, was opened for divine service. The side windows are to be filled with ornamental glass, of a delicate green tint, having a running pattern, in oak and ivy leaves alternately, and surrounded with stained crocketed borders. The principal window will be of stained glass, of geometrical design, with labels and shields at intervals, on which passages of Scripture are emblazoned. In each gable is also a small window, coloured. The windows have been designed and executed, under

the direction of the architects, by Messrs. Edmundson and Son, of Manchester. Both the exterior and interior of the church are heightened in effect by the introduction of a considerable amount of carving.

**Manchester.**—The work of restoring and renovating the cathedral and old parish church of Manchester, says the local *Courier*, proceeds satisfactorily. The improvements have been effected chiefly in the body of the church, or the parish portion, as distinct from the choir or chancel, over which the churchwardens have no authority. The chief improvement, in regard to comfort and use, consists in re-seating the whole of the church with oak benches, in place of the ugly and inconvenient pews. The new seats are all open and free, having carved bench-ends. The next great improvement is the removal of the unsightly western gallery, which extended the whole width of the church. This clearance has opened to view the three western windows, and in the time, when the organ is removed, the great archway and entrance will be also opened. Temperature and ventilation have received the attention of the churchwardens, and great improvements have been effected. The lighting has also been amended by the erection of gas standards, with brass branches and foliage, the burners being in triplets of three on each of three branches. In addition to the removal of window-obstructing galleries, the lighting of the cathedral by day has been considerably aided by a thorough cleaning of the pillars and wall surfaces, which had become very dingy. The pillars of the nave have had their thick disfiguring coats of whitewash removed, and are coloured in distemper; while the pillars of the side aisles have had stripped off about 2 inches of plaster. The pillars appear to be many feet higher since the large disfiguring pews were removed. The dangerous lath-and-plaster ceilings received early attention, a warning having been given some time since by the fall of several cwt. of sham plaster ornament during divine service. About fifteen tons' weight of this unsafe ceiling have been removed from its position over the people's heads, where it was suspended only by old wood and rotten nails. The oak beams of the roof, moulded into form, look well, and are safe, the mouldings, bosses, and varnishing adding to the effect. The roof lights in the side chapels, or aisles, have been improved and filled with rough plate glass, ground on the inside, admitting abundance of light. The whole of the roofing has been newly lathed, and new planking placed underneath. All the carving throughout the church, whether in stone or wood, has been done by Mr. J. H. Banks, of Hulme. The pulpit, reading-desks, and choristers' seats, were made by Messrs. Hulme & Heron, of Cheetham-hill. The open seats were mostly placed by Mr. J. Marsden, of Bolton. Mr. Winder executed the plumbing; and Mr. Walker the heating apparatus. The coloured tiles, in geometrical patterns, with which the floors are laid, were made by Messrs. Maw & Co., and have been laid by Mr. T. W. Graham, who was also the contractor for the whole of the masonry. To his care the general superintendence of the whole work, under Mr. J. P. Holden, the architect, has been committed. Other alterations for the better might be mentioned, both inside and outside.

**Bradford.**—The committee appointed to make arrangements for the rebuilding of the chapel and schools for Little Horton-lane, says the *Bradford Observer*, some little time ago issued invitations for plans to architects in different parts of the country. Thirteen designs were submitted in response to this invitation, and the unanimous decision of the committee was in favour of those marked "Experientia docet," which proved to be the designs of Messrs. Lockwood and Mawson, of this town, architects. The second premium was awarded to Messrs. Poulton and Woodman, of Reading. The new chapel will be capable of accommodating upwards of 1,500 people, with school-room for 300 scholars, and class-rooms immediately adjoining.

**Newcastle.**—Newcastle, says the *Gateshead Observer*, is about to add to the number of her churches. The congregation at whose head is the Rev. J. H. Rutherford, now occupying on Sundays the lecture-room in Nelson-street, was, on Wednesday, the 4th of April, to proceed to the erection of a church (with schools), in the Bath-lane, where a suitable site has been obtained. The foundation-stone was to be laid by Sir Samuel Morton Peto, bart., M.P. The style selected is Gothic. Number of sittings, 1,200. There will be a tower and spire about 130 feet high, and a large west window of elaborate design. The architects are Messrs. Oliver & Lamb; and Messrs. Scott & Reed, the

builders, will, it is expected, have the church completed before the close of the year.

**Channel Islands.**—A chapel in the Channel Isles (Alderney), belonging to the Wesleyans, is suffering from that dangerous malady, "dry-rot," and if accounts be true, it will have to be in part rebuilt. The Guernsey Methodist New Connection Chapel is in progress. We spoke of it some time back as being laid by the Rev. W. Cooke, of London, editor of the *Methodist New Connection Magazine*.

#### HARTLEY INSTITUTION COMPETITION.

THE council, after a careful consideration of Professor Donaldson's report and examination of the plans, suggested to the town-council that the plan, No. 19, with the motto, "Comme ça," was the one most deserving of selection by the town-council, subject to such necessary modifications (if any) as might be requisite to bring the cost within the amount limited by the scheme.

At a meeting of the council of the borough held on the 11th inst., it was resolved that the report of the council of the Hartley Institution be received and adopted.

The sealed envelope having been opened, the authors of the design "Comme ça" were found to be Messrs. Green & De Ville, of Great Ormond-street, London.

#### HER MAJESTY'S THEATRE.

THERE is a peculiar talent required for theatrical management which shall endure, otherwise, it is said, and Mr. E. T. Smith has certainly shown possession of a considerable share of it. He is a more arduous task before him at Her Majesty's Theatre than he has yet essayed, but he has begun very well, and we may augur for him success. London has become so rich and so large, that it is brought by railway so near to all England, that we see no reason why both opera houses should flourish.

Considerable improvements have been made in the approaches, staircase, and lobbies, of Her Majesty's Theatre; carpets, mirrors, and plants, adding their aid to impart an aspect of comfort and carefulness. Within, the stalls have taken the shape of chairs with great advantage, and the whole has been cleaned and brightened. Madame Borght's first appearance, in *La Favorita*, was a complete success; and Signor Everardi, up to this time little heard of in England, made a decidedly good impression. Many would have been glad to find him in the *Travatore*. Little has yet been done in the way of scenic effect, but preparations are making to produce *Oberon* with great splendour and completeness.

#### Books Received.

*Practical Treatise on the Turbine, or Horizontal Water-wheel; with seven plates.* Specially designed for the use of Operative Mechanics. By WILLIAM CULLEN, Millwright and Engineer. London: E. F. Spon, and John Weale.

It was told of the first Napoleon, that observing the perpetual annoyance and trouble his soldiers suffered in the hand-grinding of corn, and knowing that scarcely any district they might pass was totally devoid of streams of water, however small, he ordered one of his engineer officers, named Fournreyron, forthwith to invent some easy means of making use of such streams as they might meet with for the purpose of grinding the soldiers' corn. M. Fournreyron accordingly waited on his superiors chief next morning with the plans and other drawings of a small water-wheel, to be laid horizontally in the path of the stream, which was to be conducted through the axis or centre, and to pass off by the circumference, turning the wheel, and attached machinery of simple construction, by its force thus made centrifugally operative. The invention was found to fulfil its purpose admirably; and this was the origin of the turbine.

The anecdote is well known, and we ourselves recurred to it on a previous occasion.

Mr. Cullen, of Armagh, in the little treatise under notice, gives an intelligent account of the various forms which the turbine has assumed, together with modifications of it adopted by himself in his own practice. He went to France, and was allowed to examine various turbines either at work or in model; but the *raison* with which he explains of M. Fournreyron's unwillingness to be understood by a rival manufacturer of his trade seems rather amusing. Mr. Cullen appears to think it rather laudable than otherwise to circumvent a Frenchman in such a case. M. Fournreyron

(the inventor of the turbine) had told him "that it was the practical determination of the curves, derived from experience alone" (italics, Mr. Cullen's), which led him to the solution of the question? yet," adds Mr. Cullen, "he has taken good care to reserve to himself the plan for forming those curves." Mr. Cullen accordingly "found it impossible to effect any satisfactory arrangements with him." Being determined, however, he continues, "that my journey should not, if possible, prove abortive, I ascertained the address of his model-maker, Monsieur Clair, and visited his establishment, where I had an opportunity [Mr. Cullen having, apparently, kept "the object of his inquiries or the purport of his mission" to himself] of inspecting a model turbine on Monsieur Fontain's principle of construction, and was informed that this model was made to represent that of a large wheel now driving a saw-mill at St. Maur. I subsequently visited the foundry of Messieurs. Pihet & Co." he adds, "where Fournreyron had his wheels manufactured; but information was there scrupulously [and very properly, we think] withheld; and it was stated to us that the important portion of the constructive drawings could not be seen without the special leave of the inventor." Mr. Cullen, in short, found, as he tells us, that, notwithstanding "that easy and polite style so peculiar to a Frenchman," he "had to encounter that annoyance which is inseparable from the refusal of a favour," as the Frenchmen were "inclined to procrastinate, and require, particularly from a stranger [such as Mr. Cullen of Armagh], the favour of a second call," that they might in the interim ascertain, if possible [cunning dogs that they were!], the object of his inquiries, or the purport of his mission."

An inquisitive spirit such as that of Mr. Cullen, however, was not to be foiled in its object and mission, and he returned to the charge by a second visit to France, and accordingly has reaped a pretty good harvest of practical details, which he has turned to good account in the present volume, reserving, doubtless, some little touches of experience to his own business advantage as a millwright and engineer, by taking a leaf out of the French book which he has so diligently perused.

Notwithstanding the uncommunicative politeness of M. Fournreyron, his model-maker, and his manufacturer, Mr. Cullen has managed to give an account "of the manner in which M. Fournreyron's curves may be constructed," and even presents drawings of these and of various other turbines which other French inventors, not so suspicious, explained, "with marked courtesy," to the author; and on the whole he has produced a very instructive and practical little work on that most useful invention the turbine, a piece of ingenious mechanism which ought to be better known and more in use than it as yet appears to be; for it possesses various advantages over the more usual perpendicular wheel, such as the simplification of mill machinery attached to it, and the comparative smallness of the wheel itself, the economy of water-power, and its use in cases where no other known wheel could be worked, at least to such advantage.

#### Miscellanea.

**TOWN IMPROVEMENTS AT LIVERPOOL.**—The Improvement committee have submitted to the town council a recommendation to carry out an extensive scheme of town improvements at an estimated cost of 300,000*l.* The plan comprises the widening of many old streets, and the construction of new ones, and embraces the improvement of the approaches to the landing stages. The committee recommended that application be made to Parliament for power to borrow 300,000*l.*, the interest upon which would, it was estimated, be met by a borough rate of 3*l.* in the pound. It was stated that, if the scheme was postponed for ten years, the cost would be ten times the amount. The consideration of the subject was adjourned until the report of the special committee, appointed to consider the plans for the proposed public offices,—which, exclusive of land, are to cost 100,000*l.*,—should have been submitted and approved by the council.

**MASONS' STRIKE IN CORK.**—Undeterred by the sad lessons taught by the late strike in London, the masons of Cork are preparing to "turn out" for an increase of wages. A local paper says:—"The masons of Cork—a trade that more nearly approaches the class of unskilled labourers than any other—receive at present 2*s.* a-week. Not satisfied with the amount, they have given notice of an intended strike for 3*s.* a-week additional."

**THE ENGINES OF ELY WATERWORKS.**—Mr. Latham having denied my statement on the duty of the engines in to-day's *Builder*, I will now give the authority from which I made the statement. For the duty of the old engine, I took the average of a whole year's working, from Lady-day, 1856, to Lady-day, 1857, from the accounts laid before the Board and the public, and passed by the auditor, and the average of that year is under 4*l.* 5*s.* per million gallons. For the duty of the new engine, I took the average from the accounts for coal, oil, &c., laid before the Board for the last four months, and I find that 7*l.* is under the average for that time. The last year's accounts will be laid before the public in the course of a few weeks, when the ratepayers can make the calculation for themselves.—DAN.

**THE RESTORATION OF ST. ALBAN'S ABBEY CHURCH.**—A public meeting of the subscribers to the Abbey Restoration Fund, convened by the Earl of Verulam, the lord lieutenant, has been held at the Shire Hall, St. Alban's, to consider the steps to be taken with reference to the appropriation of the funds some time since subscribed, and a portion of which were contributed conditionally on St. Alban's being created an episcopal see. The following resolutions were agreed to:—"That there being no immediate prospect of obtaining for St. Alban's Abbey the dignity of a cathedral, a circular be sent to the subscribers of 1856, inviting them to allow a part or the whole of their subscriptions to be applied to the repairs and restoration which are now reported to be essential to the sustentation of the building;" and "That the money which has been contributed, and shall not be withdrawn, be at once expended under the direction of Mr. Scott, in necessary repairs, always keeping in view the prospect of the Abbey becoming a cathedral."

**FALL OF A PLATFORM AT WORTHING.**—While about 200 children were seated on a platform erected at the Davison School, the whole gave way and fell to the ground. The erection, which covered an area of about 25 feet in length by 14 feet wide, was formed by placing at intervals six pieces of deal board about 16 feet long, 4 inches wide, by 1 inch thick in a sloping direction, the top end pitting against the wall 8 feet 6 inches from the floor, and extending at the bottom point about 14 feet from the wall into the room: on to these six pieces of board were fixed upright and transverse pieces or strips of deal to lay the seats and foot-boards upon: these seats, of which there appeared to be about eight or ten, were about 25 feet long. Most fortunately, the entire injury was confined to a few scratches and bruises. It would seem that the gallery was overloaded, or, in other words, the main timbers were of insufficient size. They had greatly deflected before finally breaking, and appeared to have splintered into layers, like coach-springs. The erection first gave way in the centre, where the mass converged, the two extreme strings remaining unmoved, although not a single seat remained not thrown down.

**GAS.**—Ninety-two towns in England have adopted the Sales of Gas Act.—At the last half-yearly meeting of the Lincoln Gas Company a dividend at the rate of 10 per cent., "with a bonus of 5 per cent. in addition," was declared.—The Dewsbury Gas Company have just paid a dividend of 10 per cent., and a surplus of between 500*l.* and 600*l.* was carried over at the annual meeting of shareholders.—At a meeting of the Oldham Beersellers' Association, it has been unanimously agreed that no candidate be supported at municipal elections who will not pledge himself to adopt every legal means to effect a reduction of the price of gas to 3*s.* 9*d.* per thousand feet to small consumers.

**TYE AND ANDREW'S PATENT SINK TRAP.**—Messrs. Tye & Andrews have adopted the dip trap to sinks, with the advantage of carrying the waste water off with a good flush. According to their own description, "the traps are made of iron galvanized, and the mode of fixing is most simple, the joint having been made connecting the waste-pipe and trap, the lined and flanged grate is removed when the trap is passed through the hole of sink from the underside, when the lined grate is replaced, and by turning ditto slightly round, the clips of grate grip the flange of trap, and being lowered, the brass flange takes a bearing in rebate of sink, when it is either soldered or cemented round in the usual way." If it be intended, as we infer, that the grate should be soldered in, there would be the risk of the trap "sitting up." The grate might be left loose with less risk than with the ordinary bell trap, and is in other respects far superior to it.

**WORKMEN'S INSTITUTE AND BENEFIT CLUB.**—On the 11th inst. Sir F. H. Goldsmid, Bart., M.P. for Reading, delivered a lecture on "The Health of Towns," to the members of the institution, established in the Euston-road, to provide, as we have before said, for workmen of all classes a reading-room, library, house-of-call, and benefit club, enabling them to make provision for sickness and old age. Mr. Jervoise Smith occupied the chair. The lecturer was listened to with much attention, and touched upon the various subjects of food, drink, dress, cleanliness, pure air, and wholesome recreation; and under each of these heads made suggestions for promoting the public health. The lecturer concluded by observing that, according to Dr. Gny, monarchs, noblemen, the gentry, and professional men, had a slight advantage as regarded length of life over workmen in towns, but they were decidedly less long-lived than agricultural labourers. As a general rule, however, death entered the palace first, the castle or mansion next, and last of all, the humble cottage, if it were only blown upon by pure air; because health was improved, not by wealth and luxury, but rather by moderate toil of body and mind.

**PHOTOGRAPHIC ETCHING AND MULTIPLICATION OF DESIGNS, PLANS, &c.**—An ingenious and simple mode of preparing and printing copies of plans, &c., has been invented by Mr. William Stridwick, of Bolton-terrace, Newington, according to a printed description now before us in the form of a tract, titled "The Art of Photographic Etching." Essentially the process consists of etching or drawing on the opacified surface of a glass plate, and printing from that upon sensitive or photographic paper, whereby the light of the sun or course blackens the lines traced through the opaque coating, the copies being developed and fixed in the usual way. By this means, as the inventor remarks, architects and surveyors may copy their plans *ad infinitum*, by simply making an original drawing on the plate. We may here suggest, too, that the same process might do very well for the multiplication of circular and other graph letters, or other literary matter.

**THE WESTMINSTER CLOCK TOWER A MONSTER GIGANTAR.**—Very odd suggestions are occasionally made by our correspondents. "A Nobody" suggests that, as the construction of a bell fitting for such a clock as that at Westminster Palace appears to be an insurmountable difficulty (which is a mistake, to begin with), "an excellent substitute for a bell might be constructed in the clock-tower by stretching from its summit to its base metallic cables (such as those patented by the company in the Strand), upon the principle of the strings of the pianoforte [much more *forte* than *piano*, we suspect], and having them struck by a broad-faced hammer. The present striking power of the clock being sufficient to attain the desired effect, there would in such a case be no superincumbent top weight, no oscillation, and very little expense in construction." The latter part of this quotation seems to imply the idea that the tower is not strong enough for "the superincumbent top weight" and the oscillation, which no one avers; but is the writer aware that the force operative even on an ordinary pianoforte, by the tightening of its strings, is equivalent in itself to many tons weight? Our correspondent's suggestion, however, reminds us of a remark of our own in reference to Big Ben the second,—that its tone very much resembled the boom of American or Slick clocks provided with a volute of brass rod instead of a bell,—and this suggests the question whether such rods, made on the great scale, might be not unsuitable for town clocks in place of bells. No strain whatever, nor even oscillation, would here tend to pull down a tower or break its beams.

**COMPETITION DESIGNS FOR HOUSES OF PARLIAMENT, SYDNEY.**—With reference to the advertisement on this subject that has appeared in our pages on several occasions, we may mention that the general conditions and contour plan may be seen at our office by any who have not succeeded in obtaining a copy for themselves.

**MONUMENT IN STANBROPE CHURCH, DURHAM.**—Within the last few days a monument in memory of her grace the late Duchess of Cleveland has been erected by Mr. Physick, sculptor, of London. It is of Carrara marble, and consists of a recumbent figure of the deceased reclining upon a Gothic altar-tomb, while behind, in basso-relievo, is an angel conducting the departing spirit to the realms of bliss. The whole is surmounted with a Gothic canopy.

**FIXING CRAYON DRAWINGS.**—Mr. G. B. Moore, who advertises the discovery of a method of fixing crayon drawings, so that they may be kept in a folio, has sent us a specimen, wherein certainly the object aimed at is achieved.

**NOTHING NEW UNDER THE SUN.**—In our Miscellaneous, recently, a correspondent gives an interesting account of the early dawn of an Enfield rifle. Another well-known modern destructive agent was foreshadowed nearly a century ago, as may be seen in the Annual Register, A.D. 1768 (p. 103):—"They write from Paris, that a curious fowling-piece of a new invention, weighing only seven pounds, has been presented to the king at Choisy. The piece discharges itself twenty-four times in two minutes, only by laying hold of the barrel after the first shot, and then permitting it to make a semi-circle from left to right, and then right to left: by this operation it re-loads and is ready again." Surely, with a steel spring and an enlightened public, we might have had Colt's revolver long ago.—J. CUNDY.

**HOW TO PLEASE A COUNTRY SQUIRE ENSCONCED IN A HIGH PEW.**—In a church in Gloucester, which has been lately refitted, and where the squire objected to the reduction of his high pew, as he wished to see all the sittings of equal height externally, in order that he might be screened by his accustomed height of breastwork, he allowed the floor within his space to be lowered, and was satisfied with a descent of a step or two towards mother earth! Is this an emblem of his humility?

**LIGHTNING RODS.**—The conductor or lightning-rod was long since known and employed by the wild peasantry of Lombardy. According to the writer of "Recreative Science," the Abbé Berthollet, in his work on electricity, describes a practice used on one of the bastions of the Castle of Duino, on the shores of the Adriatic, which has existed from time immemorial, and which is literally neither more nor less than the process which enabled Franklin to bring lightning down from the clouds. An iron staff, it seems, was erected on the bastion of the castle during the summer, and it was part of the duty of the sentinel, whenever a storm threatened, to raise an iron-pointed halbert towards this staff. If, on the approach of the halbert, sparks were emitted, the sentinel was made sure that a storm indeed, and he tolled a bell, which sent forth the tidings to the surrounding country.

**CHINESE NAVIES.**—An astute contractor has for some time past, says a contemporary, employed Chinese navvies upon the railway works in North Wales, and professes himself perfectly satisfied with the experiment. Did he impart them direct himself from China?

**MENDING CRACKED BELLS.**—In your No. 891 you have given an account of a process for mending a cracked bell, as exhibited by Mr. Varly at the Institution of Civil Engineers. Allow me to call attention to the method described in the "Pyrotechnic," by Biringuccio, first published 1510. The sixteenth chapter is upon the subject of soldering cracked bells, wherein he gives instructions to bury the bell, or cover and fill it with earth so much as to leave the broken part exposed, and to be acted upon by the fire of a furnace, and, when at a certain heat, to pour in a sufficiency of the same melted metal, which he says will make a sound job! There are several editions of Biringuccio in the British Museum.

H. T. PELLACOMBE.

**TENDERS**

For erecting a house in Bishopsgate-street, for Messrs. Soames, Son, & Page, Mr. Wilkinson, architect. Quantities supplied by Mr. Merkin:—

Cubitt & Co.	£3,000 0 0
Mansfield & Son	8,850 0 0
Myers	7,662 0 0
Lacey, Brothers	7,730 0 0
Wilson (accepted)	7,597 0 0
Piper & Son	7,554 0 0

\* Unwilling to comply with the conditions of contract.

For residence for Mr. A. Bowman, at Edenbridge, Mr. Horace Jones, architect. Quantities by Mr. Reddall:—

Wheeler	£4,250	240
Carruthers	3,997	140
Thompson	3,967	132
Reston	3,250	99
Lawrence & Sons	3,780	not sent.
Scott	3,497	230
Fritchard & Co.	3,472	200
Cowder	3,477	150
Edwards	3,295	183

For a warehouse in the Belle Sauvage-yard. Messrs. Tress & Chambers, architects:—

Deards	£2,960 0 0
Nixon	2,877 0 0
Wood & Son	2,740 0 0
Macey	2,700 0 0
Lawrence & Son	2,640 0 0
Axford & Co.	2,628 0 0
Gander	2,625 0 0
Brass & Son	2,594 0 0
Brown & Robinson	2,550 0 0
Coleman & Son	2,530 0 0

For five houses in Carter-street, Houndsditch. Messrs. Tress & Chambers, architects:—

East	£2,700 0 0
Fowler	2,614 0 0
Candler	2,613 0 0
Tarrant	2,598 0 0
Elston	2,513 0 0
Dealis	2,450 0 0
Coleman & Son	2,388 0 0

For Cornwall-buildings, Little Sutton-street, Clerkenwell, for Mr. Joseph Ferris:—

Branson	£2,500 0 0
Carter	2,499 0 0
Health	2,289 0 0
Nash	2,198 0 0
Ring & Stanger	1,640 0 0

For the restoration of St. Mary's Church, Ashford, Kent. Mr. Joseph Clarke, F.S.A., (Boscan architect.—

Edwards	£3,370 0 0
Smith	2,195 0 0

For Pinfold Parsonage, Rochdale. Mr. Joseph Clarke, architect:—

Farrell	£2,260	£170
Nield	2,140	250
Stone	2,110	95
Stones	2,035	140
Hughes	1,925	

For alterations to the premises of the Pharmaceutical Society, Bloomsbury-square. Messrs. Lansdown, architects:—

Mansfield	£2,112 0 0
Axford & Co.	1,962 0 0
Patman & Fotheringham	1,962 0 0
Piper & Son	1,930 0 0
Myers	1,800 0 0
Hocken	1,802 0 0
Pollard & Haunch	1,840 0 0
Macey	1,746 0 0
Baterbury	1,719 0 0

For new schools at Orford, near Warrington, Lancashire. Mr. Joseph Clarke, architect:—

Pierpont	£1,955 0 0
Hughes	1,833 0 0
Pennington	1,790 0 0
Stone	1,719 0 0

For new house at Boston-Road, Brentford, for Mr. W. P. Griffith:—

Nicholson	£1,635 7 0
Donnison & Moultrie	1,839 0 0
McCallow	1,790 0 0
Adams & Sons	1,692 0 0
Nye	1,692 0 0
Chamberlain (accepted)	1,697 0 0

For building new aisle and spire to St. Thomas's Church, Golborne, Lancashire. Mr. Joseph Clarke, architect:—

Eaton	£1,873 0 0
Farrell	1,862 0 0
Hughes	1,859 0 0
Farelongh	1,490 0 0
Pennington	1,390 0 0
Stone	1,252 7 3

For new buildings at Writtle Mills, Chelmsford, Essex, for Messrs. Beach. Mr. G. Elkington, architect:—

Wells	£1,793 0 0
Brown	1,630 0 0
Saltmarsh & Beaumont (accepted)	1,520 0 0

For a pair of semi-detached villas at Croydon. Mr. John Berry, architect. Quantities supplied:—

Farrell	£1,736 0 0
Ebbutt	1,730 0 0
King, Burton, & Co.	1,618 0 0
Keley	1,616 0 0
McLennan & Bell	1,568 0 0
Rice	1,572 0 0
Hollidge	1,555 0 0
Clements	1,389 0 0

For alterations and additions to Dunster House, Rochdale. Mr. Joseph Clarke, architect:—

Taylor	£1,360 0 0
Fogget	1,254 0 0
Hughes	1,073 0 0
Farrell	924 0 0

For two houses at Enfield, for Mr. Draper, exclusive of carpenter and joiner's work. Mr. Reddall, architect. Quantities not supplied:—

Fritchard & Son	£1,130 0 0
Stubb	1,038 0 0
Clarke	1,097 0 0
Rieg & Stanger	1,095 0 0
Patman	998 11 0

For fitting up a warehouse in Cannon-street West, for Messrs. Murricks, Slater, & Nephews. Mr. F. G. Widdow, architect. Quantities supplied:—

Browne & Robison	£2,998 0 0
Ashby & Sons	895 0 0
Wm. Lawrence & Sons	882 0 0
Brass	878 0 0
Ashby & Horner*	832 0 0
When	819 0 0
Sargeant	815 0 0

\* Accepted, as they undertook to do the work in a month.

For the restoration of the church of St. Margaret, Topcroft, Norfolk. Messrs. Beust & Newson, architects, Norwich:—

Ling & Balls	£2,530 0 0
Mumford & Jackson	229 10 0
Botwright	59 0 0
J. Brooks	468 0 0
Spinks & Burrell	455 0 0
Gedbolt & Sons (accepted)	399 0 0

And the old lead and materials.

# The Builder.

VOL. XVIII.—No. 899.

The Medal Night at the Institute.



THE members of the Royal Institute of British Architects mustered strongly on Monday evening last, at the house in Conduit-street; and Mr. C. R. Cockerell, R.A., the president, took the chair. In the course of the routine business first transacted, Mr. T. H. Lewis announced, amongst other donations, nine volumes of "Le Pire Antiche D'Ercolano," the gift of Mr. Lockyer.

Professor Donaldson, in proposing a vote of thanks to the donors, referred to this work, which, he said, was not only illustrated with engravings in the first style of art, but contained essays of the deepest interest with regard to the learning of the ancients in architecture, manufactures, and decoration.

Mr. F. C. Penrose (honorary secretary for foreign correspondence) submitted the programme of the forthcoming architectural congress, to be held in Dunkirk, and stated that the presence of any members of the Institute would be most acceptable.

Professor Donaldson reminded the meeting that Dunkirk was now within a few hours of London, and that it contained a beautiful church of the Corinthian order, various statues, and many public monuments of very great interest.

The President after this called upon Mr. Lewis to read the report of the council upon Architectural Examinations, not for the purpose of discussion, but in order that the members present might be afforded an opportunity of considering the subject. This report we have given separately on another page. It will be regarded as a document of serious import. When it had been read,—

Mr. Charles Barry inquired whether it was proposed that a paper of such great importance to the profession as that just submitted should be circulated among the members of the Institute: what, in fact, was the course which the council proposed to adopt with reference to the matter?

The President said that the intention was to send a copy of the report to all the members of the Institute, and afterwards to fix an early day for the discussion.

The President, then addressing Mr. Sydney Smirke, R.A., before handing him the royal medal of the Institute, said,—Mr. Smirke, I have the honour to present you with the gold medal which has been unanimously awarded to you by the Institute, whose recommendation has been accepted by her Majesty, and which has been universally approved by the profession and the public. We consider that you are the inheritor of that remarkable school founded by Sir Robert Smirke,—a school which we so much admire, and which has done so much to improve and elevate the taste for architecture. Professionally we are all aware of the great accession, not only of talent, but of high character and respectability which your brother and yourself have conferred upon our common art. Many of us are old enough to remember how much he laboured to improve the character of the profession which his talents and assiduity did so much to adorn. We delight to think that you are of a race of artists

remarkable for ability, and that you are so closely connected with one whose name is never mentioned among architects without the respect which should attach to it. We consider that you have well sustained the reputation of the name you bear, and that independently of your eminent professional character, you have, by your exertions on behalf of the Architects' Benevolent Society, promoted to assist our brethren in distress, established claims, which it is impossible for us to overlook. These considerations, and others, to which I will not now refer, entitle you to our utmost respect and regard, and it is with the greatest pleasure that I present you with this medal, and, I am sure, all who hear me, join in the expression of a hope, that you may have many years' enjoyment of the reputation which it carries with it.

Mr. Smirke (who on rising was very warmly received) said, if under ordinary circumstances I am not competent to express my feelings, how difficult must it be for me to speak at a moment like this, when I have to give utterance to emotions so strong and contradictory. I cannot but feel proud of the honour which has been conferred upon me, but at the same time my gratification is alloyed by my consciousness of my own insufficiency and by my sense of those deficiencies which make me diffident in accepting so high a distinction. I feel most grateful to the Institute for this sterling proof of its kindness towards me, for I am convinced that there are many members of the profession far more competent and deserving of it than I am. I shall, however, endeavour to banish those doubts, and indulge in the pleasing thought that the Institute has in its wisdom deemed me worthy of this proud distinction. There are many considerations which give peculiar value to this medal. I cannot but feel that I have been a very negligent, cold, and indifferent member of the Institute. My written communications have been few and insignificant, and my personal attendance but too rare. Indeed, as a personal attendant, I may say I have been a confirmed delinquent. I must not, however, intrude upon your attention the personal circumstances which are the real cause of this apparent negligence, nor speak of the pain and suffering which attendance in a hot and crowded room entails upon me. These deficiencies ought, I know, to preclude me from expecting any favour from the Institute; but you have kindly and nobly overlooked these short-comings, and as long as I live I must feel deeply grateful for the generosity which I have experienced from the Institute. And, sir, I am bound to say that if one thing more than another gives value to this medal, it is that it has come to me through your hands. You have spoken in feeling terms of what you were pleased to term the qualifications which entitle me to this distinction; but I myself am persuaded that you have rated me far beyond my deserts. I know full well the kindly dispositions by which you are animated, and I fear that your kindness of heart has on this occasion led you to a departure from that strict and undeviating line of truthfulness which has ever been one of the most distinguishing traits of your character. I am therefore compelled to attribute this exception to the general rule to the partiality of an old friend. We were both pupils of the same master, by whose example you have so much profited, and whose virtues you have touched upon with so much delicacy and truth. We are indeed old friends, and from our earliest acquaintance I have never received anything from you but acts of kindness and friendship. I feel that I cannot say more on this occasion. It is not in the multitude of words that the emotions of the heart invariably find expression. So I shall conclude by thanking the Institute for this crowning act of honour, and by expressing my hope that it may enter in its new home upon a long course of continually increasing prosperity.

### The President's Address.

The President then said he had the honour to announce that the season was approaching when the election of a president was to take place. He would be proud to offer himself for so highly honourable and distinguished a position if he thought that the state of his health and the advanced age at which he had arrived would enable him to discharge its duties with efficiency. But there was a time for all things, and when some of those present remembered (as his friend Mr. Smirke who accompanied him, no doubt did), that fifty-two years ago he had witnessed the rebuilding of the new theatre, they would readily appreciate the motives which induced him to express distrust of his own powers to serve the Institute. Among the qualifications necessary for a president, were good health, vigour, punctuality, and the ability to attend the meetings when required. It would, he thought, be a great misfortune if by any oversight the person to be elected president should neglect or evade the important duties which he owed the Institute. In his own case he would regard it as a great sin, and as the failure of a long professional life extended over nearly sixty years. But for a sense of his own inability to discharge the functions of president with efficiency, it would have afforded him gratification to offer himself again for the office. But before leaving this portion of his subject, he could not refrain from alluding to the obligations which the Institute was under to their late illustrious president, who for twenty-four years had exerted himself so much in their welfare, and in all that tended to the elevation and improvement of their art. He believed he was justified in saying that the leading inducement in the mind of her Majesty to give the gold medal, was to be attributed to the exertions of the late Earl De Grey, who never for a moment neglected the interests of the body, and whose tact and ability, guided by the high breeding which distinguished him, had kept in the back-ground his own singular merit as an artist. He was, indeed, a nobleman among artists, and an artist among noble men; it was under his guidance that the Institute had risen to repute and importance, and had secured for itself a position which would endure for the honour of the country for many years to come. They must not forget that they owed to their late noble president not only the patronage of her Majesty, but also that of the Prince Consort, to whom the artist world owed more than it was perhaps willing to admit. He felt that the more he considered what should be the qualifications of their president, the more he felt himself bound to point to the high breeding and the urbanity of Earl De Grey, whose tact and knowledge of the world so eminently fitted him for the position he occupied. The selection of a future president was attended with many difficulties. If they were to select an architect for the office, they would have to deal with the question of professional rivalry. If they selected a young man in the enjoyment of a large practice, he would have his own affairs to attend to, for they all knew how much private engagements engrossed the time and attention of professional men. There was a further consideration to be borne in mind, and that was the absorption of time incidental to such an office. They were all no doubt aware that the president of another, and what might be termed a rival society, had upon his election given up his profession as a painter, in order that he might devote his whole time to the Royal Academy. He ventured to mention this circumstance, because it was his duty to put such reflections before the Institute, so that its members, when electing a president, might arrive at correct conclusions on the subject. In advertising more particularly to the institution of which they were members, he thought they had reason to rejoice in its establishment. In such an Institute they had the advantage of a guild without its faults—a bond of union without restriction of pedantry or craftmanship. Its object is to raise the standard of the profession, to unite the necessary qualities of mathematics and art in due proportions. What were the means to this end? He regarded the proposition to institute honorary diplomas as most important. But how, he asked, were they to raise education to the level of this examination? Schools of their own were impracticable, from the condition of the Institute and want of Government patronage, as in other countries. Their sphere was, therefore, not to educate, but to direct education, by making use of existing institutions. Their own institution would raise the standard of their common profession. No such society existed in his young days, for the architects of his time were without any bond of union, and had no connection with any public body having corporate weight and authority. Indeed, it was matter of surprise to him how the architects could have dispensed with such a society, for although no record remained of the fact, it was but reasonable to suppose, from the uniformity of practice in the works of the Greek architects, that they had, like the Romans, their *Collegia Fabrorum* long before the great benefits of freemasonry were known in Europe. These advantages the British architect was now enabled to enjoy in a spacious house, which included a library and museum, and which was able to afford accommodation to the several kindred societies connected with architecture. A great deal, as they were aware, had been said about enlarging their sphere of usefulness. They

had heard that night the outline of a scheme of examination recommended by the council, which was calculated to improve the *status* of the profession and increase its value and importance before the public. He regarded the proposed examinations as the means of obtaining degrees, not only in science, but in art also. It had been, he thought, too much the habit to overlook the value of the litter in connection with architecture. They would now be able to indulge in their love of art, and to advance to the knowledge of it by rapid and interesting steps. It was true they had no funds, but they would be supplied by public liberality and spirit. It was a vulgar idea to suppose that wealth was absolutely necessary to command success, for it sometimes occurred that it was but a drug which retarded the development of talent. But after all, to raise the standard of education was the aim which they had in view, in order that this country might take its proper place among the great nations of Europe. The Royal Institute of British Architects was, as they knew, uncrowned. They were in fact orphans; they had no Government assistance to aid them in the encouragement of art and science. The Institute was in fact left to do that which the Government could not do. This ought to be, and he had no doubt was, an honourable incentive to action. But although they had no endowments or no academies or schools, there was a large field in the metropolis from which mental improvement might be derived. There was the London University, the Royal Academy, the South Kensington Museum, the Schools of Design, and other institutions, all intended as auxiliaries in the work of education. This being the case, if they had not the means of their own they might honourably take advantage of those institutions to bear upon their art. If they had no funds of their own they could take advantage of the funds so liberally supplied elsewhere. They knew of a certain institution which was really in want of a sufficient number of candidates for their honours; and the Architects' Institute might be able to offer them suggestions, with great advantage to their utility. At all events, let them, as the *ars regina*, pursue their course with dignity, and not quarrel with any one. If they thought other institutions were in fault let them advise them, and they might possibly accept a hint given in a friendly way. They would invite the co-operation, and not incur the hostility, of any other society, more especially of that particular society which might say to them, "We have three arts to look after—painting, sculpture, and architecture—while you have only one." He would now venture to add a few words on the subject of education in architecture. There was a natural rivalry of science and art in the profession of the architect. It was notorious that from the earliest to the most recent times art and taste had stood professionally before science. Very few architects united the qualities of science and art. Sir Christopher Wren was perhaps the only illustrious example in this country of the union of the artist, properly so called, and the scientific mathematician. He feared they would have great difficulty in getting a supply of those gifted, or as they were sometimes called, "diabolical personages," uniting science and art, and showing how usefully they could be combined in public buildings and monuments. Upon this subject Rondelet said:—"The true cause of the word architecture indicates a science, the object of which is to direct the operations of every sort of building, so as to unite convenience, solidity, and beauty of forms. Architecture is not, therefore, only the art of delineating and profiling the orders, Greek and Roman, and others, as many authors presume, but a vast science, the purpose of which is to obtain the security, the convenience, and the magnificence of nations, and to give them that lustre and prosperity which true civilization implies. Most modern architects are rather decorators than constructors, miming, like the painter and the sculptor, chiefly to please—indulging in capricious but often impracticable designs, induced by their association with the imaginative arts of painting and sculpture, and patronized unduly by governments, attracted by splendour and ostentation rather than by the graver merits of solidity, convenience, and durability." Thus again said Rondelet:—"Would it not be profitable to distinguish equally the three branches of our art,—convenience, solidity, and decoration,—by encouragements of rewards and honours, and consequently, by professors of each separate department, for the culture of the several talents on which the success and merit of a work ultimately depend?" On the other hand, "Drawing," said Q. M. de Quincy, "under

which name we understand, not *simple delineation* only, but the *study of the forms* of the human body, and of nature in general, and which constitute the base of painting and sculpture,—drawing should enter as an essential study into the practice of the architect. Some authors have asserted that *no one can be a good architect* without having been a *good painter* or a *good sculptor*; and if we look into antiquity we shall find many authorities in favour of that association of studies or professions of architecture, painting, and sculpture. In Italy, especially during the finest ages of art, we find the union of these arts in the most celebrated architects. Witness the names of Giotto, Orcagna, Mantegna, Michelangelo, Raffaello, Giulio Romano, Polidoro, Vasari, Tibaldi, Daniel de Volterra, John of Bologna, Domenico, Cortova, Bernini, Algardi, &c. But confining ourselves more particularly to architecture, we find excellent in the sister arts also, Brunelleschi, Alberti, Annibaldi, Sansovino, San Gallo, Bramante, Vignola, &c., whence it results that the finest works in Italy are the fruits of the combined arts of painting and sculpture, and architecture at the same time. France and England furnish abundant instances of the same argument, viz., that these three fine arts are so many dialects of the same language, which expresses the laws and the effects of unity, variety, and harmony of contours and proportions in works of architecture." The French were mindful of this. Always aiming at method in every study, and essentially academic, they had ever produced the best exemplars of academic institution, and in their school of architecture they were no less exemplary. In the establishment of the Royal Academy, the French model was adopted by Sir J. Reynolds and the council. The laws were drawn from their example, and the institution took their general orders and features from the Academy of Paris. Many changes and modifications in the French academy had taken place since that time. By the system adopted in France the student was led through a course which fitted him for the various and the multitudinous claims upon his attention, and his genius would find all the elements which were calculated to bring forward his especial and peculiar faculty, by consulting the professors who could best furnish his peculiar propensity, and he was taught the great and fundamental truth, as Pope says,—

"To one thing only is one genius fit,  
So vast is art, so narrow human wit."

Thus we had the architect engineer, the architect of taste, the architect decorator, the architect surveyor or estimator,—all requiring distinct talents, contributing to the great ends of art and the glory of a country. It was true that genius would supply the elements which made up success without these exact academic studies and courses, and nothing would supply the wants of that genius which was inspired from heaven. To establish and to maintain by this Institute a standard of good taste and judgment in architecture, to lay down and appreciate the right principles and the right epochs of fine art, was the especial duty of this Institute. For this they invited travellers and accomplished men of thought to give some fixity of principles to their noble art, and to save it from the wreck of chance, the caprice of fashion, and the decline of judgment. He did not wish to offer any criticism, but he believed that in the course of time they would become the arbiters of everything that was sound in architecture. To lay down the true principles of art ought to be their mission, and he believed that their Institute would in time achieve it, and thus ultimately become the centre of intelligence for every information, the arbitrium of professional practice, and a court of appeal in professional questions without assuming dictation. Great would be the future estimation of those enterprising and enlightened spirits amongst them who had originated the Institute of British Architecture; great the obligations of the country for the substantial benefits and the glory to their skill and genius, from the humble cottage to the lofty temple. He believed the Institute would increase and flourish, and that in the fulness of time it would do all that was expected of it. Vulgar funds would come in by and by, and they would have legacies and other sources of income to enable them to extend their sphere of usefulness. Let them, therefore, rejoice in this growth of their time, and cultivate their advantage by labour, by union, and by every loyalty of heart and zeal to the advantage of their noble art and science, and the glory of their country. He deemed it to be his duty to offer these observations (which he did very humbly), to the better judgment of those who heard him,

and he should be glad to entertain the subject at a future meeting.

Professor Donaldson said that the address which the president had just delivered embraced a great number of subjects,—the condition of the profession, the course of study, the position to be occupied by the Institute, and the probable effect of the educational scheme, the outline of which they had heard that night. But there was one topic upon which he (Professor Donaldson) would wish to offer a few observations. It had reference to the selection of a president for the ensuing year; and as the subject was one which was foremost in their minds, he thought he would be excused for venturing to allude to it. He thought he could say on behalf of all present, that the excuses which the president had advanced against serving in the ensuing year had not that force which he himself appeared to attach to them. The members of the Institute did not think that the health of their respected president, nor yet the number of his years, could be accepted as a valid excuse for not continuing in office, because the efficient manner in which he had discharged his duties was opposed to any such conclusions. He hoped, therefore, that Professor Cockerell would consent to give them his valuable services during the ensuing year. The president had said that there was a time for all things, but the Institute felt that the time had not arrived for his retirement. The reference which the president had made to the irksomeness incidental to attendance on many meetings, would indicate that he wished to retire; but he hoped that this objection would be removed by the council preparing such a list of vice-presidents to assist the president, that his attendance at the ordinary meetings might not be imperative. It would, he thought, tend materially to the harmony of the profession if the president would reconsider his views upon the subject, so that he might feel called upon to vindicate his position as the most fitting person who could fill the post of president of the Institute. It would be, he was sure, a source of general regret if the president were not to consent to act during the ensuing year.

Mr. Peurose, in calling attention to the models for the Wellington Monument, lent to the Institute by the Government, observed that the finer sepulchral monuments of antiquity were of an architectural character, and he believed it would be found that it was the forgetfulness of architecture by the sculptor which had led to the very undecided and equivocal state of monumental sculpture at present. The Mausoleum at Halicarnassus was an example of a fine combination of architecture and sculpture. The small monumental works of the ancients were very much in the manner of ordinary Gothic head-stones. The architectural monuments of antiquity appeared to have given rise to the attempts of Byzantine and Norman kings to exhibit the union between architecture and sculpture. These Norman and Byzantine forms gave rise to the Gothic tomb, of which the finest samples in this country were to be found in Westminster Abbey. The best examples of Gothic monumental art, however, which had come under his notice were those of Naples. It was not until the schools of the Lombard bogu he felt that sculpture of the highest order was applied to the tombs of Italy. There were groups paying homage; recumbent figures with angels drawing the veil from the features of the recumbent; but there was nothing ponderous to blot out air and light in the building in which the tomb was raised; neither was there any appearance of extravagant action: everything was solemn and in order. These tombs gave rise to the architectural combinations created in Rome and Venice. Mr. Peurose then called attention to drawings of favourable examples of architectural tombs. These included the tombs of Doge Andrea Vendramio and Doge Giovanni Morozzino, at Venice, the work of the Lombardi; that of Adrian the Sixth, by Peruzzi, at Rome; and that of Thousso Vico, at Verona, by San Michele. The action of the sculpture or grouping in these cases was all of a quiet character, and in strict keeping with Nature and the purposes of an ecclesiastical building. It was, he thought, extremely difficult to fix the period at which the practice of block monuments arose. They might have had their origin in a mistaken attempt to follow Michelangelo, but it was not the practice of that great artist to indulge in block studies, and his fine tomb to Julian the Second was a monument which might be described as being of an architectural character. The earlier monuments in Westminster Abbey presented a suitable union of architecture and sculpture, and he remembered having seen in a country church in England two beautiful monuments by Gilhons,

designed so as to combine architecture and sculpture. The great objection to block monuments was that they encumbered a building, whether placed against the walls or on the floor. An architectural monument might be built in the centre of a building, for though the people might not be able to pass through it, the eye could pass through the openings, and thus remove any appearance of heaviness. The models exhibited in the room included those for which the first, second, and third prizes were awarded. The first prize was awarded to Mr. Calder Marshall, and the second to Mr. Woodington. When the designs were first submitted to public view in Westminster Hall it was intended to place the monument under the nave in St. Paul's Cathedral, but it was now proposed to place it in the Consistory Court, the business of which had been removed. The court would, in fact, be converted into a mausoleum; but in order to judge of the effect, a model the size of the original would be erected in the first instance. This duty had been entrusted to Mr. Stevens, who was essentially a sculptor, and Mr. Marshall and Mr. Woodington were engaged to fill the semicircular space with bas-reliefs in marble representing appropriate subjects from Scripture. Mr. Barry, in moving a vote of thanks to Mr. Penrose, for his interesting remarks, said,—It occurred to him that the so-called failure in the Wellington models might perhaps be attributed to the great difficulties imposed upon the competitors, by uniting in one work two dissimilar subjects,—a monument and a tomb. The idea of a tomb was to convey a lesson of mortality, to show that in the grave all men are equal,—while that of a monument was to perpetuate the remembrance of the great deeds of the person who had passed away, in order that those who succeeded him might endeavour to emulate his example, and be, in their turn, national benefactors. The difficulty of embodying these two objects might account for the moderate success which had attended some of our public monuments.

Mr. Penrose said he had prepared a paper upon the Greek marbles which had been exhibited at the last meeting, but that as the hour was so advanced, he would postpone it until a future and more convenient opportunity.

The following gentlemen were on ballot elected fellows of the Institute:—Mr. Wyatt Papworth, Great Marlborough-street; Mr. Charles Hennan, Millan-street, Bedford-row; and Mr. Charles Gray, of Southampton-street, Strand. Mr. John Wilson Walton, of Adam-street, Adelphi, and Durham, was elected an associate.

The proceedings then terminated.

ART-UNION OF LONDON.

On Tuesday morning last the annual general meeting of the Art-Union of London was held in the new Adelphi Theatre. The Right Hon. Lord Montagu, president, having taken the chair,

Mr. George Godwin read the following—

REPORT.

The Art Union of London has now been established for twenty years. Exclusive of the current year's subscription, and of the thousand added by prizeholders, it has raised and distributed the sum of 254,143*l.*, of which 138,622*l.* have been paid to artists, and for the production of statues, bronzes, and other prizes; and 64,822*l.* to engravers and for the supply of impressions to the subscribers. It has sent some hundreds of thousands of engravings over the world,—to the gold-diggers of Australia, the buck-woodmen of Canada, to New Zealand, China, the Indies, Egypt, the United States; in fact, to nearly every corner of the globe where there is an English settlement, as well as to every city, town, and village of the United Kingdom; and it finds itself, on the present occasion, with a subscription of 14,187*l.* Its supporters may, therefore, fairly believe that the principles on which it is carried on, the principles on which it was founded, are sound, and generally approved.

The print of last year, "Life at the Seaside," has been long in the possession of every member. This was a large and costly work; but that its selection and distribution were a judicious step, is proved by the singularly great subscription which followed,—a subscription of more than 3,500*l.* above that of the previous year. The production of so important a work necessarily trenching largely on the funds available for prizes, and the expense of framing it was considerable. For these and other reasons it would be undesirable to give a work of such magnitude and cost very frequently. It has not escaped the notice of the public that complaints have been made by a certain section of artists as to the amount expended on this print, and as to the production of bronze and porcelain statues and other works, to the diminution of the funds available for the purchase of oil paintings, assuming that it was for the promotion of the latter class of art-productions that this society was especially instituted. Into any controversy on this matter the council do not consider it necessary to enter. The very terms of the prospectus, which state that the society "was established to promote the knowledge and love of the fine arts and their general advancement in the British empire," sufficiently indicate the wide field originally proposed for its labours.

It is sometimes forgotten, moreover, by those who would criticize the proceedings of the council, that it has not merely to distribute the funds, but to collect them.

The total sum which has been expended by the Art-Union of London on painting, exclusive of the further large amount added by the prizeholders themselves, is 118,765*l.*, while for bronze and porcelain statues, medals, works in iron, enamels, lithographs, and other productions given as prizes, the sum of 19,897*l.* has been paid.

It may be interesting to state the number of bronze and other statues which have been distributed. The eagerness with which such works are always sought is the best proof that their production meets the full approval of the members.

Bronze statues and busts .....	313
Porcelain and other statues and busts ..	2,553
Tazas and vases in iron .....	230

It may be fairly assumed that the above list would be even much larger, but for the circumstance that in the early years of the Society medals were awarded and the art of casting statues in bronze, were almost unpractised in this country, while statues in Parian were scarcely known.

The Art-Union of London may claim the largest share of the credit of fostering a branch of art-industry, to which there is scarcely a household that is not indebted for one or two reproductions of some beautiful work of an ancient or modern artist.

Subscribers of the current year have mostly received the volume of wood engravings, prepared for them from pictures thirty increased British artists, and an engraving by Mr. F. Hall from the picture by Mr. J. J. Jenkins, called "Come along!"

For the ensuing year every subscriber will receive for each guinea paid, an impression of Mr. Willmore's engraving, after Turner's celebrated picture, "Caldwell's Pilgrimage," described in last year's Report, and which engraving is now at press.

Mr. Abscon's water-colour drawing, "Boulogne," has been reproduced in chromolithography by Mr. Vincent Brookes. All may not know that each colour in a work of this kind requires a separate printing, so that in the production of this picture, for example, twenty stones are used. Framed copies will be distributed to-day.

The council have recently offered a premium of one hundred guineas for a series of designs in outline, or outline slightly shaded, illustrative of Mr. Tennyson's poem "The Lily of the King." The advertisement points out that simplicity of composition and expression, beauty of form, and correct drawing, are the qualities which they are anxious to see exhibited in the designs. The drawings are to be sent in by the 30th of June next, and they will be publicly exhibited.

The selected series of the engraving of the council have fulfilled, will be engraved for distribution. They have further offered a premium of seventy guineas for a group or statuette in plaster, representing some subject from English history, to be subsequently executed in bronze or Parian, and thirty guineas for the work as executed in metal. The various models submitted will also be exhibited with the drawings. They propose hereafter to invite designs for a vase, a tazza, or other similar articles. Competitions fairly and honourably conducted, and adjudicated on by those who have proper knowledge of the subject (for ignorance is often as unjust as chicane), stimulate to exertion some who would otherwise remain inert, and afford opportunities for unskilled talent to develop itself and become known. Amongst those who, in early days, received awards offered by the Art Union for artistic works submitted in competition, the names of Mr. F. B. Pickersgill, R.A.; Mr. W. Calder Marshall, R.A.; Mr. Foley, R.A.; Mr. Noel Paton, R.S.A.; Mr. Henry Selous, Miss Pistrucci, Mr. Lawley, and other well-known artists.

The duties of the council in one year are very similar to those in another, and in the record, therefore, there can scarcely be great variety. Much time is given to the consideration of works of art submitted to them which do not meet their views or wants. During the past year a greater number of such works have been sent to them than usual.

Our medallic series, illustrative of British artists, is increasing, and has come to be regarded as an important and interesting feature; the more so because of the small encouragement otherwise given to the art of metal engraving in this country. The value of such memorials, as your council have long urged, is great. Medals, for example, which were produced by the ancients in commemoration of the completion of noble buildings, with only sufficient representation of striking characteristics to enable identification, have long outlasted the buildings themselves, and give us the only information we possess of the structures. A member of your council, Professor Donaldson, has recently shown, with much credit, taste, and industry, how "the medals and the antique remains explain each other, and enlarge our acquaintance with the manners and customs of the classic periods."

The Lawrence medal has been completed very satisfactorily by Mr. G. G. Adams, and will form part of the works to be now distributed. By the course pursued in the selection of a work by the artist commemorated for the reverse of the medal,—a second worthy to whom the count is indebted, is, in some cases, honoured. Thus the Chantrey medal records Watt; the Bacon medal, now in the hands of Mr. Joseph Wyon, Johnson; and the Lawrence medal, Wellington.

A medal in commemoration of Wilkie, confided to Mr. Leonard Wyon, is being proceeded with. In respect of bronzes, the council have arranged with Mr. Foley, R.A., to make a reduced copy of his fine statue, "Caracacus," executed by him for the corporation of London, and now in the Egyptian Hall at the Mansion House.

The arrangement which gives to every member who has subscribed ten consecutive years without gaining a prize of any sort, the Parian bust of Clytie, or some similar work, will be continued. To form a companion to this, the most exquisite of the antique busts, the council have commissioned Mr. Delpech to reduce the bust of the Apollo Belvedere:—

"—The lord of the merriment bow,  
The god of life, and poetry, and light,—  
The sun in human limbs array'd, and brow  
All radiant from his triumph in the light.  
The shaft hath just been shot,—the arrow bright  
With an immortal's vengeance; in his eye  
And nostril beauty's power, and might  
And majesty, flash their full lightning by,  
Developing in that one glance the Deity."

\* "Architectura Numismatica." Day & Son.

The reduced copy will be reproduced in Parian, and will doubtless be as popular with the members as the Clytie is. The Greek ideal is—

"—Not yet dead,  
But in old marbles ever beautiful."

It remains, after more than 2,000 years, to delight and better the world, and to establish the power of art. Who shall define beauty? All worship it in some shape: all struggle for it. It is a necessity of our nature, evidenced as well in the untutored savage who would carve his bow, but, or decks himself with feathers, as in the man of highest finish, who lines his house with the works of Michelangelo and Raffaele. Honour, then, to those who whether with the pen, the pencil, or the chisel, produce it for hungering seekers, or teach them to find it in nature. By the study of it, some say, as Spencer says,—

"—Lift themselves up higher,  
And learn to love with zealous humble duty,  
The eternal fountain of that heavenly Beauty."

Returning to our proceedings, it has to be stated that vacancies in the council have been caused by the regretted death of Jacob Bell, esq., to whom the country is indebted for a magnificent collection of pictures, and by the retirement of Dr. Mortimer, Aiternan Selousman, and Aiternan Wire. These have been filled by the election of the Dean of St. Paul's, Munckton Milnes, esq., M.P.; J. B. Baring, esq., and Joshua Battersworth, esq.

It must be noted, as usual, that the council continue to appoint local honorary secretaries and agents in all parts of the world, and that to the exertions of those who are connected with the association in that capacity much of its continuing prosperity is due. Recently several of the local honorary secretaries have expressed their annoyance at being solicited to receive subscriptions on behalf of various new schemes set on foot under the name of art-unions, and have suggested that some steps should be taken to put a stop to them. As to the expediency of attempting to effect this the council do not here propose to speak. They would express their regret, however, that the local secretaries should be annoyed by applications arising from the circumstances that, this society having succeeded in establishing relations with gentlemen best calculated to advance the interests of the fine arts in each locality,—every speculator in art matters connected with art has recourse to the list to further his own ends.

The following is a condensed statement of receipts and disbursements, particulars of which will be appended to this report, when printed—

Subscriptions received .....	£14,138 13 6
Printing, advertising, salaries, and other expenses, including reserve of 2 <i>l.</i> per cent.	3,393 16 0
Amount set apart for print and engravings ..	4,489 19 6
Amount allotted for prizes .....	6,255 0 0

The reserve fund now amounts to the sum of 9,337*l.*

The accounts have been audited by two members of the general body of subscribers, Mr. F. Milson and Mr. Barriet, and three members of the Finance Committee.

The following is the allotment of the sum set apart for prizes to be selected by the prizeholders themselves:—

36 works at .....	£10 each.
25 "	25 "
20 "	25 "
20 "	25 "
10 "	30 "
8 "	40 "
6 "	60 "
5 "	75 "
3 "	100 "
1 "	150 "
2 "	200 "

and one Oil Painting selected by the council, "Sardin," by Mr. Johnstone, 12*l.*

To these are added:—  
30 Porcelain Groups of "Venus and Cupid,"  
30 Silver Medals of Lawrence,  
50 Chromolithographs,  
300 Sets of Photographs,  
making in all 1,012 prizes.

Porcelain statues and medals will be allotted to the first fifty names drawn consecutively, at the close of the general distribution. The chromolithographs and photographs will be allotted to the names standing one-hundredth and two-hundredth in the list, preceding and succeeding that of each of the first 200 prizeholders, determined as above stated, with a proviso that a prize has not fallen to that number to-day, in that case the prize will pass to the next succeeding number. The prizeholders entitled to select works of art will be informed of the result by to-night's post. Notice will be sent to the other prizeholders in the course of two or three days.

The prizeholders of last year purchased from the various exhibitions of the season 105 works of art, to the following amounts, viz:—

From the Royal Academy .....	£248 10 0
The Institution of Fine Arts .....	533 0 0
Society of British Artists .....	789 5 0
British Institution .....	243 5 0
Royal Scottish Academy .....	20 0 0
Water-colour Society .....	103 5 0
New Water-colour Society .....	307 18 0

The prizes were exhibited as usual in the galleries in Suffolk-street, with the permission of the Society of British Artists, and were visited by a very large number of persons, without, to make out the list, a nevertheless important observation, the slightest damage or impropriety.

Concerning the photographs of Rome, mentioned in the list of prizes, a few words are necessary. It was stated in the last report that Mr. Lake Price had arranged to supply the Society with photographs of some world-famous pictures in the Vatican, and that he had proceeded to Rome with great facilities for obtaining what was desired. The difficulties in the way, nevertheless, proved too great to be overcome, the Pope refusing to allow the pictures to be taken down. Under the circumstances Mr. Price proposed to supply instead a series of views of the Eternal City, and the members will doubtless think now that the council did right in accepting the proposition. The views may be distinguished as *Pagan Rome*, wherein the ruins of the Temple of Saturn form the most prominent feature; the Temple of Antoninus and Faustina, the Coliseum, the Arch of Titus, and the three columns of the so-called Temple of Jupiter Stator, coming also into the picture; *the Capital*, which is a continuation of the same view, and shows other ancient ruins; and *Rome Christian*, wherein of course St. Peter's,

"The vast and wondrous dome, To which Diana's marvel was a cell," is the principal object.

In previous reports your council, seeking to set forth the various agencies in operation to aid the progress of the fine arts in the United Kingdom, or to open to wider circles the enjoyments afforded by them, have spoken of the increase of the National Gallery, the steps taken by the Government Department of Art at Brompton, and the proposed International Exhibition, wherein the fine arts, it may be expected, will play a prominent part, which is now fixed to take place in 1862. Pursuing the same course, it may be noted that in the Museum at Brompton a collection of British water-colour paintings has been commenced, having in view an historical illustration of this national art. Already are the names of some of its first professors being lost for want of record, and their works dispersed and forgotten, and those who think on the subject will say with Mr. Redgrave that while such efforts are being made and such expense is properly incurred to trace, step by step, the history of the revival of art in Italy, it is surely right to illustrate the labours of our own countrymen who have founded a new art, and to treasure up the incontestable proofs of its origin and progress.

The Architectural Museum, located under the same roof, requires extension, and should take the shape of a National Gallery of Architecture, with proper schools for art workmen and others. Some of our national collections are not well cared for, and are not made use of for progress to the extent they unquestionably should be. The Museum of Armour, in the Tower of London, for example, which should be most useful to artists, is in a condition not creditable to the country. It is without an intelligent direction: palpable forgeries have been purchased, and fine specimens required to make the collection complete, as it should be, are allowed to leave the country.

Your council have again and again urged that our large corporations and governing bodies should enlist the powers of art in the decoration of their buildings, to teach as well as to adorn, and so also assist in developing the powers of artists, who would thus be led to direct their attention to the decoration of the public edifices. The forth important truths and noble feelings, "to set in marble the great deeds of our noble forefathers." The fine fresco recently completed in Lincoln's inn Hall, by Mr. Watts, may be held to be a promise of what would be done if opportunities were taken, and means and inducements offered. The halls of some of our city companies are visited for the works of art they contain placed there centuries ago. In the hall of the Carpenters' Company, for example, will be found some interesting paintings, paintings of the time of Henry IV., and in Barber Surgeons' Hall, one of the best of Holbein's work shows us Henry VIII. and men of his time, in their habits as they lived. In how few cases have the citizens recent days added to the collections left by their predecessors? Around London have recently arisen halls for the transaction of parochial business, the broad bare walls of which offer admirable fields for the display of the painter's art. The expenditure of a few hundreds of pounds in each parish, properly applied, would set up things of beauty, silent teachers, lasting encouragements, and make these now for the most part vulgar rooms, objects of attraction, and it might be, shrines for pilgrims in future years. It would be a profitable and noble course to take. Which parish will have the honour to be first? In the gallery of the wealthy proprietor the pleasure given, or the lesson inculcated by the cabinet picture of the painter-teacher, is confined to a few, while set up broadly on the walls of the public meeting place, his work becomes the enjoyment of thousands, a common delight, a universal good.

Your council witness with gratification a gradual progress towards the fulfilment of wishes and suggestions expressed in earlier reports. Years ago, and often since, when showing the means afforded in France and elsewhere for the artistic education of the masses, and the development of taste, they pointed out the want of public galleries in our provincial towns for the reception of works of art purchased by the governing body of the locality, or presented by individuals of the State. They urged that the provision of such rooms would be greatly beneficial on the style of our painters, and materially influence them in the choice of subjects, and that the collections thus formed would exert an important influence on the population, and play an elevating part in the great work of national education. To remedy in one district the want complained of, a meeting has been initiated by Mr. Thomas Fairbairn, to promote a Free Gallery in Manchester. At a public meeting convened for the purpose, he propounded his scheme, a wide and good one, and called on his fellow citizens to provide 100,000l. to carry it out. He was fortunately not to be influenced by a noble duke who replied to him, when asked to contribute to the art-gathering held there in 1857,—"What on earth do you want with art in Manchester?" "Art and commerce," says Mr. Fairbairn, justly; "have always gone hand in hand. It was two illustrious merchants of Florence who, in the fifteenth century, afforded protection to the polite arts, and gave them a permanent foundation in Italy. In the present day, too, art fails its most liberal patrons among the trading and the manufacturing communities."

Numerous valuable and instructive donations will not be wanting in Manchester, by the erection of a suitable building, show that the earnestly desired to bring intellectual and rational enjoyments within the reach of her population. Let it be our duty," he continues, "to provide theasket, and the reward for the adornment will soon be forthcoming." The speakers at the meeting all admitted that there are subtler agencies acting upon us than we can measure by our chemistry or mathematics, that by surrounding a people with objects of refined beauty and skillful ingenuity they will surely, though it may be very slowly, imbibe something of the elevated spirit in which the true artist has always worked; and that you cannot bring the best cultivated of men into the presence of works of art, into the presence of beauty, without thereby improving them. Nearly 40,000l. have already been promised, and it seems every year, reason to believe that the scheme will be carried out nobly. The other large towns will not be long behind.

Your council, in concluding their report, feel themselves justified by this and other occurrences, in congratulating the members of the Art Union of London on the spread of right feelings in respect of the importance of the fine arts, and of the desirability of opening to all the elevating pleasures they afford.

GEORGE GODWIN, a Honorary Lewis Pocock, Secretaries.

The Chairman said it now became his duty—and he never had an easier one imposed upon him—

to move that the report just read be adopted, because though he had often presided at these anniversaries, he had never before heard a report which was more instructive or interesting. It was a pleasing, an honourable, and a creditable account of their stewardship, which offered the best claim on public sympathy and encouragement, and presented a brilliant prospect for the future. He alluded to the proposition originally made by a right hon. friend then at the Board of Trade, that annually a sum should be retained to enable the society to erect a gallery which should give it a local habitation, as they already had a name, and it was satisfactory to know that that movement was going on. This would enable them to give a better model of architectural beauty than our great city often presented to us. The noble lord congratulated the society on the progress which it had made and was still making, and especially to the fact of his hon. friend, a distinguished man in the literary world, Mr. Monckton Milnes, having joined the council, and also of the accession of the Dean of St. Paul's. Having alluded to the course pursued by the society in reference to many works of art, the gladness with which he heard of the intention to illustrate "The Idyls of the King," and the objections there were to schemes which took the name of the Art Union without being conducted similarly, the noble lord concluded by moving that the report be now received.

The proposition having been carried by acclamation,—

Mr. Monckton Milnes, M.P., said he felt much honoured by the selection which had connected him with this society. He was delighted with the progress made by the society, and he hoped it would continue till they met in their own hall, which he trusted would be raised with skill and taste. He looked upon the Art Union with great interest, because it was raised on the true English basis of self-government, and because it had already contributed more to the cause of art than any government. He forgot at the moment who the old rhetorician was who said that the gambling-table was the high altar of hope. Now, there could be no doubt that was an immoral principle as applied to that case. But on this occasion he might fairly use the expression. He believed those present would engage in the distribution with as little alloy of envy as was compatible with the weakness of human nature. In conclusion, the hon. gentleman moved the thanks of the meeting to the council, and especially to the two honorary secretaries, Messrs. Godwin and Pocock.

The resolution was carried unanimously.

Mr. Godwin returned thanks, and in doing so alluded to the progress made in the arts, during the last thirty-six years especially, and to the different position in which artists were now placed from that in which they formerly stood. In illustration of this fact he adverted to the immensely enlarged prices which works of modern artists had recently commanded, and mentioned especially pictures bought by prizeholders in early years. The deduction from this, of course, was the desirability of a good selection by those who on the present occasion gained the right to select. He concluded by moving the thanks of the Art Union to Benjamin Webster, Esq., who had most ungrudgingly lent the theatre on this occasion; and he begged to include in that acknowledgment Mr. Smith, the stage manager. He further incidentally alluded to the services of Mr. T. S. Watson, the assistant secretary of the society.

Mr. Lewis Pocock seconded the vote of thanks, and briefly expressed his own acknowledgments.

Carried with acclamation.

Mr. Webster rose amidst much applause, and said he was greatly flattered at the compliment which had been paid him. He felt delighted to facilitate such a society, seeing that the very culture of his own profession naturally included the love of painting, sculpture, and the drama; they were the graces of our nature. He should at all times be happy to lend the theatre for the same purpose.

Lord Montagu being obliged to leave,

Professor Donaldson then took the chair. Miss Emily Pringle and Miss Muir having consented to draw the prizes, and Captain Shea and Mr. C. J. Atkinson to act as scrutineers, the distribution commenced.

The following is a list of the principal prizeholders:—

- 200l.—Hopkins, Commodore, Merthyr; Yallop, T., Albert road.
- 150l.—Elphinstone, Mrs., Regent street.
- An Oil Painting of "Sardin," by S. Johnson, 120l.—Parry, W., Old Broad street.
- 100l.—Dunn, Miss E., Thornaby; Fian, J., Ramsey; Wright, C. Barnsley.

- 75l.—Allison, Miss R., Connaught-square; Dutton, —, Nantwich; Holden, Jas., Manchester; Falconnet, L. de P., Constant; Oldry, R., Finch-hale.
- 50l.—Barnes, J., Brompton; Doyle, J., St. Vincent; Everet, J. G., Creek; Harrison, S. J., Braintree; Llewellyn, Mrs., Westbourne-crescent; Robinson, John B., Whitehall-square.

- 40l.—Coates, J. A., Customs; Cross, W., Botesdale; Suffolk; Godley, W., Sloane-street; Hunt, W., Yarmouth; Moore, W. P., Isle of Man; Shand, A., Liverpool; Sealey, H., Stanhope-street; Soule, T., Seymour-street.
- 30l.—Aytoun, J. P., Kirkcaldy; Blandy, J. J., Reading; Byron, J., Westworth; Coles, A., Dover; Cole, Rev. D., Grantham; Church, J., Walworth; DeLafosse, P. J., Cleveland-square; Farthing, —, Chesapeake; Gibbon, Mrs. M., Bishop Auckland; Harrison, J., Belper; Harrison, J., Wandsworth; Hariaud, J., Huster; Heath, R., Brampton; Newnham-on-Line; Hitchen, F. W., Margate; Langley, Robert, Liverpool; McKewen, W., 94, Lombard-street; Newport, J., Waterford; Pasmore, J., Port Elizabeth.

- 25l.—Aston, F., Birmingham; Carling, W., Denmark-hill; Flagdale, Col., Queen-square; Fradley, J., Bank of England; Godfrey, D., Abingdon; Howes, Rev. J., Belton; Hamilton, Col., Kilmarnock; Milne, Geo., Brompton; Morison, W. Y., Hatton-garden; Pamflet, J. R., Driffild; Rees, —, Merthyr; Robson, M. Jun., Sandridge; Rogers, J. C., Blackford; Shakespear, J., Carnarvon; Sewell, G., Upper Thames-street; Toovey, J., Salisbury; Turner, G., Wing; Williams, Russell, J., St. Bees; Wilson, C. T., Chichester; Wiggin, J. K., Boston, United States.

- 20l.—Aylmer, F., Bessborough-street; Baily, H. St. John's-wood; Besant, W., Portsea; Broadwater, R., Bulter-square; Canning, A. P., Bishop's Stortford; Eve, J. B., Louth; Falconer, W., Hackney; Gariand, C., Leeds; Grant, W., Kilmarnock; Gordon, Jas. A., Weymouth; Ker, W. W., Waltham; Lay, T., King's Arms-yard; Lester, M., Clonmel; Martine, Dr., Haddington; Muntings, W. G., Old Change; Perry, Miss, Tyndale-hill; Procter, Wm. Bristol; Riddell, J., Glasgow; Smith, S., R.A., Grosvenor-street; Thorpe, W., Harefield-street; Vasey, D., Huntingdon; Waring, Dr., Gresham-street; Webster, J. G., Boston, U.S.; Westrop, R. J., Whitehall-square; Windle, Col., Bayswater; White, T. R., Berbic.

- 15l.—Boots, Mr., Crolyon; Brown, Miss A., Wolherpe; Cawley, J., Quorty; Chick, Mrs. F., Epsom; Eaton, J. P., Patricot; Eaton, John, Jr., Liverpool; Foster, G. B., Loddington; Francis, —, jun., Bangor; Gilson, P., Shellfield; Gemmill, G., Tottenham-court-hill; Green, E. C., Nyrham; Gordon, Jas. A., Hield, A. W., Leeds; Kitson, Mrs. E., Sheffield; Leake, R. J., Portland; Victoria; Menow, J. J., Haverstock-hill; Newcomb, F. P., Market Harborough; Penstone, W., Stafford; Thomas, G., Wing; Williams, Russell, J., Sandridge; Simmons, K. L., Charlie-ton; Stacey, Rev. T., Cardiff; Tallett, H. B., Ventnor; Vinson, R. H., Newport, Monmouthshire; Wilkinson, F., Melbourne; Young, D. F., Reigate.

- 10l.—Anew, Miss, Newton Stewart; Ashton, T., Oaklands; Baicheler, F. T., Newington Butts; Basford, J., Leeds; Grant, W., Kilmarnock; Gray, H., Brompton; Cooper, W. J., Newport Market; Da Silva, J., Wandsworth-common; Elliott, St., Stanley; Frost, W. E., Salford; Gill, T. T., London and Westminster Bank; Halden, J., London; E. C., Nyrham; Gordon, Jas. A., Hield, A. W., Leeds; Hinton, J. W., Old Brompton; James, P., Monmouth; Killey, Miss, Isle of Man; Marindale, J. W., Watford; Mortimer, Rev. Dr. E., Ekeston; Oakes, T., Laverney; Norman, J. N., Rugby; Pilkington, J., Reform Club; Robinson, Mrs. D., Pontefract; Shilling, T., Lambeth; Sala, J. B., Oporto; Slater, Captain, London; Solly, Samuel, Epsom; Spence, place; Scott, D., Lower Thames-street; Scott, Ph., Portland; Towson, T., West View; Tatham, Mrs., Athlone; Thomas, J. W., Loudon, Canada; Vautin, J., Adelaide; Watson, J., Richmond; Watson, W., Warrenton; Young, W., Hull.

- A *Parcels* Group of "Venus and Cupid."—Ashworth, Mrs., Waterford; Baiger, H. P., Rotherham; Dudley, C., Slough; Captain, London; Solly, Samuel, Epsom; Spence, place; Scott, D., Lower Thames-street; Scott, Ph., Portland; Towson, T., West View; Tatham, Mrs., Athlone; Thomas, J. W., Loudon, Canada; Vautin, J., Adelaide; Watson, J., Richmond; Watson, W., Warrenton; Young, W., Hull.

- A *Silver Medal* commemorative of St. Thomas Lawrence.—Anderson, A., Glasgow; Aytoun, J. P., Kirkcaldy; Baily, J. W., Gracechurch-street; Barrett, J. T., Kirkcaldy; Brown, Jos., Essex-court; Budd, B., 10, Albert-place; Chapman, Alfred, Clifton; Dowling, C. F., Dublin; Francis, J., Kingsland; Jamieson, Foster, G. B., Loddington; Hale, G. W., Ryde; Harris, G., Commercial-road; Hitchcock, J. M., Gedling; Houghton, H., St. John's, Cambridge; Hunter, J., Lerwick; Hustler, T. A., Ash; Hutchison, T., Rugby; Jackson, J., Nottingham; each, San., Liverpool; Nash, W., 99, Strand; Overfield, A., Leek; Pearce, W., Stratford-on-Avon; Pringle, A., Bessborough; Roe, J. F., Montreal; Robinson, R. L., Robinson; Litch; Sheau, John, Halifax; Ness, J., Stead, A., 55, Old Broad-street; Thompson, C., Seignior; Tuke, H., Conservative Club; Wyndar, Major, 583 Regiment.

THE ARCHITECTURAL EXHIBITION.\*

THE BUILDING MATERIALS, AND MANUFACTURES.

THE department comprising specimens of materials and building contrivances, has been referred to in a previous notice of the Exhibition, as somewhat inferior in interest to the similar division of former exhibitions. Not only is the number of specimens much less; but of the number, the greater portion have been seen by us in Conduit-street, before. Two or three of the articles named in the catalogue as amongst the contributions of exhibitors, are not found in the galleries. Several of the exhibitors, however, have substituted for

\* See pp. 228, 231, ante.

their previous specimens, others which are superior both in design and workmanship; and many of the works, we are glad of the opportunity of seeing again.

In the "lobby," or entrance of the North Gallery, Mr. Vincent Bellman has five pedestals in scagliola of his manufacture. One of these, in the form of a candelabrum, includes imitations of porphyry, and of the Siena and verd-antique marbles. The others, in the common form of *frusta* of shafts, represent the Gallio-Antico, Favonozzo, Babbacomb, and verd-antique marbles. Opposite to these are specimens of Martin's cement, exhibited by Mr. J. C. Part, the successor to Messrs. Stevens & Son. A small panel with scroll in relief, and a capital, both from the screen exhibited in 1851, show the cement as used for scagliola, or painted and gilt, and in the original colour,—the scroll, or tracery, white, being in the superfine quality of the cement. There are also shown, a specimen that was "rendered" in the room in which it is exhibited, and painted in "twenty hours" afterwards; one of a surface prepared for papering or painting; one of equal parts cement and sand, for internal work, as representing ashlar; a specimen of "Part's improved cement," recommended where it is not desirable to paint or paper the work immediately it is finished,—the colour a light red; and one of inland work, executed in cement twenty years ago, and which subsequently for five years has been "laid in a floor over a steam boiler." The specimen painted on in the room, it should be understood, is on lathing. The manufacturer's printed particulars, state that "when put upon dry brick-work, or lath," the cement "may be painted on in three or four days afterwards" &c. The discrepancy requires explanation. For inland work, the material is scarcely suited to chimneypieces and exposed situations; the advantages of durability and polish, though great, are not those of marble, or *pietra dura*, or of the glass-protected decorations that are in use. The appearance of all the specimens, however, warrants the reputation which the cement has for compactness and hardness, and even more than that reputation. We merely offer a suggestion to manufacturers generally, to ascertain the special attributes of their material or improvement, and not to claim for it advantages that cannot belong to it,—and which claimed, can only be followed by disappointment that will prove injurious to what may be really a valuable thing. We have now before us a specimen of a marble cement, which has been lying with specimens of marble, since it was furnished to us some years ago; and though difference in the present appearance might have been calculated upon, the cement now, on comparison, does not in the least deserve the name given to it; and we well recollect that when the material was used as a skinning by ordinary workmen, it was impossible to get the marble appearance to it, at all. These items of experience show that manufacturers would do well to revise the wording of their directions, and of their claims,—the latter, where, especially, they speak of saving of labour as well as material, from use of their invention, a saving which might be claimed properly enough were workmen the same or apt at learning.

These specimens are all that we find under the class of "plasters;" but there are a considerable number in other descriptions of plastic material for the building and decoration of walls, and for paving. First, we may mention Messrs. Ransom's "Patent Imperishable Siliceous Stoue," which has been growing steadily in importance, and of which some fresh particulars are submitted in a letter printed in the catalogue, from Mr. George L. Purchase, architect to the patentee. From experiments on 2-inch cubes, Mr. Purchase finds that the material will bear a pressure on such cubes, of 20 to 22 tons, which makes equal to 600 and 750 tons on a square foot, or 10,780lbs. and 13,154lbs. on a square inch. Expressing the strength of the Patent Siliceous stone by 100; the strength of Darley Dale stone is found to be 81; that of Portland stone, 83; of Aubigny stone, 31; of Bath, 13; and of Caen stone, 12; and the resistance to transverse strain is greater than in hard York stone, and Park Spring, as well as the other stones named. With regard to durability, Professor Ansted reports the artificial material as "theoretically and practically superior to all natural grits, being subject to no injurious action from frost, exposure to acid vapours, soot, ammonia, or other impurities present in large towns;" but we are not aware if the efflorescence of the salts of soda, calculated to give an unsightly appearance to large surfaces, has been remedied; though, it is fair to state, similar appearance is characteristic of several

kinds of brick and stone. The material has been exposed to the weather, as stated, for twelve years, without appearance of decay; it is spoken of as superior to marble in hardness, and equal to glass in durability; and certainly it has been used in forms in which stone cannot advisedly be carved. The specimens exhibited include a chimney-head, trusses, balustrades, garden decorations, head-stones, and others. The applicability of the material to dressings of brick-built houses in the London district, deserves consideration. Trusses, which of the specimens shown are best in design, are priced from 2s. each; balusters, 12 inches to 24 inches in height, are from 1s. each. The floral ornament attempted is deficient in the sharpness of stone-carving; perhaps the effect may in part be due to deadness of the colour. More interesting than the material, just now, is the process for preserving stone or stucco. We are, without such aid, still far from dependence upon the duration in London, of the stones lately used, selected from whatever beds; we are not nearer to the prevalence in buildings, of ornamental accessories executed in material wherefrom effect would be the best, and wherein labour of carving would be cheap; and the chalk, and stones of the green sand formation, within easy reach, are not used for decorative work. If these impediments to architecture in London can be got rid of, and buildings now in rapid decay can be preserved by the process which has been some time before the public, and has been tried at the Baptist Chapel in Bloomsbury, the Pavilion at Brighton, and the Custom-house at Greenock, and is in course of trial at the Houses of Parliament, its author will deserve a national recompense. Mr. Robert Hunt has reported that the stone of the chapel is now actually repellant of water; and that the process will not merely protect new stone, but stop decay, and prevent the same in future. Colour and grain of stone are spoken of by the same authority, as unaffected: but there are tinting solutions for the several shades of the colours of stone, which are directed to be added to the chloride of calcium. We regret that the associated societies in Conduit-street have not space such as we asked for in writing of the Museum in Jermyn-street, for trying all inventions of this kind, where indeed they should be exhibited, in the open air. The prices of the solutions are 5s. 6d. per gallon for the silicate of soda, 4s. 6d. for the chloride, and 3s. 6d. per pint for the tinting solutions; and it is said that under ordinary circumstances, about four gallons of each solution will be required for each hundred yards of surface. The specimens include pieces indurated of chalk and Bath stone.

The Architectural Pottery Company, of Poole, Dorset, are to be praised for the attention which they have given of late both to design and manufacture of the peculiar article for pavements,—Bale's Patent Mosaic Tiles;—though we are not quite satisfied they were right in starting with an imitation of small tessera, or that both design as on paper, and effect as in pavement, have not suffered in consequence,—in the latter case from the contrast which there is between irregularity in the tiles as laid, and regularity in the tesserae of which they are manufactured or faced. A pavement at the foot of the steps entering the galleries, laid with their tiles hurriedly, last year, has been relaid according to a design by Mr. Raphael Brandon; and it is creditable to the manufacturers to the designer. Mr. Brandon and Mr. J. M. Lockyer have contributed several of the designs exhibited by the Poole Company. One of the principal works by the Company is a pavement at Wilton House. Their manufactures include coloured and glazed bricks, which are 6d. per thousand at the works, as well as materials smaller than their tiles, for tessellated or mosaic pavements proper. The pavements may be laid in London for 9s. 6d. or 10s. up to about 21s. per square yard. The "patent mosaic" is the more expensive. The difference of effect hardly accords with the difference of cost.

The productions of Messrs. Maw & Co., Bentall Works, Broseley, Salop, occupy their old positions in the East Gallery, and are, we believe, without alteration; and near them are some of the tiles and tesserae, longer known, of Messrs. Minton, Hollins, & Co., of Stoke-on-Trent. The latter productions include tesserae of small size for pavements, and tiles for wall decoration. Mr. M. Digby Wyatt, Mr. George Goldie, Mr. Benjamin Ferrey, Mr. Garling, and Mr. Owen Jones, have been the designers of the pavements and tiles,—especially the first-named architect, for both manufacturing establishments. We may mention in this place that amongst the drawings, there are exhibited by Mr. Wyatt, two (232, 233)

of "Practical Suggestions to Messrs. Maw & Co., now in process of being worked out by that firm, for the application of the principle of mosaic to roofing." The ingenuity with which a dozen patterns of tiles, of five or six colours, are worked together, is considerable; and it extends even to the mode of representation; but it might be well to inquire whether roofs are not best treated as at present, namely, as a breadth of cool blue, or of green, or reddish colour, altered only as by the weather, or at most by a tile-cresting, or an unobtrusive pattern in bands, whether in form or of colour, rather than treated as mosaic. Contrast is wanted to the architectural features of those parts of a building which support and surmount the roof,—as relief is needed to wall-decoration, by plain surface; slight alternations of colour, as in horizontal bands, or darker lines at considerable intervals, may be exceedingly happy in result; but the mosaic species of decoration, as of walls externally, which draws attention from main lines and structural forms to itself, has not been happy where attempted; and we apprehend that if patterns and colour are introduced in roofing, there should be much less variation, or contrast, than is allowable in pavements. According to the present decoration of roof coverings,—whether by cut slates, or tiles as formed—the whole number,—or by placing the ornamental forms in bands, or having bands in material only slightly differing in colour,—more is contributed to the general result of the building than by the diagonal arrangement of lines, and other patterns attempted in some of the drawings in the Exhibition where there is an approach to the idea of mosaic. Amongst the drawings is one (177), exhibited by Messrs. Maw & Co., of the pavement of Wood Walton Church, showing in full, the combination of plain and encaustic tiles, numbered 16 in the specimens of their manufacture. The whole of the display of this branch of surface-decoration in the rooms in Conduit-street, deserves more attention than it usually receives; and there is much to be learned from it.

Analogous decoratively to the works last mentioned, though very different in the material, are Messrs. Arrowsmith's specimens of their Solid Parquet Flooring, also a manufacture of which the merits are appreciated by architects, as shown by an increasing number of their designs for its use. For bordering of rooms it is excellent, as for flooring of rooms in general where carpeting, along with the depth and richness of colour belonging to woollen fabrics, can be dispensed with. The flooring has been used with propriety, in chancels of churches. The designs and specimens in the North Gallery correspond with flooring which has been laid at Keele Hall, Staffordshire, for Mr. Ralph Sneyd, Mr. Salvin, architect; at the Hall, Little Aston, Birmingham, for the Hon. E. S. Jervis, Mr. E. J. Payne, architect; at Tapton Hall, Sheffield, for Mr. E. Vickers, Messrs. Flockton & Sons, architects; at the Manchester Assembly-rooms, Messrs. Mills & Murgatroyd, architects; at Pipbrook House, Dorking, Mr. G. G. Scott, A.R.A., architect; at Dorchester House, for Mr. Holford, Mr. Vulliamy, architect; at the Leeds Town Hall, Mr. Brodric, architect; at the house of the Earl de Grey and Ripon, in Carlton-gardens, Mr. P. C. Hardwick, architect; and other works which we need not again name. Drawings which there are in the Exhibition, showing works in which the material has been or is proposed to be applied, are not all of them favourable to an idea of the good effect of parquetry, of whatever manufacture. The "Design for Library" (180) for Sydney, is a bad drawing of execrable Gothic and sadly inharmonious colour. The gallery at Hooton Hall (185) has general merits which have been referred to. A "Portable Swiss Chalet, as fixed in Newsham-park, Brocklesby, Lincolnshire," for the Earl of Yarborough, is shown in No. 290.

Returning to the plastic materials, we may name the moulded bricks, plain and ornamental roofing tiles, ridging with crest-ornaments, red, black, and white paving tiles, and trusses, of Messrs. R. & N. Norman, of the St. John's Works, Burgess-hill, Hurstpierpoint, Sussex. The white facing bricks of Messrs. Fayle & Co., of Newton Works, Dorsetshire, and the moulded blocks for quoins and other dressing in lieu of stone, to which the material approximates in colour and texture, are again exhibited by Messrs. Messon & Boys, engineers to the company. The blocks have been used in the school at Feltham, represented in the drawing (130), of which we have already spoken. Blocks may be ordered of any pattern; and the material is both less costly than stone, and, doubtless, as asserted, "much more durable than most stones." The specimens include blocks as used for sills and mullions in the Harrow Schools; parapets and

finials, as in other buildings; fire-bricks and materials for grates and furnaces, said to have proved equal to Stourbridge clay, at less than two-thirds the price; and paving tiles, which, it is stated, are superior in hardness and durability to Portland paving. A sheet of designs shows different available applications of the blocks and bricks, as in cornices and window arches.

Progress of design and manufacture in metal-work, is well sustained by some of those who have exhibited on previous occasions. Messrs. Johnston, Brothers, have made a considerable advance; and we should be glad to think that any observations of ours have contributed to the general merit which now characterizes their works. Messrs. Hart & Son equally are remarkable for attention which they are paying to design in works of many kinds for ecclesiastical and domestic use. Their designers, if we may judge from what is shown, are abandoning the attempt at direct copyism of nature, and are bringing into service all that is characteristic of metals as distinct from other materials. We should, however, like to see more attention paid to the production of articles of good design, suited to persons of very limited means. There is no reason why a fender of good design should not be obtainable for the 7s. 6d., which is the advertised price of the "spear and scroll" article, sold by most of the furnishing establishments. The mimicry of work which the latter has in lieu of real ornament, is tolerated only because manufacturers such as those who exhibit at Conduit-street, and Messrs. Hardman and Mr. Skidmore, do not offer the plain article of good taste that equally would be appreciated, and because they choose to aim for the wants of a different class—a class not numerically large. The articles this year shown are in brass-work chiefly. There is a large field open for designs in iron, using other metals and glass as enrichment. This course indicated would lead to better results than does the somewhat gaudy decoration of iron-work with blue and red. The best effect of colour we are inclined to think is seen where the iron is painted in cool-toned colour, as in many of the works of Mr. Skidmore, and in some of those of Messrs. Johnston. The latter have used a sage-green tint with advantage, parts only being heightened by brasswork; whilst glass balls or drops, white or coloured, are introduced in some of their standards, as also in candlesticks by Messrs. Hart. These manufacturers, and exhibitors generally, should affix prices, to make their display of service to all parties. The ornamentation with colour, by Messrs. Hart, is generally good. Their latest works include a monumental brass, a standard for a moderator lamp, to be fixed to the newel of a staircase, and a time-piece. The last of these is not so satisfactory as other works.—Messrs. Cox & Son have made less attention; and their wood-work is more worthy of commendation than their metal-work. The machinery for carving, of which they are now the proprietors, is either known to all architects, or it ought to be.

In the East Gallery, various specimens of paper-hangings are displayed by Messrs. Williams, Cooper, & Co., and Messrs. Harland & Fisher. The works of the latter firm please us much. They are treated as diaper or "on the flat," without shadows. Otherwise they are in good taste: we may, however, remark, that those who wish to foster the appreciation of design, must give attention to the harmony of colour; and this attention does not consist in offering every possible combination, if it be good or bad.—The works in his plaster casting, of Mr. Deschely, remain in their old positions.—Specimens are exhibited of "Smith's Patent Ornamental Wood," which is put forth as "suitable for panellings and other architectural decorations for the embellishment of ships' cabins, railway carriages, and as a substitute for the inlaying of piano-forte cases and cabinet-work generally," also as a mode of ornamentation, which can be adapted "at a price little exceeding that of plain polished woods," and one in which coats-of-arms and any other designs can be executed with facility. The work is said not to be affected by damp or heat. We have no means of saying whether these statements are borne out; but if so, the method might deserve attention, though it could hardly be deemed a substitute for inlaying, the outline of forms being indistinct or blurred.

Near these are specimens of the green marble, called Vert Antique, lately exhibited at the Institute of British Architects by Mr. Kleanthez, the proprietor of the quarries in Greece. The price is 30s. per foot cubic, for usual sizes.

It is scarcely necessary to do more than name the remainder of the articles in the North Gallery, which have been before exhibited. Wetterstedt's Patent Metal, for roof-covering and other purposes,

should be more in use than it is, if found to justify the claims by the manufacturers. Messrs. W. W. and R. Johnson & Sons, of Limehouse, as to resistance to rust, and action of the sun and acids, and greatly reduced expense from lessened weight of metal and strength of framing.—Messrs. Charles Botten & Son, besides their Regulator-closets, and High-pressure Valves in great variety, exhibit a "patent direct-action compensating gas-meter," constructed for the requirements of the Sale of Gas Act. But little variation in the water-line being allowed by the Act,—in this meter "there can be no variation of water-line, and it will continue to work correctly for years without attention to the supply of water."—Wright's Self-acting Closet, manufactured by Messrs. Hewett, Allott, and Walker, of Sheffield, is shown; and it has been favourably reported on of late.—Chantrell & Duteil's "Patent Economic Self-acting Closet and Water-Waste Preventer" combines a stone-water-cistern with measuring-box and other apparatus at a prime cost of 2*l.* 10*s.*, in Liverpool. The cistern contains water enough for flushing seventeen times.

The contributions of Mr. Jennings are less numerous than usual, and by accident are not described by him in the catalogue. Besides air-bricks of stoneware, and one or two of his best-known inventions, they however include a new "lift-up basin," intended for use in hospitals, and to avoid the nuisance of soapy deposit as in the basin with ordinary plug, which deposit might be means of communicating disease. A small quantity of water always stands in the basin. The basins have been fixed at the Guards' Hospital in Rochester-row, the barracks at the Regent's-park, the Crystal Palace, and the Holborn Union Workhouse. After washing, the basin is tilted according to direction by the words "lift-up" on it; a certain quantity of water passes from the upper into the lower compartment of a feed-cistern; and when the basin is again lowered, the lift acting on the spindle of a simple valve allows the measured quantity to flow into the basin. Mr. Jennings also shows a new form of cock, which he calls "twist cock." In this, amongst its features, there is a contrivance for resistance to almost any amount of pressure, by means of the strength obtained from twisting a tube half-round.

Specimens of his stoves and grates are exhibited by Mr. Pierce, in the North Gallery and the East Gallery. His different forms of cottager's grates, which may be arranged so as to heat two rooms by the same fire, deserve to be widely known, and his fire-clay backs to grates may be readily combined with ornamental accessories.—Messrs. Crichley, Wright, & Co., of Burton Weir, Sheffield, exhibit "Wright's patent Gill Chlorifier," consisting mainly of metal plates, as distributors of the heat, and not different in principle from what we have seen before.—Mr. William Jones exhibits "Cole's Patent Smoke Exhauster and Down-Draught Preventer," of which the title must suffice.

Messrs. Pugh & Co.'s locks and lock furniture are known to former visitors to the exhibitions in Conduit-street. Their knobs of carved or brass-ornamented wood, deserve notice: for drawing-room doors, Messrs. Hart & Son's furniture is best in design and execution.—Messrs. Hobbs, Ashley, & Co. repeat the exhibition of their locks,—as the "new mortise lock" wherein, by a double spring, the latch is made to work independent of the crank, and necessity for slamming the door is avoided, whilst, by the form of the "frictionless follower and crank," a rolling instead of a rubbing motion is produced, preventing friction and conducing to durability.—In the North Gallery, also, we find specimens of the application of the "Hard-drying Tackless Varnish," of Messrs. Mauder, Brothers, for seats of churches, and the "White Coburg Varnish," which last has scarcely the appearance that we should have expected; specimens of Moore's Moveable Glass Ventilators; Moore & Son's Clocks; and Rees & Co.'s Glass Letters, and their Pressed-Glass Clock Dials, to be illuminated by night, and having a solid opaque appearance by day. There are also some models in plaster, cast from gipsy moulds, by Mr. R. N. Hanwell, modeller. There are several designs for decorative works, or articles of ornament, amongst the drawings; but these we will not name in the present place.

Considerable interest will be taken in the contribution just made to the Exhibition, by Messrs. Devaux & Co., of models showing the methods of laying zinc on roofs and in gutters, in France, and specimens of different applications of the material ornamentally,—as in "marquises" for shop-fronts, with stamped ornament; in rain-water-pipes of decorative character; and in mar-

gins to incense-lights. In many of these, the flatness of the ornament (at least without the accessories of colour and gold, as in Paris), appears bad as anything we English have done in manufacture. Decorations of zinc, to lucarnes, were introduced at the Surrey Music-hall. In the models of roofing and guttering, the care taken to prevent contact of nail-heads, and to allow every-where freedom for expansion and contraction in the sheets, may be noticed. Workmen should carefully examine the models with the aid of the sheet of drawings published. The real difficulty standing in the way of use of the material in England, will be doubt as to the invariable purity of the article supplied.

On the table may be found a model of a window-frame and sash, showing improvements recently patented by Mr. W. H. Elkin. The main object is to allow the sashes to be taken out for cleaning, inserting glass, or repairing lines, without injuring the paint or woodwork. The contrivance also keeps the sashes steady and free from rattling noise. The improvement consists in forming the pulley-stile, one side, loose, but pressed against the edge of each sash by springs at the back, top and bottom of the stile against the pulley-stile, which gives way sufficiently to allow the sash to be disengaged from the opposite side of the frame; the sash then being no longer held by the head, is easily taken out. The lines, which are hooked, can be disengaged; or the sash can be turned upside-down, if convenient for cleaning. The pulley-stiles can be lifted out of the frame to repair weights or lines. The principle, according to the inventor, can be applied to windows, new or old, at a cost of ten shillings a window.

The Exhibition of Materials and Inventions is capable of being turned to further account; and perhaps it would be well to consider whether articles should not be classified and divided over several exhibitions, so as to get from time to time a better view of each department of practice than the Exhibition as at present can afford. Also, exhibitors should consider the best form of presenting succinctly the nature and advantages of their inventions in the catalogue, tabulating the particulars as much as possible, and not as now, too often omitting such important information as that concerning price.

#### ARCHITECTURAL EXAMINATION.

The following paper is submitted to the members of the Institute of Architects, as already mentioned. It will be discussed by them hereafter:—

It has now become an established rule, both with the Government authorities and with the heads of the learned professions, that candidates either for admission into any branch of the public service, civil, naval, or military, or for participation in the rights and privileges enjoyed by the several denominations of private professional men, should undergo an examination to test their capability to discharge the duties of the positions they may desire to occupy. In divinity and in medicine this rule is of long standing, but the application of it to the branches of the legal profession is comparatively recent.

So far in the public interest has this spirit of affording a guarantee of capacity been carried, that the Universities of Oxford and Cambridge now periodically offer, in their "voluntary middle-class examinations" to numbers, not graduates, about to enter on commercial or other ordinary avocations, the means of obtaining a certificate of their progress in the usual branches of modern education. Cognisant of these facts, the Council of this Institute have felt the imperative necessity that the architectural profession should no longer continue the only one, open to be assumed, at any rate nominally, with all its heavy responsibilities, by the more ignorant, though bold pretender. It is with this feeling they have taken into consideration a scheme which has been laid before them for establishing an architectural examination, of which they now submit an outline for the consideration of the members of this Institute.

The question of founding such an examination has already been discussed at meetings of this Institute; and the Council do not profess to do more than recommend the initiation of a scheme to be cautiously and gradually developed and brought into working order, in which too much should not be attempted at the onset; but of which, in accordance with the rule now established in other professions, the ultimate should, in their opinion, be the establishment of a system of con-

pulsory examination extended to all architects, whether members or not of this Institute.

Should the scheme be carried into operation and meet with the desired success, some alteration in the rules which now govern the admission of Fellows and Associates would become necessary.

The Council submit the outline of the scheme in the form of propositions, adopted after due consideration by themselves, aided by the valuable advice of the Board of Examiners of candidates under the Metropolitan Building Act, and of the Professor of Architecture at University College, London:—

Proposition 1.—That it is desirable to afford an opportunity for a voluntary professional examination to the present Associates, and to the future Fellows and Associates of the Royal Institute of British Architects. That an elementary examination be established for the students and Associates of this Institute under the age of twenty-five years; and a higher examination in the theory and practice of the profession for Associates above that age, and for future Fellows.

Proposition 2.—That the rules as to students and their prizes be reconsidered by the Council so as to lead educationally towards the last-named more important examination.

Proposition 3.—That the elementary examination embrace pure and applied mathematics, land surveying, mensuration, geology, ordinary construction and materials, drawing, the styles of architecture, the history of architecture, languages, and chemistry. The examiners to define the subjects absolutely necessary; the marks to be appointed to each; and the aggregate number essential to entitle each candidate to a certificate.

Proposition 4.—That the chief subjects for the higher examination be such as occur in professional practice, with the general theories on which the detail of such is based—*e. g.*, languages, architectural jurisprudence, the Building Act, sanitary requirements, the history of architecture, the theory of the beautiful, the analysis of the styles of art, architectural composition, the literature of architecture, the theory of the higher subjects of construction, *e. g.*, of arches, bridges, and domes, and the application of iron, &c.

That the subject for the higher examination may also be a development of those enumerated for the elementary examination to an extent commensurate with the information on other subjects expected from the person examined.

Proposition 5.—That a curriculum be prepared and circulated, giving a general outline of subjects for examination.

Proposition 6.—That the examiners be authorized to take into consideration any diplomas or certificates of competency that may have been obtained elsewhere, *e. g.*, from the Universities of Oxford and Cambridge, the Professor of Architecture at the University College, and at King's College, London.

Proposition 7.—That the examinations be carried on by means of writing as well as orally, and that they take place in the months of July and October.

Proposition 8.—That the examiners be chosen by the president, the vice-presidents, the past vice-presidents, and the Council for the time being, from among the members of the Royal Institute of British Architects, so far as may be possible, and that they receive fees for their attendance.

Proposition 9.—That the following fees be paid by the candidates on entering their names for examination, *viz.*—

For the elementary examination . . . . 2 guineas.  
 „ higher . . . . . 3 „ . . . . .

LECTURES IN CONNECTION WITH THE ARCHITECTURAL EXHIBITION.

The first lecture of the course in connection with this Exhibition was delivered on Tuesday evening last, by Professor Donaldson, “On the Arrangement of a Roman Consular House, and the Life of a Roman Patrician.”

Mr. G. E. Street occupied the chair.

The Chairman, in introducing Professor Donaldson to the meeting, said that this was the third time on which that gentleman had done the Society the honour of delivering the introductory lecture of the course.

Professor Donaldson said that, in selecting the subject of this lecture, he had been anxious to adopt one which would allow him to make some observations in reference to the drawings which his audience saw around them. These drawings indicated the development of the human mind as represented in architecture; and, though not a perfect collection, served to carry us back to the most distant periods. The Egyptians, at an early stage in the world's history, had erected monuments of enduring solidity, which continued unimpaired by time to the present day. The Greeks, at a more recent period, developed another style, the principal character of which was beauty. The Romans, pursuing a different principle, had followed in a new sphere of mental development. Then came the Medievalists, who wrought out the sentiments of religious feeling. The subject of Roman architecture, which was the topic on which he was about to dwell, should have special charms for an English audience, when they recollect how intimately the early history of Britain had been affected by the conquests of that mighty people. He might be allowed to recall them to the times when Julius Cæsar had attempted to conquer this island, and had met with too warm a reception to induce him to establish his permanent residence here. When they considered that

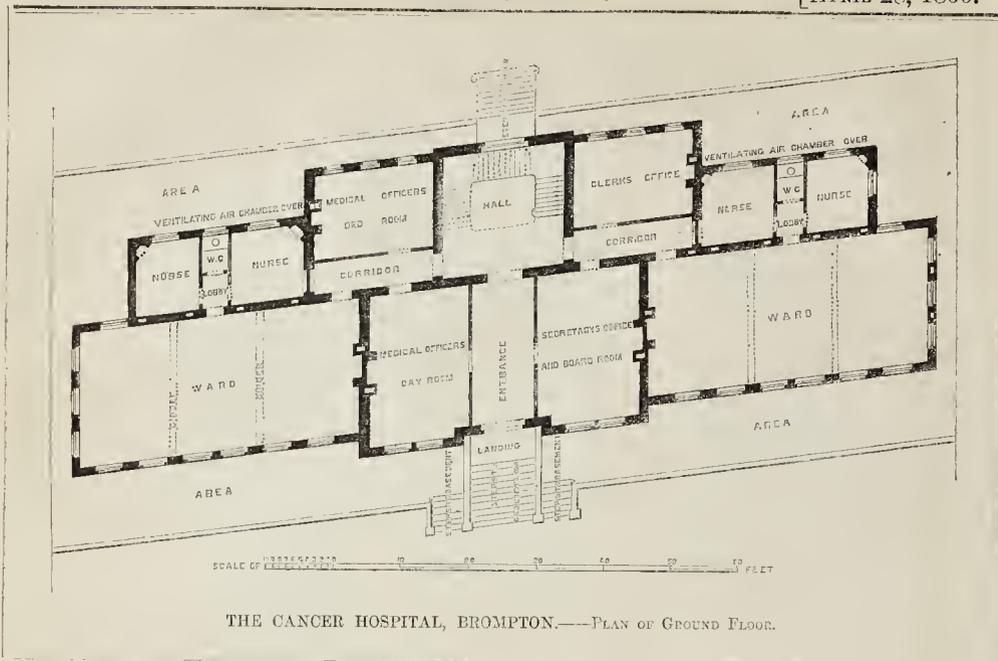
the Romans, whom the rich mines of copper and gold had tempted to return and take possession of this island, had held it for a space of 450 years, during which time they had provided it with military roads running north and south, and branches extending in an easterly and westerly direction, and had fortified camps (*castra*), which afterwards grew into towns (*municipia*), they would see what a civilizing influence the introduction of the manners and customs of Rome must have had upon a people who had hitherto been little removed from barbarism. The names, Chester, Colchester, Manchester, Cirencester, indicated points where these *castra*, or stations of importance, had been established. Indeed, the Romans, when they had permanently settled in any part of the country, constructed houses of convenience and magnificence, theatres, amphitheatres, and circuses, and carried on the same sort of government as in Italy itself. A history of Britain during the Roman period would be interesting, as showing how these civilizing influences had spread; and perhaps the day was not far distant when such a history would be published, as the materials for drawing it up were becoming daily accessible. For instance, at Leicester, mosaics of great beauty had been discovered under the house of a tallow-chandler; and at Cirencester he had seen the other day some mosaics which showed a development rivaling the Greeks for beauty. He might here be allowed to express his regret that there were not in the British Museum any mosaics polished so as to represent their original beauty. In the Vatican there are some laid in the floor, protected from being walked on, which were polished to the highest perfection. As a means of showing the civilizing influence which Rome must have exercised in this country, he would now proceed to lay before them a description of a Roman house, and show all the things that occurred therein during a day at Rome. The house which he would select was one of an ordinary size, which contained all the comforts and conveniences such as a Roman patrician might be expected to provide himself with. Of the arrangements of such a mansion (*domus*) we had accurate information, as we could see them in a perfect condition at Pompeii, unmodified by the ages through which they had since passed, and judge of them from a plan which had been discovered in one of the temples at Rome, and was now in the Capitoline Museum, and which corresponded with these Pompeian dwellings. To take a house of the Augustian period: it was surrounded on all sides by streets, and represented thereby an island; hence it was called *insular*. Part of this house was appropriated to the exclusive use of the noble possessor, and part fitted up in small shops, which were let for revenue, or served to sell the products of the farm or vineyard of the noble. At the present day you can see illustrations of this latter practice in Italy, in the little wickets attached to the nobleman's house, at which you can purchase, for a trifling sum, a bottle of pure wine, the produce of his own vintage. In Pompeii some of these shops can be seen, with their counters, and jars for oil or wine thereon: on the pilasters are inscriptions and characters denoting the commodities sold therein. The streets which surrounded the Roman house were narrow, not exceeding 15 feet in width. This was of especial advantage in a sultry climate, as the passer-by was sheltered from the extreme heat of the sun. There were, however, special streets on which their chariots (*bigæ*) travelled, and which were of sufficient width to allow two to pass one another. This *domus*, or place, to which he would now return was entered by the vestibulum, which was protected from draughts by the inmates of the dwelling. At the end of this porch, next the house, a porter (*janitor*) stood, and a large dog to warn the doorkeeper of the approach of strangers. Sometimes, instead of the living animal, a representation of it was cut into an adjoining column, and over it the words, “*Cave canem*,” written, which he might be allowed to translate familiarly into “No admittance except on business.” The pavement was decorated with mosaic; and on the step of the door of admittance was inscribed the word “*Salve*,” “welcome,” over the door of egress, “*Vale*,” “glad to see you again,” both which words served to indicate the genuine hospitality which characterized the Romans. The vestibulum led into the entrance court (atrium): this latter was surrounded by columns, and open in the centre; and was the place where the Roman nobleman received his dependents (*clientes*), a class of persons whom the peculiar democratic institutions of Rome rendered necessary to every patrician who sought senatorial honours. The patrician received them at six or seven in the morning, and until such time as he was ready to

give them a reception they awaited in the wings (*alæ*), which were adjoining to the atrium. To enable the patrician to receive his clients properly, an officer was in attendance on him, who whispered to him the name of each as he approached. From the atrium you passed into the tablinum, in which were preserved the statues of their ancestors: these were of marble, wax, or terra cotta, and brought forward in public processions. Next adjoining the tablinum was the peristylum, or colonnade, which was reserved for the private use of the family, and to which the intimate friends only were admitted. This contained a garden and piscina, or pond, in which were gold and silver fishes. To the right of the peristylum was a passage leading to the posticum, or back-door, which afforded a means of escape to the proprietor when harassed by the importunities or business of his dependents. By this back-door dependents used to enter; and near it were the apartments for cooking, and the stabling. Closely adjoining the culinary department were the dining-rooms (*triclinia*), the couches in which were sloping, so as to allow guests to recline, and occupied three sides of a square: they were arranged to accommodate three guests or nine, according as the host was attached to the number of the graces or muses. In the centre of the building was the basilica, a noble hall, in which the patrician was wont to hear and decide on such state questions as in his incapacity of quastor or consul might be laid before him. On the opposite side from the Triclinia were the balneæ, or baths, which the climate of Rome rendered indispensable to every citizen. (The learned lecturer, to explain a Roman bath, gave an amusing description of one which he had enjoyed in Bergamo, in Asia Minor, and which must have corresponded in most points to the Roman plan.) Nor were the Roman nobles forgetful of religion in the arrangements of their houses; for, attached, was a small temple in which their gods were placed, and to which the family were wont at fixed times to resort, and, though under superstitious form, invoke an ever-present Providence. The patrician generally spent till eight in the morning, with his clients: he used then to repair to the forum and ascertain what law cases concerned him: thence to the Basilica, to watch over the interests of his clients. This occupied till two o'clock in the day, when he returned home and took his bath. At three or four he used to betake himself to the court set apart for those athletic sports which had especial charms in a Roman citizen's eyes, or to the Xystus a covered space adjoining, if the weather was unfavourable to out-door sports. In addition to the public, private, profitable, and religious parts of the house which he had mentioned, he would call their attention to one portion which was set apart to the ladies of the family. The halls and *soirées* of the present day seemed then unknown, but, instead thereof, ladies used to receive their private friends in these apartments, where, no doubt, they spent many pleasant hours together. Then, there were gardens attached to the house, which contained arbours and fish-ponds, and in which all the elements of art in full perfection were to be found. The floors of the dwelling were inlaid with mosaic; and the walls showed the development of the artist's mind, sentiments which would elevate taste, and not common-place decorations put on by a mere paperhanger.

The Chairman in moving a complimentary vote of thanks to Professor Donaldson, for the interesting lecture which they had just heard, expressed a hope that as he already on three occasions had favoured them with an opening address, he would confer an additional favour next year, by adding another lecture on the discoveries at Wroxeter, and thus exhibit, as it were, a Roman house as it existed in Britain fourteen centuries ago.

Mr. Robert Kerr will deliver the next lecture on May 1, and has selected as the subject of it, “The Battle of the Styles: its Past, Present, and Future; from a favourable point of view.”

WHEN WERE HOUSES NUMBERED?—I have with much perseverance searched for particulars in connection with the numbering of the houses in the metropolis, the exact time at which this took place, &c.; but have been unsuccessful in finding any, although it is a matter of very moderate age. I mention this in the hope that one of your readers may be able to throw some light upon this important event, for without this improvement Sir Rowland Hill must have been driven mad with letters addressed to John Smith, near the “Three Legs and Bible” in the Poultry; or over against the “Blue Balcony” in Little Queen-street. A LONDON ANTIQUARY.



THE CANCER HOSPITAL, BROMPTON.—PLAN OF GROUND FLOOR.

## THE CANCER HOSPITAL, BROMPTON.

The new hospital for cancer, at Brompton, nearly opposite the Consumption Hospital, and now in course of erection, is intended ultimately to accommodate 300 patients. The building consists of a central compartment (capable of holding sixty patients), with wings; but the central portion only is now being proceeded with. It presents a frontage, next the Fulham-road, of 130 feet, and a depth of about 40 feet, surrounded by an area of 10 feet, securing to the building means of external communication and ventilation. The elevations are constructed of white Suffolk bricks, with bands of red bricks, ornamental cornices and terra-cotta medallions. There is a sparing use of stone dressings.

The lowest story, 10 feet high, contains the ward for out-patients, with surgeons' rooms and dispensary; the remainder is devoted to the usual domestic offices.

The principal or ground-floor, 14 feet 6 inches high, approached by a flight of steps, contains the hall, staircase, 18 feet square, secretary's offices, apartments for the medical officers, and two wards for patients, each 42 feet by 20 feet.

On the first story, 13 feet 6 inches high, there are three wards, 42 feet by 20 feet, with rooms for the matron, nurses, &c. These will communicate with staircases and corridors, the whole of which throughout the building are of stone.

An additional story in the central portion will also afford further accommodation for patients.

The building is being erected by Messrs. Lawrence, of Waterloo-bridge, at a cost of about 7,000*l.* under the superintendence of Messrs. John Young & Son, architects, of King-street, Cheapside; the consulting honorary architect being Mr. David Mocatta.

The reason given for the unfortunate arrangement of the plan is, desire to use to the utmost hereafter the ground behind. The mistake will be long regretted.

The charity appeals strongly to the good feelings of society.

## SIR THOMAS BODLEY, FOUNDER OF THE BODLEIAN LIBRARY.

ONE is so accustomed to associate public munificence with private benevolence, that any facts, which tend to throw discredit on the private character of a man who has proved himself a national benefactor, are not unaturally regarded with considerable prejudice and suspicion. The world was astonished and grieved to find shortcomings in the case of Howard, the prison philanthropist, a man whose reputation was European, and whose

untiring exertions and active benevolence earned for him the admiration of his fellows and the gratitude of posterity.

The following extracts, taken from the correspondence between John Chamberlain and Sir Dudley Carleton, preserved in the State Paper Office, though they give another example of the fact that a public character for benevolence is by no means incompatible with a neglect of domestic virtue, may interest our readers.

They relate to Sir Thomas Bodley, whose name has been for generations connected with one of the most noble and most valuable institutions of this country,—the celebrated Bodleian Library at Oxford. His time, his means, and his energies, were for years devoted to the founding and maturing of this great work; he obtained an order from the Government of the day, that a copy of every book printed in London should be sent to his library; and, having placed the establishment on a firm footing, he was attacked with ague, and, after a few days' suffering, closed his literary labours, and left the result of his arduous undertaking as a splendid and munificent legacy to that seat of learning of which it is now the honour and the ornament.

In a letter of the 4th February, 1613, John Chamberlain, writing to his friend at Venice, says, "Sir Thomas Bodley died on Thursday last, between four and five in the afternoon, having lain speechless, and without knowing anybody, almost thirty hours. His executors are Sir John Bennet and Mr. Hackwell, a young lawyer, Sir Ralph Winwood and Sir Henry Saville; his overseers and supervisors over them, the Archbishop of Canterbury, the Lord Chancellor, and the Lord Cooke, to each of these last bequeathing a cup of gold of the value of 50*l.*; whereas to his brothers he bath left very little, and to his brothers' sons, who are his heirs and must hold up his house and name, scant anything." To Mr. Gent and William Allen, like a couple of almsmen, he bath left his best and second best gown, and his best and second best cloak; but to cast a colour or shadow of somewhat upon Mr. Gent, he makes a clause that he forgives him all he owed him, which Mr. Gent protests to be never a penny, and bath much ado to withhold from blazing how much and many ways he was beholden to him in former times, and indeed indebted; but howsoever it be, his being so obsequious and servile to him so long a time deserved a better recompense and reward. But his servants murmur and grumble most, with whom he bath dealt very meanly. Some of them bath served him and her very painfully above two-and-twenty years, others nineteen, others fourteen, and the best not reaping after so long expectation above 20*l.*; the

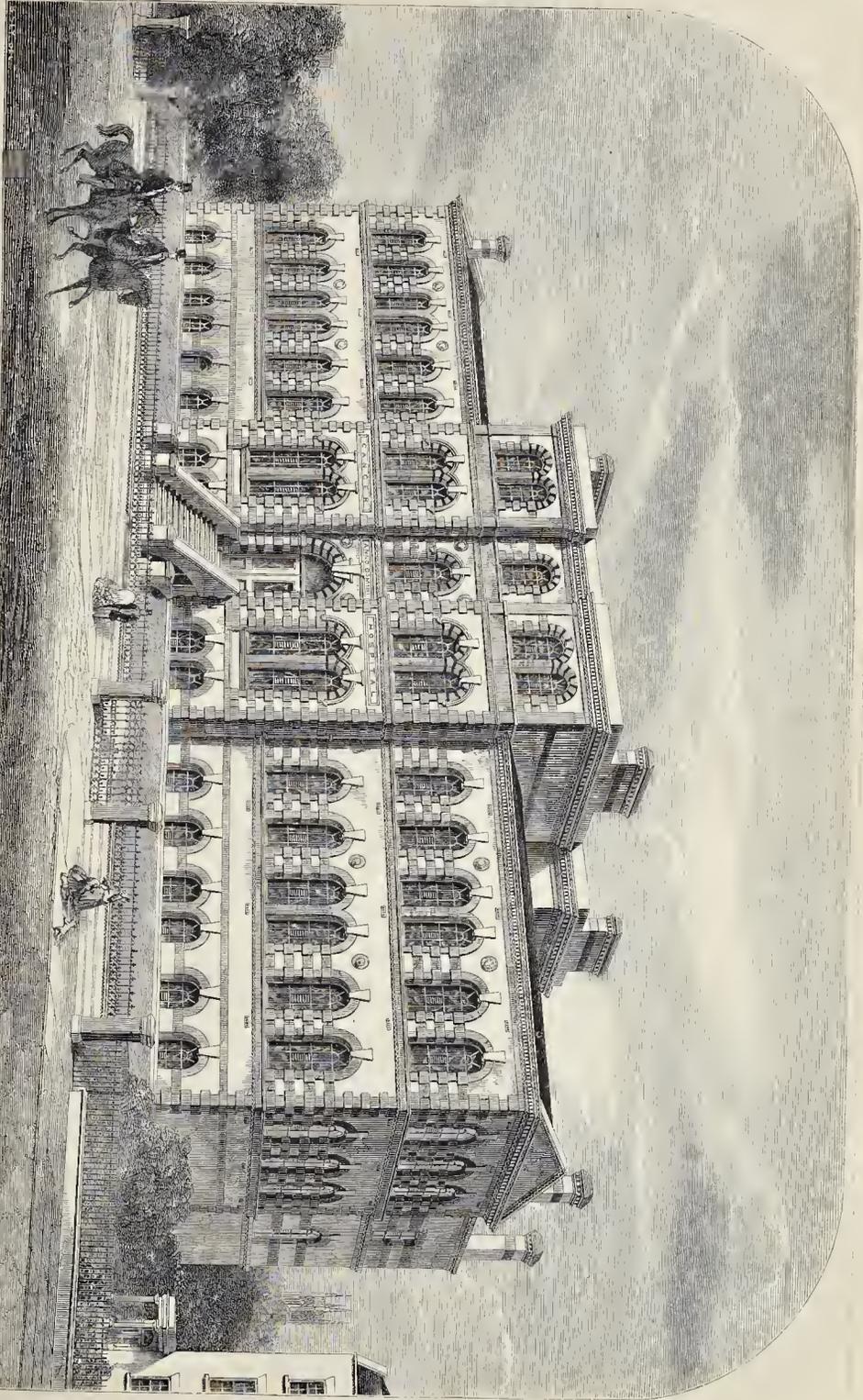
rest ten, and those not past two or three neither. He makes no mention of any friend he had, nor so much as for a mourning garment, nor will not allow it his servants unless they go to his funeral at Oxford to fetch it. But let goodnature go, if he had had regard of conscience towards his wife's children, by whom he had all his wealth; but in truth he bath dealt hardly with one of them, who bath many children, and is in need and distress, and by his means; the story whereof is too long for a letter. And all this for a valuing and shew of good deeds, for he bath given about 7,000*l.* to his library at Oxford, and 200*l.* to Merton College, besides mourning to all the students of that house, from the highest to the lowest. This, and such like, make me," says the vivacious writer, "know and esteem the world, as it is, nothing but vanity."

In a subsequent letter, dated the 25th of February, he reverts to the same subject, and says,—

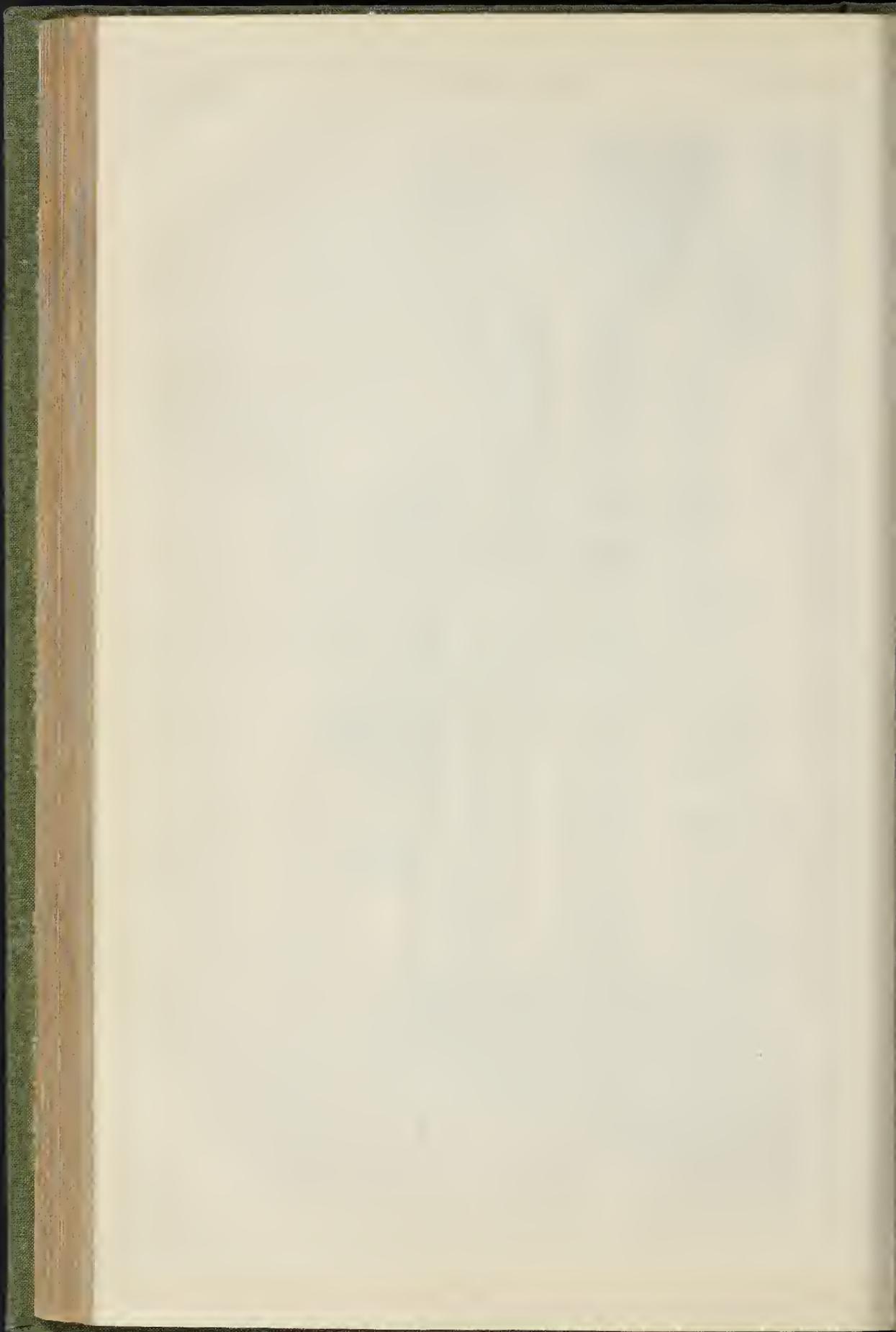
"Sir Henry Saville showed me the last week his notes taken in the reading of Sir Thomas Bodley's life, written by himself in seven sheets of paper, with vanity enough; wherein, omitting not the least minutiae that might hurt to his glory, he doth not so much as make mention of his wife, nor that he was married, nor of Secretary Walsingham, nor the Earl of Leicester, who were all his main raisers, whereby may be seen what mind he carried to his best benefactors."

But, however much his vanity and ingratitude may have caused his friends to be disgusted and his servants to gumble, they do not appear to have had upon either the same effect as upon poor Mr. Gent; for, in a letter of the 23rd of June, I find the following paragraph:—

"I perceive, by your letter of the 28th of May, that you had heard of Mr. Gent's decease, which I make no doubt was hastened by Sir Thomas Bodley's unkindness, to whom, besides all other reckonings, he had been as it were *perpetuus servus*. But the other's unthankfulness towards his kindred and friends might be the better borne, if he had not dealt unjustly with his wife's children, which I have not spared to make appear, even to his executors, who have no other defence, nor can make no better answer for divers manifest wrongs and palpable dissimulations, but that if he were alive, no doubt he could excuse himself better than they can. But the truth is, he was so drunk with the applause and vanity of his library, that he made no conscience to rob Peter (as they say) to pay Paul, for the which he bath his reward in verses and orations which the University heaps upon him for the present, though I make no question but they will quickly vanish, and in short time come to stop mustard-pots."



THE CANCER HOSPITAL, BROMPTON.—MESSRS. JOHN YOUNG & SONS, ARCHITECTS.



## ART AND BUILDING IN FRANCE.

The decorative works of the Église Saint-Eustache, Paris, have just received a fine addition in the shape of paintings, sculptures, carved works, and enamelled porcelains, with which the two arms of the cross of this vast edifice have been enriched. It is well known that, a few years ago, in making preparatory works for paintings ordered by the town of Paris for the decoration of the two chapels, a discovery was made, under the plaster which concealed them, of ancient subjects surrounded by arabesque ornaments, extending beyond the limits of the chapels which they, as it were, framed in with a border. This discovery served as a key to a general system of restoration, which, under the direction of M. Victor Baltard, has led to an ensemble of the most happy effect and one full of harmony; the researches of this architect having proved that, out of twenty-four chapels, six were so decorated shortly after the completion of the church. The church of Saint-Eustache has become once more the sanctuary of former days—the *paroiſſe des artistes*: under its arches there assembled in solemn rites the ancient Academy of Painting and Sculpture, founded under Louis XIV. The chapel of St. Andrew in the church retains still the *blason*. At the present day the walls of this church have afforded full scope for the display of paintings and sculptures by modern artists, while they echo, from time to time, in sacred concerts, the grandest themes of musical composition. Among the works now completed in this church we may notice one of considerable interest, that of the transept, where M. Sigoul, with his usual talent, has executed four grand compositions, accompanied by figures of the Evangelists and the four cardinal virtues. Six remarkable statues of the apostles on the right arm of the cross are due to M. Debay. Those on the left are by Husson and Crauck. One interesting detail deserves the attention of artists, viz., four bas-reliefs, of a striking originality, representing those personages of sacred history who loved and taught the harmony of sound, David, St. Cecil, St. Gregory, and St. Ambrose, executed in enamelled terra cotta, by M. Devers, in the style of Lucca della Robbia. On Thursday, the 12th inst., the inauguration of the new chapels took place, in presence of the Prefect of the Seine, the municipal council, and the Committee of Fine Arts of the Prefecture of the Seine. The Archbishop of Paris, Cardinal Morlot, distributed medals to all the artists who had contributed to the restoration of the paintings. During the ceremony the following pieces of music were executed:—1. Prelude, by S. Bach, for violin and orchestra. 2. "Tantum Ergo," of Rossini. 3. The "Ave Maria" of "The Pilgrims" (fifteenth century). 4. "Domine Deus," composed by Bonetti, and adapted for the occasion by Tamberlick.

A great number of workmen have just taken possession of the grand nave of the Palais de l'Industrie, to make preparations for the spring exhibition of the Imperial and Central Horticultural Society. As in the case of the preceding meetings, all the ground of the grand nave, in extent nearly two acres and a half British, is to be transformed into a vast "jardin Anglais," with grass plots, filled with exhibitors' shrubs and flower-pots, to receive smaller and more delicate specimens. On this occasion a radical modification is to take place as to the disposition of the small river supplied annually to the herbage of the garden. From the plains of Autenil, Issy, and elsewhere, the necessary soils are being extracted, the quantity of turf required not being less than 5,000 metres superficial.

Outside they are not less busy in forming a flower garden on the opposite or right side of the Grand Avenue des Champs Elysees: already the grass-plots and flower-beds have been traced out, forming an exact reproduction of those on the left or exhibition side of the road, and disposed so as to include in the most picturesque manner the fountains, and other works already established. Meanwhile the theatre of the Bonifies Parisiens is being cleared off to make room for a structure more fitted for the season during which it is open to the public. The copper galvanizing of the remaining fountains and statues will complete this important change to the Champs Elysees.

The new constructions of the Palais des Beaux Arts, in course of erection, proceed rapidly. The frontage is towards the Quai Malaquais. There are two saloons, the lower one on the ground floor being reserved for the exhibition of productions of the Roman schools, and the upper one for works of competition by the students. At either extremity of the former, which is thus rendered of smaller dimensions than the latter, are rooms devoted to

divers purposes. A large circular-headed doorway, fronting the quay, gives access to the public to the new "palais," or, as we may call it in English, repository, of Fine Arts,—such as it is, perhaps, the best in Europe. A double staircase of stone leads to the upper gallery, which is lighted from the north by twelve windows and three large skylights. A spacious gallery, like the arcade of the library of St. Genevieve, is at a future period to connect these buildings with those of the ancient *école*. This, it is said, will be reserved for the permanent collection of the casts now kept in the Louvre, while the two other side galleries will be reserved for paintings. The *École des Beaux Arts* now occupies all the space upon which stood the convent of Les Petits Augustins, founded by Margaret of Valois, first wife of Henry IV.

The Fountain of Saint Michel, on the Boulevard de Sebastopol, on the left bank of the Seine, continues to employ a number of sculptors, decorators, and workmen of all sorts behind the canvas screen which hides it from the gaze of the curious. Meanwhile, in the *ateliers*, busy work is going on at the colossal group of St. Michael overthrowing the Demon; also other groups and figures in bronze, which are to decorate this vast composition. Four columns of red Languedoc marble have just been placed in pairs on each side of the central niche, surmounted by white marble capitals. These are to support four bronze statues representing the four cardinal virtues.—Prudence, Force, Justice, Temperance. The whole structure is expected to be finished by the end of this year.

An Exhibition of Industry, Horticulture, and Fine Arts is to take place at Troyes the 1st May next, and is to last two months. There is every reason to expect that it will prove one of the best and most interesting of the French provincial exhibitions held up to the present. The demands for space have been so numerous that the authorities of Troyes have been obliged to enlarge the space originally designed by constructing a *vaste annee* upon the largest public thoroughfare. The last day for receiving paintings was the 14th instant. Troyes, of 31,000 inhabitants, is the chief town of the Department of Aube, whose population is 262,000 inhabitants.

## IRISH BUILDING NEWS.

The church of Knockany, Co. Limerick, is to be rebuilt by the Ecclesiastical Commissioners. The appointment of architect to this board (in the room of the late Mr. Joseph Welland) has not yet been filled, but we are informed that there are numerous candidates, including practitioners in England, Belfast, Cork, and Dublin, and amongst them some Roman Catholics. The office is said to be worth about 700l. per annum. The decision will be come to on the 3rd May.

The shell of the intended new church of St. Mary, Granard, is to be proceeded with, and tenders are sought for. Mr. J. Bourke, architect. The plan is cruciform with nave, aisles, transepts, chancel, side chapels, sacristy, baptistry, &c. A handsome tower, with broached spire attaining a height of 170 feet to top of cross, is included in the design. The length of the building will be 120 feet; the width across nave and aisles, 54 feet; and breadth across transept, 86 feet.

A church at Lenamore, 80 feet by 22 feet, in the Early Pointed style, and to cost 650l., and a large convent, schools, laundry, &c., for the Sisters of Mercy, at Newry, are about to be built after designs by the same architect.

Mr. Hawkshaw, C.E., has reported relative to the subsidence in the piers of the Boyne viaduct, substantially to the effect that no apprehensions for public safety need be entertained at present. The same engineer is building the bridge across the Foyle, for the Londonderry commissioners. The Newtonards and Donagadee proposed line has been let to contractors, and must be completed against January, 1861.

The Portpatrick harbour works are estimated to cost 20,000l.; Mr. Abernethy, C.E.

A new church, 120 feet in length, by 55 feet in width, Mr. McCarty, architect, is to be built at Clonca, Co. Waterford; also a convent at Kilrush, same architect.

The foundation-stone of the Cork Protestant Hall was laid by the Earl of Bandon, and the building is now progressing; Mr. R. R. Brash.

Mr. J. McCurdy, architect, has been declared the successful competitor for the new Masonic Female Orphan School at Dublin.

At the new mansion of Mr. Phineas Ryall, Bray, near Dublin, Messrs. Lanyon & Lynn, architects (already described in the *Builder*), some of the floors are laid in Arrowsmith's patent solid parquetry. The same style of flooring has also

been adopted at Colonel Taylor's, Ardgillan, Balbriggan, &c., and numerous other places in Ireland.

The Rathgar Presbyterian Church competition has been decided in favour of Mr. Heiton, of Perth, architect.

The Royal Hibernian Academy Exhibition is to open on 7th Proximo, and it is expected that the display will exceed in excellence those of preceding years, chiefly owing to the inducements offered by the Art Unions, whose prizes are to be selected therefrom.

Alterations and additional buildings are to be erected at the Royal Hibernian Military School, Phoenix-park, Dublin.

The Clones and the Tuam Gas Companies are about having the necessary works executed for the introduction of gas into their respective towns.

The Cottagers' Society, established by Lord Fitzwilliam, at Coolatin, Co. Wicklow, is said to have been successful.

A superintendent engineer, to take charge of waterworks and gas, is required by the borough of Cork: an appointment of a somewhat similar character is vacant at Belfast.

The Midland Great Western Railway Company are about having important works executed at their Dublin Terminus, completely reversing the present arrangements of arrival and departure. Mr. Wilkinson is the architect; Mr. Crew the contractor.

## LIVERPOOL ARCHITECTURAL SOCIETY.

The fourteenth meeting of the session was held at the Royal Institution, Colquitt-street, on Wednesday, the 18th; Mr. Wm. Weightman in the chair. It was suggested that the society's annual excursion should this year be to the Menai Bridge, Bangor, and Penryn Castle. The secretary (Mr. Stubbs) said he should be happy to receive any suggestion on the subject of the ensuing excursion, prior to the holding of the annual meeting of the society, when a decision would be come to. Mr. Bonit suggested that, at the next *conversazione* of the London Architectural Exhibition, the society should be represented; for at the recent meeting he heard disparaging remarks made with reference to Liverpool not having sent any specimens of art thereto. The paper for the evening was read by Mr. Huggins, and was entitled "The Path of Progress of Modern Gothic, involving a Comparison of English Medieval Architecture with that of the Continent, and other Styles."

## NEW WATER COLOUR SOCIETY.

The New Society of Painters in Water Colours opened their twenty-sixth exhibition to the public on Monday last. It consists of 372 pictures, and, notwithstanding that the principal members of the society, tried by their previous works, are not in great force, is a very agreeable and interesting collection. Two new associates, G. Simonau and Carl Werner, are decided acquisitions. No. 1, "On the Way Home," and 109, "Bernacle," both by the first-named, are solidly and effectively painted. M. Werner's works are known to a considerable circle. His "Venice as it is" (169), is more satisfactory than "Venice as it was" (128). "The Young Nun: Monastery S. Saba, Viterbo," pleases us more than either. Mr. Louis Haghe sends six works, all noteworthy. The chief two are, "An Improvisatore in the Forum, Rome" (28), and "the Murder of Riccio" (78). In the latter, the artist has been more successful in human expression than usual; but how does he reconcile the arrangement with the quotation he gives, showing that Riccio was "slayne goinge downe the stayers?" Mr. Edward Corbould exhibits but one picture, "Saul at Endor" (250). Mr. Vacher is a valuable contributor of Italian scenery, prominently, "Sorrento, Monte St. Angelo and Vesuvius" (234). There are several charming specimens of Mr. Edward Warren's peculiar art; and Mr. Rowthorn (always pleasing, though usually too pretty), Mr. Mole ("Eccleshourne Glen, Hastings") Mr. McKewan ("A Peep at Naworth Castle"), Mr. James Fahey, and others, have works to be looked at. Mr. Bennett's chief contribution, "View from Heaven's Gate, Longleat" (204), with a sly reference to "Hark, the Lark," is a fine landscape, with the effect of considerable extent. Mr. Fidey's principal picture is a very elaborate work, illustrative of Shelley's "Queen Mab":—

"Sadden arose  
Innate's soul;  
Upon the couch the body lay,  
Wrapt in the depth of slumber."

It does not succeed in telling the story, but is

remarkable for its manipulation. Mr. J. M. Topping has made a considerable advance, and exhibits, amongst other things, a large female head under the title, "L'Italia" (143). An assertion has reached us that the fifteen pictures, contributed as the work of the late S. Cook, are not the *bona fide* property of his family, but belong to a dealer. This should be inquired into by the Society. The number of pictures sold is very considerable: irrespective of those which were so before the private view day, thirty-eight received tickets on that occasion.

#### EXHIBITION AT THE FEMALE SCHOOL OF ART, GOWER-STREET.

THE Exhibition, which is now open, of the drawings by the students of the Female School of Art, should aid in obtaining for it from the public that assistance which the withdrawal of the Government grant necessitates. Ninety-two drawings were submitted in competition for medals. To twenty-six, medals were awarded by the Government inspector, and of these, seventeen have been selected to be sent in competition with the other Schools of Art throughout England for national medals to be awarded.

The names of the students thus marked out are Harriette Bradford (some clever heads), Anne Bartlett, Rosa Le Breton, Anna Maria Browne, Eliza H. Bryant, Margaretta Clarke, Selina Eckett, Susannah Fryer, Mary E. Julian, Sarah McGregor, Charlotte Pursey, Isabella Piggott, Theresa Smith, Isabella Fox Smith, Frances Von Stifmmer, Philippa Stevens, Fanny Stock, and Augusta Wells.

Besides the drawings sent in competition, there are some by ladies connected with the school, which are very excellent, as, for example, a work by Miss Charlotte James.

It is to be hoped that manufacturers and others will afford facilities for the profitable employment of the skill here acquired. The number of students at the present time is 118, and the daily attendance averages seventy. The Royal Academy, we are glad to hear, has unanimously voted 50*l.* to the school.

The subscription up to this date amounts to 361*l.* The public should be made acquainted with the fact that in July next the school will be finally closed, unless sufficient funds be raised before that time. Miss Gann, the superintendent, will give any information that may be desired.

#### STONEWARE PIPES.

A MEETING that took place at the Society of Arts on this subject, as set forth in the *Builder* of 21st inst., and which was attended by the principal manufacturers of the ware, entered into a review of the rise and progress of the art in this country; showing the great extent of the Lambeth factories, the amount of capital employed, and the immense importance of the recent introduction of iron-stone pipes, as respects town populations and in a sanitary point of view.

It was asserted that this adaptation of pottery ware had never been used in London until the 9th September, 1845, when Mr. Northern stated that "he had sent the first drain-pipe to the Board of Sewers."

That drain-pipes had been largely used before this period, in the wide improvement of wet lands, is perfectly palpable: they were so used, in all forms; principally lapped, or doubled tiles; and also small tubular perforated articulations: therefore, it is the more strange that pottery ware had not been applied to carry out the system of metropolitan sewage: such, however, is the fact.

In England this description of manufacture has wondrously progressed since 1846; but that a tubular conduit in terra cotta is no novelty was sufficiently illustrated by Mr. R. Rawlinson, who, during his stay in Asia Minor in 1855, saw very ancient earthenware socket-pipes dug up from an aqueduct on the banks of the Bosphorus. That gentlemen might, however, have gone further; for they were made in the Potters-field at Jerusalem; and evidences of a similar kind exist in China, which prove that they were used centuries prior to the foundation of the Holy City.

Wondrous advances in the ceramic art have within the last twenty years fully kept pace with the refined progress of other manufactures. At present, the models in porcelain, as well as in porcelain, rival, if they do not surpass, the extravagantly over-estimated productions of Berlin and Sevres; and the more utilitarian objects of iron-stone pottery or tiler, as now required for the improvement of agriculture, or for the health of towns, have made a corresponding progress.

The question was asked, by Mr. Rawlinson,

"At what date was the first earthenware drain-pipe introduced?" Mr. Northern replied, "On the 9th September, 1845," and by him!

Now, Mr. Editor, I beg to state the fact that early in the year 1845 I laid before Mr. Leslie, the most energetic and practical member of that Commission, samples of ironstone tubes: that gentleman exhibited them to the Board of Commissioners; and the first large quantity of this ware (upwards of 2,000 pieces) was bought of me, and paid for by cheque of 100*l.* 5*s.* on 3rd April, 1846. These tubes were manufactured for a wholly different purpose, namely, for chimney-flues, to be built up in solid brickwork or masonry,—having taken out a patent early in 1842 for that invention: I ordered large quantities (several barge-loads) from Messrs. Haywood, of Burslem: I took a wharf at Belgrove-lane for the sale thereof, and, having published the matter by pamphlet and advertisement, held it open until 1845, when finding that the sale did not pay a manager, or the rent, I offered the whole to the Commissioners of Sewers: in fact, the principal sale was made to the Messrs. Bird, of Hammer-smith, who used those flues in the Consumption Hospital, in 1844. This was the first public building in which the new principle was applied; but having myself, in 1842, used the smoke flues in three houses of mine in Regent's park, I also applied the same material (of 9 inches diameter) as drains; and having found them to answer perfectly, I put forward the system before the Board of Sewers.

As to the fate of the chimney-flues, it turned out that in 1848 I discovered extensive applications had been made of the invention: in Mr. Hope's mansion, Piccadilly; in Lord Ellesmere's palace, Stable-yard; in Mr. Suth Smith's new houses in Belgravia; in Buckingham Palace; and in Wind-or Castle, where old chimney-flues were demolished and the ironstone tubes introduced!

I had taken out the patent in the name of Wm. Denley, a bricklayer in my employ. I therefore applied in his name to the gentleman and magistrates before named for some moderate remuneration of the patent right, but without success! In this predicament, an action was brought against Mr. Flore, the royal architect: here, however, we took the wrong man, and were noused, and told to sue the builder, Mr. Cubitt. accordingly we did sue him, but the lawyer in the case was offered a sum as his costs, he threw up the case, and so the rights and flues vanished in smoke.

The loss on this question, comprising cost of materials, rent, clerk's salary, and law expenses, much exceeded 1,000*l.* However, if there is any credit to be derived from the utilization of a simple but really valuable appliance, let it fall to those who, however inadvertently, have really introduced it.

To be defrauded of a legal right, and that by the wealthiest and greatest of the community, is a sore grievance: added to this, the usurpation of a valuable merit but reiterates the poet's plaint, now 2,000 years old, "Tullit alter honores."

T. H. HARDINGE.

#### LONDON AND COUNTY BANK COMPETITION.

THE directors having recently purchased additional premises in rear of their chief banking-house in Lombard-street, the whole of which are now in progress of demolition, have selected two architects to furnish them with designs for the new structure, with the understanding that each will receive an honorarium, and that the best, if approved of, will be carried out. The competitors are Messrs. Francis, who recently erected the National Discount Company's house in Cornhill, and Mr. Henry Baker, architect of the London and Westminster Bank, Bloomsbury, and of the Australian Chartered Bank in Cornhill.

#### THE CRYSTAL PALACE.

PROMISING arrangements have been made for the new season. It will open on Friday, the 4th of May, with a festival for the inauguration of the bronze statue of Mendelssohn, lately executed by Mr. Charles Bacon. The festival will include the oratorio of "Eljibab," on a scale far exceeding any on which it has ever before been attempted. The band and chorus will consist of nearly 3,000 performers. The unveiling of the statue will be followed at dusk by a torchlight procession. There are to be flower-shows in May and June, a series of opera concerts, a performance by the "Société des Orpheonistes" of France—a very extensive association for the promotion of vocal part-music, which has its head-quarters

at Paris—and a variety of other arrangements, including a school of art, science, and literature, for the instruction of classes by eminent professors and teachers, concerning which we have not at present any very precise knowledge, beyond the fact that Mr. Edward Goodall is named to teach drawing (landscape, architecture, flowers, &c.); Mr. W. K. Shenton, drawing from the figure, and modelling; and M. A. Roche, French, with history, geography, and astronomy.

#### THEATRES ABROAD.

THE Minister of State, in a letter of the 11th inst., has announced that the construction of the new Opera House in Paris has been decided upon, at the end of the open space on the Boulevard des Capucines, at the starting point of the new Rue de Rouen, and of the branch street to be opened between this Boulevard and the Rue de la Chaussée d'Antin. The plan for the purchase of the ground had been deposited at the Mairie of the ninth arrondissement, on the 15th, and is to remain for twenty days for public examination. It contains three indications:—1. The site of the new theatre and its dependencies, occupying the space between the projected "place" and the Rue Neuve des Mathurins; 2. The trace of the two separating streets (15 inches wide), bordering the new edifice on either side; 3. The map of the lots into which it has been deemed convenient to divide the various frontages, so as to render the houses as symmetrical as possible, due attention being paid to salubrity. A design of the façade is annexed, obligatory for all constructions.

The Nannur Theatre was destroyed by fire on the 15th March last. During the preparations for a *bat masqué*, which was to take place at *Mi-carême*, an escape of gas from leakage took place: this being ignited, communicated to the decorations, and spread the flames throughout the building so rapidly, that in a few minutes the roof was consumed. At seven o'clock in the evening the fire first broke out, and at nine o'clock nothing remained but the walls. The surrounding houses were with difficulty saved from destruction.

At Nismes the theatre had a narrow escape on the 11th ult.: under the same circumstances as at Nannur, the decorations took fire about eleven a.m., from escaped gas becoming ignited in some way or other. Owing to the exertions of the soldiery the fire was extinguished, with the loss only of some scenery and furniture.

#### THE DOCTOR FOR THE POOR.

EXPERIENCE, in the working of the present system of applying medical relief to the English parishes, both in the metropolis and in the provinces, induces us to make a few brief remarks on the subject which is now before the public.

The duties of a district parish surgeon, if justly performed, are most arduous, and we gladly bear testimony to the ability and devotion with which many gentlemen, who hold this important position, discharge them. In the midst of poverty and wretchedness, terrible disease and the most sanitary conditions, it is known that district surgeons carefully attend the sick, and, by means of their influence, in a variety of ways improve the condition of their neighbourhood. They have the encouragement of knowing that they are conferring a blessing on their fellow creatures. This is, however done for a most insufficient remuneration,—a sum ridiculously small,—and this smallness of remuneration, in some instances, leads to carelessness, which has often caused death and suffering amongst the poor. Nor is this a matter to be wondered at, for all men are not enthusiasts, and they find themselves unable to provide medicine, and give sufficient time for the payment allowed, perhaps 1*s.* or 1*s.* 6*d.* for each case, on an annual receipt of perhaps less than 50*l.*

We could mention cases where death and the most distressing circumstances have resulted from the difficulty of obtaining medical assistance. It may be worth while to state that in many parishes it is a regulation that no persons, when the weekly income is above 1*s.*, is entitled to the help of the parish surgeon. This operates badly. In many instances the circumstances are such that the hospitals are of no avail. Fully admitting the benefits derived from them, and from dispensaries and other excellent institutions, we have no hesitation in asserting that *hundreds die in the metropolis alone from the want of sufficient medical assistance.* It demands consideration, whether it would not be found an advantage even to the parishes, to extend the scope of free medical relief, particularly in large towns, where rent is expensive to those with families, whose income is larger than the sum above mentioned.

In many instances, so populous is the district, and so great the need of the district surgeon, that it is impossible for any man, however anxious, to attend properly to the duties of the office. The extent and peculiar condition of districts should be considered, and the masses of the poor not left neglected: the payment of the surgeon should be such that he might not make that an excuse for inattention: proper remuneration would command improved skill and more careful consideration; and those who have seen, both in town and country, in certain instances, how the poor are still treated, will consider the provision of the extra expense as a duty. Independently, however, of that, it might be the means of restoring many to strength and usefulness, and, by saving lives of the heads of families, prevent expensive pauperism.

#### STAINED GLASS.

**Whitchurch.**—The parish church of St. Mary, Whitchurch, Oxon, has been adorned with another window, by Hardman, in the centre of the north aisle. It consists of three lights. In the centre light our Lord is represented as subject to his parents and working as a carpenter; the dexter is occupied by the figure of King David playing the harp, and seated on a Gothic throne: the sinister is filled in by an angel bearing a scroll. A large south window has been painted by Messrs. Clayton and Bell. The upper portion of the centre light comprises the figure of our Lord, to which are brought the maimed, the halt, and the blind: the under part is composed of medallions, illustrating acts of mercy. The legend, "Come unto me, all ye that labour," &c., interests the design. In the geometrical openings above angels are shown bearing scrolls. The window has been erected to the memory of the wife of Admiral Fowler, of Wallisot House.

**Knighton.**—A stained glass window has been placed in the chancel of the parish church here by Mrs. Breeze, in memory of her late husband. The window is from Messrs. Chance & Sons, of Birmingham, and its erection was entrusted to Mr. Edward Minton, of Knighton. It consists of three lights, the centre one representing the Saviour upon the cross, and the others the Apostles St. Peter and St. John.

#### MODERN CONSTRUCTIONS.

In the letter you inserted from me in the *Builder* of March 31, I should have said, the bridges I spoke of are of wrought iron for the most part, not cast, and I am well aware that the system of construction upon which they are framed was probably adopted from motives of economy; *but economy and taste are not necessarily antagonistic*, and I do think that the public have a right to expect engineers and railway directors to pay some attention to the beauty of our metropolitan streets, instead of stopping up the view everywhere by an ugly mass of heavy metal, like Malomet's coffin, "poised between earth and heaven."

On the Continent, even in the country parts, far removed from any village or town, we see beautiful bridges, finished up in the most expensive manner, and so carefully elaborated in every detail that they appear worthy of a place in some museum of fine arts rather than to be left exposed to all the fury of the elements in the midst of wilds and water-courses, where the taste and skill that have been expended on them can be rarely seen and hardly ever appreciated. This is wrong in the other direction, because it is a waste of money that might have been usefully employed to extend the road or to make branches to it. But surely, in a great city like London, the emporium of the world, the metropolis of the universe, we should not grudge the expense of a little decoration: on the contrary, we must insist upon it, for the sake of accustoming our people to refined forms.

Taste.  
"Emollit mores nec sinit esse ferus."  
Besides, it is a duty we owe to ourselves and to others to show that, while we can do great things, we have also an eye for beauty; that we have a soul capable of admiring the glorious monuments of antiquity, which are the embodiment of the thought, the experience, the joys, and the sorrows of centuries; and likewise, that we are able to transmit to posterity this hieroglyphical history of the past, together with some pages of our own, stamped with the impress of our own thoughts, our own aspirations, our own imaginations; enriched by the results of independent industry and immense improvement. They are our own treasures: they are the heir-looms of posterity. Let them not be imbued with the

spirit of parsimony or vulgarity, or devoid of feeling and taste; but let them be so designed as to raise similar feelings in the breasts of those that come after us as inspire us when we gaze in raptures upon the wondrous works of the old masters,—the chasings of Benvenuto Cellini,—the splendid structures that decorated the world in times long gone by,—the stained glass enshrouded in mystery and bathed in light; when our hearts are filled with emotion, and we taste in a few short moments the concentrated essence of sublime, soul-stirring, century-spirited symbolism.

Not that I am an advocate for "building castles in the air." We are a practical people, and it is our glory to be so; besides, the building art is essentially practical; but good taste is to be found in simplicity as well as in luxury, and can be manifested with economy as well as with lavish expenditure.

The fact is, that men who have been gifted with true taste show it in everything, no matter how small or inexpensive; while those who have not *feeling* innate in their nature can never introduce it even from a copy, although they may have millions at their disposal.

Therefore it is that we must cultivate the taste of the general public, and educate the eye of the amateur, so that art of every kind and degree may in time be estimated at its proper value. Your journal will do much towards this object by holding up for admiration whatever is truly deserving of merit, and by fearlessly denouncing, as you do, all that is calculated to vitiate public taste.

W. H. V. S.

#### MASTERS AND WORKMEN.

##### COURTS OF CONCILIATION.

THE Parliamentary Committee on the subject of masters and operatives has had occasional sittings. On the 20th it reassembled, Mr. MacKinnon in the chair, and the other members present being Lord Robert Montagu, Sir J. Paxton, Sir M. Peto, Mr. Alderman Cubitt, Mr. Slaney, Mr. Egerton, Mr. B. Cochrane, Mr. Pollard, Urquhart, Mr. Ayrton, and Sir E. Buxton.

Mr. George Potter, the secretary to the operatives during the late strike, was called and examined.—Having been informed by the chairman that the committee wished to ascertain the best means of framing a bill for the prevention of strikes, he said, in reply to questions put to him,—I believe the late strike might have been averted if the men had been enabled to meet the masters in council. I believe the principle of the bill before Parliament to be right, and that it would tend to effect the object which it contemplates.

Questions were put by various members of committee to the witness, and amongst others by Sir M. Peto, in reply to whom he said, I think there is hardly anything in the present law, as it affects the relation of masters and workmen, of which the workmen have to complain. The last Act passed on the subject has been a great boon to them. I agree with the principle of the bill now before Parliament, but think its machinery might be improved. I think it would be better to allow the council to elect a referee than to leave the appointment with a magistrate. I think the selection of the council for the men should be left to the registered men, whether they are in unions or not. As a permissive bill, I think it a step in the right direction, and believe the workmen generally approve of it.

By Mr. Pollard-Urquhart.—If it had been in operation last autumn, I think the strike might have been prevented.

Not long ago Mr. Blanchard Jerrold read a paper "On the French Courts of Conciliation," in the Temperance Hall, Townhead-street, Sheffield. The Master Cutler occupied the chair.

The chairman briefly introduced the lecturer, stating that the subject of the lecture was of great importance to all, and that if Mr. Jerrold should be the means of introducing into this country any scheme by which the frequent misunderstandings between employers and employed could be prevented, he would, indeed, deserve the thanks of every portion of the community.

Mr. Jerrold said, in opening the subject.—The object of my reading is to set before you the value of an institution which has flourished for nearly half a century among our neighbours, to the great advantage of both employers and employed. It will be for the employers and employed of this country to decide whether this most useful and flourishing French institution shall be copied, with certain modifications, in the great centres of British industry. I

offer you the results of my visits to the Conciliation Courts of Paris, because I think that a close acquaintance with the operation of these courts will raise them in your esteem, and stimulate you to demand that conciliation courts shall be forthwith established in this country.

The lecturer then entered very fully into the subject, and in conclusion he made a statement which, if wrong, ought to be contradicted by those interested. The firm of Peto, Brassey, & Betts, railway contractors, he said, had passed regulations requiring all their men to contribute 5d in the pound on their earnings as a sick fund, but so that their interest in the fund should cease immediately they ceased to be employed by the firm. They even went so far as to exclude the sufferers by chronic disease from the benefit of the fund, and to render the presentation of a card containing the rules to each workman sufficient to make him a member, any law or usage to the contrary notwithstanding. "Is it possible," he said, "to conceive anything more tyrannical, or more openly against the law of the land than these regulations, by which a large firm, I understand, yearly put 4,000, or 5,000, into their pockets?" That this is erroneous, we have no doubt.

#### THE ROYAL ENGINEER DEPARTMENT.

Sir,—The publication of the War-Office circular, addressed to the military officers of the Royal Engineer Department, only proves the urgent necessity for the reform in that branch of the public service which your journal has hitherto advocated. I say it *only proves* this fact, for it provides no remedy: to direct the attention of the military officer to the rudimentary principles of architectural composition cannot supply that practical knowledge the acquisition of which costs the civil architect years of earnest toil, and without which it is impossible to successfully design or economically construct; and it is because this indispensable quality constitutes no part of the professional education of our military engineers that the works upon which they are engaged invariably prove so enormously expensive; and, however gently the Secretary for War may touch this rotten portion of the Department's present constitution, however earnestly he may endeavour to shift the blame upon the Department's only prop—the civil branch,—nothing can remove the wide-spread opinion long since arrived at by all who have had any contact with the Department, viz., that the military officers are not competent for their present position.

It is rather unfortunate for the consistency of the circular, to find it condemning the practice of the Department in allowing the *civil* branch to design the civil works, while it recommends the *military* officers to perform that duty; and though "Mr. Herbert does not allude to the works of fortifications" in support of the necessity of his proposition, he selects several instances which cannot be considered otherwise than "works of fortification," they being outside the ordinary practice of civil architecture.

Taking these instances, therefore, the argument is not against the civil branch, but rather should be stated thus. If the instances referred to, which are solely within the special duties of the military engineers, are inappropriate and expensive, what must the civil buildings be, which are but indirectly connected with the practice of military engineering? And we can only arrive at a proper answer to this question by a thorough inquiry into the past working of the Department, which I trust will soon take place. C. E.

#### BUILDERS' ACTIONS.

**Ormes v. Beadel.**—In the Vice-Chancellor's Court, the question in this case was whether a letter, which had been signed by the plaintiff abandoning a contract to build a house at Chelmsford for Mr. Copland, had been signed by him under such circumstances of pressure on the part of the defendants as entitled the plaintiff to be relieved from the consequences of such letter. In August, 1858, the plaintiff entered into a contract with Messrs. Beadel, Son, & Chancellor, of Chelmsford, "auctioneers and architects," to build for Mr. Copland, their principal, a house at Chelmsford for 1,400l. By the fifth condition of the contract it was provided that if the works did not proceed with such progress as the architects (Messrs. Beadel & Co.) might consider necessary, they should be empowered to purchase such materials and employ such workmanship as they might consider necessary, and deduct the cost of the same from any moneys due to the contractor on account of the works undertaken by him, and

that with the exception of a sum to be received by the architects for keeping the premises in repair for six months after their completion, the whole of the money should be paid to the plaintiff during and upon the completion of the works according to the architects' certificates. During September and October, 1858, the plaintiff received 225*l.* in respect of work done under the contract, and in accordance with certificates given to him by Mr. Chanceller. On the 20th, and again on the 27th of November, 1858, the plaintiff applied to Mr. Chanceller for certificates of work done by him, but they were refused, and a dispute arose between those gentlemen. On the 11th of December, 1858, the plaintiff signed a letter, addressed to Messrs. Bendel, Son, & Chanceller, whereby, in consideration of 50*l.* then paid to him by them, he gave up the contract for building the house for Mr. Copland, and agreed that the value of the work approved by Messrs. Bendel & Co. should be estimated by Mr. Gardiner. The plaintiff's case was, that his signature to the above letter was obtained under such circumstances of pressure on the part of the defendants as entitled him to be relieved from it.

The Vice-Chanceller said that the proper decree to make would be to declare that the signature of the plaintiff, to the letter of the 11th of December, 1858, was obtained under such circumstances as that he was not bound thereby; that the contract of the 22nd of August, 1858, had been put an end to, and was no longer binding on the parties thereto, and that an account should be directed of all sums of money paid by the plaintiff for labour and materials used in the construction of the house mentioned in the suit, and if it should appear on such account that the amount so paid by the plaintiff exceeded the sum of 487*l.* 7*s.* 3*d.*, admitted by the different parties to have been received by the plaintiff, the balance should be paid by the defendants to the plaintiff: costs to be paid by the defendants, with liberty to apply.

#### ARCHITECTURAL INSTITUTE OF SCOTLAND.

At the last meeting of the Architectural Institute for the present session (Mr. Lessels presiding), a discussion took place upon the paper read at the meeting on the 2nd inst., by Mr. Robert Anderson, "On the Domestic Architecture of Italy and France during the Middle Ages and the Period of the Renaissance." Mr. Anderson gave a brief résumé of his paper, in which various arguments were brought forward in support of the superior adaptability of Gothic or Medieval architecture over either the pure Classical or the Renaissance styles to the requirements of modern civil and domestic buildings. According to the *Scotsman*, Mr. Cousin asked whether Mr. Anderson controverted the statement recently made by Lord Palmerston, in reference to Mr. Scott's design for the Foreign Offices, that Gothic architecture, except for ecclesiastical buildings, was not a national style in this country; and, if he did so, whether he could adduce any examples in Britain of Gothic or Medieval architecture in civil buildings? Mr. Anderson replied, that for a lengthened period Gothic was the only style of architecture used in this country, either for ecclesiastical or civil purposes, though the greater part of its remains applied to the latter purpose had been destroyed, especially in Scotland. Taking these facts into account, and considering that the ecclesiastical branch of the Gothic was still admitted to be the national style, he thought that the same term was applicable to it when applied to civil buildings. Mr. Cousin rejoined that Gothic was quite as much national in France and Germany for ecclesiastical purposes as in Britain, notwithstanding that there were slight differences of feature in some of the details adopted in the three countries appreciable only to professional eyes; and he could not comprehend, therefore, on what grounds the Gothic style could be claimed in this country more than in others as exclusively national. Mr. Shiels spoke strongly in favour of Gothic architecture as giving free scope to the inventive genius and constructive skill of the architect, and therefore happily adapted for every description of structures; while the Classical styles permitted little or no departure from their conventional forms, and in their forcible adaptation to domestic purposes necessitated the most deceptive expedients—such as blind windows, false fronts to hide the indispensable form of the building behind. Mr. J. D. Peddie said if the question to be decided were whether or not Gothic architecture was suitable for civil and domestic buildings, he would answer in the affirmative; but he also thought that the Classical styles could un-

questionably be used with perhaps equal advantage. He thought there was exceedingly little interest in the discussion whether Gothic was the national style in this country or not: the great question was, what was the best and most suitable style? He thought it a mistake to suppose, as some had asserted, that the Classical architect was little more than a mere copyist, while the Gothic edifices required originality of invention, as well as of arrangement. On the other hand, he would say that he had never yet seen a Gothic building, and he never expected to see one, in which he did not find quite as much copyism as in structures modelled on the Classical and Renaissance styles.

#### UTILIZATION OF TOWN SEWAGE.

EXPERIMENTS AT CARLISLE.

IMPORTANT experiments are now being made in the neighbourhood of Carlisle, according to the local *Journal*, which states that the town-council have granted upon very liberal—indeed, nominal—terms to Mr. McDougal, of Manchester, the use of the sewage of Carlisle for fifteen years. Mr. McDougal has now commenced his operations upon the Wilow Holme, which he has leased from the Duke of Devonshire for the purpose. The area of the Holme is about eighty acres. The outlet of the main sewer of Carlisle is in the lesser portion; and near the entrance from Caldwgate to the larger holme an engine-house has been erected, and a tank has been constructed by the side of the main sewer, with a sluice so arranged that as much of the sewage can be diverted into it as may be desired, as it flows down in its course to the river. Adjoining this tank a smaller receptacle is constructed, in which is mixed a strong disinfecting fluid, which is allowed to run through a small pipe into the larger tank, and there disinfect the whole of the sewage as it accumulates. A powerful pump worked by the engine then forces the sewage thus disinfected and deodorized through an iron pipe about 10 inches in diameter, which carries it to the holme, where a mode of irrigation is adopted by means of sewage canals. The fluid used as the disinfectant is one patented by Mr. McDougal, and manufactured by him at his chemical works at Chadderton, in Lancashire. It is estimated that one gallon of the concentrated essence as it leaves the chemical works will be sufficient to disinfect from 10,000 to 20,000 gallons of sewage.

#### OUR POLICE COURTS.

Your remarks will have found an echo with many whose misfortune it is to attend these dingy abodes.

They form a stinging disgrace to our legislature and criminal law jurisdiction. Take the most important,—the wretched den in Bow street—approached by a narrow single outlet, and occupying the space only of a dwelling-house. An impressive libonial tray in which foreigners may form a proper conception of the beauties of our police legislation, and the manner in which criminal and civil law elbow one another.

The recent part of the community shrink from them, and the characters they are necessarily brought into collision with,—the dregs of humanity. To them, therefore, the doors are as if barred.

But, to consider modern legislation has imposed a host of additional duties, of which often the bare name of the act involved is known only to the unfortunate adjudicators. Criminal and civil law can never be ought not to be so little considered in their varied aspects as they now are.

Commodious new police courts are much wanted,—planned with a central hall and waiting-rooms, and with not less than four distinct means of approach and egress. The comparatively new police courts are ill planned, and public convenience is in no way considered or cared for.

Some classification is also desirable, and means should be taken to separate the bad characters who swarm in these congenial spots from those who attend in the furtherance of duties having no reference to criminal law.

SOUTH CIRENCE.

#### SCHOOL-BUILDING NEWS.

**Bristol.**—The foundation-stone of the Infant and Sunday Schools about to be erected, in connection with St. Clement's Church, has just been laid. The building, consisting of school and classroom, with teacher's residence, will be in the Early Decorated style of architecture, from the designs of Mr. S. B. Gabriel, of Bristol, architect. The expense of erection, including ground, will be about 1,400*l.*, part Government grant, and the rest subscription. About 1,200*l.* have been obtained. The contractors are, Mr. John King, builder; Mr. John Lawrence, carpenter; and Mr. H. Nelson, plasterer.

**Ironbridge.**—A National School has been inaugurated at Ironbridge, according to the *Shrewsbury Chronicle*. The building, which has been erected according to drawings by Mr. Samuel Nevett, is in the Elizabethan style. It comprises a boys' school-room, 57 feet by 29 feet, and class-room, 11 feet by 14 feet, and a girls' school-

room, of the same dimensions, with teachers' residences. The building is constructed of blue brick, with Bath-stone dressings. In the centre of the front is a bell turret and vane. The windows to the west are surrounded with a plain border of stained glass, of ruby colour. The roof is an open one, of stained lead, and covered with blue tiles. The builders are the Messrs. Nevett, of Ironbridge, under the superintendence of Mr. T. Smith, of Madeley. The cost of the building, with the school furniture, is about 2,000*l.*: of this sum, 1,194*l.* 12*s.* 6*d.* has been raised by voluntary subscriptions.

**Manchester.**—The foundation-stone of Christ Church new schools, Moss Side, has just been laid, according to the local *Advertiser*. A sum of 1,700*l.* has been subscribed, and there remains a further sum of upwards of 300*l.* to be raised to complete the cost. The architects of the school are Messrs. Robert Goldsmith and Son. The building is of the Decorated order, has two floors, and an open timbered roof. The length will be 72 feet by 32 feet; the height of the lower room 41 feet and the upper 31 feet. On the ground floor are boys' and infants' school-rooms, with class-rooms, and rooms containing boiler and other conveniences. The room on the second-floor is set apart for girls, and runs the entire length of the building. In the roof there will be provision for regulating the heat and cold. In the principal front there will be four gables, in which are three-light windows, with tracery heads. On the south end will be erected a bell-turret. The schools are to be built of brick, and faced with Yorkshire pier-points and Hollington dressings. The contract for the work has been taken by Mr. Mark Forgett. When completed, the schools are expected to accommodate 640 children.

**Sheffield.**—The chief stone of the new schools about to be erected in connection with the Wicker Congregational Church, has been laid. The site is at the rear of the church, and on the same plot of land. The principal front, towards Gower-street, is 138 feet long, and the flanks at either end, forming the gables, are 36 feet wide. The schools are arranged to fit the peculiar shape of the ground. On the basement story is the lower day-school, for 300 children. Immediately over this room, and approached by an entrance-hall leading from Gower-street, is the principal school-room, about 60 feet long, with accommodation for 400 children in classes. From the same entrance, and also from the porch, the other school-room is approached, which, like the last named, is 25 feet high, and for 250 scholars. There are also four class-rooms for about 150 scholars. A house for the chapel-keeper is situated between the schools, with a frontage towards Gower-street. The outer walls are of Dunford-bridge stone, with ashlar dressings, similar to the church. The woodwork is stained and varnished, and the windows are glazed with leaded panes. The estimated cost is 1,500*l.*, exclusive of warming apparatus, gas, and other fittings. Messrs. Joseph & Alfred Craven, of Sheffield, are the contractors; Mr. Wm. Abbey is the clerk of works; and the architects are Messrs. Hadfield and Goldie, of Sheffield, under whose superintendence the work is now being carried out.—The chief stone of St. Stephen's Church schools has been laid. They will be closely adjacent to the church, and will be of two stories, of stone, and in plain Gothic style: near them will be the residence of the schoolmaster. The estimates for the whole erection are about 2,200*l.*, including the site and the master's house. The architects are Messrs. Flockton & Son, of Sheffield.

#### Books Received.

*The Book of Ornamental Alphabets, Ancient and Modern.* By F. DELAMOTTE. Third Edition. Spon, Bucklersbury. 1860.

In this new edition the errors we pointed out in the first have been for the most part rectified, excepting in the case of the numerals, which are still altogether erroneous. The date given as an example between the words ninth century and twelfth century is in truth 1554. Bating this, however, Mr. Delamotte's book will be found very useful by a large class unable to obtain more costly works.

*The Engineer's Handbook.* By CHAS. LOWNDES, Engineer, Liverpool. London: Longman & Co. 1860.

THIS is a very useful little book, containing principles to guide in the construction of machinery, and many valuable rules and tables concisely stated.

## Miscellaneous.

**BAILLE'S TABLE FOR GLASS CUTTERS AND BUILDERS.**—What Mr. Baille calls his "Magic Roller Measurement Table," shows at once the contents of any size of glass, from 7 by 5, to 70 by 37, half an inch at a time, "effecting a calculation in a few seconds, which would require upwards of twenty figures by the ordinary method." It is very cleverly arranged so that the required dimension may be found with rapidity. In country places it will be found more useful, probably, than in large towns, where the glaziers and many builders by their glass cut into squares; while in the country they are obliged to keep crates of glass to meet the various sizes wanted.

**MORTALITY AMONGST MOUNTAIN SHEEP: A WARNING.**—We hear that the weather has destroyed a number of sheep, not only on the hills, but on the low grounds, a Cart-load of skins have been forwarded to Penrith, and other towns and villages in the neighbourhood of the hills; and they still, nearly daily, keep arriving from the fells. Never, in the memory of the oldest shepherd on the hills of Westmoreland, can be remembered so fearful a mortality. Throughout Ireland, and North and South Wales, there have also been great destruction and loss amongst cattle, sheep, and lambs. Our town agriculturist and our Government should look in time to the future. Most of the great plagues and pestilences have been preceded by elemental disturbances, continued through several seasons, heat, drought, and cold. Any one, or all, in excess, may destroy or injure plants. Animals suffer next, and then man. Cholera is raging in North Africa at present. We would most earnestly appeal to our Government and to all Local Boards, Guardians of the Poor, and others having charge over the public health, to commence sanitary operations in time. If any cleaning away of foul refuse be required, this should be done immediately: closed rooms should be ventilated, and there ought to be a most liberal use of the limewash bucket and brush. Meat inspectors should be on the alert, and Government ought more narrowly than usual to watch over salt and preserved meat contracts. The old proverb of "a stitch in time," should be attended to in sanitary matters.

**THE EARL OF AIRLIE ON "THE LIFE OF STEPHENSON."**—A lecture in connection with the Glasgow Athenæum was recently delivered in the City Hall, Glasgow, by the Earl of Airlie, on "The Life of George Stephenson," to a numerous, though not crowded assemblage, the audience being partly composed of the working and middle classes. Sir Archibald Alison introduced the noble "Head" of "The Bonnie House o' Airlie" to his audience.

**THE BUILDING TRADE AT REDDITCH.**—Within the last week or two the builders in this neighbourhood have raised the wages of their bricklayers and labourers. But for the scarcity of bricks just now an unusual amount of building would be going on: houses are scarce and much wanted, more especially for the humbler class of operatives, many of whom are living in tenements scarcely eligible for dog-kennels. Thirty or forty tenements, it is said, will shortly be erected in this town upon an improved plan.

**MONUMENTAL.**—Dr. Watt's memorial scheme is progressing. Mr. Lucas, of Chilworth Tower, according to the *Hampshire Independent*, has the work in hand. The statue is composed of Sicilian marble, and the figure will stand 8 feet high. The height of the whole fabric will be 19 feet. The committee propose polished grey granite for the pedestal.

**THE ABBEY GATEWAY, READING.**—After more than once being threatened with removal, the corporation, it is now stated, have determined to attempt to raise a subscription for the restoration of the Abbey gateway, and will vote a certain sum for the improvement. It will be remembered that the British Archaeological Association, when they met at Reading last year, expressed a strong opinion against its possible destruction. Reading should preserve all its memorials of the past: the expenditure would be amply repaid by the increased attractiveness of the town.

**KENT.**—A county police-station has just been completed at Seabrook, between Folkestone and Hythe, containing six cells, and reception-room for prisoners; petty sessions room, and residences for the superintendent of police, the lock-up keeper, and the groom constable, with stabling, &c., and other offices. The works have been executed by Mr. J. Edwards, builder, Folkstone, under the direction of Messrs. Whitehead & Blandford, architects, Maidstone.

**PAINTERS' STRIKE AT GLASGOW.**—A large body of journeymen house-painters are on strike in Glasgow. It appears that the men are accustomed to make up a price of wages list at this season of the year, which they present for the approval of the masters, to be binding for twelve months. The employers state that they have no objections to pay the wages which the men demand, and which they have of late been in the habit of receiving, but they decline to be bound in writing for a year. Upon this, the Union has at once ordered a strike. A number of the masters, according to the local *Gazette*, have agreed to the terms of the journeymen, but the largest firms, or masters who employ 500 out of the 700 men in Glasgow, have resisted.

**THE BOYNE VIADUCT.**—Mr. Hawkshaw, in a report on the safety of this structure, says,—"I am quite sure that the care you have bestowed on this subject ought to assure the public against all apprehensions, nor are there, in fact, any grounds for alarm, as the viaduct is now perfectly safe and secure."

**HOSE RAILWAYS IN BIRKENHEAD.**—At an adjourned special meeting of the Birkenhead Commissioners, the surveyor reported, with reference to the laying down of horse-railways along the roads in Birkenhead, that he did not see any reason for opposing the plan, but should rather recommend it, as deserving of favourable consideration. Eventually the appointment of a committee was agreed to. Mr. Train was in attendance with a model of the carriages and section of rails. A committee meeting was held after the general meeting, and it is understood that the committee agreed to leave the engineering details to be arranged by the surveyor with Mr. Train, and the legal questions to their law-clerk and Mr. Train's solicitors.

**INDURATING THE HOUSES OF PARLIAMENT.**—A return published of all sums paid for indurating or preserving the external stonework and the iron roofs of the Houses of Parliament since the year 1853 shows that 3,517l. 10s. 11d. have been devoted to that purpose. The works appear to have been undertaken by Mr. G. B. Daines and Mr. N. C. Zerelmeij. The former gentleman received 1s. per yard superficial for stonework and 1s. 10d. per yard for the iron roofing. Mr. Zerelmeij was paid 2s. 2d. and 2s. per yard for the roofing, and 1s. per yard for the stonework. Referring to the decay of the stone used in the new Houses of Parliament, Sir Charles Barry says:—"The decay which has taken place in the stone employed in the new palace seems to be confined principally to the parapets, where the stone is exposed on two faces; also in the water-tables, cills, cappings, bases, and plinths, and the courses of stone above and below them, within the influence of the drippings and splashing of showers of rain (particularly where opposed to the south and south-west winds), and to a very limited extent on the plain faces of the ashlar, owing probably to soft varieties of the stone. A fruitful source of decay is also due to the unusual and extensive use of water externally, for purposes of ventilation, by which a considerable portion of the masonry is constantly rendered alternately wet and dry; which should be prevented, if possible, as it is the severest test to which any stone can be subjected. Experience has fully satisfied my mind that in proportion as stones are absorbent, so in proportion is the extent of discoloration and decay which ensue in a smoky and impure atmosphere like that of London."

**THE LIGHT ON WESTMINSTER-BRIDGE.**—I am not an individual who discovers something very consulting in finding fault with everything, but I really do think the lime-light (as I believe it is called) on Westminster-bridge is too brilliant. I fancy it would be better if surrounded by ground glass. If it is brought into general use, and permitted to blaze away as it now does, one half of the inhabitants of London will go blind; and that you will own is a consideration. I remember when gas was first used in London, and a very excellent light it was that was provided (if my memory does not play me false), much better than the miserable stuff now in general use in our streets; so that this light, being a decided improvement, should be applauded rather than condemned, and will, I have no doubt, prove a great boon, if rendered useful without being injurious.—**PRO BONO PUBLICO.**

**LIVERPOOL CEMETERY COMPETITION.**—In our paper of the 14th inst. it was mentioned, in a resolution passed by the Burial Board, that the plans sent in under the motto of "Gottesacker," were among others deserving of commendation. We are asked to say that the design under the motto "Gottesacker," was by Mr. Charles Turner.

**A NEW MODE OF REMUNERATING ARCHITECTS.**—In a recent number of the *Builder* appears an advertisement from the Burial Board of the parish of Ealing, Middlesex, inviting "tenders from competent persons to fill the joint offices of architect and surveyor to the board. Candidates to submit plans for two chapels, entrance lodge, and gateway, to be erected upon the proposed burial-ground, at a cost not exceeding 1,400l.; and also to state the terms per day for the necessary duties as surveyor."—Z.

**INSTITUTION OF CIVIL ENGINEERS.**—At the meeting, April 17, Mr. Bidder, the president, announced that the late Mr. Joseph Miller, for many years a member of the council, had bequeathed to the Institution 5,000l., of which 3,000l. would be receivable immediately, and 2,000l. on the demise of a gentleman resident in the West Indies. The funds of the Institution would thus be materially augmented, as there would also be soon receivable the bequest of 2,000l. from the late Mr. Robert Stephenson. To these amounts must be added the sum of nearly 5,000l. bequeathed by the first president, Mr. Telford; of 200l. presented by Mr. Charles Manly; and of 1,000l. which had recently been invested out of income. The total invested property would thus ultimately become 13,094l. 12s. 4d. The paper read was "On the Efficiency of various kinds of Railway Breaks, with experimental Researches on their retarding Powers," by Mr. W. Fairbairn.

**THE PROPOSED LONDON PAUPER LUNATIC ASYLUM.**—At a recent meeting of the Common Council, Mr. Deputy Dakin brought up a report from the special Lunatic Asylum Committee, with plans and estimates for the erection of a pauper lunatic asylum for the City, at an expense, exclusive of furniture, of 65,000l. The report stated that, upon the resolution of the court, to defray the cost out of the City cash, the committee entered into communication with the justices relative to the site at Stone, near Dartford; that they found that site to consist of 33 acres, at 100l. per acre; that a deposit of 250l. had been paid; and that the site had been approved of by the Commissioners of Lunacy. That the committee directed the comptroller to complete the purchase, which he had done; and that they then instructed the City architect to prepare plans for a building suitable for 310 patients. That the plans so prepared were approved by the committee, but amended, so as to provide for 328 patients; that the cost of carrying them into execution, according to the estimate of the City architect, would be about 65,000l.; and, finally, the committee asked that the report might be referred back to them for execution, after approval by the Secretary of State. The report was ordered to be printed, and circulated among the members of the Corporation, the committee, at the same time, being empowered to submit plans for approval to the Secretary of State.

**ROYAL ITALIAN OPERA, COVENT-GARDEN.**—In Madlle. Cellig, who made her first appearance here last week, in Beethoven's "Fidelio," Mr. Gye has an artist of more than common ability and power. The opera, noble and beautiful as it is, is not popular in England; and admirably as it suits the singer, many will probably wait till she appears in some other part. Her acting is as good as her singing, and in a popular part, such as the sorrowing mother in "Le Prophète," we anticipate for her a striking success. For the re-appearance of Grisi and Mario in "La Favorita," on Tuesday last, some new scenery has been painted, but we have not yet seen it.

**A COVERED MARKET FOR MALTA.**—A contract has been taken by Messrs. Emmerson and Murgatroyd, of Stockport, for the erection of a covered market in Malta, to be constructed of iron and glass. The structure will be temporarily erected in a large field in Heaton Norris prior to its shipment.

**COTTAGE BUILDING.**—The new number of *The Quarterly* (Murray) contains an article on Labourers' Cottages, illustrated with some plans. The writer gives the preference to a cottage designed by Mr. C. W. Strickland.—An elegant volume, called "Country Cottages," by Mr. John Vincent, architect, has been published by Messrs. Spott, Bickersbury, to which we shall refer in due course.

**THE ARCHITECTURAL EXHIBITION.**—Sir, — Will you kindly permit me to remind the writer of the critique on the Architectural Exhibition that Brisbane, South Australia, possesses the advantage, or disadvantage, of a tropical climate, and that therefore, in designing a church for such a locality, the great object is, of course, to exclude the light by means of very small windows?

W. BURGESS.

**STEAM TRAIN FOR THE INDIAN RIVERS.**—A train of barges, built by Messrs. John Reid & Co. of Port-Glasgow, for the Oriental Inland Steam Company of London, has been tried on the Clyde with satisfactory results. The train consists of a steamer and five barges, of the collective length of 900 feet. The breadth of the train is 30 feet, and the depth of the hold about 7½ feet. The draught of the barges, when light, is about 10 inches, and it is reckoned that, on a draught of about 2½ feet, the train will carry about 2,000 tons of cargo. The engines, which are on the high and low pressure principle, have been constructed by Messrs. Fawcett, Preston, & Co., of Liverpool. The different barges of the train are articulated to one another by means of circular joints, so as virtually to constitute a long flexible vessel presenting only one bow to the water.

**ROYAL DRAMATIC COLLEGE.**—The first brick of this institution was laid on Monday, by its master, Mr. Benjamin Webster, assisted by several of the officials connected with the project. The site is at Maybury, near the Woking station of the South-Western Railway.

**DRINKING FOUNTAIN MOVEMENT.**—The Bath City Act Committee have given permission for the erection, by a private individual, of a drinking fountain in Ladywood, at the back of Paragon-buildings. The proposed fountain will be composed chiefly of Bath freestone, the architrave and arabesque groups of white lias, the columns of red and gray polished granite, and the capitals of white veined marble. It will comprise a drinking-basin, a trough for cattle, and one for dogs.

—The Town Council of Brighton some time since gave leave for the erection of a public drinking-fountain in the Queen's-road. The fountain is now nearly completed. The site chosen is the centre of the open space at the top of Gloucester-lane, opposite the Colonnade Hotel. The design has been furnished by Mr. E. E. Scott, architect. The structure is 12 feet in height, and is in the Italian-Gothic style. It comprises two drinking-taps,—one facing the terminus, and one on the south side,—which are placed under stone canopies, so as to secure the coolness of the water. There are also two water-toughs,—one for horses, and another below it for dogs. On the eastern side there is a raised platform for resting handens on. The material of the fountain is Portland stone; but it is relieved with a tablet of polished red granite, which bears this simple inscription, "Erected by an inhabitant, with the co-operation of the Town Council and the Water Company."

**AN ELECTRIC TARGET-INDICATOR.**—We find the following paragraph in the Liverpool Daily Post, of Tuesday last:—The Electric Target.—This ingenious invention was tested yesterday, on the practice-ground of the Cheshire Volunteers, at Leasowe. The target is a massive iron frame, divided into three segments, centre, upper, and lower divisions, and these segments are connected with electric batteries and a galvanometer, which instantaneously indicates the portion of the target which the bullet has struck. All need of signalling, &c., is thus done away, and any danger to life prevented. The marksmen may all stand close to the indicator, and the firing continue uninterrupted during the whole time of practice, a faithful record being presented of the number of hits; and the target may be so divided that spaces of a few inches can have each a separate wire and needle in the indicator. In the shooting, the full advantage of the target was perceived. One of the electric targets, it is added, has been fitted up at Hythe, and the time and danger-saving result has given the greatest satisfaction. General Hlay having expressed his opinion of the invention in very high terms. The cost is moderate.

**MALLEABLE IRON CASTINGS.**—A new method of malleablizing iron castings is announced in the New York Tribune to have been discovered by Professor A. R. Eaton, of that city. It consists in exposing the castings to the contact of oxide of zinc, as a substitute for the oxide of iron in the furnace. It is stated that the employment of the oxide of iron which combines with the excess of carbon in iron castings when long exposed to red heat, leaves a spongy residuum on the castings, which is obviated by the zinc oxide, because the zinc is volatile and passes off, leaving the oxygen gas to combine with the carbon in the iron; although, were both metals equally fixed, the zinc would rather deprive the iron of oxygen than the iron the zinc.

**"HEARNS OF OAK."**—Sir: Can you inform me if Mr. Evans has furnished a list of the competitors, or the names of the three successful artists, to any publication where it could be read in the provinces?—**"ONE OF THE UNSUCCESSFUL."**  
\* \* \* The names have not reached us.

**BLACKFRIARS-BRIDGE.**—The Bridge-house Committee reported, at a recent meeting of the City Common Council, that from June, 1850, when the defective state of the pier of this bridge was first discovered, to the end of 1859, the expense of providing and maintaining temporary supports had amounted to about 6607. a-year; that these supports, besides being very unsightly, were a great obstruction to the navigation of the river; that no other pier had sunk, and there had been no further subsidence since the supports were applied. The committee were, therefore, of opinion that the time was come for permanently repairing the bridge by rebuilding the defective pier and the two adjoining arches, and they asked authority to inquire and report upon the subject. After some discussion the report was agreed to.

**PROPOSED IMPROVEMENT OF JANSEY HARBOUR.** The Harbour's Committee, according to the Jersey Times, recommend the deepening and making into a wet dock the old harbour, widening the old North Pier to 150 feet, thereby giving increased accommodation along the east side of Albert Harbour. The breadth of the new quay will allow room for the construction of warehouses. A landing jetty will also be run out from Victoria Pier to low water.

TENDERS

For taking down and re-building the Episcopal Palace at Gloucester. Mr. Ewan Chalmers, architect. Quantities supplied by Mr. T. W. Goodman and Mr. J. A. Banker:—

Williams	£11,652 7 0
Bectonell	10,038 5 11
Clark & Son	10,834 0 0
Holland & Hammen	10,790 0 0
Estcourt	10,350 0 0
Lilley	10,182 11 0
Wingate & Son	9,750 0 0
Moore	9,991 17 0
Jones & Son	9,379 0 0

For Romford Drainage. Mr. Edward Gotto, engineer. Quantities supplied:—

Robson	£8,054 6 9
DeBick	6,957 7 8
Taylor	6,413 6 11
Harcourt	6,342 7 10
Hill	6,342 0 0
Paynt	6,280 17 0
Mariott	5,936 0 0
Patman	5,890 1 5
Murray	5,777 9 6
Bartles	5,660 11 0
Ayers & Co.	5,614 0 0
Doewra	5,593 3 7½
Coker	4,949 9 11

For a new Baptist Chapel and School room, Heath-street, Hampstead. Mr. C. G. Searle, architect:—

Piper	£2,840	Chapel	£2,920
Laurence	5,730	880	670
Holland	5,659	492	562
Macey	5,634	489	578
Myers	5,393	456	559
Brown & Robinson	5,175	549	490
Hill	5,095	627	430

For three Houses in Edgware-road, for Mr. M. Levy. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Pearson & Doughney:—

Houses.		Vanls.
King	£4,242	£2,980 0 0
Myers	4,187	290 0 0
Williams	3,997	230 0 0
Walton	3,940	230 0 0
Evans, Brothers	3,865	227 18 7
Keyes & Head	3,864	190 0 0
Pickard	3,728	212 0 0
Macey (accepted)	3,389	224 0 0

For pulling down and rebuilding No. 31, Strand, for Mr. J. W. Allen. Mr. Barnett, architect. Quantities supplied by Mr. W. W. Cuyther:—

Thomas	£3,525 0 0
Clements	3,348 0 0
Jackson & Shaw	3,350 0 0
Smith	3,182 0 0
Hill	2,919 0 0
Evans, Brothers	2,931 0 0
Candler	2,990 0 0
Patrick	2,868 0 0
Myer	2,795 0 0
Patman	2,790 0 0
Macey (accepted)	2,710 0 0

For St. Patrick's Catholic Church, Sunderland. Mr. James Gillis Brown, architect:—

Webb	£3,183 1 0
Ridley	2,723 4 4
Hurst	2,334 3 7
Young	2,235 0 0
Lewis	2,181 0 0
Conyers	2,175 10 0
Oram	2,163 11 0
Young	2,147 10 0
Lee & Lacy	2,025 17 0

For erecting a Rectory House at Tansor, near Caudle, Nottinghamshire. Mr. John Norton, architect:—

With Casterton and With Ancestor		Keaton Stone	
Dressings.			
Tresni & Berridge	£3,311	£3,171	
Cogswell & Day	3,465	3,189	
Pooley	3,430	3,400	
Bennett & Sons	2,420	2,326	
Ellis & Sons	2,195	2,115	

For erecting a Farm-house, and sundry buildings, at Highworth, Surrey, for Captain Rodney; Mr. James G. Smither, architect.

House and Sundry Buildings, Road, &c. Total.			
	£ s. d.	£ s. d.	£ s. d.
Ockendon & Sons	1,865 5	—	450 13
Harding	1,812 0	—	568 0
Hardy & Son	1,831 0	—	452 0
M'Lennan & Bird	1,657 0	—	473 0
George	1,648 0	—	695 0
Thorton	1,648 0	—	459 0
Barnes	1,791 0	—	350 0
Kirkley	1,351 0	—	327 0

For the erection of a villa residence in the Brunswick-road, Camberwell New-road, for Mr. W. Stafford. Mr. James G. Smither, architect. Quantities supplied.

Smith	£2,350 0 0
Rurkitt	2,250 0 0
Mallett & Young	2,170 0 0
Nixon	2,160 0 0
Hemmings	2,025 14 0
Asford & Co.	1,894 0 0
Tarrant	1,988 0 0
Hockey & Co.	1,948 3 6
Fisher	1,924 0 0
Richards	1,923 0 0
Hart	1,869 0 0
W. Smith	1,889 0 0
Brown & Robinson	1,824 0 0
Humphris & Lufford	1,757 6 10
Riley	1,669 14 0
Clements	1,536 0 0

For House and Conservatory for Mr. Calcutt, at North Hyde. Mr. Henry McCalla, architect:—

Stimpson	£2,157 10 0
Ramham	1,828 0 0
Wright	1,824 0 0
Manly & Rogers	1,496 0 0

For extension of a Warehouse in Cannon-street West, for Messrs. S. & M. Morgan. Mr. F. G. Widdows, architect. Quantities supplied:—

Laurence & Sons	£1,702 0 0
Asby & Horner	1,697 0 0
Sargeant	1,559 0 0
Gibson	1,509 0 0
Wheen	1,557 0 0
Asby & Sons	1,498 0 0
Gray	1,480 0 0
Brown & Robinson	1,475 0 0
Heath & Son (accepted)	1,474 0 0

For the erection of a Manufactory, for Mr. Cranston Dowling, in Clement-street, Birmingham. Mr. Cranston, architect:—

Drinkwater	£1,498 19 0
Harley	1,440 0 0
Hardwick	1,289 17 0
Matthews	1,293 0 0
Briggs	1,265 0 0
Burkitt	1,259 0 0
Grove	1,159 0 0
Stokes	1,158 0 0

For Works near "Elephant and Castle," for Mr. E. H. Rabbits:—

Thompson	£1,040 0 0
Woodward	995 0 0
Downs	960 0 0
Monday	959 0 0
Coils & Co.	925 0 0
Penington	859 0 0

For a pair of semi-detached villas, to be erected at Boston Park-road, Brentford, Middlesex, for Mr. Meyers. Mr. Charles Jones, architect, Lombard-street Chambers.

Adamson & Son	£1,039 0 0
Brundsen	1,023 0 0
Nye	914 0 0
Nias	786 10 0
Jackin (accepted)	780 0 0

For the erection of Congregational Chapel, Alvechurch. Mr. Cranston, architect:—

Thomas & Roberts	£980 0 0
Grove	698 0 0
George	658 0 0
Clark	645 0 0
Showell	610 0 0
Stat	610 0 0

For alterations and additions to Warehouses, Upper Market, Norwich, for Mr. Charles Winter. Mr. John Daymond Hills, architect, Norwich:—

Brown & Bailey	£807 0 0
Curtis & Balls	895 0 0
Mims & Foyson	860 5 0

For Wallingford Cemetery. Messrs. Poulton & Woodman, architects, Reading:—

	Chapels and Lodge.		Boundary Walls.		Laying Out.		Iron Gates and Railings.	
	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.
Dalrymple	1,308	0 0	630	0 120	0 65	0 0		
Young & Co.	1,100	0 0	570	0 0	0 0	0 0		
Wintup	1,150	17 0	535	0 105	0 0	0 0		
Wood	1,104	10 5						
Orton & Child	1,076	0 0	537	0 98	10 0	67	0 0	
Braxler			576	15 0				
Green					155	15 6		
Shaw					125	19 0		
Jones & Black							90	0 0
Wilder							75	15 0
Hood							71	0 0
Grafton							65	0 0

J. & S. Orchard, for chapel and lodge, 1,227½; the above, 1,699. \* Accepted.

# The Builder.

VOL. XVIII.—No. 900

The Post-Office.

**S**WIFT as a post, is a comparison that has been used from the Scripture times, to express great speed and activity. In Great Britain in recent years, when the genius of Macadam and the spirit of the coach proprietors had raised the speed of travelling to the rate of from eight to twelve miles an hour, the Royal Mail was the surprise of all, and only a few thought that the rapidity of the English post could be increased; but George Stephenson, and those who worked with him, showed, that it was "not a tempting of Providence" to travel by the help of the locomotive at the rate of thirty, forty, and even sixty miles an hour.

It is worth while just to glance at the historical summary of the postal service.

Letters, for both public and private persons, were originally sent by especial messengers only, and more recently by common carriers, who began regularly to ply with their "pack-horses" about the time of the Wars of the Roses. Government posts, in the shape of relays of horses, were not established until about two centuries later; but as early as the time of Edward II., horses were kept by private individuals for hire, so that a person might travel post, that is, by relays. In 1481, Edward IV., then at war with Scotland, is said to have established a system of relays of horses, the post stations being twenty miles apart, so that despatches were carried 200 miles in three days. In 1548, the charge for post-horses impressed for the service of the Crown, was by statute (2 & 3 Queen Elizabeth; Edward VI., c. 3), a penny a mile. Camden says, that Thomas Randolph was chief postmaster of England in 1581; and it appears that in Ireland, the first horse-post was established during O'Neill's wars, for the purpose of bringing military intelligence.

The first establishment of a letter post by the Government was in the reign of James I., who, as is stated by a proclamation of Charles I., set on foot a post-office for letters to foreign countries, "for the benefit of the English merchants." It was not till the reign of Charles I. that a post-office for inland letters was established. This new establishment was entrusted to Thomas Witherings, who had before been appointed Foreign Postmaster, but in 1640 he was suspended for alleged abuses in both offices. Philip Burlamachy then became postmaster and the superintendence of the principal secretary of state. About this time the conveyance of letters by the new method excited opposition, and in 1642 a committee of the House of Commons was appointed to inquire into it; but the utility of the institution was too great to permit of its abandonment. In 1644, Mr. Edmund Prideaux was appointed by both Houses of Parliament to be Chief Postmaster; under the management of this official, a saving of a public charge of 7,000*l.* a year in maintaining postmasters was effected.

In 1649, the Common Council of London set up a post in rivalry with that of the Government; this, however, was not approved of. At the beginning of the system, the postmaster was allowed to take the profits, in consideration of his bearing the charges. Afterwards, however, as the revenue increased, the office of postmaster was farmed, and this practice of farming was continued, as regards the hy-

posts, till almost the end of the eighteenth century. In 1649, the amount of the revenue derived from the posts was 5,000*l.*; in 1657, under the authority of Cromwell and his Parliament, the post underwent considerable changes. The ordinance under which this was effected, gives as a motive for the establishment of posts, "that they will be the means to discover and prevent many dangerous and wicked designs against the Commonwealth."

At the Restoration, the settlement of the Post-office was made the subject of a fresh enactment. In the year 1663, the revenue of the Post-office was settled by an enactment on James, Duke of York, and his heirs male in perpetuity. At this time it had increased to 21,000*l.*, that being the sum at which the office was farmed. In Scotland, at that time, no inland post was in existence, and it was only in the time of William III. that, in 1693, the Scotch Parliament passed an Act for the general establishment of a letter post.

In 1683 a penny post for the conveyance of letters and small parcels about London and its suburbs was set up by Robert Murray, an upholsterer, who assigned the same to William Dockwra; this was opposed, but, nevertheless, the undertaking was so successful that it excited the jealousy of the Government, who seized this the first district London post, though a pension of 200*l.* a year was afterwards granted to Dockwra. At first there appears to have been no limit to the weight of a packet sent by the district post, but its value was ultimately restricted to 10*l.* In 1685 the revenue of the Post-office, which had been conferred on the Duke of York, now that the prince had succeeded to the throne, was settled on the king, the amount being estimated at 65,000*l.* a year. In 1698 Dockwra was removed from his office on a charge of mismanagement and misappropriation.

In 1708 an attempt was made by Mr. Povey to establish a halfpenny post, in opposition to the established penny post, but that was suppressed by a law-suit. In 1710, in the reign of Queen Anne, the old enactment respecting the Post-office was repealed, and a new one made providing for a General Post-office for the three kingdoms and the colonies, under one head, who was to bear the style of Her Majesty's Postmaster-General.

In 1720 Ralph Allen was granted the lease of the cross posts for a life rent of 6,000*l.*, and carried out various improvements, and gained profits of 12,000*l.*, which he continued to receive for upwards of forty-four years, spending it mainly in works of charity and in hospitality to men of learning and genius. In 1764, on the death of Allen, the cross posts were put under the management of Mr. William Ward, who, for a salary of 300*l.* a year, undertook to hand over the profits, which then amounted to about 20,000*l.* a year. This branch rapidly increased, and in 1799, when it was transferred to the General Post-office, the annual profits amounted to 200,000*l.*

In 1784, a great reform was made in the Post-office, by Mr. John Palmer. Up to that time the mail-bags had been carried by post-boys on horseback. In many instances these were idle boys without character, mounted on worn-out hacks, and who, so far from being able to defend themselves, or escape from a robber, were much more likely to be in league with him. Mr. Palmer, who was the manager of the theatre at Bath, had observed that when the tradesmen of that city were particularly anxious to have a letter conveyed with speed and safety, they were in the habit of enclosing it in a brown-paper cover, and sending it by coach, though the charge of that conveyance was much higher than the postage of a letter. He, therefore, proposed that the mail-bags should, as far as possible, be sent by the passenger coaches, accompanied by well-armed and trusty guards. He also suggested other important alterations; for example, that the mails should be so timed as to arrive in London, and as far as it might be at other places, at the same hour, so that the letters might be delivered altogether, and that they should be despatched from, and arrive in, London, at a time convenient to the public, the mails having hitherto left London

at all hours of the night. This plan met with great opposition, but Mr. Pitt saw the merits of the improvement, and under his auspices an Act of Parliament was passed, authorising its adoption.

Mr. Palmer was appointed under the Controller-General of the Post-office, to superintend the carrying out of the scheme, at a salary of 1,500*l.* per annum, together with 2*l.* per cent. upon any excess in the net revenue, over 240,000*l.* The speed of the mails was at once increased from 3½ to more than 6 miles an hour, and subsequently a swifter rate was effected. In 1792, although Mr. Palmer had ably performed the duties of his office, he was suspended from his functions, and an allowance of 3,000*l.* a-year (a sum much below the emoluments to which he was entitled by agreement) was assigned to him in lieu of it. He memorialized the Treasury against this arrangement, but without success. However, he petitioned Parliament, and in 1813, after a struggle of many years, a Parliamentary grant of 50,000*l.* was made to him. In 1792 a Money Order-office was first set a foot. In 1796, the rates of inland postage were raised to a scale, varying from 3*d.* to 9*d.*, and they were afterwards raised much higher. In 1799, an Act was passed, authorizing the Postmaster-General to send bags of letters by any private ships, such letters being charged at half the packet rates. This is the origin of the ship-letter system, under which the postal communications, are conveyed to every part of the world by private ships. In 1814, measures were taken to provide a new General Post-office, the old one in Lombard-street having become too small for the business to be transacted. It was not, however, until 1829 that the present building in St. Martin's-le-Grand was opened for use. Year after year the speed of the mails was increased, and in 1830, upon the opening of the line between Liverpool and Manchester, the mails were for the first time conveyed by railway. In 1835 Lieutenant Waghorn commenced transmission to India, by the direct route through the Mediterranean and over the Isthmus of Suez, a line of communication subsequently extended to China and Australia.

Early in 1837 Mr. Rowland Hill broached his plan of penny postage, which was adopted in 1839, and carried into effect in the beginning of the following year.

Such is the history of the progress of our post-office system, which has led to the establishment, as its chief centre, of the great building in St. Martin's-le-Grand.

In this monster establishment there are now employed about 1,700 persons of various grades; this, however, is but a small portion of the army of more than 2,000 men who are engaged in delivering letters to the ten districts of the metropolis. The whole number of persons employed in the Department of the Post-office in 1858 was 24,372.

Those acquainted with the General Post-office will have remarked that a covered arcade passes through the centre of the building towards the Goldsmiths' Hall. Here are letter-boxes, offices for inquiry, notices, and a place for the delivery of the letters of those who have arranged to leave them to be called for. Here, too, the vast number of newspapers are brought which require to be passed through the post; we will, however, without particular notice, leave this, and enter the portion of the building to the northward, where, in passages of no great width, are hung at short distances leathern water-pipes, fastened to other pipes ready for immediate use. Numerous doors—marked and numbered—belong to various offices; one of which is apportioned to the Vice-Controller of the Circulation department. Here we are introduced into a room in which many gentlemen are busily engaged in writing and other business; and, in a separate room, find the head of this important department, who has kindly consented to place us under excellent guidance for the purpose of viewing the wonders of the General Post-office. First, then, let us peep at the Library, which, although but recently established, contains between 3,000 and 4,000 well-selected volumes, many of them presents from the Prince Consort, the Bishop of Exeter, eminent

authors, and others of rank and position. This is managed in the same way as the excellent library at the Bank of England, and is already found most useful to upwards of 500 clerks and others who are engaged here. Adjoining the library is an airy and well-lighted reading-room, in which are to be found the leading periodicals, globes, maps, and chess-boards. In another apartment interesting lectures have been given from time to time, by gentlemen belonging to this office. Besides the library just mentioned, there is another, which is unfortunately not so extensive, for the use of the letter-sorters, &c. Let us, however, leave this pleasant feature of the Post-office, and walk to a room of large size, in which a sound is heard like the rustling of a ripe corn-field, together with a curious hum of voices. Here, seated at a table, are more than a hundred persons, most of them intently engaged in opening and redirecting letters which have not got into the hands of those to whom they were addressed. At first it seems surprising that such a large staff should be needed for this purpose. It is not so, however, when we learn that in one year there were about 1,700,000 letters, being equal to about 1 in 300 of the whole number, returned to the Post-office, in consequence of failure in the attempts to deliver them.

Owing to the same cause about 570,000 newspapers were also undelivered in a year, being 1 in 124 of the whole number.

With great activity the clerks carry forward this work, and evidently no time is allowed as has been supposed, to pry into the secrets of correspondents. This department was formerly called the Dead-letter Office, but is now known as the Returned-letter Office. It is a marvellous sight to see the vast mass of letters of all kinds, and the large amount of trouble which is caused in a great measure by the carelessness or want of thought of writers. In many instances, letters, containing valuable property, through hurry or inadvertence, are dropped into the letter-boxes without any address at all.

More surprising still is the appearance of the great room in which the chief part of the English letters are sorted and placed in positions from which they can be readily tied together and put into bags at the time appointed for the conveyance of them to their several destinations. In this room, which is of good proportions, and with the exception of the deficiency of light, a fine apartment, in the busy parts of the morning, about 467, and in the evening 378, persons are engaged in stamping, sorting, and arranging the letters, which, in countless multitudes, meet the eye in all directions, having been brought to this and the other sorting-rooms from the places where they are delivered into the General Post-office. By means of steam power, baskets-full of letters are continually being raised by lifts similar to that which is in use at the Colosseum in the Regent's-park. As rapidly as they arrive at the different mounts of the office from various quarters the huge baskets of letters are emptied on large tables, from which they are carried by armfuls to be stamped with the date, and, at the same time, have the postal stamp partially obliterated. This is still, to a certain extent, done by hand, at the rate of about sixty a minute. There has, however, been an ingenious method of stamping invented by Mr. Pearson Hill, which enables one person to stamp, in the usual manner, 140 letters in a minute. From end to end of this room are counters, along the centre of which run raised partitions, fitted with spaces for the reception of sorted letters. These spaces are labelled with all the towns and places for postal delivery in the United Kingdom. One table on each side affords accommodation for six or seven sorters, who, each in his allotted space, arrange their letters in "roads." Take, for instance, one of the number, and we find the letters for Bedford and six other adjoining towns labelled. At this table there are six or seven places for Bedford letters, and the same as regards other towns,—each in charge of one sorter. The mail for Bedford will not depart until the evening; but as the letters for this road drop in, they are collected and carefully arranged under their proper label, and, when necessary, the six or seven packets are gathered together. The letters are divided into groups for the different parts of the kingdom; then each of them is divided into districts, and these again into "roads" similar to the arrangement just mentioned. The visitor to the Post-office will note that in addition to the labels of the names of places, there is one division

\* A marked improvement has taken place in this respect, for in 1857 the number of returned letters was 2,400,000, or 1 in 230.

† 155 gas-lamps are needed to light this department.

marked "Blind." This is for the reception of letters the direction of which cannot easily be deciphered, and which are placed there to be forwarded to the "blind readers," a name which gives a very wrong notion of them, for it would puzzle the most painstaking antiquary accustomed to the study of time-worn inscriptions, or faded and cramped manuscripts, to discover the meaning of the directions on many of the documents which these "blind readers" yet contrive to make out. In this office the gas-light seems to be needed even in the middle of the day. In a part of this room is a raised seat for the gentleman who has the superintendence of those who are engaged in the operations which are here busily carried forward. Communicating with this large room by open arches are a series of offices for the various London districts, ten in number. In connection with the whole of London and the separate districts, the same process of division and sub-division is carried forward, and certain metropolitan streets and squares are classed and lettered as a particular "road."

In each of the postal districts of London the sorting of letters is, to a certain extent, carried forward in a special central post-office, which has been provided in ten central situations; for instance, if a letter is posted to any part of the northern district, addressed "Mr. ———, No. ———, street, N."—that letter will be almost immediately delivered, and not passed through the General Post-office at all. This relieves the central establishment, and it cannot be too well known that the marking of letters with the district initials not only facilitates the operations at the General Post-office, but causes letters to go more quickly into the hands of those to whom they are addressed. This will be readily understood when we consider that all the metropolitan letters which come to the General Post-office are, in the first instance, grouped together, and then sorted for the various district offices in the General Post-office. It would, of course, be much more easy to divide the letters with rapidity if legibly marked S.W., or N., as it may be, than if the street and neighbourhood were simply mentioned.

There is no arrangement in this vast metropolis which is more surprising to a stranger than the collection and delivery of the London district and inland letters. In 1859 the distance over which mails were conveyed by mail-coaches, railways, foot-messengers, and steam-packets was about 133,000 miles per day, this being about 3,000 miles more than in the year ending 1857. In the year 1859 the whole distance traversed by the various mails was thirty-seven millions, five hundred and forty-five thousand miles! In 1858 the number of letters passed through the post-offices of Great Britain amounted to 523,000,000. The average to each person in England was twenty-two letters; and each person in London it was forty-six.

Heaps of letters here meet the eye. What mingled notes of joy and sorrow, what wonderful surprises, weighty business, and valuable property are here sealed up! Letters of love and hate, of births, marriages, and deaths,—words to delight and words to undo. Their contents, by the way, are at times curious; and it has been necessary to forbid the carriage by this means of glass bottles, razors, scissors, needles, knives, leeches, game, fish, vessels containing liquids, gunpowder, and similar sweetmeats.

If we look into the rooms set apart for the management of the foreign mails, the arrangements show, in a forcible manner, the wonderful extent of British commerce and relationships. Here are departments for Austria, Baden, Bavaria, France, Norway, Denmark, and the most northern latitudes; the Brazils, Chili, the Equator, Spain, Sardinia, Switzerland, United States of America, North America, the various districts of India, Australia, and other places too numerous to mention.

Here arrangements are made for the overland Indian and other mails. The letters, newspapers, and books are collected in the same manner as in the other parts of the General Post-office; then they are secured in cases of sheet-iron, which, when full, are carefully soldered up and inclosed in wooden chests, which are branded with crosses of red or black, and marked with the name of the district, city, &c., at which its arrival is awaited. Some idea of the extent of these mails may be formed when it is mentioned that each of the boxes referred to weighs, when filled with letters and papers, about 86 lbs., and that the ordinary Australian mail, exclusive of the portion sent overland, generally consists of 480 boxes of books and newspapers, and 100 boxes of letters,—in all 580 boxes. These would weigh altogether 49,880 lbs., equal to nearly twenty-two tons and a half. The other mails are of like

colossal proportions; and the preparation for each is constantly going on.

Large as the area of the General Post-office is, in consequence of the increase of business it is becoming much too small for its various purposes. Hundreds of foreign mail-boxes are stowed in all available places, in somewhat picturesque confusion. As the time comes for the departure of a particular mail, the hustle in that department increases, and the numerous boxes or baskets, when ready, are collected together, and lowered by cranes into the waggons which are to convey them to the railway depôts or on ship-board. The business of this part of the office is much increased by the immense number of letters which are sent from many parts of the Continent for transmission over sea by the English Post-office. The management of the rates, the necessary amount of prepayment of those packets, must cause a great deal of trouble, and requires much skill. Leathern bags for ship letters are crowded around, and amongst the group of communications we notice letters for the fleet and for our soldiers in various climates.

In the upper portion of the building, the newspapers, both inland and foreign, are arranged in a manner similar to the letters below. They are hoisted in surprising quantities by the steam-lifts in the same way as the letters. The light and certain other sanitary arrangements here, are better than in most of the parts below. A large room, with a circular roof supported by iron girders, is well adapted for its purpose. When the bags for inland districts are prepared, they are fastened, sealed, and shot down wooden spouts to the places where the carriages are in waiting; and with a swiftness to which the most rapid of the old posts bears no comparison, the news of the metropolis is wafted far and near.

The book-post has, too, become an important institution, and a source of profit and a great convenience to the public. It would not, however, have suited the authors of other days, the issuers of ponderous folios; for no hook exceeding 2 feet in length, width, or depth, can pass by the post.

If a book weighing less than four ounces be sent according to the Post-office regulations, it will go for a penny to any part of the United Kingdom; and one weighing from 1 lb. to 1½ lb., for 6d.

For years past, particularly since the commencement of Sir Rowland Hill's penny postage scheme, constant alterations have been needed in the General Post-office. At the present time extensive works are in progress, and it may be observed that these have improved many defects in the original structure.

Besides the offices in which the letter and newspaper sorting is carried forward, there is a considerable number of offices in parts of the south portion of the building. Offices for the secretary, managers of departments, and other heads of the establishment, the solicitor, and others, occupy much space, and new buildings are like to be commenced; for the General Post-office, like the British Museum, has become too small for its present purpose.

Looking at the lower parts of the building, you find underground chambers and arched passages of massive brickwork, which promise to last for many centuries yet to come: these subterranean apartments are in some instances tolerably well lighted, and are used for various purposes, but are not fit for human occupation for any length of time. In one part accommodation is provided for the letter-sorters and some others who may wish to take refreshment there: here they may at leisure time avail themselves of the library which has been provided for them. Hot air is dispersed throughout the whole place, and means are taken to carry off the vitiated atmosphere.

This has been done with good effect in the Returned-letter Office, and it is to be hoped that the same plan will be adopted in other offices, particularly in that for sorting the letters, in which a considerable number of persons are at different times of the day employed; for, as Dr. Waller Lewis, the medical officer of the establishment, remarks, the gas used for lighting, "mixed as it is with carbonic acid, carbonic oxide, and sulphurous acid (the latter by absorption of atmospheric oxygen quickly becoming oil of vitriol), cannot be otherwise than injurious to the delicate breathing organs of those exposed to its fumes; it has been found that the thickest and toughest leathers, when subjected to the action of those gases in libraries, become in a short time destroyed."

The establishment ought to find an advantage, and doubtless does so, in having a resident medical officer, who, besides attending to the general health of those engaged in the department, looks with care to ventilation and other sanitary pro-

visions. We have not the means of comparing the amount of sickness and death here with that of other Government offices, such as the Treasury, Admiralty, or Somerset House, in which considerable numbers of persons are engaged. This might be very usefully done. In any investigation of this kind for the purpose of testing the effects of the sanitary condition of buildings on health, it should not be neglected to note the previous employments of those engaged. As regards the General Post-office, it appears that out of 451 candidates for the situation of letter-carriers or sorters, the greater number had been engaged in sedentary employments, and as many as 132, or 29 per cent, of these were found to be physically disqualified.

The various improvements, in ventilation and otherwise, which have been made from time to time, would seem to have had a beneficial effect upon health. It should be borne in mind that the greater number of letter-sorters are exposed (when not here) to all the evils of the dwellings which other workers with moderate means are obliged to occupy who are engaged in the City. It is to be hoped that a plan which has been shadowed forth by the Post-office authorities for providing suitable dwellings, properly arranged, in a convenient neighbourhood, for such as desire them, may be carried out and properly appreciated by those who would, with their families, derive a very great advantage from improved residences.

**SANITARY PROGRESS.\***

**Swansea.**—Swansea is the seat of copper smelting; new docks have recently been opened, and building is going on rapidly. The corporation purchased certain waterworks, but they are not sufficient for the existing and rapidly-increasing population. A bill is now before Parliament to bring in the waters of three streams, by a covered conduit, nine miles in length. There will be three storage reservoirs for purposes of compensation and supply. The conduit will be so arranged as to have sufficient fall at the lower reservoirs to drive hydraulic apparatus to pump portions of water for higher service. By these means, the entire area within the borough will be supplied with fresh and soft water. The estimated cost of these works is 75,000*l.* Public sewerage works are being carried out under the superintendence of the borough surveyor, Mr. Cousins.

**Sunderland.**—At Sunderland works of public sewerage have been carried out by the local surveyor. Earthenware pipes have been used most extensively, and with great advantage.

**Wigan.**—At Wigan public sewers have been carried out by the borough surveyor, and some 4,000 houses have been drained. This work is in progress. The corporation have undertaken the public water supply, and obtained an Act of Parliament to purchase some works in existence, and to establish new works. There has been some difficulty at the storage reservoir, in consequence of old coal workings, and the corporation have a bill in Parliament to obtain more extended powers. They wish to complete the reservoir, and to add additional storage room.

**Workop.**—At this comparatively small town complete works of public sewerage have been devised and executed; and outlet works to prevent fouling the river. Private works of house-drainage are going on as rapidly as possible, so that by the end of summer most of the houses in the town will have been placed in a good sanitary condition.

**Waltney.**—Works of sewerage and drainage have been devised and executed by the local surveyor, Mr. J. Thomas Lea. New gas-works have been partially completed, and water-works are in progress. The Local Board are also in treaty for the purchase of the ferries. This place is, therefore, in a healthy state of transition.

**West Ham.**—This is a suburb of the metropolis in which are situate the new Victoria Docks, a considerable portion of the area is some 10 feet below river Thames high water, and yet house building is progressing rapidly. Works of public sewerage are being carried out over the entire area, a considerable length of sewer has been constructed at a dead level. The outlet is at low water of a spring-tide, and the leading main sewers have only a fall of 3 feet to the mile. The inverts to the sewers, in the low district, are of cast iron, and have had to be laid in water. The whole of the subsoil being affected by land-springs; as, also by the river water. The sewage and subsoil water is to be pumped. The Messrs. Galloway, of Manchester, are making duplicate steam-engines,

with four pumps 48 inches diameter. Two pumps to each engine. The sewage must be disinfected, and the effluent water will be passed to the Thames. The pumps are so arranged as to deliver against the tide, rising and falling with it, so as not, at any time, to expend unnecessary power. The public sewers have manholes and ventilating shafts, in which sewer gases will be disinfected by passing through charcoal.

Sanitary progress has not been very rapid, if we consider the question in reference to the whole country. The Public Health Act, 1818, and the Local Government Act, have been applied to some 314 cities, boroughs, towns, and places in England. There are, however, upwards of 12,000 parishes in England and Wales. Many cities and towns have not yet adopted the Public Health Act, nor carried out any proper sanitary works. Liverpool and Manchester have only commenced: the local authorities regard sanitary works with some suspicion, and play the step-father's part rather than work from conviction, and with a hearty goodwill. So long as there is one undrained street, or one foul cesspool, the work will be incomplete. At present cesspools are enumerated by thousands both in Liverpool and in Manchester.

I may give the Society one complete example, which, having stood the test of time, may be deemed more satisfactory than dry speculation. I therefore lay before you the following particulars:—

**ALNWICK AND CANONGATE.**

**Particulars of Sewerage and Water-Supply.**—The drainage area of the district dealt with, is about 980 statute acres; population in 1851, about 7,000; number of houses and tenements, 947; rateable value, 12,681*l.* 10*s.*

Inquiry under the Powers of the Public Health Act, was held in Alnwick on Wednesday, the 24th October, 1840.

The Local Board elected by the ratepayers at once took up the question of works, and entered into arrangements with the Ordnance authorities for a survey. This having been completed, the Board requested myself to devise schemes of water supply and sewerage for the district; and, after preliminary arrangements, the works were commenced early in 1853. The public portion of the work was completed early in 1854, and has been successful operation up to this time. The cost stands as under:—

<i>Cost of Public Works in Alnwick:—</i>	
Water-works.....	£6,129 0 0
Sewers.....	4,327 18 11
	£10,457 18 11

N.B. Some additional works and payments have raised this amount to nearly 11,000*l.*, or about 1,500*l.* within a year's rental, as per rate-book.

The whole of the sewers and drains (with one exception) have been formed with earthenware pipes, supplied principally by Messrs. Doulton from the pottery works at Lambeth. The largest diameter of pipe is 18 inches; the smallest 4 inches, internal measure. The lengths laid are as under:—

	<i>Pt. in. diameter.</i>	<i>Lineal yds.</i>
Earthenware pipe outlet sewer.....	1 6	1,540
Brick arch & stone invert.....	1 6	66
Earthenware pipe sewer.....	1 3	933
Do. do.....	1 0	1,433
Do. do.....	0 9	6,166
Do. do.....	0 6	about 1,600
<b>Total.....</b>		<b>11,138</b>

Or 6 miles and 578 lineal yards. There are also 54 man-holes, 28 lamp-holes, and 140 street gullies.

**Water Works.**—The water is collected from springs rising in land belonging to His Grace the Duke of Northumberland, and is conveyed by earthenware pipes into a covered service reservoir. From this point it is conveyed into the town by cast-iron mains, varying from 9 inches to 3 inches diameter. The lengths are as under:—

	<i>In. diameter.</i>	<i>Lineal yds.</i>
Earthenware main from springs to covered reservoir.....	9	4,000
Do. do.....	6	1,500
<b>Total earthenware mains....</b>		<b>5,500</b>

	<i>In. diameter.</i>	<i>Lineal yds.</i>
Cast-iron mains.....	9	101
Do. do.....	8	100
Do. do.....	7	100
Do. do.....	6	1,400
Do. do.....	4	600
Do. do.....	3	4,800
<b>Total of cast-iron mains....</b>		<b>7,100</b>

<i>ABSTRACT.</i>	
	<i>Lineal yds.</i>
Earthenware pipes laid from springs.....	5,500
Cast-iron main through the town.....	7,100
	12,600

Or 7 miles and 250 lineal yards. There are also

45 sluice valves, 8 wash-out valves, and 90 fire cocks or hydrants. Covered reservoir, 60 feet by 48 feet by 13 feet 6 inches deep, containing about 240,000 gallons of water.

The service reservoir is about 100 feet above the highest part of the town, and nearly 300 feet above the lower parts. The service is constant. Water can be thrown by means of hose fixed to any fire-cock over the highest building by the pressure in the mains. After hose has been taken to the site it can be fixed and in work within thirty seconds,—a ½ inch jet being in full play. One, two, or more jets may be in action at the same time, with full effect.

The outlet sewer delivers its contents at about one mile distant from the centre of the town, and remote from any houses. The refuse is being turned to use by one of the farmers of the district. Since the completion of the public works, private works have been carried out. Common privies and open middens, covered cesspools, &c., have been abolished, and soil-pans substituted. Yards and houses have been drained, and water taken into the yards and tenements. The extent of private works up to the 28th of September, 1855, is as under:—

**PRIVATE WORKS.**

**Drains, &c.**—The private drains are of earthenware pipes, varying from 9 inches to 4 inches in diameter. There are now laid 23,160 lineal yards, or sixteen miles.

There are 640 soil-pans fixed and in use, and upwards of 1,000 yard-grids and sinks properly trapped.

**Water Supply.**—The private supply of water is by galvanized iron pipe, from 1½ inch to ½ inch diameter:—

Galvanized iron pipe laid, say.....	10,650 lineal yards,
Lead pipe laid, say.....	5,300 ditto,
<b>Total.....</b>	<b>15,950 yards;</b>

or nine miles of service-pipe now in use.

There are also 744 bib-cocks, 464 stop-cocks, 600 kitchen and other sinks, and 20 public traps for general use.

The daily consumption of water is about 80,000 gallons, or nearly 11½ gallons per head. This includes street-washing, &c. Private works are progressing at present.

Private drains may require about 4,840 lineal yards of earthenware pipe, or 2½ miles; soil-pans, 107; sinks and yard-grates, about 250.

**House Water Supply** may require about 2,610 lineal yards of galvanized iron service-pipe; bib-cocks, about 124; stop-cocks, 77. N.B. These lengths have been laid.

**Private House Works have cost:—**

<b>First-class house, rental 40<i>l.</i> per annum,</b>	
Sewerage.....	£15 3 3
Water.....	11 18 11
<b>Total.....</b>	<b>£27 2 2</b>
<b>Second-class house, rental 15<i>l.</i> per annum,</b>	
Sewerage.....	£7 11 1
Water.....	4 11 10
<b>Total.....</b>	<b>£12 2 11</b>
<b>Third-class house, rental 7<i>l.</i> per annum,</b>	
Sewerage.....	£5 4 4
Water.....	2 17 7
<b>Total.....</b>	<b>£8 1 11</b>

**Abstract.**—Supposing the entire town to be completed, the particulars may be represented thus:—

<b>Sewers and Drains—</b>	<i>Lineal yards.</i>
Public sewers.....	11,138
Private sewers.....	23,160
Additional private sewers laid.....	4,840
<b>Total.....</b>	<b>41,138</b>

or, 25 miles and 138 lineal yards of sewers and drains, being an average of 6½ lineal yards of sewer and drain to each individual of the community. Therefore, if an average of six persons be taken to each house, 35 yards of sewer and drain will be required for each house.

**Water Supply—**

<b>Public Works—</b>	<i>Lineal yards.</i>
Earthenware mains from springs.....	5,500
Cast-iron mains.....	7,100
Galvanized iron and lead service pipe now laid.....	15,840
Ditto to be laid.....	2,540
<b>Total.....</b>	<b>31,080</b>

or, 17 miles 1,160 lineal yards.

**Works, when completed—**

<b>Sewers and drains, public and private.....</b>	<i>Lin. yds.</i>	<i>Miles.</i>	<i>Lin. yds.</i>
Public water-pipes and house service.....	41,138	or 25 138	
	31,080	or 17 1,160	
<b>Grand total.....</b>	<b>75,218</b>	<b>or 42 1,298</b>	

Nearly 43 miles. There are also 740 soil pans; 1,250 yard

\* See p. 244, ante.

rates and sinks; 868 bib-cocks; 511 stop-cocks; 800 kitchen sinks and slop-stones.

On the sewers, 54 man-holes, 28 lamp-holes, 149 street gullies.

On water-mains, 45 sluice-valves, 8 wash-out valves, 90 fire-cocks or hydrants.

Covered reservoir, holding 210,000 gallons of water.

Total cost of the whole—  
Public works, about.....£11,000 0 0  
Private works, about.....10,000 0 0

Total cost.....£21,000 0 0

or about once and two-thirds the annual rental for complete works. That is, the total cost to the owner of a house of 21l. per annum, will have been 35l. But as the law allows the rates to be mortgaged for the public works, and the principal and interest to be repaid in thirty years, this reduces the direct money payment, so that for the private works alone, which, as a rule, amount to about half the whole; or, in this case, to 17l. 10s.

The rates at present are—To repay principal and interest on the sum borrowed for public sewers and waterworks, 1s. in the pound; for water alone, that is, salaries of clerk, superintendent, turncock, and collector, 2d. in the pound. For the next thirty years, therefore, a house rated at 21l. per annum, will pay:—

Rate to repay principal and interest on money borrowed for sewers and waterworks, 1s. in the pound.....£1 1 0  
For water, 2d. in the pound.....0 4 4½

Total rates for sanitary works and water,.....£1 5 4½

A house at 7l. will therefore pay 8s. 5½d.; and houses at 3l. 10s. will pay 4s. 2½d.

There are many houses at the lower rental, and the poor have water without stint within their houses, drains to remove it, a soil pan, kitchen sink or slop-stone, all as complete as the house of highest rental. At the end of thirty years, the debt on the public works will have been repaid, and consequently the cost of management will alone have to be provided for; that is, a rate of 2½d. in the pound.

Remarks.—The sewers and drains in Alnwick have been laid on a new principle. The pipes are in straight lines, and uniform gradients throughout. At any change of line or gradient a man-hole or lamp-hole has been formed, having a movable cover. This allows of complete inspection. At the man-hole there are flushing arrangements, so that the whole of the sewers and drains can be cleansed. The outlet-sewer pipe has a fall of 1 in 400 for two-thirds of a mile in length. This can be flushed from the river, and is preserved free from deposit.

#### ALNWICK CASTLE.

The castle has been sewered with earthenware pipes from 12 inches to 6 inches in diameter. The total length is about 1,760 lineal yards, or one mile. Old drains, cesspools, and privies, have been taken up and soil-pans put down. The whole of the castle sewers and drains can be flushed from tanks formed at the head of the drains.

The practical engineer will notice that the outlet sewer at Alnwick is exceedingly small for the drainage area (480 statute acres). The fact is, this area has not been considered with reference to the dimensions of the sewers. All existing surface and other outlets for storm waters have been improved, and these take off such excesses. The street-gullies, yard-sinks, and down-spouts are carried direct into the new sewers and drains, there being overflows at several points to relieve them of any surplus water; ordinarily there are not more than four or five inches in depth of sewage in the main outlet, and it is rarely full. The system has been in action six years without detriment, public or private.

When cholera broke out in Alnwick several cases occurred in houses of a superior class, without any apparent cause beyond this, the subsoil was damp. On opening this street for new sewers, the ground was heek and fetid for 10 or 12 feet in depth. The old moat, or town ditch, had traversed this line, hence the foul state of the strata.

In advocating sanitary works and sanitary regulations, the promoters of such measures must not be charged with being egotists and visionary dreamers. On the plea of comfort alone these necessary means of cleanliness should be insisted upon, because evidence proves that a filthy people are nearest to dumb brutes in feeling, habits, and conduct. Nay, they are worse than many brutes by the amount of intellect they possess.

All preventive means of disease in excess do not reside in sewerage, drainage, and a water supply. There must be surface cleansing and ventilation, both of streets and of houses. The interior of all houses must not only be well ventilated, but they

must be preserved clean and sweet. Wall papers, carpets, window-hangings, and bed-curtains, have much to answer for. Fever has been known to break out in houses the rooms of which have been newly papered, when bad or sour paste has been used. A floor entirely covered with carpet, unremoved, accumulates dirt, and heavy curtains impede ventilation.

Many persons persist in maintaining a fever apparatus about or near their houses,—pigsties, cow-sheds, stables, fowl-pens, or refuse-heaps of one sort or another: sinks and water-closets drain into covered cesspools: water is drawn from wells only a few feet deep, the water being contaminated by surface infiltration, or rain-water, stored in lead cisterns and collected from lead gutters, is used. New sewers and drains may be faulty in construction, and if so they will become a cause of mischief. The end of all sanitary works and regulations should be to remove impurities without atmospheric or terrestrial contamination, and to preserve the subsoil, water, and air pure without and within dwelling-houses.

Sanitary progress has as yet been confined to certain parts of England. On the continent of Europe the question is not understood, and the disputes in England as to the proper mode of severing and draining towns have retarded progress. Paris remains a city of cesspools, and where sewers have been formed they have been made on the plan of admitting men to walk and to work in them. American engineers have visited England to see for themselves, and I believe with beneficial results. We have brick sewers and earthenware-pipe sewers to point to in actual work, and the make of earthenware pipes is steadily increasing. Some short time back the weekly make of earthenware sewer-pipes was not less than twelve miles, and the make of soil-pans about 1,000 per week.

Those who know the sanitary state of England will acknowledge that, as yet, there is no room for boasting: our towns, in too many instances, remain with defective waterworks, and the streets have foul sewers, and the houses foul cesspools. Noblemen's mansions, and country houses, are in the worst possible sanitary state. If there are sewers and drains to houses, they are square in form, large in dimensions, and allow all the foul refuse to saturate the ground beneath the basement. Water is drawn from wells sunk into a tainted subsoil, and is retained in leaden cisterns, and is drawn through pipes of lead. The houses have no proper means of ventilation, many rooms have no direct light from the sun, and yet people wonder when they lose their health in such places. The smaller and ruder abodes of the Middle Ages possessed some advantages, inasmuch as the wide fires and open fire-places allowed of ventilation, rushes for carpets, and surface filth, might work less injury than covered drains and closed cesspools.

Those who know, by experience, the sanitary state of the Continent, will think we in England possess some advantages. The dread of ventilation is general over the whole of Europe.

To aid "sanitary progress," architects and engineers have duties to perform of the utmost importance to the welfare of the community: houses must be so planned, so built, and so furnished as to enable the inmates to secure shelter from the elements and to enjoy health.

The site for the foundations of any house must be effectually drained.

Sewers must be external to the main walls of the house; there must be full means for inspecting and cleaning them by water. They must be fully ventilated, and the gases disinfected.

Drains within the house must be water and air tight. At junctions with the sewers there must be means to prevent any in draft of air from the sewers.

Water-closets must, in all cases, be in situations of easy access, but against an external wall, and having full means of permanent ventilation to the open air.

Sinks, slop-stones, and waste-water pipes, should also be placed in rooms or spaces, against external walls. The waste-water pipes should communicate with drains formed outside the walls, rather than with drains within the house.

Cisterns to contain water for domestic use should not be placed over water-closets, nor over nor near dust-bins. The waste or overflow-pipe should not communicate direct with sewers and drains, but should have such means of connection as to render any back draught of sewer gases to the water impossible.

Lead should not be used for cisterns, or for conduit, or for service-pipes, if the water acts on it. Soft waters generally, and some hard waters, act

on lead, and poisoning by lead is far more common than the public imagine. Wrought-iron tubing with screw joints, may be used from house-service pipes to the exclusion of lead.

Where water is drawn from wells, great care should be taken to avoid subsoil contamination: sewers should be so constructed as to be beyond suspicion. No amount of mechanical filtering renders foul water pure. If, therefore, sewage and cesspool fluids filter through the subsoil, and mingle with the water of a well, and this water is used for drinking, health may be injured. There are thousands of cases in this country where wells are poisoned by such means.

Halls, corridors, and staircases should be fresh-air chambers, or reservoirs to any house. There should be means of full, free, and constant ventilation at all times during all seasons, communicating with the external air, and letting in fresh air. If there is any apparatus for heating air, there must also be a constant and due admixture of natural air, whatever the external temperature may be, and the more of natural air the better. In this climate persons in health may breathe external air all the year round with advantage, to the extent of sleeping with an open window. Let a thermometer be placed in a bedroom, and if the temperature is raised during the night by the animal warmth of the inmates, mischief has been inflicted.

Houses may be too large on plan. This is always the case when there are rooms, halls, or corridors, without full external light. These remarks are applicable to public buildings also.

The basements of buildings should be fully ventilated. There should be no chance for emanations from subsoil, sewers, or drains, rising into and through the inner rooms. Buildings exert what may be described as a pumping power; that is, a power of drawing in air with considerable force from beneath and around. This is the case when the temperature within the house is higher than that of the external air.

Let those who object to means of external ventilation consider the problem. There must be circulation of air in any house or room or suffocation would ensue. To have circulation there must be change and expulsion of air, and if air flows out of any room other air will flow in. If the sewers and drains offer the readiest means of inlet, then these foul and injurious gases will find their way in. The only safe means to prevent this is to provide liberally for a permanent inletting of pure air.

All dwelling-houses, and all rooms in such houses, should have means of ventilation suited to the varying uses of houses and rooms in modern life. Every room should have means of ventilation, independent of the door, at or near the ceiling. If all inner-door spaces were formed from floor to ceiling, the space above the door arched away may be made to open independently of the door. Large parties and crowded rooms are seldom provided for in modern houses.

Sunlight is of the utmost importance: any plan which renders sunlight impossible is defective. Architectural grandeur cannot compensate for such defect.

As to Sewerage and Drainage.—There are sites, generally sand and loam, constituting a sort of quicksand, which sewers and drains cannot render dry. The sources of wet may be beneath, and water is raised and held by the power of capillary attraction. Such sites should be avoided, or the foundations and basement should be raised, by means of concrete or other dry material.

The external subsoil should, in all cases, be isolated from the basement walls. This may be done by dry rubble walls, or by open or fly closed area walls. In any case, such external spaces should have full means of ventilation.

Public buildings are generally too large on plan: this is the case also with many private houses. Enclosed courts, long corridors, double rooms—that is, rooms on each side of internal passages—and all rooms having borrowed lights, form objectionable plans. Separate pavilions, with corridor connections, covered or open, may probably prove the best form of plan even for private establishments. For asylums, hospitals, and such-like buildings, the pavilion plan is alone allowable. The New Houses of Parliament might have been broken into pavilions with advantage.

The extent of the civilization of Egypt is seen in massive granitic ruins, in mysterious pyramids, and in countless myriads of mummies. In India we find vast ruins of cities, and huge tanks for irrigation and water supply. We have the ruins of ancient Rome, attesting to her former grandeur and greatness, but her amphitheatres and aqueducts do not measure the extent of the Roman

empire, or any works remaining above ground, but rather, the buried pottery, found at intervals, attest the former extent of Roman arms and Roman civilization. The apparently frail vessel, turned from the Roman potter's wheel, outlives even history, and comes to a resurrection long after the cloud-capped towers and gorgeous palaces have crumbled to dust, and their sites have been returned to the uses of the husbandman. Etruria is the name of a nation older than the Roman; Etruscan is now chiefly applied to the products of the Etruscan potter's art. In our modern sanitary progress, we are writing an enduring history with the most humble material,—earthenware sewer pipes and agricultural drain pipes. The brick and cement of London will moulder into irretrievable decay. There may not be even the fragment of a broken arch of London Bridge for Macaulay's New Zealander to stand upon; the sands of the sea may have filled up and buried your noble docks; desolation may reign supreme over the entire surface of this land;—how brought about, I will not argue: civilization is ever changing the seats of commerce, and, if the had passions of man can be curbed, there are natural and elemental changes and causes of inevitable decay. In this world nothing is but what is not: there is no permanence, but one continuous round of birth, growth, maturity, decay, and death. The pure religion of Christ will endure: all that constitutes Great Britain may have passed into oblivion; and her power and extent of empire may be known best by buried sewer and drain pipes, laid during the days of her sanitary progress.

ROBERT RAWLINSON.

#### THE ARCHITECTURAL EXHIBITION.\*

In our last notice of the drawings at the Architectural Exhibition we named some of the designs for churches and chapels, and hinted at the question which has at other times received attention in these pages, of appropriate form and character for edifices of the class. We cannot pursue this most difficult question fully at present; but we advert to it as capable of receiving elucidation from such drawings as there are in Conduit-street.

It is only clear that the architecture for churches and chapels has still to undergo great change. To preserve what may be valuable in the associations of old structures which have been long used, and yet to produce the suitable form for seeing and hearing, is the problem that is being worked out slowly for each form of ritual, and under many disadvantages from the too dominant influence of precedent and absence of definite conclusions as to the ritual requirements themselves. It is to be regretted, however, that there should be, as still, a wide severance between convenience, use of old details, and true art. All these should be present or concurrent; but seldom do we find a design remarkable for attention to more than one of them. Putting together the buildings which best admit of comparison, small churches with dissenters' chapels, considerable improvement in the former, certainly is noticeable; whilst the latter, though designed even more frequently for their use, decoratively either fail altogether, as regards the æsthetic impress for the religious use, or they still caricature the Gothic detail.

Some of the principal designs for churches are amongst works in the West Gallery, which we have yet hardly mentioned, and comprise chiefly designs belonging to two competitions—those for the building of the church at Heigham, Norwich, and the Roman Catholic Church of Saint Peter and Saint Paul, Cork. The latter competition was the subject of much controversy, after the award. We have already named a drawing (292) of an interior according to the design which we presume is to be carried out at Cork. That the Mediæval associations should be preserved in the Roman Catholic Church, at special disadvantage even, as might be supposed, to a form of worship in which seeing the altar is essential, is at least more comprehensible than is the retention of all the defects of the form as in many of the chief edifices erected for the Protestant ritual. It is noteworthy as fact that whatever defect there was in the plan of the more prominent examples of the early Christian church, by the massiveness of piers, and their number arising from repetition of aisles, the chancel was never "well developed" as in the Mediæval plan followed by the modern Gothicists; while in the well-known old example, lately referred to by us, it consisted in the rilling-in of a portion of the body of the church. The abbey churches, like the church of Westminster, had, for special reasons, a

similar arrangement in the nave, to that of the *cancelli*, or rails, but combined with the development of the eastern arm of the structure. The somewhat analogous arrangement in parochial churches where there are aisles or chapels to the chancel, was always combined with the length in an eastern direction, which the further it is extended, becomes thereby the more unfavourable to use of the aisles—since the altar would not be seen from the greater portion of those aisles, even with arches opening from the nave and chancel into the aisle or chapel, or whatever devices of hælioscopes. Considering the unfitness of the Mediæval plan, therefore, it is not surprising that it should be in course of abandonment. Its acceptance was part of the belief imposed upon the profession, that architecture consisted in symbolism. The tentative efforts that have been noticed by us, at bringing the chancel area within the structural nave, or of narrowing the aisles, and the disuse of the lofty screen, are steps in the direction favourable to the ultimate prevalence of true art and good church architecture.

The designs for the church at Cork, whilst made specially for a restricted site, indicate the same tendency in the churches of the Roman Catholics, as we have recognized generally. In all the more important of these designs, the dogma of the "well-developed" chancel is virtually abandoned, and the church takes nearly the plan that would be best for the view of the altar from all parts. There is a peculiar similarity in the decorative features of the principal designs, as in those of the ceilings and roofs; and these features have great merit. We have referred to those of Mr. Pugin's interior; and it would be difficult to find finer features of detail, or a better manner of their combination, than we see in Messrs. Hadfield & Goldie's interior view (52) of their design, the "promiated." In it Mr. Goldie's power of drawing has served him towards production of a design which belongs to the highest class of art. The exterior (61) has a noble "decorated" window of eight lights; but the canopy over it is close under the mouldings of the gable, so that the objection which there is to pediment over pediment in classical architecture, is suggested. The angle tower, with tall, deeply-recessed openings in the principal stage, has good points. The flanks of the church, which, in the drawing, contrast harshly with the front, would probably be concealed by neighbouring buildings.—Mr. S. J. Nicholl's design (64) is not so successful in the open roof and ceiling; but is, in most other particulars, deserving similar terms of praise. There is distinctive character in the tower, with its crocketed capping—as throughout the design.—Mr. G. J. Wigley's design (68) differs from these, inasmuch as it has a South-European character in its Gothic, or what is as much Eastern as Italian. The front has breadth rather than height; and gables and other features are subordinate to the general mass.

We should mention, whilst speaking of Roman Catholic churches, that besides the sketches by Mr. Goldie in the Great Gallery, and already named, the Exhibition contains an "Interior View of Holy Cross Church, Standish-street, Liverpool" (38), remarkable for its good western window and porch, but defective as to the form or proportion of the finials which crown the buttresses.—Mr. T. Goodman has in the Great Gallery (278) a "North-west Prospect of the Church and Presbytery of our Lady of the Immaculate Conception, Aspall, Wigan," a picturesque group, whereof the nave, aisles, porch, and sacristy of the church have been completed; and Mr. Pugin's contributions include a considerable number of photographs (320, 321) of churches erected or about to be erected from his designs. We may also mention as in the Great Gallery, a design which, indeed, has merits beyond those of drawing, but attracts attention first from the ornament of the mounting and the polychromed frame, for which we named it some weeks ago. We greatly question the advantage of this practice of embellishing drawings, whether to the effect of a design or upon the mental capacity of the designer. Even drawing should be regarded as the means to an end; and the clever pen-work, which is becoming general, should not be allowed to take the attention of the architect from the important thing, his design, or take that of the observer firstly and chiefly. Some architects, no doubt, employ other hands in this class of work; but young men, who work with their own, are most likely to be injured by the practice. The manipulation of the brush and colours, on the other hand, may be valuable, educationally, in design. However, it would be well to inquire

into the comparative results of methods of different schools, in drawing from sculpture. Too much time may be spent on cross-hatching with a point. The despotism of the delineative process leads to exaggeration in finials, crockets, and other details, from which the "Monuments about to be erected in the Cemetery of Bruges, Belgium" (270), from Mr. Shaw's designs, are not free,—excellent, however, as these designs are in many respects; though all ponderous masses over graves may be not according with the most approved sanitary views. The design by Mr. Shaw which we first had in view is that for the "Priest's House about to be erected at Droogenbosch, near Uccle, Belgium," which is certainly *pitiful* in the features of the library and the "balcony," and the circular conical-capped staircase turret, and has a very clever chapel interior, the roof timbers of which are ornamented, and wherein effect is produced by simple means, such as we have ourselves always pleasure in finding out where the result to which they conduce is great in proportion to them. Whether the entire building would be equally successful in execution, unless as an imitation, we are inclined to doubt.

On the table are to be found photographs of designs by Messrs. Evans & Pullan, for Lille Cathedral, which obtained the third silver medal, and of Mr. Pullan's design (specially mentioned) for Constantinople Church. The latter design we spoke of when it was exhibited at King's College; and the other we have found too recently to allow of examining it with due care.

The designs for the church near Norwich do not manifest the same originality with other attributes of art, as may be found in some of the designs for churches named in our former notice, or found in those for the church at Cork. The Roman Catholic will thence, perhaps, reason or infer, as some have, that there is hope for art only through his particular religious views. We are not called upon to inquire into, or controvert, such an impression; but there must be some advantage in having the force of tradition settled,—so that the artist may work from an understood point. It is at least curious that the art or invention in structures of the ecclesiastical class, should now appear to prevail most where we might least have expected it, in designs for Roman Catholic churches, or in the works of architects nurtured under circumstances wherein there has sometimes been asserted as involved a preference for the Roman Catholic form of ritual. The preference may be said to exhibit itself chiefly in church furniture as represented in the views of interiors, or seen in some of the manufactured articles which were the subject of our last week's notice. It is observable, also, in designs, of which we may mention those by Mr. E. Sedding, one (259) "for Reredos and Embroidered Frontal, for the use of the English Church," and the other (260) "for portion of Furniture for Altar." In both of these we recognize good drawing and good art; yet, as in the former work there is the representation of angels swinging censers, there must either be an association of ideas inconsistent with the ritual of the English Protestant church, and which therefore cannot but be a defect in the design and art, judged whether by Protestant or Roman Catholic; or the Protestant ritual must be held different from what we have been in the habit of considering it. The merit throughout, of a design, must be impaired by the misconception primarily of what is the end. Of the designs for Heigham Church there are several in the West Gallery. Mr. R. M. Phipson's design (54 and 57), proposing to leave the tower for after-erection, is scarcely like a church externally—from the excessive length, as the building appears in the drawing. Mr. J. G. Bland's design (55 and 56) has the advantage in the drawing, of a lofty spire; and is good, of the imitative "decorated" character: but the *louvre*-like feature over the intersection of the cross, were it to be permanent, would be not sufficiently ecclesiastical. Mr. J. M. H. Hahn's design (58, 59) is plain "decorated" and Early English, with spire. In Mr. E. Wallen's drawing (66), we have a "decorated" design, with walls of brick with white bands, and with red colour to the roof-covering in the form of diagonal intersecting bands. There is also a design by Mr. J. D. Ellis (88).

There is a clever drawing in the room with these works, "of a Church designed in 1858, for competition" (71), by Mr. John Bentley, also the producer of a drawing equally clever (196), "Design for a proposed Clock-Tower and Drinking Fountains." These productions have originality, and, indeed, profusion of note-worthy features; but they are of the class which aim at more than is built with ordinary funds, or more structurally

\* See pp. 195, 228, 251, 260, *ante*.

than sometimes is practicable. The design, 196, is for a diminishing square tower, ornamented at the top with facets, gables, and pinnacles, surmounted by a belfry stage, with a tiled and lead-covered capping. Lamps project from the base, and a fountain appears on one of the sides; but these features have little association with the tower, except the accidental connection. Those designs which display the greatest wealth of detail are not necessarily the best, though the details be individually good, and available funds ample. A now common vehicle of this wealth is iron-work. The improvement made in the manufacture was indeed wanted; but it should not be forgotten that metal-work can give little to architectural effect in works which are of masonry or brickwork; that it is best applied where there can be no harsh contrast between mass and tenacity; and that, like every other manufacture, it should be the servant of architecture, and not contend with other competitors for mastery over it. That there is this tendency is shown in many designs, even of architects, and in one (201) "for a Bracket Clock for a Church Tower," by Mr. G. R. Harbottle.

The question of appropriate character for churches may derive illustration from the design No. 90, in the West Gallery, "for Chapel of the Holy Trinity, Knightsbridge," by Mr. Charles Gray. It is interesting chiefly from the effort made to harmonize the introduction of galleries with internal effect, and at the same time to avoid obstructive nave piers. Two designs with this object are shown: in the principal one, twisted columns of iron, in two tiers, are used; whilst, in the other design, support appears to be given to the open-timbered roof by struts from the gallery front, but a section is wanting to explain the proposal. The exterior design, which is elaborate and clever, is labelled "Italian Gothic," an impolitic course, to say the least, as standing in the way of appreciation of what there really is here, of art. We look forward hopefully to a time when no other style will be recognized for use except one of the time, and when the public will cease to demand an old name as voucher for the claim preferred.

Perhaps we might be deemed wrong in looking for ecclesiastical character in a synagogue; we can, however, call to mind buildings of this class that do not entirely want a character which is special and appropriate. The Synagogue in Upper Bryanstone-street, Bryanstone-square, is not likely to add to the number. Mr. G. Low's design for it (302 and 313), internally at least, is of the class of poor Italian productions; and Mr. Collins's "First Sketch" for the building in course of erection from his design, is externally (160), an unfortunate mixture of styles, some of them like the Saracenic, unfitted by association for the uses of the particular sect, and internally (161) has the very questionable arrangement of an upper range of arches, the massive piers of which are carried by slight iron columns. Mr. J. G. Stapleton exhibits in the same frame with a drawing already noticed, several views of congregational chapels, works on which he has been engaged. The chapel at Wandsworth, Gothic "Decorated" (160), accommodates about 900 persons, at a cost of 2,300l. In the interior of the chapel at Cobham, Surrey, there seems a want of a collar, or tie, to the feet of the rafters resting on the head of the range of dormers.

We are better satisfied with the sort of design that there is in the small churches of which views (anastatic prints) are exhibited by Mr. R. J. Withers. Variation of outline and details, and adaptation to different circumstances of materials, have here been attended to;—albeit, a nineteenth century character is not wholly attained in the stone-built churches. "Narraghmore Church, Ireland, as altered and remodelled" (203), has a massive bell-turret carried on corbelling and a buttress; and "Warrington Church, Surrey" (204), has the timber belfry carried on the roof. "Little Cavorthorpe Church, Lincolnshire" (208), perhaps the best of the designs, appears to be of red brick, with dark-coloured bands, the square reveals being filled in with Decorated tracery: there are no buttresses; the separation of nave and chancel is but slightly marked, and there are no aisles,—the arrangement in all the latter particulars being in accordance with the tendency in church architecture that has already been spoken of. Mr. Lamb's designs also deserve commendation amongst the number of those for small churches. There may be somewhat too much repetition of forms and details peculiar to this architect, but we prefer that to the other practice that has been common, of repeating with little variation old models. The "Design for Bagley Church, Yorkshire, about to be rebuilt" (271), is at once recognizable by its moderate height combined with cruci-

form plan, and its square lantern at the intersection of the cross. The "Design for re-erecting the District Church of the Parish of Ham, Surrey" (272), however, is different. It has a peculiar form in the tower at the junction of the square with the octagon lantern stage: the angle has, instead of the ordinary weatherings, a species of roof covering, the effect of which is not so satisfactory as that of other details of the design. Mr. Lamb exhibits four drawings of recently erected buildings, in Gothic style of one character or another. The Rectory House, Copdock, near Ipswich (264), has a singular effect from the differing height of the walls, and the treatment of the whole roof apparently as a "lean-to." The "Station Inn, Pevensh" (265), resembles many of the old houses of the district, in the tile-faced overhanging upper story. The "Entrance Front of Newton Hall, near Dunmow" (266), best exhibits what, however, is common to all the designs in some degree, the good grouping. Projections, with corbie-stepped gables in the chief buildings; a plain doorway; a lantern on the main roof; a square kitchen building, with lantern or louvre; other offices helping the effect of the centre; and the use of materials in stripes; are the simple elements which conduce to very successful effect. In the "Vicarage House, Great Kimble, Bucks" (267), the roof-covering is brought down over the bay window, in a common but effective manner.

In the course which our remarks have taken, we have been as yet content with the mention made in our preliminary notice, of some of the drawings in the Great Gallery, which may first attract attention. The works referred to, however, should be more particularly described. The most prominent of them are the five or six large drawings and sheets of drawings exhibited by the author of a work that we have already named, Mr. F. R. Wilson. The sheet numbered 226 displays plans and views of six or seven buildings recently completed in the north of England; the drawings 227 and 229 are views of the Forum Romanum restored, one looking towards the Capitol and the other towards the Colosseum, to illustrate the question as put—"Is it to be Classic?" whilst another large sheet (228) shows "A Cluster of Ancient Cathedrals, Churches, and Domestic Buildings existing in England;" for the alternative, "Or is it to be English?" Various views of Alnwick Castle, "a Building recently enlarged, externally Mediaevalized, and internally Italianized," appear under No. 230. Mr. Wilson had in the Exhibition, when we first visited it, a sheet of plans, which we mentioned, to exhibit the merits or demerits of the Italianized interior. This lot of elaborate drawings was withdrawn, under an idea that an exposition of Signor Montrolli's work might not be agreeable to him until completion of the work. The immediate direction of the operations, those due to the English architect, Mr. Salvin, and those due to the Italian, has been from the commencement, nearly five years ago, in Mr. Wilson's hands, and has involved much labour in drawing, directing, and interpreting. Every stone was as far as practicable reset in its old place—to retain the peculiar character of the ancient masonry. Mr. Wilson's intention is to show by the whole series of his drawings, the respective merits of two styles, which he regards the one as exotic and the other as native; and to show, as in his drawings of the "Mansion House and Lodge, erecting at Cheswick, near Berwick-upon-Tweed," from his designs, pliability of the Gothic, as in the admission of plate-glass, and of decorations internally, as of ceilings corresponding with the external architecture. Whilst in the Alnwick cellars, the beams are concealed, and height is sacrificed and extra labour incurred, his own designs show that the beams may be made to form part of the ceilings. But we do not see that his designs, clever as they are, and his elaborate illustration of Alnwick, or his way of stating the case of Gothic against Classic, will help quite as he supposes, to settle the matter at issue. One of his designs, is mainly Italian; and the house at Cheswick, would be called Florentine or Byzantine, rather than Gothic. It is a combination from many styles, the Elizabethan amongst the number. Gables, each pierced with small circular lights, grouped so as to resemble the cusped circle; bays in two stories, crowned by a parapet formed of small arches; a central portion of the front, carried up and covered by a flat roof; wide balconies on cantilevers; the windows of the lower story arch-headed, without mouldings, and grouped three together; and the upper story windows similar, except that the head is filled in as solid, with a cusped perforation; and a penthouse to the lodge, all round it, boldly projecting on cantilevers; these are the features of a design which is very clever, but shows certainly not the pliability of Gothic. Were we to look at his designs to find the bent of the author's mind, we should discover it to be towards Mediaeval Italian, but castellated Florentine rather than a more defined Gothic; and this is shown in his buildings at Almouth-by-the-Sea, of which drawings were also in a former exhibition. It is impossible not to be delighted with the matter which the author has so laboriously put together in the three drawings, 227, 228, and 229,—scene-painter's work, though the colouring for the marbles in the Roman Forum is, and exaggerated. The cluster of English Mediaeval buildings ought to be carefully redrawn, and engraved for publication. In the Forum we should be disposed to ask whether the monumental columns, with plain shafts, are not too numerous, and whether all the structures and objects are not too much crowded together. But taking the representation as correct, the comparison of any actual group of buildings with an ideal group is not a fair one: the Mediaeval picture should have been one of a market-place with town-hall and cross.

Mr. Truefitt is doing something towards the settlement of the question put by the author last-named, and to hasten other good ends. His several works recently erected at Holloway, and others designed (243 to 253), are nearly all of them of that class of suburban house-buildings wherein generally fresh art is most needed in the structure, and mistake, whether as to decoration or as to styles, has been most complete. The avoidance of all imitative material; the use of stone in the manner which combines the utmost effect with the smallest expenditure of that expensive and perishable substance; the dexterous use of breaks and sets-off, to get effect and harmonize the internal and external decorative features; the attention given to the enclosure walling, a feature so much neglected in buildings of the first class; the use of features of the Gothic which are serviceable, as the gable, and yet the avoidance of window-mullions and of all prominent Mediaeval character, are evinced in the designs, whether they be sometimes inclining slightly towards one style or sometimes the other. Whatever the architecture of the future may be, it will and ought to be an architecture indebted to the Gothic; whilst it should not be in character Mediaeval; and good architecture of this kind, we say, is now about being produced in the class of buildings where it is most wanted. There is only one serious difficulty that we see in the way of such efforts as those of the author of these designs: it is in the prejudice against brick.

The London brickwork often has really the mean effect imputed by the public, and one which makes the general appearance of a building very different from that which is shown in drawings. Those who can compare the house lately erected at the corner of Bond-street, and Burlington-gardens, designed by Mr. Truefitt, with the drawings (253) will be sorely satisfied with the effect that the new brickwork temporarily has; and the whitewash efflorescence, to nine house-proprietors out of ten, and to most surveyors of London estates, would be so offensive that it would lead to the cementing of the front. This difficulty at the threshold of art is one which we should be glad to know how to get over. Cement may doubtless be used, not in imitation of stone-work, and so as to be the vehicle of some degree of art; but there are objections in the lifeless appearance of the surface, or in the dirt which soon becomes offensive enough to induce an application of ochre colour or glistening paint. "A Pair of Cottages at Toppersfield, Essex" (249), shown with the works we have mentioned, may give some hint towards the provision in labourers' cottages, of the accommodation required including three bed-rooms, for a moderate sum. Our present author provides the third bed-room of one house on the ground-floor, in the centre of the front portion of the plan, and the room of the other house in the same position on the upper floor.

Never was a valuable chance so thrown away, as that there has been for art in the design of street frontages. We cannot say that the designs in the Architectural Exhibition, all are what might have been expected from architects. But those nine in number, of Mr. F. P. Cockerell (297 and 300), show how much might have been done had the work been consigned to proper hands. The amphora form, with a hole pierced in it for the water to escape, is a mistake, and contrary to first principles of our art; and perhaps the urn form in others may be fairly objected to; but there is a grace and beauty in the designs generally, and in the accessories of their sculpture, such as yet

should contribute to the adornment of our streets and parks. The "Fountain erected at Spilsbury, Oxon" (301), by the same author, is treated as an archæol. recess, surmounted by a wide projecting roof; and may be classed with many road-side examples equally plain, though not of the same merit. Mr. W. G. Smith's designs (318) are amongst the best of the Gothic class; but there are conceits in them, such as the excessive channelling, and the form given to the labels in one case, and errors against first principle in the arrangement of the water spouting from the mimicked rocks. The best Gothic fountain appears in one of Messrs. Shaw & Nesfield's drawings, in their design for the Manchester Assize Courts; but it is almost too elaborate for probability of execution. The fountain just "inaugurated" at Bath, designed by Mr. C. J. Phillips (344), is only injured by the lightness of their iron-work finial to the massive stone; for, as we have said, relative harmony is to be studied, as well as the expression of fitness of each material.

We must wind up our series of notices by merely naming a selection of the other works that we have examined, but cannot now describe. The designs for the Manchester Assize Courts, by Messrs. Crossland, Garling, Green & De Ville, Truefit, Kirky, E. M. Barry, Lamb, Powell, Shaw & Nesfield, T. R. Smith, Morgan, J. M. H. Hahn, and T. Allom, were, however, all of them, unless with some one exception, described by us with other designs when they were exhibited a year ago; and the designs for the Cambridge Guildhall, by Messrs. J. P. Jones ("Floreat Cantabrigiæ"), E. J. Anson (with a device), and De Ville & Green ("Suum Cuique"), were in like manner spoken of in our exhibition at Cambridge. It cannot be too frequently mentioned that, whilst the names of those who exhibit at Conduit-street are but a small proportion of those who competed, the designs found are scarcely any of them shown sufficiently for the purposes of comparison with others.

Mr. W. G. Habershon has several drawings of lodges (215 to 219), brick and half-timbered buildings now erecting at Bedwell-park, Herts, for Sir Culling E. Burley, Bart.; and a view (287) of a half-timbered house which he is building for Lord Lilford, at Warrington, Lancashire. Mr. Edmeston has drawings (312) of stone doorways from houses at Norwood, erected from his designs, one of the number being better in effect as built than as shown in the Exhibition. Mr. G. R. Clarke, Mr. Morgan in his design for the Jews' Hospital, Mile-end, and Mr. G. G. Scott in photographs of his Government offices, have contrived works differing much, but which each deserve to be looked at. We have omitted to name several works of decorative art, and amongst them the photographs of Mr. M. D. Wyatt's designs for engine and carriages for the vicery of Egypt, excellent as surface-decoration; the cartoons for stained glass by Messrs. Lavers and Barrand, some capital designs for decorations by Mr. E. Agnelli, and the drawings of old buildings and details, many of which are very interesting.

TERMS OF CONTRACTS.

BEFORE IN ROYAL ENGINEERS' DEPARTMENT. SINCE our previous reference to this subject, Mr. Sidney Herbert has issued a second document, with the view of correcting the expenditure of the public money in the Royal Engineer Department's building operations. We are not certain that the present efforts of the Secretary of State for War, patriotic as they are, will, without further steps, result in any permanent improvement in the Department. The existing organization (with its double set of officers, whose interests can never be made identical, together with their triplicate and quadruplicate system) makes it a very difficult branch of the public service. The two branches should be divided,—one taking the military portion of the duty, and the other the civil; and each should be responsible for what it does.

The directions and suggestions given are nevertheless very valuable, and, if they were acted upon by engineers, architects, public companies, and employers generally, would considerably reduce the cost of buildings. Great expense is now often incurred in consequence of the very limited time in which buildings are required to be completed under heavy penalties, which are often enforced under very stringent clauses of contracts.

Mr. Herbert urges the necessity of consulting the customs of the country in fixing the terms of contracts; that when terms are agreed on they should be enforced, in fairness to rejected candidates; and goes on to say:—

"3. The following are a few of the numerous instances

in which the terms originally fixed may enhance, and, indeed, in cases which have come under Mr. Herbert's notice, have really enhanced, the cost of public works, without any corresponding advantage.

4. A specification may provide for a description of brick which, however good in itself, is little, if at all superior to that which is made in the neighbourhood of the proposed work.

5. One description of brick, stone, or timber may be insisted upon when a choice of several might be given.

6. The time for the supply of materials may be so short that it is not possible for a dealer to get a consignment from the source of supply; and he is obliged, in fixing his price, to calculate upon having to purchase the material in a limited market.

7. The time for the completion of a work may be so short that the contractor has to calculate for unusual expense of all kinds, not only in the supply of materials, but labour.

8. Workmanship and fittings may be insisted upon to which the inhabitants of a country are not accustomed, and which few will undertake, or, if they do, at extravagant prices only.

9. No bond should be required, except when it is absolutely necessary, and the payments should be made as frequently and the reserves as small as possible.

10. No contract should be made except with those who are known to be competent to perform it; but at the same time the most extended competition should be resorted to among all that are competent.

11. In consequence of the modifications made by Circulars 411 and 526 in the system of contracts for large works at home stations, Mr. Secretary Herbert has reason to believe that the public have obtained better terms, and he trusts that officers commanding the troops at foreign stations will co-operate with the controllers of army expenditure and with commanding royal engineers in adopting these principles.

12. It is most desirable that the commanding royal engineers and controller of army expenditure should, from time to time, consult those persons who generally tender for engine works or supplies, including unsuccessful candidates, as to the nature of the terms which are most advantageous to them, and that every facility compatible with the interests of the service should be afforded to the contractor in carrying out the work.

13. Whenever it is found by actual experience at foreign stations that work may be carried on by the hire of workmen and the purchase of materials at a cheaper rate than by contract, the former system may be adopted in place of either periodical or special contracts."

THE COMPETITION DESIGNS FOR SAINT ANDREW'S CHURCH, DUBLIN.

STEPPING out of the old path followed by committees in Ireland generally, the committee in this matter have, by exhibiting the designs before announcing their decision, courted opinions upon their merits.

It is stated there is a unanimity amongst the committee upon the super-excellence both in design and draughtsmanship of one set contributed by an eminent provincial firm, though a paragraph in the accompanying description by the authors themselves proclaims one fact, that the design as exhibited cannot be executed for the limited amount. Honour already attributes an injustice to the committee, but we must decline listening. "Dum spiro spero" has a composition of some merit, both as regards exterior and interior—perspectives, in many colours, of each being given, with cruciform plan, attributed to an official of a certain local establishment. "Excelsior" displays a design in his usual style, though his perspectives are of a less pretentious character—hardly emanating from a southern clime,—probably all the better for artists' eyes? "Resurgam" the first—by the way, there are three "Resurgams"—is happy in his plan—in features, cruciform, with nave, transepts, and chancel—and equally so in his elevation. The authors of a design marked with a shamrock in a ring, the A 1 design hinted at above, evince an ability in grouping, in richness of detail, and in general effect to be admired. "Dunce Templæ retereis" deserves and requires investigation, to appreciate the designs which are admirably wrought out. The plan is very peculiar, perhaps the simplest in the exhibition, comprising chiefly nave and aisles, but the latter are mere passage-ways, and their usual width is thrown into the nave, that no optical impediments might be offered to the seated portion of the congregation. "Templa quæ delicta" is A 2, but we cannot expect to see it carried out in its integrity. "In fide et in bello fortes" contributes two designs, one to cost 9,600*l.*, and another 10,200*l.* (sharf to the limited amount), but the former is preferable, save in the weakness of the spire. The perspectives are tinted by the same English band whose colouring of prize drawings in a recent competition was noticed.

"Delta" has four drawings. The manner is palpable. Monogram, T in a circle. Has ten drawings, including an effectively etched perspective, with many meritorious points, but a glaring defect in the flatness of the transept roof, and the banding of the upper part of the tower and the spire.

Gothic is the style adopted by all the competitors.

LECTURES IN CONNECTION WITH THE ARCHITECTURAL EXHIBITION.

ON Tuesday evening the 1st of May, Mr. Robert Kerr delivered a discourse on the "Battle of the Styles; its Past, Present, and Future; from a favourable point of view."

Mr. Godwin having been called to the chair, said it was a particular pleasure to him to introduce the lecturer of the evening, because it had been his privilege, some years ago, first to make Mr. Kerr's writings known to the public, in the shape of a series of papers afterwards collected as "The Newleaf Discourses." Mr. Kerr had a right to be considered amongst the first of those who urged upon the public, in our time, the necessity of recollecting that architecture is a fine art, and upon the profession that those who practice it should be artists.

Mr. Kerr then delivered his discourse, tracing the history of architecture in modern times, and showing the variations which had taken place in public opinion. We will give a report hereafter.

The Chairman, at the close of the discourse, in proposing a vote of thanks to Mr. Kerr (which was afterwards unanimously carried), said that if the public could be made to know that seven interesting lectures could be enjoyed there, together with the right of coming at any time into the exhibition of drawings and inventions, for half-a-crown, the gallery would not be large enough to contain the visitors. Knowledge of the art, too, would spread; one of the results of which would probably be the growth of an opinion that, as Mr. Cockrell had said fourteen years ago, he who would really become an architect must leave the special discussion of styles, and steadily look to the true end and aim of his art. The chairman afterwards announced, that on the following Tuesday, Mr. J. H. Parker (of Oxford) would deliver a lecture on the comparative progress of English and French architecture.

On Saturday last the Prince Consort paid a quiet visit to the Exhibition to see the works there displayed. The door-keeper, not knowing the Patron of the Society, asked for the usual shilling for admittance, when, as we are told, it was immediately handed to him with evident good humour.

THE OLD WATER COLOUR SOCIETY.

For the fifty-sixth time the Old Society of Painters in Water Colours has opened its exhibition. On the present occasion it consists of 281 works, mostly excellent, though of specially remarkable pictures there are perhaps fewer than on some previous occasions. Mr. Carl Haag sends some of the results of his recent travels, including an admirable and striking drawing of the "Ruins of the Temple of the Sun, Palmyra," 105. Amidst the wonderful assemblage of ruins constituting the ancient Tadmor in the Wilderness, Mr. Haag was located a week. Amongst his smaller drawings, 224, "The Cave beneath the Hully Rock, Mosque of Omar, Jerusalem," will be looked at with great interest. Mr. F. W. Burton appears to have sent but two small heads, but these are of extreme beauty, especially 228, "Am Schutzpatronentage; in der Procession." Mr. A. P. Newton's principal picture, 69, "Mountain Gloom: the Pass of Glencoe," is powerful, truthful, and large. It is a noticeable incident that this excellent picture, the price of which was 250 guineas, has been purchased by a prizewinner of 20*l.* only, in the Art-Union of London. Mr. Struwell, of the Edgware-road, he paying the difference.

Mr. Duncum has a fine work, badly placed, "The last Man from the Wreck," 14; Mr. T. M. Richardson, a capital view of Durham, 119; and Mr. W. Hunt, several of his unapproachable studies. The latter varies his contributions by sending a pair of miniatures in one frame, 240, which might be called, "As I was and as I am."

Mr. John Gilbert comes out strongly; his "King's Trumpets" (21), is a remarkably good specimen of his powers. Mr. F. Snullfield, too, has some very interesting pieces of expression; and Mr. Naftel (see particularly 4, one of the watch towers in Bay of Salerno); Mr. S. P. Jackson ("Sunset before a Stormy Night, Widmouth Bay," 75); Mr. Davidson ("Eelesbourne Glen, Hastings," 44); Mr. Samuel Read ("Tomb of Rubens," 65); Mr. J. D. Harding ("The Forest," 70); Mr. Rosenberg, 107; Mr. Bicket Foster ("View in Holmwood Common," 208); Mr. Samuel Palmer ("The Ballad," 112; a powerful sunset effect); Mr. Joseph Nash, several capital interiors; Mr. T. M. Richardson, Miss Margaret Gillies, Mr. J. J. Jenkins, and some others, call for special admiration.



BRINKBURNE PRIORY CHURCH, NORTHUMBERLAND.

## BRINKBURNE PRIORY CHURCH.

THIS building, justly esteemed as the choicest ecclesiastical ruin in the county of Northumberland, is in course of restoration. For three hundred years it has remained untouched, and, compared with the fate of our parish churches, unimpaired. The spires of the gables have fretted away; the south-west angle has fallen; and, when we add that the roof has disappeared, and the flooring consequently perished, we have summed up the only finger-marks time and decay have left upon it. The secluded and sheltered situation of the building accounts in great measure for its fortunate preservation. It is built in a valley, upon a nook of green sward, on the brink of the river Coquet; and is hemmed in by steep banks as high as the tower of the church, which is therefore scarcely visible from the adjacent country. On the high land around there is still a great deal of wood; and we learn from old charters and surveys of other buildings, recommending the use of timber "from Brinkburne wode," that it was once a dense forest. The smoke from the priory fires was hidden by surrounding foliage: the only clue to its situation, possessed by the pillaging Scots, was the sound of the church bell. Local tradition informs us that a foraging party, intent upon the well-stocked larders of the inoffensive canons, had given up their search for the priory in despair, when the bell, summoning the community to a thanksgiving for their escape, revealed its position, and guided the enemy to the spot.

Brinkburne or Brankburn Priory Church is a remarkably fine specimen of the transitional period between the disuse of the Norman and vigour of the Early English styles. The excellence of the ashlar work, the use of clustered columns and lancet windows, point to the best period of Early English; but the doorways, the clerestory, and the third tier of lights at the east end, possess the Norman characteristic of the round arch. Yet this erection was the design of one mind, for there is no evidence of any alteration: the whole scheme was doubtless carried out as at first laid down.

The plan of the church is cruciform. The nave has a north aisle, and both north and south transepts have eastern aisles. The total length of

the interior is, 30 feet 10 inches. On the south side of the nave the presence of a beautiful arcade of trefoil arches, springing from slender shafts, indicates the site of the cloister. At a great height above this arcade were five lancets, one of which had fallen with the south-west angle. Their altitude was rendered necessary to catch the light from the south, which would have otherwise been intercepted by the nave. The north side of the nave has a clerestory and a triforium, the arches of both of which are round. The East end is lighted by three tiers of triplets: the two lower sets are pointed-headed, the upper plain and round. The long slender lights of the transepts are also round-headed. The doorways are all of Norman outline, but decorated with Early English ornaments. The north-west doorway, in particular, stands slightly forward, as in a porch, and is very richly ornamented. In the gable over the doorway is a triplet of trefoil arches. The tower also partakes of the same intermixture of styles apparent in every portion of this interesting edifice. The Norman features are not always capped by the later style: in several instances they surmount it; and the character of the masonry also unmistakably proves that the building is of a uniform date.

Of the domestic buildings of the priory nothing is visible. The site is occupied by the modern mansion of C. H. Cadogan, esq.

William Bartram, Baron of Mitford, founded Brinkburne Priory. He granted the site, in the reign of Henry I., to Osbertus Colutarius, for the purpose of founding a priory of Black Canons. Besides the site the pious baron gave the monks lands and woods, and his descendants gave them permission to cut timber out of their forests, to take fish out of their river, and to kill game. When we consider that the Coquet is a famous salmon stream, and that the moors, with their grouse, were close at hand, to say nothing of larger game in the forests, we shall see that these were no mean privileges. The monks had also a license to buy and sell in the town of Alnwick,—a good assurance of their prosperous condition.

The restoration has been undertaken in a purely

Mediaeval spirit by the unaided exertions of the family to whose possession the edifice has fortunately devolved.

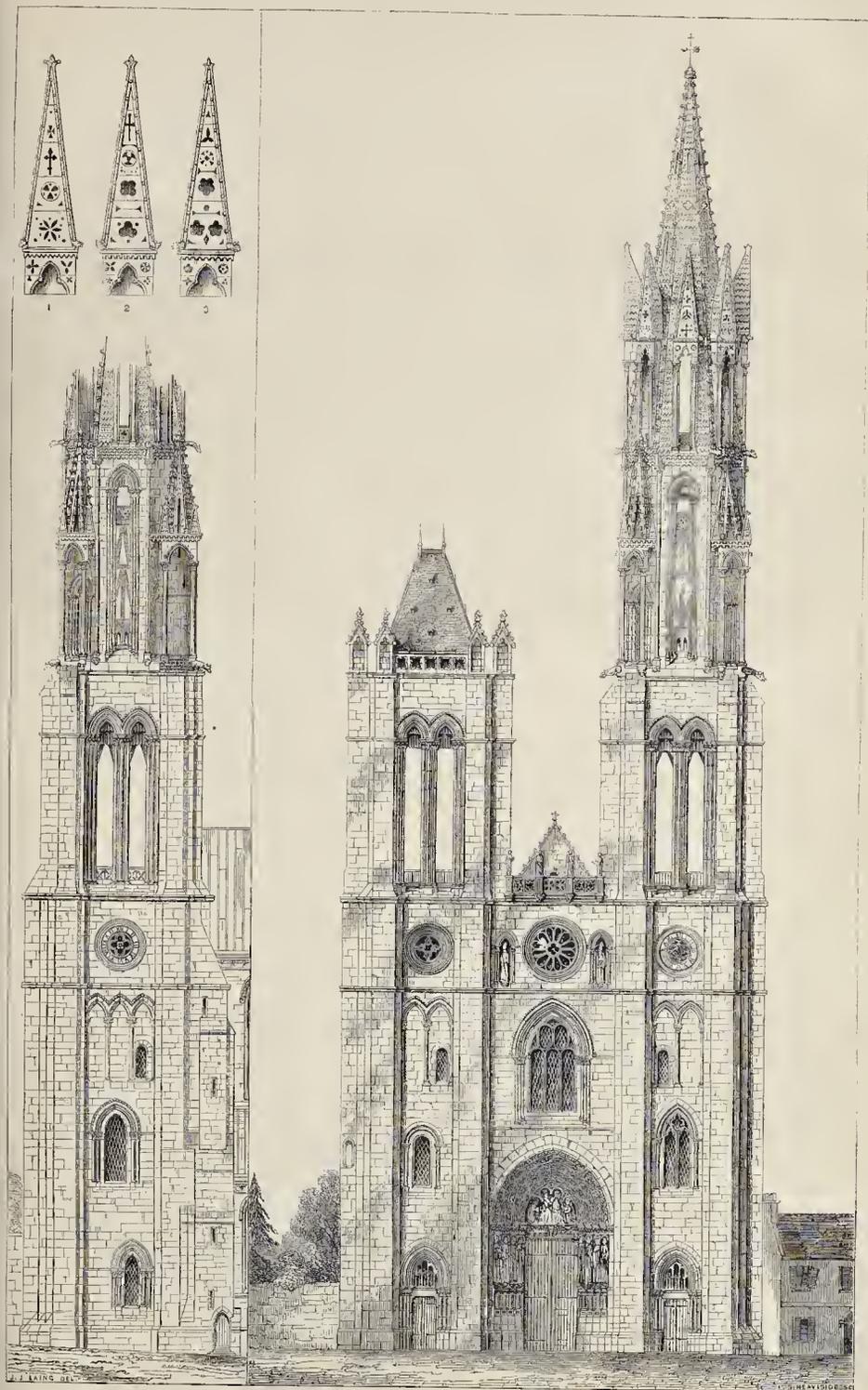
The building has been covered in with a timber roof, which is coated with small red tiles, of a hue quiet enough to harmonize with the weather-faints of the old masonry. A wheel window has been inserted in the gable of the south transept. The south-west angle, which was occupied by a staircase turret, the greater part of which had fallen, has been built up, and here, we believe, is the only deviation from a strict restoration. The staircase, which led through passages in the splayed pillars of the western triplet to the triforium, has been built up with solid masonry, and the characteristic passages through the pillars themselves have also been filled in.

The restoration of the church has been under consideration for many years, and a fund was collected for the purpose in the last century which is still in the hands of the archdeacons of Northumberland, unappropriated. We understand an attempt is about to be made to render it applicable to the payment of a clergyman.

Various objects of interest have been found at different times in the building and its vicinity. On one occasion a bronze vase was found, containing nearly three hundred gold rose nobles. A large stone, roughly hollowed out, had been placed in an inverted position over the hidden treasure. On removing an accumulation of rubbish in the interior of the church a coped stone coffin-lid was discovered. It was sculptured with a trefoiled cross, having a mitre to the right of the shaft of the cross, and to the left a pastoral staff. An inscription describes it to be the tombstone of one of the priors. These and other relics of the past have been carefully preserved.

RAILWAY TRAFFIC.—The traffic returns of railways in the United Kingdom for the week ending April 14, amounted to 498,960*l.*, and for the corresponding week of 1859 to 443,310*l.*, showing an increase of 51,750*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 215,582*l.*, and for the corresponding week of last year to 189,566*l.*, showing an increase of 25,996*l.*

SEN LIS CATHEDRAL, FRANCE.—GEOMETRICAL VIEW.



South Side of Tower.

West Front.



## SENILIS.

SENILIS, a small, quiet, interesting French town, in the department of the Oise, and near to the Forest of Chantilly, is situated a few miles from Creil, a junction-station of the Northern line of railway to Amiens. At Creil, there remains but little of its ancient importance: from its peculiar situation near the river it was held as a strong point of military defence, and is referred to particularly by M. Viollet le Due, in the part of his admirable Dictionary of the Architecture of France treating on military architecture, wherein he gives a choice illustration of it. The principal remaining ancient edifice of Creil is the church, a most peculiar one in shape, partly owing to its position, and, perhaps, from a great portion having been destroyed, and other work substituted by restoration. There is nothing very interesting in its general features. Not far distant from it are the remains of a small chapel of the eleventh century, or even earlier: it is very much defaced, and desecrated to the utmost extent that the French could devise in using it as a cow-hyde and loft for old bones and rubbish, the whole being surrounded by manure heaps. A part of its side wall may be seen in an illustration in M. V. le Duc's work, vol. iv.

On the road to Senlis there is nothing of any interest, save the curious dwellings of the poorer peasants near Creil, cut out of the solid, soft red stone; but on approaching Senlis the country looks fairer, with the lovely slender spire of its cathedral sparkling in the day-light, or glowing in the sunset. No geometrical drawing can render or tell the charming effect of the heautous spire of Senlis, esteemed by French and English judges as one of the gems of France. One cannot help thinking that in that age of geometric design the architect must have had a thorough conception of true artistic and perspective effects. Apart from its excellent construction and lovely decoration, and piercing with stars and rosettes,\* time has so worked his artistic tincting on it, that its mellow warm-coloured stone glows like old gold in a rich sun-set.

A view is given of the south side of the spire and tower, to show the varied and interesting construction connected with the turret staircase, which, although different from the west side, gradually rises into complete harmony, and unites all with the most mastery and delightful effect. The corresponding turret staircase, at the back of the north tower, is worthy of examination, which, although requiring the same construction as that on the south side, the architect, in his love for variety, treated differently, yet remembering in it, as in all parts, what was due to the whole conceived design. For more enlarged details of a part of south spire, M. V. le Duc's work must be referred to again, in his article "Clocher."

It will be seen that there have been some changes made in the west front, particularly with regard to traceries in windows. The greater part of the nave and transepts of the cathedral are of Romanesque character. Round the choir are small chapels, some containing good painted glass and coloured decoration. A sort of gallery is formed over the vaulting of the aisles, thus giving greatly increased accommodation. Throughout the edifice, especially in the façades of transepts, additions of Flamboyant work have been introduced, such as traceried balconies, &c., constructed with the *Heur-de-lis* as a prevailing form. The principal entrance doorway is most exquisitely carved; the draperies of the tall statues of saints and kings being well arranged and richly embroidered. Remains of ancient colouring still exist, especially around the auriols of the saints in the niched mouldings of arch.

Senlis contains, besides its small cathedral, ruins of the ancient castle occupied for some time by St. Louis, and around the town a great part of the massive fortifications may be seen. There are also two fine churches in tolerable preservation, but, like other sacred edifices, in this quarter especially, they are in a state of horrible desecration,—that of St. Frambourg being used as a builder's depot, and quarry if he choose. This imposing, lofty church, is of thirteenth century date, and has a fine circular apse and entrance doorway, with richly-carved foliage in its mouldings and graceful capitals. It has had a central pier in the doorway, containing probably a statue of the Virgin, or of St. Frambourg; but has been despoiled of this, and of the sculpture contained in the arch. The other church (St. Pierre), of the richest and

most Flamboyant, is used as the cavalry barracks—the aisles being occupied below for stalls for the horses, whilst above are the vaulted ward-rooms of the men. Little remains of another church of very early date, that of St. Aignan, which is converted into a theatre. There are remains of others, but they have become gradually so small by degrees, that scarcely anything can be traced of them.

Near to Senlis are the ruins of the important "Abbaye de Chaly," having an exquisite little chapel, of thirteenth-century work, in good preservation.

The illustrations are drawn on the wood by Mr. J. J. Laing, from sketches made by him some years ago, for Mr. Ruskin.

## ANOTHER NINE-HOURS MOVEMENT.

It is greatly to be deplored that a renewal of the late disastrous struggle is threatened by the leaders of the workmen in the building trades, who have recently been calling meetings and endeavouring to obtain the co-operation of non-society men towards the end in view. At a meeting on the 21st ult., at the Mitre Tavern, St. Martin's-lane, the chairman explained the new tactics to a numerous assemblage, chiefly of carpenters and joiners. The "Conference of the United Building Trades," he said, had determined upon adopting a different course of organization, by the formation of a system of branch houses all over the metropolis, and for that purpose London had been divided into fifty districts. By the above means they believed that the nucleus of an organization would be formed that would carry the movement in a few months, and prevent the masters from being able to learn that the men belonged to the union. Several branches had already been established. After addresses from others, several names were enrolled.

If Courts of Conciliation are to be of any use in the settlement of disputes between masters and men, now is the time to set them going and give them a fair trial; and we trust the Government will not "massacre" this "innocent," but on the contrary urge on the projected measure and pass it into law without a moment's delay.

The building trades' workmen are in an unsettled state elsewhere than in London.

## MASTERS AND MEN.

Before the Parliamentary Committee on this subject, mentioned in our last, Mr. Thomas Piper gave evidence on the 24th of April, as master-builder, and hon. secretary for twenty-five years of the Builders' Society. In reply to the observation of Mr. Potter, that the late strike might have been prevented if the men could have met the masters in council, he showed that thirteen masters and nine men discussed the question of nine hours as a day's labour. After full deliberation the masters declined to concede. Subsequently the masons and bricklayers, and afterwards the conjoint trades, sought an interview with the masters. The masters replied that they would be ready to receive a deputation if any new matter and stronger reasons could be adduced, but it would be useless to go over the same ground again, as the masters could only give the same character of reply; he said the masters would decidedly welcome any measures for friendly adjustment of differences; cordially agreed with the principles of the Bill, but great practical difficulty was apparent to the masters in the working of the proposed Courts of Conciliation,—first, because the men who might be appointed would be unacquainted with the masters,—with their personal character; secondly, because of the extreme variety of questions arising in the building business, and the extremely technical character of such questions.

Sir J. Paxton asked what character of questions could come before the Council of Conciliation, if all the men worked by the day, as he understood the vast majority did in the building trade?

The witness stated,—Of course the number of questions would be much more limited than in trades working piecemeal; but still there would be many minor questions which could be brought before such a council. He doubted the practicability of dealing with such a wide question as the nine-hours question, because it invaded great fixed principles, which custom and expediency had established. Did not agree with the witness (G. Potter), who stated that if the tenth hour of labour was omitted, it would make only 7½ per cent. difference to the master. It should be borne in mind, the deputation did not assign, as a reason for the demand of nine hours a day, "rise in

wages;" but the only reason alleged was desire for relaxation and opportunity for improving themselves; and the argument which the masters alleged as to the practical advance in labour was,— "Then you must increase your price to the public."

The master builders of London conceded the one hour and a half on Saturday, and this was an important practical advance of wages; but it was felt there was some ground for the concession, and that the spirit of the age was in favour of such a boon to the workmen. Sub-letting is practised to a very limited extent by London builders, and certainly not in the largest establishments. It is important that the building workman, as well as every other workman, should have a free labour market. The present system he thought injurious. The real market value of labour, and the distinctions of quality and skill, were destroyed, which was an injustice to the able workman.

The committee are now determining on their report.

## THE MERITS OF PERCHLORIDE OF IRON AS A DEODORIZER.

In a report, on the practicality and probable efficiency of the plan proposed by the Metropolitan Board of Works, for deodorizing the sewage of London by means of perchloride of iron, presented to the Improvement Committee of the City Commission of Sewers, by Dr. Letheby, their medical officer of health, the reporter not only questions the advisability of using such a deodorizer, but asserts that, two years ago, he found it to be "the least effective, and at that time the most expensive of all the deodorizers known;" and, in fact, that "it has in every instance most signally failed as a practical deodorizer." We have thus assertion and counter-assertion opposed to each other, and it remains to be seen which is right,—the Commission of the Metropolitan Board or the medical officer of the City Sewers Commission. As for the cost, Dr. Letheby admits that it is now only a twelfth part of what it was two years ago; but nevertheless maintains that the cost would still be enormous, from the quantity requisite to make it an effective deodorizer of the London sewage and purifier of the Thames. Dr. Letheby has his own favourite deodorizer, but the question in the meantime hears exclusively on the merits of perchloride of iron. Dr. Letheby, we may add, attributes the summer nuisance on the river to putrefactive decomposition of organic matter in the sewage, and not to the cause to which Mr. Spencer ascribes it.

## PUBLIC BUILDINGS IN THE PROVINCES.

*Steyning (Sussex).*—The tender of Mr. R. Pink, of Eastgrinstead, has been accepted for erecting a new police station at Steyning, at a sum between 1,700*l.* and 1,800*l.* It will be built at the back of the Chequers Inn.

*Manchester.*—About twelve months ago the erection of a branch free library in Livesey-street, Rochdale-road, was commenced. From the laying of the foundations the building has gradually progressed until it now, according to the local *Advertiser*, only requires the finishing touches previously to being opened. The plans and designs were prepared by Mr. Lynde, the city surveyor, and the contractor was Mr. Thompson, builder, Chetnam-hill; the clerk of the works being Mr. S. Taylor. The façade of the building, which is about 45 feet in length, is of dressed stone, in the plain Italian style of architecture, and in place of windows has a raised panel in the centre of each of the three bays into which it is divided. The parapet consists of open stone work. The library room is in length 44 feet, by 31 feet, and 26 feet in height. It is lit by a lantern roof, and the ceiling is coved and panelled, some of the panels being of open work for the purpose of ventilation. The plan for heating and ventilating the library was by Mr. Lynde. A shaft or chimney about 50 feet high is, from a chamber over the entrance-hall, fed with air which passes through a screen. The screen is for two purposes: it catches all the "blacks" which rush in at the louvres, and by turning upon it an artificial shower, it will, when need is, refrigerate the air before it passes down the shaft. The air on passing down the shaft is carried by means of tunnels under the library room floor, through which, by means of grids, it rises into the library, and passes out through the perforated panels of the ceiling into another shaft. From all the grids of this kind the rush of air creates an almost unbearable draft, but here it is said the draft is imperceptible. Under the floor, and in the tunnels, hot-water pipes are laid, over which the air from the shaft

\* Figs. 1, 2, and 3, show some examples of the piercings of the eighth pediments above spring of spire, all being different in design. These may not be faithfully correct, but give the appearance, as well as the eye can make them out from below, by hasty sketches in adverse weather.

passes. Air so passing over heated pipes is, however, liable to lose its hygienic or healthy breathing qualities, and, in addition, air so heated is injurious to the binding of books. With the view of restoring the qualities of the air, here, by means of several stop-cocks, small streams of water can be emitted out of the pipes, so as to produce a kind of imperceptible vapour. In the evenings the library will be lighted with four sun-light gas pendants, of fifteen jets each. The building will be opened early in June, when 3,000 volumes will be placed on the shelves.

**Hulme (Manchester).**—It has been resolved at a public meeting that a new town-hall should be erected for Hulme. The cost is estimated by the city surveyor at about 7,000*l.* The building, as designed, will be of stone, with the principal front towards Jackson-street. The frontage will be 71 feet, the plot having a depth of 84 feet; the whole containing 665 square yards. The erection will be in the Italian style of architecture,—the elevation consisting of two stories. The main entrance will be in the centre of the front, with the township offices on the left-hand side of the hall, and the overseers' offices on the right. On the further side of the hall, a staircase will give access to the second story, which, besides ante-rooms, will contain a large room in the direction of the frontage, 66 feet long, 32 feet broad, and 30 feet high. This will be as nearly as possible the same size as the principal room in the Manchester town-hall. It will be lighted by five windows, looking towards Jackson-street. The greatest length of the building (also of stone) will face City-road, and on the ground story will be the police offices, with the entrance towards City-road, as at present, and also a parade-room.

**Leeds.**—It is proposed to erect a new corn-exchange near the White Cloth Hall. At a meeting, in the town-hall, of corn-factors and others, the markets committee exhibited a plan of the corn-exchange at Edinburgh, and it was explained by Mr. Filler, the borough surveyor. That building, which is of the Italian style of architecture, is 150 feet long and 80 feet wide. It contains a large open space in the centre, in which both the factors and farmers transact their business, and there are factors' offices on each side of the building. After the plan had been inspected, a good deal of discussion ensued, and a general opinion was entertained that it was desirable that the farmers and the factors should meet in the same building, but that there should be separate accommodation for each. A resolution to that effect was unanimously adopted. Mr. Alderman Gill assured the factors that the committee were anxious to meet their wishes, and make the exchange in every way a suitable one. He also requested all gentlemen who wished for accommodation in the exchange to communicate with the borough surveyor, in order that the committee might be enabled to decide what extent of accommodation to provide. Plans for the proposed building are about to be advertised for.

**Hull.**—The prospectus has been issued of a new dock at Hull, to be called the Hull West Dock; the Company to have a capital of 400,000*l.*, in 20*l.* shares. It appears that the old docks, which were founded in 1774, have yielded enormous returns, but that there has been no adequate expansion of them to meet the growing trade of the port, and that the steam-ship owners are especially dissatisfied. The promoters have subscribed a third of the required amount, and the municipal corporation and Hull Trinity-house have, it is stated, resolved to contribute largely. An Act of Parliament is to be applied for, and 4 per cent. is to be allowed on calls during construction. The monopoly of the existing company expires in 1865.

#### CHURCH-BUILDING NEWS.

**Edlington (near Horncastle).**—The Church of Edlington has been re-opened by the Bishop of Lincoln. The edifice has been rebuilt, except the tower, to which a new upper story has been added. The edifice, which is in the Geometrical style, except the tower arch, which is Norman, consists of a nave, south aisle, chancel, south porch, and tower at the west end. The two windows on the south of the chancel are of stained glass, a present from the vicar's wife. The rest of the windows are of a rough deep-tinted glass. The floor is paved with Minton's tiles. The architect employed was Mr. James Fowler, of Louth.

**Bishop Stortford.**—A new Independent chapel has been opened here. The edifice is in the Italian style. The form of the building is oval. The galleries, of which there are two, one above the other, are carried about three-fourths round the building. The front of the galleries is of open

ornamental ironwork, painted grey. The stairs leading to the galleries are carried up spirally in the towers in front of the building. The roof spans the whole width between the walls, and is divided into panels. In the centre is an ornamental skylight, and the windows are filled with rough plate-glass. The seats are all open, stained, and varnished, and are circular, to adapt them to the shape of the building. Colour has been very sparingly introduced, the object being to avoid showiness. The edifice is built of white bricks, with Bath stone dressings. The architects were Messrs. Poulton and Woodman, of Reading; and the builders, Messrs. Young & Co., of Oxford. The building is seated for 1,050 persons.

**Kegworth.**—The restoration of Kegworth Church has been progressing under the superintendence of Mr. Garland, of Nottingham, at a cost of about 1,400*l.*, and is now nearly completed. The floor is of encaustic tiles. The new seats are of Russian pine and English oak; the pulpit, reading-desk, &c., are of oak. The vestry, formerly the abode of an anchorite, is being restored. The edifice has been repaired.

**Waltham Abbey.**—The committee for the repair and restoration of the Abbey Church, Waltham, have announced that the church will be opened on the 3rd of May. The new gallery is almost completed; so is the decoration of the ceiling, 1,000*l.* more is required to complete the chancel end of the Abbey.

**Malden.**—The foundation-stone of a new church about to be erected by the Earl of Romney, in the Motte-park, has been laid. The architect is Mr. Blandford. The church will consist of nave, chancel with apsidal end, vestry on the north, and organ chamber on the south, north porch, and campanile at the west end. It is designed in the Early English style of architecture, and will contain accommodation for 200 persons.

**Dover.**—The foundation-stone of the new parish church of St. James, Dover, has been laid, in a field known as Tinker's close, at East-brook. The style is Decorated, of the fourteenth century. The edifice is to consist of a nave, 93 feet long by 24 feet wide, with side aisles, each 78 feet in length by 20 feet in width. The chancel is long by 23 feet 6 inches, into which an organ-chapel opens on the south side, and is in extent 20 feet by 16 feet. The vestry is at the east side of the north aisle. The principal entrance to the church is by the tower, which is situated at the north-west angle of the building. The altitude of the tower and spire will be 140 feet, and the top of the gable of the west front will be 60 feet high, and will contain a traceried window of six lights. The other entrance to the church is by a porch on the south side. At the west end a gallery has been provided for children; while, with the view to increase the number of sittings, galleries have to be introduced over the north and south aisles, with staircases at the entrance end of the building. The number of sittings which the church is intended to hold is 1,400, being an increase of more than 800 over that in the present building. The architect is Mr. Talbot Bury, and the builder Mr. W. Moxon, of Dover. The estimated cost of the whole is about 7,000*l.*

**Netley Abbey.**—It is in contemplation to restore the chapel of Netley Abbey, situated on Southampton Water, for the purpose of performing Divine service in it. The ruins of Netley Abbey are now surrounded by a large population, owing to the military hospital which is erecting in the neighbourhood, and which will be the largest building in Europe.

**Ventnor (Isle of Wight).**—The foundation-stone of the Church of Holy Trinity, Ventnor, has been laid. The architect is Mr. C. E. Giles, of London. The building will be a Gothic one of the Geometrical period. The ground covered is 110 feet by 48 feet, and at the north-west angle is a tower surmounted by a lantern and spire, about 160 feet in height. The contract for the works has been taken by Mr. James Bull, and the entire cost of the building will be about 5,000*l.*

**Publow (Somerset).**—The church here has been restored under Mr. Ferrey, of London, architect. The contract was entered into with Messrs. Hughes & Son, of Bristol, builders, for 12,000*l.* The work of re-construction has been almost completely carried out. New roofs have been built in the side aisles, buttresses erected against the decayed walls, new clerestory windows constructed, new mullions to all the windows, the interior completely renovated by the removal of all the old wooden pews and the construction of open seats. The entire floor of the church has been repaved, and the whole drained.

**Newport (Wales).**—The Bishop of Llandaf has opened the Church of St. John the Evangelist, at

Maindee. The edifice consists of a nave and a south aisle, with a tower over the westernmost bay of the same. The aisle is divided from the nave by an arcade of four bays (including that of the tower), and it is continued eastward so as to form a chancel aisle of one bay. There are western and southern porches, a chancel, and a vestry. The tower has as yet only been carried up to the level of the ridge of the aisle roof, but will, when completed, with the proposed spire, rise to a height of 180 feet. The church is designed to accommodate 500 persons. The site is upon the slope of Maindee-hill, which is being rapidly covered with villas and forms a pleasant suburb to Newport. The church has been executed by Mr. Logan, under the superintendence of Mr. Biggs, from the designs of Messrs. Pritchard & Seddon, the diocesan architects. The walls are of thin Pennant sandstone. The dressings are of Combe Down Bath stone; the timber of Memel, but all the furniture of pitch pine with pine figure. The roof is covered with boarding felt and Ladies' Delabole slate. The windows are traceried. The chancel arch and the capitals of the arcade columns are, or are to be, carved; this work has been entrusted to Mr. Earl, of London. The style of architecture is Geometrical.

**Bristol.**—A number of curious carvings have been discovered at Bristol Cathedral. The designs of many of them are of grotesque character, and they are generally in a good state of preservation, but some have been considerably mutilated. They were brought to light by the removal of the stalls in the progress of the work for the restoration of the interior of the cathedral.

**Stourbridge.**—W. O. Foster, esq., M.P. for South Staffordshire, has erected and presented to the neighbourhood of Wollaston a church, schools, and master's house, at a cost of nearly 10,000*l.* The church, which has been opened, will accommodate about 650 persons, and consists of nave, side aisles, transepts, chancel, sacristy, south porch, organ-chamber (adjoining the chancel), and tower at the north-west angle of building. The materials used for the walls of the whole of the buildings are blue brick and dressings of Bath stone. The style adopted by the architect is that of the fourteenth century Gothic. The church has a tower, surmounted with trefoiled battlements and pinnacles. The interior woodwork of roof, seats, reading-desk, screen to sacristy, and children's gallery at the west end, are of deal, and stained; the roof and stalls in the chancel being more elaborate, and containing appropriate tracery. The organ has been supplied by Mr. Walker, of London. The east and west windows were painted by Messrs. Clayton & B. I.; and the building was heated by Messrs. Haden, of Trowbridge. The whole of the buildings were designed and carried out under the superintendence of Mr. G. Bidlake, of Wolverhampton; Mr. Elliott, of the same town, being the builder.

**Manchester.**—With reference to our notice recently of the works of restoration in Manchester Cathedral we are asked by Mr. T. R. Williams to state that he executed a considerable portion of the carving.

#### WORKS ABROAD.

On the 28th ult., on the Baden side of the Rhine, took place, with perfect success, the launch of the enormous caisson destined to receive the concrete of the foundations of the abutment of the new Rhine Bridge. It is 16 metres long by 12 metres wide, and 10 deep; thereby containing 1,920 cubic metres. The depth of the cavity excavated by dredging in the bed of the river is 15 metres, so that a second "story" of 5 metres has to be added to the monster box, increasing its capacity to 2,780 metres cube. This is the last great hydraulic work required for the fixed bridge, the similar one on the French side being so far advanced that the masonry will be commenced in fifteen days, by which time the foundations are expected to have sufficiently set. The Baden abutment will require two months longer. The imposts of the piers are ready for the lattice-work of the girders, which, along with the swing bridges, are in a very forward state. It is calculated, at all events, that the French and Baden lines will be thus joined together, and trains continue without interruption next August, and afford the opportunity of charming trips from Paris to the heart of Austria.

The demolitions undertaken between the quay of the *Mégisserie*, opposite the *Châtelet*, and the *Rues Jean-Laudier* and des *Lavandières-Saintes-Opportunes*, are completely terminated; not a vestige rests of the numerous houses that were standing on this vast space. In consequence of

his clearance, a considerable portion of the Rue Saint Germain l'Auxerrois has vanished. The foundations for the new Théâtre Lyrique, to be built on this spot, will be laid at once: the plans, &c., have been just completed.

Paris masons are not more careful than any others of their class, either of their lives or the buildings they are erecting. A few days ago, in the Rue des Vertus, during the erection of a house of considerable height, the usual dangerous system was carried on of loading, with dressed stone, the upper floors of the building before the works were in a measure consolidated. The consequence was the falling-in of the upper one, by the parting of the walls, carrying the whole of them, with the workmen, down to the cellar. Two were taken at the rubbish dead: five were wounded.

The lava from the extinct volcanoes of the Puy-de-Dôme, hitherto only used for architectural purposes in the basin of the Limogne, has been now extensively employed in Paris for foot pavements, street inscriptions, and panels for the rich enamels of the process of M. Mortelouque. The Count de Chantrol has, by the useful instructions and indications published by him, been one of the chief promoters of this branch of decorative art. He is, moreover, in order to develop further the lava works of the Puy-de-Dôme, founded at the Polytechnic school of design and architecture, which, strengthened by aid from the funds of the department, as well as by the private liberality of the Count de Chantrol, has already gained a wide reputation in furnishing the country with skilled workmen. Other schools have been founded of this description by private persons: at Semur, M. Larrivé has instituted a school for workmen, with the valuable addition of a museum.

#### SELECT COMMITTEE ON PUBLIC INSTITUTIONS.

THE select committee of the House of Commons, appointed to inquire whether it is in the power of Parliament to provide further facilities for promoting the healthful recreation and improvement of the people, by placing institutions supported by general taxation within the reach of the largest portion of the taxpayers, have made their report. They have considered the question submitted to them under the two following aspects:—"First, whether facilities can be afforded to the people at large for visiting public institutions on week-day evenings, without injury to the buildings or their contents; the evenings being ordinarily the only time when they could in any numbers find leisure to do so? Secondly, whether, provided such facilities were afforded, they would avail themselves of them in sufficient numbers to justify the increased expenditure that would be incurred thereby?" and they ultimately submit,—"that institutions such as the British Museum and the National Gallery should be opened on week-day evenings to the public; and that, as the opportunity thus afforded of bringing the instruction and pleasure to be derived from visiting them within the reach of those who are occupied during ordinary working hours would be appreciated by them, it is desirable that they should be thus opened, under due regulations, between the hours of seven and ten in the evening, at least three days in the week. Monday and Saturday appear to be the most convenient days to the public at large."

#### THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of this society was held in the rooms in Conduit-street, on Friday evening, the 27th April: Mr. Deaford, president, in the chair.

Mr. Bunker begged to be allowed, before the regular business of the evening began, to ask the secretary whether the committee had communicated with the council of the Royal Institute as to the plan proposed for granting diplomas and degrees in connection with the profession of architecture. As far as he had an opportunity of judging from the statements which had appeared in the *Builder* and elsewhere, the scheme, as laid down, was of an exclusive character, and immediate steps should be taken to obtain correct information on the matter. He might here remind the society that they had been the first to suggest such tests of proficiency for the profession, and that it was their duty not to allow the matter to pass away without some notice.

The Secretary said that the committee had taken no steps; indeed, on that day the matter had appeared for the first time.

The President fully concurred in the remarks of Mr. Bunker as to the advisability of communicating with the secretary of the Royal Institute. A com-

mittee meeting would be held that day week, before whom he would undertake that the matter should be regularly brought. The secretary would correspond with the Royal Institute, and the whole subject might be suitably discussed at the next meeting of the society, which, fortunately for their purpose, was a special business meeting.

Mr. Bunker said that no time should be lost: the final decision of the Royal Institute would be made, he feared, on Monday, 7th; and the rules, as now laid down, would exclude the members of this society from the advantages proposed.

Mr. Norton read a paper on Medieval sculpture, to which we shall return. The observations were illustrated by casts of diptychs from the second century up to comparatively modern times.

#### THE LATE FIRE IN REDCROSS-STREET, NEAR BARBICAN.

THIS portion of old London has much to interest the antiquary, for here and in adjoining streets there are vestiges of the old metropolis as it was before the time of the Great Fire of 1666. Nearly opposite the old church of Cripplegate is one of the most picturesque groups of houses now to be found in the City, and of which we have given an engraving. At the end of Red Lion-street, next Barbican, there were on each side some buildings faced with the dark-coloured red brick, moulded in cornices, which was much in use about Charles the First's reign. One of those clumps of houses nearest to Smithfield has been destroyed, leaving just enough to show that behind the facing there was work of far greater antiquity.

The ruins present a singular appearance, and show how the buildings have been patched and altered from time to time. In a portion of the brick house of Charles the First's days part of the timber framework has been left, which is probably upwards of 500 years old, including barge beams of oak, some of which are of great length, and about 18 inches square. Part of this wood is remarkably sound, in spite of the action of time and fire.

A sight of these ruins serves to give some idea of the action and effect of the Great Fire of 1666. Throughout the space swept by the recent conflagration there were no sufficient party walls, and it is only where these modern works are placed that the raging of the flames on the present occasion was stopped: but for this, notwithstanding the immense power of the water engines now in use, it would have been no easy matter to have limited the damage. Throughout the whole of the premises the brick and stone work has been nearly levelled with the ground.

Although the frontage was of substantial-looking brickwork, the back portion was chiefly of wood, and hundreds of the houses which escaped the Great Fire are of the same dangerous construction. Year by year, however, these remains of past times are vanishing, and fires, alterations, and the slow but sure effect of time, will, ere long, destroy all traces of the city of the past. Several very large fires have happened in this neighbourhood within the last twelve months.

It is worth noting that the old-fashioned houses, formed of massive timber, resist the action of fire for a much longer time than dwellings of the modern kind. At Bermondsey a fire demolished extensive warehouses and several houses: an ancient wooden house which stood in the midst of the fire escaped with trifling damage. It is only the introduction of party walls which prevents the spread of fires amongst modern buildings to the extent of those of former times.

#### DECORATION OF ST. PAUL'S CATHEDRAL.

AMETTING of the committee regarding the above was held on the 19th ultimo. The Very Rev. the Dean in the chair. A statement of finance was read, by which it appeared that, altogether, the public had, up to that time, contributed to the joint purpose of the special evening services and the internal decoration of the cathedral about 7,000*l.*; that about 5,000*l.* of that amount to speak in round numbers had been already expended in furthering both purposes. The fixing of the organ in one of the north bays of the choir, in preference to restoring it to its old place above the screen at the entrance of the choir, was reported to have been satisfactorily accomplished.

A report of the cathedral surveyor was then read, accompanied by plans and drawings of the alterations in the choir contemplated by the sub-committee. The *City Press* says, Mr. Penrose stated, in answer to an inquiry, that 10,000*l.* would make a very good beginning of the entire decorations indicated in his drawings,

but that many times that amount would be required to complete the whole interior worthy of the building itself and of the national importance it represented. Mr. Penrose supplemented his remarks by stating that he had discovered in the archives of the cathedral an original drawing of Sir Christopher Wren, wherein was portrayed one of the bays of the choir with an organ introduced. This he stated was as satisfactory as it was interesting, for it thereby evidenced that in the alteration of the site of the organ, the committee were only following out the original plan of the great architect in his noble work, the cathedral—a plan, however, in which he was at the time so shamefully frustrated, as he was in too many particulars with respect to it. Mr. Cotton moved a resolution proposing the removal of the organ-screen from its present site to the entrance of the south transept,—it being understood that it was placed there as a suggestive site or substructure for the proposed new and additional organ for the special use of the popular evening services, and for such other public ceremonies requiring musical adjuncts,—which was then carried.\*

#### COMPETITIONS.

*Ripley Chapel, Derbyshire.*—The committee of this chapel have selected the design of Mr. R. C. Sutton, architect, of Nottingham, under whose superintendance the work is to be carried out.

*Chester.*—The committee for the restoration of Holy Trinity Church examined the several competing designs sent in by local and other architects; after which it was determined to select two plans, one for a restoration of and the other for rebuilding the church, both plans to be submitted to the final choice of a future vestry meeting. Mr. James Harrison's designs for a restoration of the church, says the *Chester Chronicle*, were unanimously adopted; but, with respect to the rebuilding, considerable difference of opinion was expressed. Dr. Waters proposed that the plans of Mr. Murray, of Coventry, for an entire rebuilding and extension of the church, should be recommended to the vestry by the committee. Mr. T. Hughes proposed that no plans should be recognized by the committee which in any way interfered with the present foundations of the church, or with the interments therein, or in the burial-ground. After a lengthened discussion, the motion that Mr. Murray's plans, along with Mr. Harrison's, should be submitted to the vestry, was agreed to.

#### PROFESSIONAL EXAMINATIONS.

In your last number is a programme of a scheme for that great desideratum, a professional examination and certificates.

I wish, however, on my own behalf and on that of many of our brethren whose practice is similar to mine, to claim the extension of the proposed examinations to a class, who, without being members of the Institute, are most desirous of some mode of distinction from the herd of quacks.

If it is asked, "Then why not enter the Institute?" I reply, the Institute discourages measuring and quantity-making, on which my practice is based, and requires its members to sign a declaration, which no man can honourably subscribe whose charges are usually made to the *builder* and not to the *client*.

It is again urged, that "the proposed examinations do not apply to measurers and quantity-makers?" To this I answer, that I (and many like me) have a practice which, whilst based on surveying, is partly architectural, and I cannot afford to throw away either my T-square or my measuring rule.

Therefore please permit the appearance of my humble petition, that the great men of Conduit-street would be pleased to extend their proposed voluntary examinations to a class of men, whose opinions many of the said dons themselves do not disdain to ask on matters of construction and detail, and your petitioners, as in duty bound, will ever pray.

A SURVEYOR AND ARCHITECT.

\* A correspondent writes,—

"SIR,—It is painful to notice the ill effect produced by the hangings which have been placed in St. Paul's, to enclose the space for the Sunday evening service, and which entirely interfere with the right effect of Wren's glorious building; from no point can a proper view be had of the whole interior. Admitting that sacrifices must be made in order to promote so much good as has been done by these special services, it is, notwithstanding, a pity to disfigure one of our finest examples of architecture. Visitors from the country, foreigners, and even the dwellers in the metropolis, must be disappointed at this. It is not possible, therefore, to devise some plan by which, during week days, these curtains may be drawn aside, in order that, without such interruption, visitors may be able properly to view the interior of St. Paul's."

## EXETER BRANCH BANK COMPETITION.

STR.—We are reluctantly obliged to address you on the above competition. We allowed the paragraph in your impression of March 31st to pass unnoticed, as the object of the writer was too patent, and our interests thereby not affected. But when we find this Mr. E. C. Robins, with the most unblushing effrontery, parading a design at the Architectural Exhibition, as a "View of the Design for the Exeter Branch of the Devon and Cornwall Bank, to which the first premium was awarded," patience has its limits, and we are compelled to expose his conduct. To do so we have only to call your attention to the annexed extracts from correspondence in our possession.

KENNEDY &amp; ROGERS.

Extract from Instructions, &c., to Architects invited to compete.

"The architect whose plan is preferred and adopted shall have the superintendence of the building on the usual terms of 5 per cent. on the outlay. The architect whose plan is considered second in merit shall receive 10, 10s., and the third in merit, 5s., &c."

Extract from Letter.

"Devon and Cornwall Bank,  
Plymouth, March 16, 1860.

GENTLEMEN.—I have the pleasure to inform you that the directors of this bank have selected the plan, marked "A seise la fin," for the building the Bank-house at Exeter, &c. &c. &c.

(Signed) DAVID DERRY.

\* \* \* We said, at the time, that we gave the particulars as they had reached us, but did not understand the transaction. It is to be hoped that the competitor who sent us the statement did not purposely withhold the facts now communicated, which makes the arrangement clear.

## DECISIONS UNDER METROPOLITAN BUILDING ACT.

## PROJECTIONS.

*Boher, District Surveyor of St. Pancras, v. Neaman, Builder.*—This was an appeal, in Court of Common Pleas April 23, based on a special case, against a conviction by Mr. LONG, of Marylebone police court. The appellant had erected a shop building of one store over the forecourt of No. 3, Bartholomew place, forming part of the high road at Kenish-town, and had neglected, and indeed refused, to apply to the Metropolitan Board for their permission so to do, either under the powers vested in them by the 26th section of the Building Act, or by the 143rd section of the Local Management Act.

As Bartholomew-place consists of an unbroken range of about twenty houses, although standing back from the public road, the district surveyor conceived it to be his duty to institute proceedings against the builder, under the first-named section, for erecting a projection "beyond the general line of fronts" in the street. The case was ably argued before the magistrate, the defendant being represented by counsel, who maintained that the term "projection" applied only to some adjunct, some appendage to a building, such as a bow window, a verandah, porch, or balcony, and not to a building standing on its own foundation. The magistrate being of opinion that it was a projection, counsel then argued that it did not extend beyond the general line of fronts in the street: in fact abutting immediately on the road, or much nearer to it than the building in question.

Mr. LONG, however, considered that as the projection extended beyond the line of fronts which would be affected by it, namely, the line of Bartholomew-place, it was contrary to the Act, and he issued an order to comply with the requisition of the district surveyor within a month.

Against this order the builder, supported by the owner of the property, now appealed to her Majesty's Judges, who, after hearing Mr. Field on behalf of the appellant, expressed their opinion that the question was simply one of law, which it was in the legitimate province of the magistrate to decide, and that it did not involve any matter of law at all. Mr. Fenwick, the district surveyor's counsel, was not called upon, and the appeal was dismissed with costs.

It should be mentioned that, before the month expired, as given in the magistrate's order, the Local Board of Works sent a gang of workmen and pulled down the building, stacking the materials on the ground; so that the district surveyor was reluctantly brought into court long after his requisition had in reality been complied with, or at all events had been rendered unnecessary.

## BED OF BATH STONE.

A PRACTICAL mason, accustomed all his life to the use of Bath stone, sends us the following remarks:—As to bed, if you look closely into Bath stone, you will see the bed show in a sort of lists, \* of soft and hard, horizontally. The veins, if any, you will observe, run across the bed and up the face of the stone. For all work of heavy nature, and for purposes that require great strength, it is best to put stone bed-way,—say, jamba, cills, arches, columns, caps, and washers.

I have found that coping, plinths, labels, string courses, and cornices, are all better joint-bedded. For this reason, if they lie bed-way, you will see

\* Beds is a Gloucester word, meaning courses or layers. Thus they speak of a list wall, a common mode of building a dell boundary, viz. a foot of dry walling without mortar, and a foot with mortar.

by looking round some of the churches that the soft lists of the beds absorb the damp, and then the frost lifts off the pieces of the work exposed to the weather. I have known many pieces of coping and cornices that in course of years were eaten away. Tracey I have found to be better face-bedded, for this reason,—if it is worked from the bed, the cusps very often drop off; and in some instances I have known them all fall off in working, such is the weakness through the soft lists, always in all freestone.

## THE CHARGE AGAINST MESSRS. PETO, BRASSEY, &amp; BETTS.

STR.—I was so much surprised at the accusation made by Mr. B. Jerrold, against Messrs. Brassey, Peto, & Betts, which appeared in the article upon "Masters and Workmen," in your last number (p. 266), that I felt it my duty—as connected with one of the technical journals—to apply directly to the members of that firm, for the purpose of ascertaining the truth of the accusation. The characters of Messrs. Brassey, Peto, & Betts would almost have warranted the summary rejection of the story Mr. Jerrold told; but as it was made known, I thought it best to take special measures to learn the whole truth with respect to it.

The result of my inquiries has been to convince me that Mr. Jerrold has even circulated to what extent he may in the present excited state of the building trades, to be neither more nor less than a deliberate slander; and I have been requested to meet it with the most distinct contradiction. Unfortunately, the period at which I received the answer to my inquiries has prevented me from noticing the subject with the necessary detail; but, by your permission, I may return to it hereafter.

G. R. BRNELL.

## THE LONDON BUILDING COMPANY.

The first general meeting of shareholders of the London Building Company was held at the Institution, Cleveland-street, Fitzroy-square, on Tuesday evening May 1st. In the directors' report it appeared that the Company had not been supported by the building operatives to the extent they had anticipated, but still that had not deterred them from endeavouring to obtain work, and the opportunity offered of sending in a tender for certain works at Herod Hempstead Church, they had done so. Although there was the lowest estimate for new fittings in deal, it was not the lowest in oak, and the church committee had not yet decided who was to have the contract. The shareholders expressed confidence in the management of the Company, re-elected the directors and the secretary, appointed two auditors to examine the financial statement read to them, and requested that the articles of the Association should be printed and sold at a moderate cost.

## NAVIGATION WORKS ON THE SEVERN.

## INSTALLATION OF CIVIL ENGINEERS.

On April 24, the paper read was an "Account of the Works recently constructed upon the River Severn, at the Upper Lode, near Tewkesbury," by Mr. E. Lender Williams.

The whole of the works constructed, during the past fifteen years, for the improvement of the navigation of the River Severn, between Stourport and Gloucester, were projected in 1841, by Sir William Cubitt.

After a contest, in Parliament, of five years' duration, the requisite powers were obtained; but, owing to the unfavourable state of the money market, the works were not commenced until the autumn of 1856.

The depth of excavation required for the lock-pit was 35 feet, and here some difficulty arose, as was anticipated. Beneath 2 feet of loam, and 16 feet of sound red brick clay, there occurred 14 feet of impure blue limy clay, intermixed with black mud and decayed vegetable matter, in which strong springs of water were met with, and then 4 feet of compact blue limy clay, overlying a thick bed of water-bearing gravel. When the sound upper crust was removed, the semi-fluid mass began to rise in the pit, letting down the clay on each side, and breaking up the whole of the surface. At first it was suggested that the water should be drained off, but the proximity of the river, which surrounded the works on three sides, left little to be hoped for from such an attempt. Relief was therefore sought in another, and, as experience proved, the right direction. Pits were sunk in the line of the east-west wall of the lock forebay, the sides and ends being planked with half timbers, well strutted. As soon as the sound clay was reached, the pits were filled with concrete. The distance between these pits was 20 feet, and the intermediate soil was allowed to remain until the concrete in the adjacent pits was consolidated, when these spaces were also filled with concrete. Thus, the whole of the wall foundations, composed of concrete, 12 feet in width, and 14 feet in depth, were got in. It was expected that this mass would, by its gravity, resist the pressure of the soft soil at the back, especially as the materials lie between the two lines of concrete had not been removed. But as the concrete walls were forced bodily inward, 18 inches on each side, strutting timbers were introduced, to prevent

further movement, whilst an inverted arch concrete, 6 feet thick at the crown, was gradually carried through the whole length of the work upon a similar plan to that adopted in the case of the foundations of the side walls. As the timbers did not seem to be sufficient to prevent inward movement of the sides, during the formation of the inverted arch, counterforts of concrete 10 feet square, and carried 2 feet below the bottom of the side-wall foundations, were introduced at every 12 feet apart. The concrete foundations thus completed contained upwards of 7,500 cubic yards.

## Books Received.

Department of Science and Art: Directory with Regulations for establishing and conducting Science Schools and Classes. London: sold by Chapman & Hall, Piccadilly. 1860.

THIS pamphlet contains a summary of the nature and amount of aid that can be obtained from the Department, with Syllabus of the subjects which certificates to teachers of science are given by the Department, and other useful matter; the whole revised to March, 1860, superseding all former rules, though still subject to revision. It is very desirable that those interested should have precise information on the points here indicated, and this they will find concisely and officially given in the sixpenny pamphlet under notice.

## VARIORUM.

In a tract, titled "The Victoria-bridge at Montreal, Canada: who is entitled to the Credit of its Conception? or a short history of its origin. By Canadian" (King & Co. 63, Queen-street, Cheap-side, printers), it is urged that Mr. Stephenson, though entitled to the credit of executing the bridge, had not the merit of its conception, which is ascribed to the Hon. John Young, of Montreal, and that to Mr. T. C. Keefer, C.E., a native of Canada, is due the merit of demonstrating the entire practicability of accomplishing this great work. The declared purpose of the tract is to enable the Prince of Wales to do justice to all, by his remarks and proceedings as to the bridge when he visits it this summer.—A brief article "On a Carbonate of Lead from Leaden Coffins. By R. V. Tuson, lecturer on Chemistry, at Charing-cross Hospital," has been reprinted from the *Philosophical Magazine*, for April 1860. The interesting points in connection with the substance in question are, that it is anhydrous, contains but a small excess of oxide, and hence differs in composition from other carbonates of lead. It was found, during the search for the remains of John Hunter, that many leaden coffins had been converted, interiorly, all but a thin outer plate or foil, into this carbonate.—In a small pamphlet on the "Advantages of reducing the Hours of the Miner's Labour, and the necessity of Educating the Collier Boys; with Suggestions for the better Inspection and Regulation of Coal-mines, in order to preserve the health and protect the lives of all persons employed in them," printed at the *Leeds Express-Office*, Mr. Richard Bayldon, the author, urges that, on account of the peculiarities and dangers of the miner's occupation, and to prevent all further strikes, lock-outs, and other misanderstandings between miners and their masters, the Legislature ought to step in between them with an Act of Parliament, restricting the hours of their labour to eight hours a day.—English Grammar for the million appears in the shape of "The Penny English Grammar, adapted for the Use of Schools and Private Families." By M. Kavanaugh, author of other grammar-books, and published at 21, Paternoster-row.—Mr. John Plummer, the Kettering operative, has just had published, by Tweddie, 337, Strand, "Some Remarks occasioned by a Pamphlet entitled 'Trades' Unions and Strikes, their Philosophy and Intention.'" The pamphlet referred to is that of Mr. J. T. Dunning, under the title quoted. Mr. Plummer states his views with ability, and remarks that if his fellow-workmen would only strike as determinedly against intemperance, ignorance, and class prejudice, as they do now against any real or alleged grievance, they would be all the better for it.—A third edition of a tract, titled "Plans for the Purification of the River Thames, and the Improvement of the Metropolis. By William White," has been published by Lockwood & Co., Stationers'-hall-court, and others. Two chief features of this plan consist of the deepening of the river

channel with the pavement of its banks; and the engraving of the metropolis by a ring of pipes or canals and reservoirs, for the flushing of the sewers. Cost, the author considers, is a matter of secondary importance, whether it be "three billions or thirteen." He also "considers that he deserves some reward for endeavouring to promote the health and happiness of the 3,000,000 inhabitants of our great city," which reward might assume the shape of "a subscription being raised for him by those whom his plans will benefit, for the talent manifested therein."

Miscellaneous.

THE DUKE OF HAMILTON'S WINDOW IN GLASGOW CATHEDRAL.—The *Glasgow Herald*, in a description of the painted glass window, the work of Munich artists, which has been put up in the north transept of Glasgow Cathedral, as the gift of the Duke of Hamilton, says:—"In artistic style the window harmonizes of course with the great western window lately fitted up by the munificence of the Brothers Baird; but in some important points it is essentially different. In the west window many figures are grouped together in one panel or compartment; but in the transept window each of the six panels into which it is divided by the mullions contains only the figure of an ancient prophet. These are Moses, Isaiah, Jeremiah, Ezekiel, Malachi, and John the Baptist."

MANUFACTURE OF GLASS.—Mr. Balmain, St. Helens, has provisionally specified some improvements in the manufacture of glass and other vitrified substances. The object of the invention is to ensure the removal, from the furnace or pot in which the raw materials for forming glass are placed, of each portion of the glass mixture immediately it is vitrified, and thus to separate it from the unvitrified mass. This object is attained in an open furnace by constructing it with the pots, one horizontal or nearly so, on which the raw material is introduced, and the other tilting it (with an inclination of about 1 foot in 6 feet, more or less), which removes the material as fast as it fluxes, and perfectly vitrifies it at the time it has run from 6 to 8 feet. The advantages gained, it is said, are an economy of fuel and labour, and an improvement in the quality of the glass.

TYE & ANDREW'S SINK TRAP.—The patentees desire it to be understood that the grate is intended to be a fixture (a very desirable thing, of course), and they explain that the bottom of the trap is provided with a screw boss, so that the inside is always accessible to the workman. We have an excellent character of the trap from those who have had it in use.

LONDON AND COUNTY BANK COMPETITION.—With reference to a paragraph last week mentioning the intended rebuilding of the company's premises in Lombard-street, the secretary, Mr. R. P. Nichols, requests us to say that with the exception of a house bought two years since, the whole of the premises has been held by the bank for the last fifteen years, and that although the two buildings named have been invited to furnish designs in conjunction with Mr. C. O. Parnell, the approved plan will be carried out under the superintendance of the last-named gentleman, as the company's architect.

DESTRUCTION OF THE SALOON'S HOME, LIVERPOOL.—This fine building has been completely destroyed by a fire which broke out on Sunday morning, and in the course of a few hours left little more standing than the outside walls.

THE GREAT BELL, ITS SUCCESSOR, AND ITS REPUTATION.—It appears that Dr. Percy has made his report on the composition of the great bell, of which Ben the second,—at Westminster Palace, to the Board of Works, while Mr. Cowper has examined the House of Commons that the bell is cracked seriously in several places. I therefore venture to assert confidently that it is in vain to present any proposals for "doctoring" the hands of poor Ben, for science and experiments are shown, again and again, that there is no possibility of restoring a bell in such a case so as to satisfy the musical ear. The best course to pursue will be to give proper instructions to our eminent founder to produce a new bell from wrought metal, for the quality of which he should be held responsible. In the mean time, as I have before suggested,—the chimes being silent,—let a clock strike the hours upon the heaviest quarter-bell, which ought to emit a deeper note than that of the great bell at the Abbey.

THOMAS WALESBY.

THE DRINKING-FOUNTAIN MOVEMENT.—The Winchester Committee for promoting Drinking Fountains are preparing to set three in operation as soon as circumstances permit—one just erected opposite the Eagle, near the railway; one near the Westgate, erected by the late mayor (Mr. Hutchinson); and one at the south entrance to St. Thomas's Church, Southgate-street, a gift of the late rector, the Rev. G. C. Cubitt.—It is intended to erect a drinking fountain at Mumps (Oldham), in memory of the late Mr. G. Barlow, mayor of Oldham. The fountain is designed by Mr. Wroe, of Messrs. Wolstenhulme & Rye's foundry, Lower Moor, and the principal expense has been borne by him. The fountain is to be a frame 2 feet 6 inches high, and 2 feet 6 inches square, placed on the top of a stone pedestal, approached by steps. Four pillars will rise from the frame. In the centre of the pillars will be placed a Grecian vase, and they will support a dome with an ornamental top.—The Bradford band of Hope Union are about to erect a drinking-fountain opposite the Grammar School, from a design made by Mr. T. C. Hope, architect. The design is the same as the one Mr. Hope made for the Beaumont fountain in competition with Mr. Milnes.—The first drinking-fountain in Duferriem is in course of erection at the corner of Queen Anne-street Church. It is a gift of Dr. Dewar, of Aberdeen. Public wells here have lately been furnished with ladders.

THE WOLVERHAMPTON SCHOOL OF ART.—A public meeting was to be held at Wolverhampton on Friday before last, to determine whether the School of Art of that town should be maintained or be closed for want of funds, but it proved an utter failure: not more than thirteen persons could be prevailed upon to assemble, and it was decided that no meeting could be held. The mayor, however, said he thought it was disgraceful that, in a large town like Wolverhampton, supported as it was by manufacturers, the School of Art should be allowed to go down at a time when it was more than ever necessary, owing to the expected competition with France. The only course he saw open to them was for a committee, as had been proposed, to canvas the town for sufficient funds to keep up the school.

THE CENSUS.—The observations we made in respect of the advantages to be expected from the census, and the increased powers needed by those who are to be employed, have met with general acceptance. The *Covenanter Standard*, after quoting them, adds:—"In taking the census, everything depends on the intelligence and efficiency of the persons employed for that purpose; and unless a better rate of remuneration is offered than the pittance paid on former occasions, we do not believe duly-qualified persons will be obtained for the task. It should be remembered that 'the army of enumerators' are only required for a day or two's employment of a peculiar description, to be promptly and punctually performed; and eligible persons, capable to perform the duty, will not turn out from their ordinary occupations without an adequate recompense for such special services."

ARTISTIC COPYRIGHT AMENDMENT ACT.—A deputation from the Society of Arts, consisting of the Right Hon. S. Walpole, M.P.; Mr. W. E. Wynne, M.P.; Mr. R. Monckton Milnes, M.P.; Mr. W. Coningham, M.P.; the Hon. Aug. Liddell, M.P.; the Hon. Arthur Kinnaird, M.P.; Mr. W. Stirling, M.P.; Mr. J. Walter, M.P.; Sir C. L. Eastlake, P.R.A.; Sir Thomas Phillips (Chairman of Council of the Society of Arts), Mr. Frederick Tayler (President of the Old Water-Colour Society), Mr. H. Warren (President of the New Water-Colour Society), Sir E. Landseer, R.A.; Mr. W. Mulready, R.A.; Mr. S. A. Hart, R.A.; Mr. E. M. Ward, R.A.; Mr. W. Dyce, R.A.; Mr. R. Redgrave, R.A.; Mr. G. T. Doo, R.A.; Mr. A. Elmore, R.A.; Mr. W. P. Frith, R.A.; Mr. J. R. Herbert, R.A.; Mr. J. F. Lewis, A.R.A.; Mr. H. Horsley, A.R.A.; Mr. John Bell, Mr. Jas. Holland, Mr. F. Imbert, Mr. M. Noble, Mr. Edwin Field, Mr. P. Le Neve Foster (Vice-President of the Photographic Society), Mr. J. Leighton, Mr. Jas. Fahey, Mr. G. Godwin, F.R.S.; Mr. F. W. Burton, Mr. J. J. Jenkins (Secretary to the Old Water-Colour Society), Mr. C. Wentworth Dilke, Mr. A. Cluade, F.R.S.; Mr. Alexander Redgrave, Mr. J. M. Dodd, and Mr. W. C. T. Dolson, had an interview with Viscount Palmerston, upon the subject of the amendment of the law of artistic copyright, on Saturday, the 25th ult. The deputation submitted the draft of a bill, and sought to undertake a promise that the Government would undertake to bring it in, or at any rate give it their support. The Prime Minister of course promised consideration.

HER MAJESTY'S THEATRE.—If the new opera of "Almina," by Signor Campana, should be again produced, the scenery and costume should be made to correspond with the intimation that the action takes place in Pisa, "in the twelfth century;" fifteenth and sixteenth century architecture and dresses do not accord with this. We mention it rather for the sake of other operas than of "Almina," which, although it contains several very charming morsels, can scarcely become a permanent favourite. At her Majesty's Theatre, everything that is done should at any rate be synchronous. Preparations are being made for the production of "Oberon," which is to be the grand work of the season, and as this will be brought out under the direction of Mr. Plancké, with Mr. Beverley for scene-painter, we may expect that the mounting will be worthy of the music, and the result, what it should be, a perfect whole.

THE PERAMBUCO RAILWAY.—It is to be regretted that matters seem to be still in an unsatisfactory state with regard to this line of Brazilian railway. On the 26th of November last we alluded to the misunderstandings between the company's engineer and the original contractor, Mr. Furness, and the law proceedings there resulting. Since then agreements have been entered into, it appears, with Messrs. Waring, the present contractors, under which, according to Mr. Daniell, Q.C., the contractors have become managing partners in the company; and the engineer-in-chief, Mr. Penistone, a sub-painter, with, according to Mr. J. Baylis, C.E., "one-half the company's share of the profits." But while the prospective proceeds are thus disposed of, it unfortunately appears, from a printed statement by Mr. Baylis, that the works are in a most unsatisfactory state. Those of the second section, on which, according to this statement, an expenditure of 100,000*l.* has already been incurred on an estimate of 53,044*l.*, are thus alluded to by Mr. Baylis:—"Of ninety-one embankments not more than thirty-four are of the required width; of ninety cuttings, not more than fifty-seven are of the required width; of fifteen river and other bridges, required of the contractor, not more than three permanent bridges have been erected, and the principal one is already failing; of fifty-four culverts (with openings from 2 feet to 8 feet) required of the contractor, not more than fourteen have been constructed; of 16½ miles in length of ballasting, there is no ballast whatever for the permanent way, except on one mile and a half, and this is not finished; of 16½ miles of permanent way, only 8½ miles are laid in any shape. A great portion of this length will have to be altered, or taken up and relaid. . . . Of the tunnel [the key of the position] and 'the heaviest work on the section' not one yard is finished!"

BRISBANE CHURCH.—Sir, Mr. Burges is undoubtedly a far better architect than geographer, or he would not have labelled his drawings in the Architectural Exhibition, as intended for "Brisbane, South Australia," much less have followed to the mistake by his letter in your last number. Brisbane, in about latitude 27° S., is the capital and historic of the newly-erected colony of Queensland, in the north-eastern Australia, and is distant some 1,300 miles from Adelaide, the capital of South Australia. The climate is not, strictly speaking, tropical, but like that of Australia, generally somewhat anomalous, although so much farther north, that is, nearer the tropic than Melbourne and Sydney. Its summer heat is probably less, the country lying high, and being tempered by the sea-breezes, and also from the circumstance that its rainy season is in the summer, and not in the winter, which last season is generally dry and serene. Melbourne I should judge to be occasionally one of the hottest places on earth. I have noticed in late papers that during the past summer, even in a favourable position, the thermometer has repeatedly risen to the almost unparalleled height of 125° in the shade, and in the interior the thermometer has been known to mark even a greater height: such heat, occasioned by the hot winds blowing from a desert interior, is not generally of long duration, and is accompanied by an extraordinarily electric state of the atmosphere. A similar high temperature, and arising from the same cause, has been noticed by travellers in the oases of the North of Africa. Sydney, for the Parliament Houses of which city designs are now required in competition, has a climate resembling that of Naples, or, perhaps, more nearly, that of Algeria. In Sydney, the thermometer rarely reaches the freezing point. All parts of Australia are subject to occasional heavy rains, for which provision should be made in the plans.—AUSTRALIAN.

TEMPORARY CHAPELS, SCHOOLS, &c.—At the annual meeting of the Coventry Archidiaconal Church Extension Society, recently held, some allusions were made, in the report of the general committee, to the subject of temporary buildings for churches, schools, &c. Mr. Robinson, the Society's architect, is therein reported to have stated, as to the comparative merits of iron, zinc, and wooden churches, that "the cost of iron churches would reach the considerable sum of 2*l.* and upwards, per sitting, and would fall but little short of the cost of permanent brick and stone buildings; and that the apparent facility of removal would be doubtful. Wooden churches, on the contrary, might be supplied at the cost of 1*l.* per sitting, while the expense of removal would not exceed 2*s.* per sitting." After the reading of the report, the archdeacon referred to the matter, by stating that their architect had provided a model for such erections, which had been approved of by the Bishop of London, as especially useful in mining, manufacturing, and agricultural, though not in metropolitan districts. For large buildings the cost, according to the archdeacon, would be 15*s.* a sitting.

GAS.—A new gas company is about to be formed in Glasgow, to supply gas at 3*s.* 4*d.* per 1,000 cubic feet. It is incorporated under the Limited Liability Act, in shares of 1*l.* each.

EXETER HALL AND ITS APPROACHES.—The shareholders of this building, at their last annual meeting, passed a strong resolution for the purpose of enabling the directors at once to adopt and carry out the best plan for making more convenient the entrances to the large hall. It was stated at the meeting that nine plans had been submitted, none of which were suitable. Let the directors advertise for plans; they would soon have such a number to select from that the only difficulty would be, of many equally good, to choose the best.—A SHAREHOLDER.

THE BROMPTON MUSEUM.—On Tuesday evening, Dr. Lankester delivered a lecture on "The Animal Product Collection," in the Museum, treating of bone and ivory. He described the nature of the skeleton of vertebrate animals; illustrated the uses of bone, the nature of ivory, and then its various applications.

TENDERS

For Unitarian chapel and schools, Broad-street, Birmingham. Mr. John J. Batemas, architect:—

Briggs	£11,252 0 0
Bartley	19,750 0 0
Smith	10,700 0 0
Cresswell	10,622 0 0
Hartwick	10,362 0 0
Branson & Gwyther (accept)	19,474 0 0

For St. Ann's church and parsonage, Hanger-lane, Stamford-hill. Mr. J. Barry, architect:—

Kelk	£19,970 0 0
Piper	9,750 0 0
Holland	9,715 0 0
Ashby	9,397 0 0
Dove Brothers	8,445 0 0
Myers	8,893 0 0

For block No. 4, Hampstead sewerage:—

Moxon	£5,300 0 0
Dethick	5,100 0 0
Thurst	4,950 0 0
Abbott & Hopwood	4,652 0 0
Clewser	4,598 0 0
Batterbury	4,290 0 0
Hill (accepted)	4,100 0 0

For sewers for the vestry of St. John, Hampstead. Mr. John Douglas, architect:—

Moxon	£5,300 0 0
Dethick	5,100 0 0
Thurst	4,950 0 0
Abbott & Co.	4,652 0 0
Coker	4,508 0 0
Batterbury	4,290 0 0
Hill (accepted)	4,115 0 0

For new church and parsonage at Goff's Oak, Cheshent. Mr. W. G. Habershon, architect:—

Porter	£4,251 0 0
Patman	4,162 0 0
Terrant	3,600 0 0
Secrave	3,834 0 0
Plooyman	3,782 0 0
Howley	3,777 0 0
Croven	3,466 0 0
Crabing	3,498 0 0
Haynes	3,445 0 0
Sanders	3,250 0 0
Clart	3,170 0 0

For additions to factory, new engine-house, &c. to Messrs. Nettifield & Chamberlain's Patent Screw Works, Smethwick, near Birmingham:—

	Engine-house.	Total.
Hardwick & Son	£3,580 0 0	£4,473 0 0
Cresswell	3,420 0 0	4,050 0 0
Pashley	3,470 0 0	480 0 0
Briggs	3,430 0 0	564 0 0
Webb & Sons	3,355 0 0	477 0 0

For the erection of offices and warehouse, No. 93, Hargrave, Great Tower-street, for Mr. Hampshire. Messrs. John Young & Son, architects. Quantities furnished by Mr. Shopper:—

Mansfield & Son	£2,778 0 0
Marsland & Son	2,585 0 0
Lawrence & Sons	2,537 0 0
Little & Son	2,534 0 0
Ashby & Son	2,398 0 0
Corder	2,406 0 0
Asford & Co.	2,482 0 0
Piper & Son	2,458 0 0
Browne & Robinson	2,394 0 0
Hart	2,319 0 0
Knight (accepted)	1,846 0 0

For severage of Conservative Land Society's Kentish-town estate. Mr. James Wylson, engineer. Quantities not supplied:—

Cole	£2,600 0 0
Barnes	2,547 11 6
Mann	2,412 0 0
Pound	2,392 0 0
Abbott & Hopwood	2,340 0 0
Hare	2,306 0 0
Renmore (accepted)	2,250 0 0
Batterbury	2,200 0 0
Rogers	2,085 10 0

For a Baptist chapel, Loughton, Essex. Mr. D'Oyley, architect:—

Richardson	£2,465 0 0
Hill (Winton)	2,387 0 0
Blackburn	2,368 0 0
Rivett	2,093 0 0
Bull	2,064 0 0
Clown	1,960 0 0
Hill (Whitechapel)	1,955 0 0
Pugh	1,645 0 0

For building two villas on the Western Elms estate, at Reading. Messrs. Cooper & Goulding, Reading, architects. Quantities supplied:—

Shooper	£1,662 0 0
Shepherd	1,719 0 0
Wally	1,672 0 0
Orton & Child	1,660 0 0
Woodroffe	1,659 0 0

For dwelling-house and offices on the Town Close estate, Norwich, for Mr. R. White. Messrs. Benest & Newson, architects:—

Boardman	£1,820 0 0
Ling	1,775 10 0
Bishop	1,667 10 0
Worran	1,648 15 0
Norfor	1,657 0 0
Lacey	1,600 0 0
Mims & Foyson	1,544 10 0
Plummer & Bloom	1,495 0 0
Browne & Bulley	1,477 0 0
Bocking	1,460 0 0
Sobbs & Barrell	1,467 0 0
Wright	1,450 0 0
Moore	1,370 0 0

For timber siding for coals at the Blackwall Railway, Shadwell. Mr. W. Tite, architect:—

Jay	£1,650 0 0
Ashby & Son	1,572 0 0
Lawrence & Sons	1,559 0 0
Piper & Son	1,372 0 0
Brass	1,370 0 0

For addition of a chancel and other works to the church of St. Barnabas, West Kensington, for the Rev. Dr. Francis Hessey. Mr. Thomas Johnson, architect. Quantities by Mr. Trege:—

Cowland	£1,447 0 0
M Lennan & Bird	1,370 0 0
Mathews	1,250 0 0
Porter	1,200 0 0
Cooper	1,192 3 0
Harding	1,185 0 0
Rudkin	1,099 0 0
Davis	757 15 0

For additions and alterations and other works at Manor House, Daer Park, Lez, Chichester, for Mr. G. H. Haskeombe. Mr. F. F. Thome, architect:—

Thomas	1,373 0 0
Myers	1,364 0 0
Woodroffe	1,291 12 0
Humphries & Luxford	1,176 18 0
Marsland & Son	1,097 0 0
Pollock & M'Lennan	1,066 0 0
Francis (accepted)	1,069 0 0
Pickard & Co.	995 0 0
Riley	880 0 0

For Rectory-house, Pakefield, Suffolk. Messrs. Benest & Newton, architects, Norwich:—

Nurfor	£1,258 0 0
Johnson	1,250 0 0
Boardman	1,160 0 0
Rix & Sparham	1,115 0 0
Marsland & Son	1,050 0 0
Rix & Frost	1,049 0 0

For altering and repairing premises, No. 66, Welbeck-street, for Mr. H. Hayward. Mr. C. Zalles, architect:—

Clemence	£1,087 0 0
Howard	997 0 0
Hallett	925 0 0
Hanson	894 0 0
Batterbury	882 0 0
Arcey & Bellingham	830 0 0
Macey	818 0 0
Mansfield & Sons (too late)	915 0 0

For villa at Pevalk Park, near Plymouth and Devonport. Mr. Alfred Worman, architect:—

Jenkin	£1,629 0 0
Condy	925 0 0
King	963 15 0
Hosking	904 14 0
Weary	920 0 0
Dugle & Martin (accepted)	860 0 0

For the erection of a detached villa, for Mr. W. Angell, at Backhurst-hill, Essex. Mr. J. H. Rowley, architect:—

Ashton	£860 0 0
Cave	792 0 0
Humphreys & Son	775 0 0
Stowell	735 16 0
Rivett	730 0 0
Salmon	696 10 0
Goodman (accepted)	653 0 0

For an infant school in connection with the British School, Plymouth. Mr. James Hine, architect:—

Elliott	£469 0 0
Call & Pethick	440 5 0
Clarke	375 0 0
Adams & Son	468 0 0
Stilson	460 0 0
Finch (accepted)	433 0 0

For two new houses in the Woodbridge-road, Guildford, for Mr. Hyde. Mr. Peak, architect. Quantities supplied:—

Nye	£457 0 0
Beagley	438 11 0
Smith (James)	436 14 0
Pollard	433 10 0
Lea, Messrs.	433 0 0
Swayze	429 10 0
Garnett	425 0 0
Bowme & Robinson	410 5 0
Mrs. Mason & Son	413 0 0
Strudwick	394 0 0
Smith (Charles)	367 0 0

For rebuilding party wall at No. 131, Wool-street, Cheapside, for Mr. Rawson. Messrs. John Young & Son, architects:—

Asford & Co.	£456 0 0
Bowme & Robinson	430 5 0
Lawrence & Sons	418 0 0
Lark & Son	398 0 0
Chessum	330 0 0

For alterations at the Government Emigration Depot, at Stonehouse, Devon. Mr. Alfred Norman, architect:—

Comly	£200 0 0
Dugle & Martin	235 0 0
Threveston & Denton	307 0 0
Call & Pethick (accepted)	214 0 0

TO CORRESPONDENTS.

The Granite Composition.—In reply to a correspondent who desires to know the result of the application of the "granite composition" to the roof of the clock tower at Westminster, and to the other roofs of the building, we may say that some who have offered plans there consider it has been perfectly successful. upwards of 40,000 yards have been used there with it, and many works elsewhere. They have found no alteration whatever in the material since its application. *Enlarged Particulars in stone*—I shall be much obliged if one of your readers will inform me of a preparation for filling in wells patented in stone work (similar to those in St. Margaret's Church, Wells street) that will stand the weather.—G. F.

B. F.—W. C.—W. F. (the decay is not in the "less exposed" situation)—Ernest (might get into difficulty by returning better written and get sent)—J. C.—W. G. H.—T. C. B.—J. H. B.—T. L.—Another Correspondent.—J. R. W.—J. C. & C.—H. C. A.—F. E.—K. (write beyond our province). J. P.—A. C.—C. K. (shall be glad to see tracing or photograph). J. M.—H. & H. (shall hear from us).

Stonework from stone.—I shall be much obliged if one of your readers will inform me of a preparation for filling in wells patented in stone work (similar to those in St. Margaret's Church, Wells street) that will stand the weather.—G. F.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher." Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

In Re Cony, Builder, a Bankrupt, Kilburn. MESSRS. LEREW & LEREW will SELL BY AUCTION, on the PREMISES, Springfield-road, Kilburn, on MONDAY, MAY 7th, at TWELVE, by order of the Assignees, the CAPITAL MATERIALS and JOINERS' WORK, 4000 Reeds, cut and uncut, and ironing, laths, drain pipes, scaffolding, nails, and sundries.—May be viewed the Saturday prior to the sale, when catalogue can be had on the Premises; of W. W. WHITEHEAD, Esq. Assignee, 2, Beaulieu-street; and of the Auctioneers, 2, Cadogan-street, N.W. and 35, Chancery-lane, W.C.

IN BANKRUPTCY.—KENTISH TOWN. MESSRS. LEREW & LEREW will SELL BY AUCTION, on the PREMISES, Crossham-road, close to the turnpike, in the high road, on TUESDAY, MAY 8th, at TWELVE, by order of the Assignees of Henry Cony, Builder, a bankrupt, a quantity of MATERIALS and JOINERS' WORK, about 1000 Reeds, cut and uncut, and ironing, laths, drain pipes, scaffolding, nails, and sundries.—May be viewed the Saturday prior to the sale, when catalogue can be had on the Premises; of W. W. WHITEHEAD, Esq. Assignee, 2, Beaulieu-street; and of the Auctioneers, 2, Cadogan-street, N.W. and 35, Chancery-lane, W.C.

KENSAL NEW TOWN, near the GAS WORKS. MESSRS. LEREW & LEREW will SELL BY AUCTION, on the PREMISES, above, on MONDAY, MAY 14th, at TWELVE, about 1200 Yellow, white, and pine PLANKS, DEALS, and BATTENS; 100 squares of prepared flooring, 5000 feet of ironing, laths, drain pipes, scaffolding, nails, and sundries, and other stores, 1000 pieces paperhanging, scaffolding, painting, and some excellent old materials in long list starting, and sundries.—Auction Office, 2, Cadogan-street, Newport-road, and 35, Chancery-lane, W.C.

GOVERNMENT STORES, WESTMINSTER. MESSRS. EVERSFIELD & HORNE are instructed by the Commissioners of Her Majesty's Works and Buildings, to sell BY AUCTION, on the PREMISES, above, on MONDAY, MAY 14th, at TWELVE, about 1200 Yellow, white, and pine PLANKS, DEALS, and BATTENS; 100 squares of prepared flooring, 5000 feet of ironing, laths, drain pipes, scaffolding, nails, and sundries, and other stores, 1000 pieces paperhanging, scaffolding, painting, and some excellent old materials in long list starting, and sundries.—Auction Office, 2, Cadogan-street, Newport-road, and 35, Chancery-lane, W.C.

# The Builder.

VOL. XVIII.—No. 901.

The Royal Academy of Arts.



Y hanging nearly 300 pictures fewer than usual (the whole number of works admitted this year is 1,006), all that are exhibited are better seen, and the artists whose works are there praise the arrangements. What those artists whose works have been returned say about it,—whose hopes for the year are quenched,—whose prospects, in some cases, of actual subsistence are darkened,—is another matter. Hung, ever so badly, and named in the catalogue, there is just a possibility that a picture may be espied and bought; returned to the artist's own room, the amount of chance, in nine cases out of ten, is reduced to *nil*. The Academicians are doubtless perfectly well aware of this; and, finding that the Government will do nothing in respect of a

new building and increased accommodation, may not be sorry to make the public outcry greater. At the dinner, which took place as usual on the Saturday immediately before the first Monday in May, Sir Charles Eastlake, the president, in proposing "The Health of her Majesty's Ministers," referred to the position of the Academy in this respect:—

"The exertions of the artists," he said, "have been great, and it is only to be regretted that all the meritorious works included in this year's display could not be placed in the situations they deserve. Indeed, some we have been reluctantly compelled to exclude for no other reason than that fit places could not be found for them. I must do the members of the Royal Academy the justice to say that some of their own works have been this year withdrawn to make room for others; and it is satisfactory, amid the disappointments which, under the circumstances, are unavoidable, to see works by contributors occupying those prominent places which by a fair and acknowledged privilege are usually assigned to members. From the experience of the present exhibition alone, it is plain that the additional space which the Academy so much wants would be a boon to the contributors, and it is on this account the more earnestly desired. The members of the Royal Academy are sincerely anxious to render this institution as useful as possible in conformity with the objects of its foundation. They, too, are prepared to set their house in order; but before they can do so it is essential that they should know, without a figure, where and what their house is to be."

Something, it is to be hoped, will be shortly done, and that something be the best thing, to aid the progress of the arts, by placing the Academy on a sounder footing, and providing sufficient accommodation for an annual exhibition of the works of artists. The Academy does not march with the age; it stands too much on its dignity; pool-poos the press; makes no recognition of its real friends, and, as a matter of course, has fewer out of doors than it would otherwise be entitled to expect. It is understood that a different feeling now prevails with many of its members, and that there is a disposition to movement more in accordance with the spirit of the times. We earnestly desire to see this manifested. We are of those who acknowledge on the part of the public a debt of gratitude to the Academy in spite of its shortcomings, and desire to see

it take its proper place in public estimation by a liberal, far-seeing, and enlightened management.

When Sir Charles proposed the health of the visitors, he spoke of the love for art now growing up, and contrasted it with the feeling dominant in a past time.

"A former race of critics," he continued, "might almost seem to have been influenced by a saying of Madame de Staël, 'Taste teaches us what to avoid,' a maxim which might easily lead to universal disapprobation and exclusion. The slightly altered but more liberal form, 'Taste teaches us what to prefer,' which is more consonant to the present disposition of the friends of art, implies, indeed, selection, but at the same time a willingness to select. This reading may be further recommended by a remark of Lord Bacon, though he is speaking of the physical sense. 'Dees,' says that philosopher, 'prefer one flower to another, and therefore have taste.' There can be no doubt that the present impulse, which is taking its own course, requiring neither control nor stimulus, is of a salutary tendency in a national point of view. It may be true that the increased and increasing prosperity of the country, which supposes the demand for superfluities, is one main cause of this favourable disposition; but, granting that the productions of taste are among the superfluities of civilized existence, it may still be admitted that they are among the worthiest and most eligible of that class. Together with abundance, expenditure, justifiable or not, will always exist; and, this being assumed, it is satisfactory to find that a portion of this redundant opulence is employed on so legitimate and so defensible an object as art."

He justly urged, as to the Fine Arts, that both in their material and moral uses they can be, and are, greatly subservient to the work of education, and that their humanizing tendencies are by no means confined to those who can command their productions, but that they exercise an increasing and unmistakable influence on the habits and tastes of the lower classes.

The president, in proposing the toast, spoke of the visitors as "the representatives of all enlightened friends of art, who directly or indirectly contribute to its promotion." It would give a curious result to analyze the grounds on which the invitations are given, and to see how far the principle here suggested by the president is kept in view in sending them. However, let that pass just now, and let us add to this brief allusion to the dinner that the president gave amongst the toasts "The Royal Institute of British Architects, and the health of its president, Mr. Cockerell." The fact, he said, that Mr. Cockerell is a member of the Royal Academy, need not deter me from paying respect to one who has been most worthily selected to fill a distinguished office. Indeed, that selection connects in an honourable manner the two societies, and represents the amicable relation which should subsist between institutions which, in different ways, but with equal zeal, are desirous of promoting the best interests of the Fine Arts in this country.

Mr. Cockerell, in acknowledging the honour of the toast from such a company, said, with feeling, that, equally with the Royal Academy, engaged to record to future times the spirit, the taste, and the glory of our great country in their own day, the Institute of Architects have need of those encouragements which such a distinction implies, and acknowledge it with gratitude.

A few words now as to the general exhibition. It is undeniably good. We should not place it so far in merit beyond those of previous years as some are disposed to do, but it is certain that it comprises a large number of sound and admirable works, and several of very great excellence and beauty. Beginning at the beginning for a mere skin,—No. 8, "St. John leading Home his adopted Mother," W. Dyce, R.A., although a little too much like a picture of a picture, is a work of great merit, growing on the spectator with lengthened observation. The same able artist's (141) "Pegwell Bay, Kent,—a Recollection of October 3, 1858," is exceedingly charming. It should rather be called, "In recollection," Su-

minute a piece (withal so effective), must surely have been painted on the spot. No. 22, "Whose Bread is on the Waters," J. C. Hook, R.A., is one of four by this artist, which, following in the path lately taken by him, will increase the reputation that path has led to. No. 29, "The Black Brunswickers," J. E. Millais, A. (one black Brunswicker seeking to get away from his lady-love who would detain him), is a noble picture, free from eccentricity, and powerful in expression. David Roberts, R.A., is very strong; 49, the first we come to, "The Piazza of San Mark, Venice," is not the best he has sent, but is, nevertheless, very charming. His view of the "Coliseum," No. 286, and the "Interior of the Cathedral of Pisa" (212), though not pretending to the finish of some of his earlier works, are full of grace and beauty. In 58, "The Marriage of the Princess Royal," Mr. J. Phillip, R.A., has achieved a triumph over a difficulty. It is the best picture of its class that has been painted in England in modern times. The bridegroom is made too old, otherwise the likenesses are also very good. His diploma picture (168), "Prayer," is a striking piece of colour. Mr. Ansdell has thrown into 59, "The Lost Shepherd," what is wanting in some of his pictures, sentiment and feeling. It is a beautiful, yet painful work (81) "Die Heimkehr," W. C. T. Dobson, A., is more pleasing than his larger picture; and we should say the same of his "Plough," 234, and 284, "Emilie aus Görwitz,"—a charmingly painted head.

Sir Edwin Landseer's large picture (106), "Flood in the Highlands," is more remarkable when examined in detail than for its general effect. It is spotty and confused. Few would discover for themselves, that the distracted and life-threatened family are assembled on the roof of their cabin. Like many other pictures in the present exhibition, it is powerfully painful. This is the case with Mr. Solomon's "Bridge of Sighs" picture, No. 478, and Mr. Elmore's fine work, 153, "The Tuileries, 20th June, 1792," which with all its excellence would be unbearable but for the one young girl in the centre of the brutal mob, whom the queen's words have softened.

Mr. E. W. Cooke, A., has some beautiful pictures, especially 102, "Bella Venezia," and 248, "H.M.'s Ship Terror in the Ice of Frozen Strait," 123, "Mary," according to St. Luke, J. R. Herbert, R.A., is a noticeable picture. The hands of the mother, in Mr. Cope's "Evening Prayer," are exquisitely painted, but the feet of the child, and perhaps some other parts, are hard and woody. Mr. Frith's picture, "Claude Duval," 162, will be less popular than his "Dearly Day," but is nevertheless a most attractive work of art. The frightened lady essaying to dance the coranto with the highwaymen, as a ransom for her money, is exquisitely treated. The Art-Union of London have arranged to engrave this picture for the subscribers of a future year. Before this is done, however, the fourth wheel of the carriage, at present wanting, should be painted in. 223, "A Volunteer," H. O'Neil, A., shows a sailor going off from a raft to take a rope to shore, so to save if he may be his shipwrecked companions. With much in it to praise, the picture will not achieve the popularity of "Eastward, Ho!" which first gave the artist a real hold on the public. 257, "His only Pair," T. Faed, is full of sunlight and beauty. 275, "Scene from Taming of the Shrew," A. Egg, A., has life and vigour, but is injured by the ugly straight line of the curtain, and the general redness of tone. Mr. Goodall gives one result of his recent travels, 295, "Early Morning in the Wilderness of Shur," doubtless very true in its details. Leighton, from whom much was expected, exhibits but one small landscape, "Capri—Sunrise," 322, a characteristic indication; and Mr. Cropsey sends three excellent Isle of Wight studies, Nos. 394, 479, and 481, very carefully painted. 360, "The Hedger," by J. Brett, is a most elaborate piece of painting. 367, "The General Post-office, One Minute to Six," G. E. Hicks, has much character; and 409, by the late F. Stone, A., is one of the best of his works. "Atop of the Hill," J. T. Linnell, No. 451, is a brilliant landscape.

The ladies are well represented: we would particularly mention the Miss Mutries, for their various exquisite contributions; 256, "Italy," Madame Jerichau; 269, "Peg Wofington's Visit to Triplett"; 334, "The First Step in Life." Mrs. E. M. Ward; and 403, "The Governess," Miss Osborn; and having said thus much, we must content ourselves with mentioning for admiration, 33, "The Strayed Flock," R. Redgrave, R.A.; 71, Vesuvius, and Part of the Bay of Naples," C. Stanfield, R.A.; 87, "Showing a Preference," J. C. Horsley, A.; 88, "A Moorland Queen," and 526, "A Forest King," both by A. MacCallum; 100, "St. Paul's, from London Bridge," H. Dawson; Sant's "Little Red Riding Hood," 552; 251, "The Sword of the Lord and of Gideon," M. Stone; 455, "Never More," P. H. Calderon; and 461, a study of "Serpentine and Porphyritic Rocks," by J. G. Naisb.

In portraiture, Mr. J. P. Knight, R.A., is very strong, having several admirable works. The veteran Pickersgill has also some good heads; and we will not omit mention of "The Duke of Argyll," by G. F. Watts (347).

#### The Architectural Drawings.

Following hard upon our notices of the exhibition in Conduit-street, comes this of the Academy—regarded with less interest than formerly, for the works presented illustrative of architectural art. Whilst giving, as we hope we have given, efficient support to the institution maintained by the profession, we have never ceased to advocate the continuance of the association between the arts, which is the fundamental principle of the Royal Academy. In doing this we have not forgotten that there are some points of distinction between those arts, and that injury may have accrued in our own art at one time, from the practice of architecture by the artist-painter. Seeing, however, that sad injury has resulted through causes that are to be understood, and which, after the modern pursuit of aesthetics, need not again operate; that each other of the arts is different from the rest, in field and language, though there be the general unity of art; and that the fact of architecture being an art, requires to be kept in the mind of the public by every available means, we have reason for the expression of our regret at the position which architecture occupies both in the schools of the Academy and the annual display by which the public mind is to a considerable extent formed on the subject of art in general.

The undemonstrative arrangement of architecture, on the occasion of the exhibition, so much complained of during recent years, is maintained, inasmuch as there is no clearly distinct location of architectural drawings, and no heading in the catalogue for our art, though there is one of "sculpture." But the architectural drawings now are separated from oil paintings. The majority are placed in the room known as the Miniature Room, where they are at least associated with works in, if we may so speak, vehicular harmony with them. Here they occupy one side of the room, and so much of one end as the doorway allows. Therefore, of seventy-three drawings which there are, to be called architectural, in this room, and which include the usual number of representations, and some of them indifferent ones, of old buildings,—more than half are placed where it is impossible to do justice to them or see them. Amongst these are works, perhaps the most important of all from subject. There are, however, this year, on the walls of the corridor at the top of the stairs, thirty-one other works; so that there are 104 drawings in all, which may be considered open to present notice. The architectural subjects by David Roberts, E. W. Cooke, and others, in oil vehicle, should be alluded to here; though they have been named by us, with the works with which they are placed. The drawings in the corridor have some advantages of position for being seen: though an inspection of them, under the circumstances, may be chiefly resultant in a lesson of the difficulty of ventilating, whilst avoiding cold and dust-charged drafts. Ventilation, we should here say, certainly is this year better than usual in the principal rooms; but the dust is excessive, and must seriously injure the paintings. The crowd on Monday was greater than ever: of course it was scarcely possible to see any of the chief pictures; and so long as the Academy continues in its present habitation, neither can architecture be duly treated, nor will any "work of wit," or large picture on the line, be "read" and seen "with the same spirit" that its author painted.

Amongst the architectural drawings there are several, the absence of which from the Architectural Exhibition in Conduit-street must be regretted. Designs for the Manchester Assize Courts are to be found in each exhibition; and a similar dissociation of competition designs for other works exists. Some of the drawings this year in Trafalgar-square, and probably the best, are, we have said, valueless as placed; and works as important as those shown have been rejected, which could have been exhibited and would have been somewhat prized in Conduit-street. Therefore, whilst hoping that the Royal Academy display of architectural drawings may continue, or rather be improved, we trust that some arrangement may be hit upon by which each institution may be maintained without injuring to some extent the other. There is this further defect in the illustration of architecture at the Academy,—that very few of the designs are more than pictorial views; that is to say, there are few plans attached; and the information given in the catalogue is meagre and inadequate. The "getting-up" of this catalogue, which annually is disgraceful to the Academy,—and, must we not add, their printers,—and the numbering of the works, seems to have been specially unfortunate for the architectural drawings.

From the Manchester Assize Courts competition we have views,—one (641) showing the design of Mr. W. Blackett, with a profusely perforated Roman facade—the columns on too lofty pedestals; one (663), the design of Mr. G. Morgan, Gothic; two (673) the designs, Gothic and Classic, to nearly the same plan, by Messrs. H. E. Kendall, jun., & F. Mew; and one (681), the design of Messrs. W. J. Green & L. De Ville. One or two of these names may be recognized as represented at the other exhibition. Messrs. Kendall & Mew's designs have not been mentioned by us, except in our notice of the exhibition in Manchester, where we spoke of their merits at great length, but at the same time remarked upon their short-comings. Through a somewhat unfair method of representation, an effect of grouping was displayed which there could not be in execution.

Recent competitions, however, are not largely represented at the Academy. The Piedmontese prisons competition included designs by Messrs. Green & De Ville, by whom we find in the corridor a view of their design (625) for the prison at Genoa; and one (626) for the prison at Turin. The drawings being "bird's-eye" views, give some suggestion of the general principle of plan, which, for the prison at Turin, was the "Panopticon," built within a fortified *enceinte*, and for the prison at Genoa seems to have been somewhat similar, but quadrilateral instead of polygonal in the external form. The details shown in the drawings are Gothic; and bands of red brick to lighter coloured materials, and red and black bricks to vousoirs of arched recesses and window-heads, give the chief character to the design.—Near to these is one design "for the Royal Dramatic College, Mayberry, near Woking," which is by Mr. W. Webb. The drawing (627), about 10 feet in length, shows a work chiefly Elizabethan in manner, and of red brick and stone, except as to the centre and two ends, which are wholly of stone. The best feature is the lower story of arches, springing from shafts isolated or attached to buttressed piers.—Mr. E. C. Robins exhibits (628) "The First Prize Design for the Croxdon Cemetery Chapels, about to be erected" under his superintendence, which has the not uncommon arrangement, iconographically and decoratively, of two dissimilar "Decorated Gothic" and gabled buildings, united by two archways, over one of which is a tower with broach-spire. The art brought into works of this class ought to have been greater than it is; but in the present instance, it is better than usual.—"The selected Design for the Townhall, Bishop Auckland" (717), by Mr. J. P. Jones, was given by us in a recent number, with the belief that it was to be carried out; this, however, is not the case.—Very recently we gave the design for the Holy Trinity Chapel, Knightsbridge, which is to be executed; and in our last number we mentioned a design for the same building, which there is at Conduit-street. The design, "one of the selected," by Mr. H. S. Legg (718), is at the Academy. The front is lofty, the centre rising to a gable to the clerestory, flanked by gables on the returns so as to give somewhat the character of a tower—the intersection being crowned by a light spirelet, or *flèche*. The principal window is an elaborate one, of six lights, the style of the design being Geometric Decorated; and there are three canopied doorways.

Taking the order of numbers, with modification

admissible afterwards, we start with No. 616, a view of the interior of "Tonbridge School Chapel, Kent," by Messrs. Wadmore & Baker. It is of late "Decorated" character, and has a wagon-headed boarded ceiling, with the main ribs rising from corbelled shafts, and the usual arrangement of seats "stall-wise."—"Opéras, Sweden" (618), the residence of Mr. J. T. Dicksen, now being erected from the design of Mr. W. A. Boulnois, is Italian of the Romano-Florentine school. The chief feature of the design is a low tower, perhaps for the staircase, and octagonal, which stands in a re-entering angle, where the entrance is placed at the angle of a one-story portion of the plan, apparently leading immediately into a conservatory. Mr. Boulnois is the author of another design (711) for a house in the same country, at "Gothenburg," now being erected under his superintendence, for Mr. Oscar Dickson. It is in the same style.—Mr. T. Anson's "Corn-Exchange Chambers, Seething-lane" (622), with less ornament than his other buildings in the City, is distinguished by his manner, and has greater merits than there are shown in the mere elevation. The frame includes details and parts of the interior separately drawn. The building is a structure, brick and stone we believe generally, of four stories, and a Mansard roof with circular dormers, the lower story of stone being treated as a range of arches, and the space of five central, out of the seven openings, being grouped together,—four casements between the windows of the first and second floor helping to give the centralization. The openings are chiefly arch-headed, those of the first and second stories being similar to one another. The external details are not so successful as the general character. The interior is, in many respects, highly successful. A public room is lighted by a range of square windows, close to the ceiling, which is divided by beams, carried by main pilasters; and each inter-pilaster, at the window-stage, is divided by a short pilaster or anta, to form two window-openings. Colour is introduced and well managed. The dado is dark in tone, with relief of red lines; the large spaces of the walls are light green with a diaper; and primary colour in lines and ornaments is used in the ceiling.

Knowledge of right principles of chromatic decoration, similar to that in the design last named, is shown in most works of Mr. R. Beavis, who has one design at the Academy, namely 623, "for the decoration of drawing-room ceiling at Torry-hill, near Sittingbourne,—now being executed by Messrs. Trollope & Sons." The main beams and the margins of panels are ornamented in lines, and interlaced and other patterns, on the flat, partly in red colour; whilst the panels themselves are painted with Buffaloesque ornament and figure compositions. In the corridor is another design for a ceiling (632), by Mr. C. J. Allen,—also good,—whilst scarcely equal to the last-named, though more elaborately in the ornament of architectural character. There is some difficulty in forming opinions of designs of this class from the drawings, when it is not stated whether ornament is to be executed in plaster, or merely as a painted imitation of relief. The design (633) "for painting and decorating a Gothic entrance-hall in Wales," by Mr. C. Pfander, is not very successful in the "Gothic" forms; and the crimson, green, blue, and yellow or brown, are crudely put together.

The "Porch" (630), an addition to the old hall at Halliwell, near Bolton, Lancashire, for Mr. Peter Ormerod, is Tudor or Elizabethan. The angles cut off are pierced with openings, whereby there is an appearance of weakness just where there should be abutment to the arch.

The "Lunatic Asylum for the Colony of New Zealand" (631), by Mr. C. J. Shoppee, is a Gothic building of the many-windowed, half-timbered class, with overhanging stories, and has the roof covering banded blue and red.—"East Tytherley Parsonage, Hants" (634), is brick and half-timbered with large boards, and has a good general effect. The angles of the building are chamfered, without advantage.—The "Design submitted to Mr. Faucon, for his proposed new House, near Rouen" (635), is French Italian, with a roof porch, and accessories to the entrance; but the cornice appears too light, and the oval or circular windows to the lofty roof are much too small. The "Parochial Schools, now erecting at Holbrook, Suffolk" (636), from Mr. R. M. Phipson's design, are Gothic, with the prevalent coloured bays, here blue and red, and the similar particular treatment of vousoirs to segmental arches. The wide projecting caves and corbelled springing of the gable are not quite in harmony, though the same arrangement may be found else-

where: the latter feature usually should cover the projection at the end of the eave. There is another drawing (713) of "Schools just erected at Hovingham, Suffolk," by the same architect, which has the same features, but others of better character, and appears to be generally superior.—"The Hospital at Hensworth," Yorkshire (we correct the catalogue, as elsewhere, though we cannot promise invariably to do so) is shown by the architect, Mr. R. P. Pope, in a clever pen-drawing (637), with plan, and parts sketched on a larger scale. Considerable skill, whilst a recognizable manner in the Gothic, characterizes the design, as in the arrangement of the coloured materials, and the porch of three arches and columns to the master's house. The almshouse porches, with flanking windows, are peculiar. The chapel is in very good taste; there is not, however, so much difficulty in planning these small interiors in the class ecclesiastical of buildings, as those of churches on a large scale.—"West Broyle, Chichester" (638), the residence of Mr. J. J. Johnson, erected 1550, by Mr. W. M. Toulon, is of Gothic design, and stone, with tiled roof; and has an angle window.—"Calthorpe Lodge, Leicestershire" (639), the residence of Mr. J. W. Morrice, was designed by Mr. A. B. Fend, though the catalogue does not say so. It is a large brick and stone Tudor building, with oriels. The halls, trade or enclosure to a space which may be a sunk garden, is the least satisfactory part of the whole, if the drawing be correct.

There is a sheet of drawings (640) illustrating a design by Captain Fowke, R.E., which recent proceedings render interesting. It is entitled "Suggestions for a public road to connect the districts north and south of Hyde Park, without interfering with the Kotten Row ride, the drive, or the walks in the park and gardens." The "Suggestions" refer to the crossing of the Serpentine, and to the distance thence northwards to the Bayswater-road. It is proposed to make use of the existing bridge, by adding to it a superstructure, a double screen of columns, whereby the pedestrians might cross in the new terrace walk—ascended by long inclines; and one-half the width of the bridge could then be devoted to the public road. The northward portion of the road would run for almost the entire length, in the sunk fence between the Park and Kensington Gardens. A section of the bridge is not given; but we apprehend the idea is not to add in height, to more than one-half the width; consequently, if the effect of the bridge from one side were improved, it could hardly be so from the other. In the addition the coupled columns are between piers, placed over those for the arches, and bearing statues. With some slight variation in the details, to unite the substructure and superstructure, and extension of the latter to the full width of the bridge, the alteration would be one to enhance the effect of the scenery, and would be in many respects more desirable than the construction of a bridge adjacent to the present one. Such a public road, however, is wanted, as might be used by omnibuses: the road (and it certainly will have to be made), will speedily become a principal route,—as it will connect each district with an important railway-station on the opposite side of the park—the Great Western Station being north, and the Victoria Station south; and any such route should be planned to admit of tramways. Under these points of view the present proposal would be sufficient. The public cart and omnibus traffic might be noisy and disconcerting to the riders and pedestrians; the width, half that of the present bridge, would not suffice; and sharp curves in the approaches, as shown in the plan, would be very objectionable. A direct line of deeply-sunk road-way, such as we had in view when the improvement desired was first spoken of in our columns, crossed by many and ornamental foot-bridges, would best serve the traffic and the privacy. The difficulty, we must admit, is the crossing of the Serpentine; for, we do not quite like Mr. Tite's idea of a tunnel, unless shafts for light could be constructed. Such shafts to the tunnel, of course would have to be built one or two feet above the water-level, and, therefore, to be made ornamental; and in their construction not only pressure and infiltration of water would have to be provided against, but the greater force of the expansion of ice.

Mr. M. D. Wyatt has two works in the Exhibition. No. 642 is a "View, looking east, of a small Church recently completed at Coedy-pant, Monmouthshire," where he has employed colour with effect, in the form of an imposed band of Scriptural texts to the plain Early English window openings, as well as around the chancel

arch. The chancel is narrower than the nave, which is without aisles. His other work, of which, owing to one of the hindlers spoken of, he does not get the proper credit, is (709) a "View, looking east, of the Military Chapel, Warley Depot, Brentwood, Essex." The design is round-arched, or Byzantine, in manner, the arches red brick (which is the material generally of the interior) springing from stone columns,—the capitals of which, if correctly drawn, we should have preferred different. The chancel-arch and whole perspective are simple, and highly effective.—Mr. W. Burges exhibits a drawing (643) of a staircase lately completed from his design at Gayhurst, Bucks, the seat of Lord Carrington. It is Elizabethan, of very good character. But why does the drawing of a work of the nineteenth century represent figures, supposed to be those of persons resident, in costume "of the [other] period?"—We may name in this place a very good drawing which there is (703) by Mr. T. Bury, of his staircase lately erected at New Lodge, Windsor Forest, the seat of M. Van de Weyer. It is late Gothic in details, but at first sight has the character of an Elizabethan work.—A drawing (644), by Miss Westlake, of the tomb of the late George Gwilt, architect, in the churchyard, Southwark, is interesting chiefly for the subject; but the commemorative production is shown not to be a very elaborate one—unless we are to speak of the railing, which is coloured and gilded.

We have named some drawings of churches, and there are others. Mr. J. Barnett's "St. Stephen's Church and Parsonage, South Lambeth, for the Rev. C. Kemble" (645) "Decorated" Gothic, is not well managed in the tower and spire, but is better elsewhere.—A drawing of "the West End of Landaff Cathedral, as restored, with the proposed south-west tower and spire, as designed by" Messrs. Pritchard & Seddon, is placed almost too high for examination. In the drawing, however, there is no apparent harmony (if any could be expected) between the two western towers. It could not be said that the design of the south-west tower is unsuited to the rest of the church; yet the north-west tower, at least, which has good "Perpendicular" parapet and pinnacles, marking it of the Somersetshire class, manifestly is injured. Truly our church "restoration," when needing to go in the smallest degree beyond conservation, is a hazardous thing. But we have not the means of knowing just now, without a visit to Landaff, what is the character of the alteration intended to be shown by the drawing, or even whether this has been, or is only about to be carried into effect; for, the title of the drawing is somewhat obscure. The same architects exhibit a design (664) "for a church about to be erected at Cardiff." As we have no plan, we can merely conjecture from the view, that the design embodies some alteration in arrangement such as we recently expressed the wish to see, and believed we had evidence was in progress. The clerestory is very prominent in the composition, and is lighted by large windows; whilst the aisles appear to be as we desired to have these parts of a church, narrow; and in the present design they are lighted by very small windows. The design, though plainer than Messrs. Pritchard & Seddon's excellent one for the Constantinople church, calls that to recollection. The tower and spire, "not now in contemplation," appear too big; and when such a tower is placed at the junction of the nave and chancel, it is apt to look out of place when the church is approached from due north or south, unless greater distinction of level or decoration between the nave and chancel, be made, than there is in this design. The defect in question is very remarkable in a somewhat costly church built not long ago for Lord Stamford, at Bowden, Cheshire, where nave and chancel are the same height, and the building is approached by a road exactly at right angles to the church, the tower being seen at the end of the road.—Mr. G. E. Street's "Church about to be built at Cowley, near Oxford" (649, 652), has its authorship pronounced—without reference to execution of the drawings. The plan includes the arrangement of transepts and tower, both, to the chancel, and a sacarium polygonal-apsidal on plan. The external character is that of plain Early English, with few or no buttresses, and coloured bands duly subordinated, and with a broad spire and leuanes. In the interior, there are a roof of massive timbers, short circular shafts as nave-piers, and a sacarium arch as well as the chancel arch; whilst, to further mark a distinction which is recognized by ecclesiologists, the sacarium is gromised, the severe over the altar being enriched with colour, and the ceiling of the western part of the chancel is hexagonal, boarded, and ornamented

in the compartments. The outer mouldings of the chancel arch interpenetrate with an "order," or rim, of cusped ornament. The masonry appears internally. The interior of Mr. Street's church at Boy's Hill, Maidenhead, is represented in a drawing (688) by Miss Hughes, which may serve to show how red brick, relieved by black lines skilfully disposed, can be used for the production of good internal effect. If we assume that the public are becoming satisfied with the use of masonry or brickwork unplastered, for interiors of churches, there is reason to hope that the effects will ultimately be most important on the appreciation of what is most valuable in architecture generally. Mr. Street has in the Exhibition (648) a "Design for the Monument, about to be erected by subscription, in the south aisle of the choir of Litchfield Cathedral, to the memory of Major Hodson," a copied tomb with floriated cross upon it, and the sides chiefly composed of sculpture representing scenes in the life of Hodson, or personifying his virtues. Though marked by the ability of its author, we can hardly say we like the design. The general form is not pleasing; and the monument, whilst too much a tomb, is far too much sculptural on the sides and ends, or is there not sufficiently architectural; and it differs much, without corresponding gain, from the best Gothic monuments, where sculpture is prominent on the slab or lid, and the sides are in details to a greater extent architectural. A markedly Mediaeval dress, besides, or as we think, is adopted in the personifications of the virtues; and this, though it may be deemed, with the general design, appropriate to the Gothic cathedral, is scarcely in all respects to be defended in a monument the tribute of people of this day whose admiration is of the virtues not under the garb of the Middle Ages.

There are several well-known names amongst the exhibitors, besides those we have mentioned. Mr. Ashpitel, Messrs. Halliwell & Goldie, Mr. E. W. Pugin, Mr. J. T. Kuowles, Mr. Penrose (a design for the completion of St. Paul's, internally), Mr. D. Brandon, Mr. T. H. Wyatt, Mr. S. S. Toulon, Mr. W. G. Habershon, Mr. Sydney Smirke, R.A., Mr. Owen Jones, Mr. T. Page, Mr. E. M. Barry, Mr. F. P. Cockerell, Mr. Tite, Messrs. Francis, and others, are represented—some of them by works of high merit; but to these we must return when we have more space.

#### THE VICTORIA BRIDGE, CANADA.

AMIDST the engineering works that rise rapidly and successively around us, there is none so great as the object of our present notice. Though perhaps the circumstances under which it has been constructed may have been hardly so difficult as those which surrounded the "Britannia," on account of the engineer having the disadvantage of less experience, still it is larger in every respect, and, in its influence upon commercial interests, more extensive and important. As a connecting link between the United States and Lower Canada, its commercial importance is immense, independently of the scientific triumph. Imagine this thin line, as it appears at a distance, drawn 60 feet above the level of the rapid St. Lawrence, which brings down the water and ice of two thousand lakes and upper rivers,—a striking and lasting monument of the genius of a Stephenson! It is by means of men like this that the Far West has opened out vast resources, consequently adding so many great links to the lengthening chain of progressive civilization. "It is to men like this that nations (hitherto separated by what may have appeared insurmountable obstacles) owe their union; and such men, independently of their scientific triumphs, have wrought by such means political ones more grateful and permanent than all the treaties upon the record of Time." With such feelings we view the sweeping bridge that spans the far-spreading valley or foaming torrent, wherever they may be, though an unprofessional eye cannot estimate the niceties or complications of construction. Far more difficult is it for such to realize the hours, days, months of laborious anxiety that this has cost the originator, and the one responsible for such an important undertaking. Scientific theories have to be practically solved; the new principles staked to be carried out successfully, or a perhaps already splendid reputation irretrievably ruined, and only a faint idea can generally be formed of the work of brain and hand embodied in those huge masses of stone and iron, that seem as if looking down upon the foaming waters in all the pride of conscious strength.

But of this mighty "iron," this giant innovator of modern times, having so many varied developments in the hands of inventor and adapter! When we view the works of Lancashire, Stafford-



and we found Carter from 1792 protesting earnestly against Wyatt's work, and the Society of Antiquaries from 1795 to 1813 engaging in the publication of Carter's drawings of Medieval buildings. But as actual illustrations of the then public taste in Gothic, perhaps the best examples were the front of the London Guildhall, and the descriptions of Carlton House, which, when remodelled for the Prince of Wales (1783) by Holland, although in Palladian style, was made to comprehend a Gothic dining-room with furniture to match, and a Gothic conservatory said to be "in imitation of a cathedral."

More credit ought to be claimed than was usually accorded to a writer of this period who was the first to attempt classification for Gothic design—namely, Batty Langley. If his suggestion was nothing more than that there were five orders of Gothic architecture, this, however ridiculous now, was the only hypothesis which could be reasonably expected of the age. That there were five orders of architecture in the abstract was held as a principle of almost divine institution. The lecturer himself in his youth was taught to believe, and did believe, that the Greeks had some species of inspiration of taste out of which their perfection came; and he dared to say there were gentlemen in the room who believed so still. Villalpanda had boldly affirmed that the design of the five orders was delineated in heaven, and presented to Solomon to be employed in his temple, the Greeks having afterwards copied the system therefrom. The well-known old lady of the court of Queen Anne had a new garment embroidered with the five orders, as a grand rotunda of authentic decoration, from hem to waist. What, then, was the theory of Langley but one of the most ingenious conceptions possible,—if an error, still the *primæ facie* principle, a fair trial of which was the inevitable first step towards the classification of the style. Fair play was due even to Batty Langley.

**Nineteenth Century Classicism.**—The French revolution and the war divided the Europe of the eighteenth century, lately under discussion, from that of the nineteenth century, now in hand. During the war the Greek taste had slowly advanced. In 1807 appeared Wilkins's "Magna Græcia." After the peace, the then rising men, Messrs. Cockerell, Donaldson, Inwood, and others, employed the new facilities of travel to admirable purpose, and issued the publications which bear their names. In 1825, Gwilt's edition of "Chambers," contained the addition of that Greek style which the worthy master in his own day had so despised. Meanwhile Soane and Smirke had risen into celebrity in Greek practice. Soane was R.A. in 1802, professor in 1808; and from 1800 to 1827, was building the Bank of England. Smirke was R.A. in 1811, and began the Post-office in 1818. Of younger men, Wilkins became R.A. in 1826, and Cockerell in 1836. In 1823, Cockerell built the entrance to Archbishop Tension's Chapel, in Regent-street, and in 1827, St. George's Chapel. Wilkins during the same period built the London University College and the University Club, and Inwood St. Pancras Church. In 1800, James Burton had built the Russell Institution in Coram-street. Greek taste was thus in full practice; and not only had Palladian been cast ignominiously aside, but the Roman works themselves were pronounced corrupt.

Allusion had already been made to the growing disposition to deify the merits of the once triumphant Greek school; but if we pointed to that estimable leader happily still amongst us, Mr. Cockerell, there was no man of the new school who would sit down by his side without sincere respect—respect for that "classicality" of education and intellect which before long it might be our misfortune to look back upon with regret as the attribute of an age gone by.

**Nineteenth Century Gothicism.**—James Wyatt was the first leading practitioner who accepted the revival of the feudal sentiment; but, once in motion, the new heronial style soon progressed apace. In 1801 we had Fonthill, by Wyatt; Cashiohury soon after, by the same; Ravensworth in 1808, by Nash; Louisa Towers in 1814, under the personal inspiration of Lord Shrewsbury; Toddington in 1819, designed by Mr. Hambury Tracey (afterwards Lord Sudeley), and Abbotsoford, by Sir Walter Scott, introduced us to the interposition of amateur feudalists in aid of the movement. Windsor Castle was the then perfection of the movement; and, in 1824, Wyattville became R.A. Archaeology also came forward rapidly; Britton commencing the publication of his "Antiquities" in 1806, and his "Cathedrals" in 1816. Pugin, the elder, pub-

lished his "Specimens" in 1823; "Normandy" in 1826; "Examples" (comprising the first detailed delineations of meritorious specimens) in 1831. Classification had meanwhile advanced to an important position in Rickman's "Attempt," which divided English Medieval architecture, with remarkable detail, into four distinct styles,—Norman, Early English, Decorated, and Perpendicular, a division still found to be so far correct. Cottingham's Museum belongs to the same age, collected chiefly from the destruction of St. Katherine's Hospital to make way for the docks.

In churches there had been now developed a decidedly Gothic tendency. One of the most admired of the earliest works was the Scotch Church, by Mr. Tite, in Regent-square. In 1826, Mr. Poynter built St. Katherine's, in Regent's-park; about 1827 Smirke restored the Temple Church, and built the library, in character with the ancient buildings; at the same time Nash had built Haggerstone Church, and Mr. Barry, in his church at Brighton, followed by those of Cloudeston-square, Ball's Pond, and Holloway, had already exhibited his remarkable artistic power.

Other eminent names of the age were those of Repton, Blore, Hopper, Buckler, and Mr. Ferrey, who was well worthy of the title of the father of the present Gothic list of practitioners.

Tudor was soon the almost universal style for country mansions and public buildings, such as asylums and the like, of rural position.

The first great public triumph of Gothic style was in the case of the Houses of Parliament, 1835. The feudal sentiment (if overthrown in France by the revolution, encouraged in England by the result of the war) had so far gained the ascendancy, that the arguments in favour of genuine old English building for the palace of the English Legislature were readily accepted on almost all hands. The styles for competition were "Gothic and Elizabethan." Barry, in easy triumph, carried off the palm with a Gothic design universally admired. The second premium was adjudged to an Elizabethan work, but that weaker style was indisputably defeated. Up to the present day the Palace of Westminster had been carried on in continual aggrandisement of plan and continual progress of detail. If now by a new class of critics that great work was pronounced imperfect, it was not by any failure in its own promise, but by the introduction of a new spirit of art, namely, that of ecclesiasticism, to be presently treated of. The consideration of the Early nineteenth-century Gothicism could not be more appropriately closed than with a tribute of homage to the transcendent practical sagacity of Sir Charles Barry,—no archaeologist, no black-letter man, no rubber of brasses, no professor, no bookmaker, no speechmaker,—but at the drawing-board a prince. The Houses of Parliament might pass out of fashion, as all human works must; but, as a man eminently safe and graceful designer, Sir Charles Barry deserved to be ranked with Wren, as one of whom future generations of Englishmen would justly be proud.

**The New Italian School.**—In the pseudo-Augustan age of George IV. the tendency of style in ordinary building was towards the increasing modification of Palladian by Grecism of detail. It was so even with Nash, although he could scarcely be called a Greco-Palladian so much as a Cockerell-Palladian; and in the hands of men of better education,—Soane, Smirke, Burton, Cockerell, and others,—public buildings in London and elsewhere began to acquire a character of exceedingly careful proportion and elegant finish, worthy of the utmost admiration. It was reserved, however, for Barry to introduce in the Travellers' Clubhouse the genuine palatial Italian of the sixteenth century. The Reform Club followed. The test of natural style was best to be found in the unaffected work of the mere builder, and it seemed to the lecturer obvious that by this simple rule the fenestral Italian was proved to be the style proper to modern Europe, as that which most naturally applied to every-day building,—the style of the merchant, not of the priest or baron. The success of Barry's Italian was complete, and ever since, the style had been the favourite all over England, and had produced most numerous and varied works of great excellence.

A word might fairly be said in connection with this chapter in favour of Nash, whom it was common to call the king of compo and sham, and a man of execrable artistic memory. It ought to be remembered that his time was peculiar. He did not make the style, but the style him. As the right man in the right place, at that particular day, he deserved credit; his energy was most valuable; better men might have filled in

his position; as it was, better men followed with advantage upon the ground he broke.

**Eclecticism.**—The policy of Wyatt was followed by others, and it soon became the practice to design either in Classic or Gothic, at selection. During the war "Grecian and Gothic" came to be spoken of as in a manner rival styles. Roman, Italian, Louis Quatorze, Tudor and Elizabethan, Castellated, Lombardic, and so on, were added to the eclectic list. As early as 1812 the Egyptian Hall in Piccadilly was erected. The Brighton Pavilion was also worth mentioning,—in "the Turkish taste." The principle of eclecticism was that all authentic styles were on an equal platform of eligibility for adoption, according to circumstances. Copyism and precedent thus enlarged their authority. From 1834 to 1837 occurred the establishment of the Institute of British Architects. This was conducted on purely eclectic principles, and the Institute had been of great service to the art so considered. The Greeks were unquestionably then in the ascendant, but an encouragement of Gothic study was freely accorded. An apportionment of styles soon became recognized,—for churches, Gothic; for mansions and the like, chiefly Tudor; for civil and municipal edifices, generally Italian; for grand monumental buildings, Greek or Roman,—all one happy family, into which no jar was expected to appear for ever. Many practitioners excelled in diverse styles, as Barry in both Italian and Gothic, and after him Scott; and to the present day there were a large body of metropolitan and provincial architects who designed most admirably in all styles alike. This was the triumph of eclecticism. Hosking's essay in the "Encyclopædia Britannica" (1832) was the most complete description of eclectic architecture at that time. Since then Ferguson had developed the same view much more elaborately in his learned, impartial, and most valuable "Handbook" (1855). Mr. Barry became R.A. in 1812, on eclectic grounds. One principle of the eclectic school was a little inconsistent: it was considered that as a rule the best of modern English architecture was inferior to foreign,—French or German. Although we must admit the superiority of the French in instinctive grace, and of the Germans in philosophical abstraction, yet the Paris Exposition in 1855 effectually proved that in practical architectural design the English were before both. The case of Lille Cathedral gave the same result, and, although it might seem inhospitable to say so much, so did the contest in Westminster Hall. It ought not, however, to be overlooked that the excuse for the depreciation of our native merit lay in the unexpected pleasures of Continental travel after 1814, producing a favourable impression on Englishmen generally, which it must necessarily take time to overcome.

Before proceeding to another portion of the narrative, the lecturer could call upon his audience to join him in an acknowledgment of the great services that had been rendered to eclectic art by one gentleman well known there, still happily active and hard at work,—Professor Donaldson. During a long series of years no other man could claim to have done so much for the profession in every way as he. Due credit ought also to be given to another gentleman, then present, for long and arduous services in periodical literature, most impartial, and highly successful.

**Ecclesiology.**—From 1835 to 1810 the sentiment of ecclesiasticism came very decidedly into view, through the means of the well-known movement in the Church, in favour of ritualism, which, of necessity, materially affected church architecture. In 1835, Pugin the younger opened his energetic assault upon Classic practice in his "Contrasts," followed in 1841 by his "True Principles," in which he laid down rules for sound design, and, subsequently, by the "Apology," which treated of the availability of Medieval style for all modern requirements. It must also be mentioned how this individual teacher, by the labour almost of his own hands, had revived the whole circle of the Gothic decorative arts,—carving, glass-painting, metal work, encaustic tiles, embroidery, furniture, &c., to a degree scarcely credible. In 1841 was founded the Cambridge Camden Society: the publication of the "Ecclesiologist" followed; symbolism, in great force, came into request; Pre-Raphaelitism in painting lent its aid; archaeological societies were established in all quarters; the clergy began to take a lively interest in architectural revival; church building and restoration were largely entered upon; and the effect upon the profession was great and rapid. A new school of architects arose, confining themselves entirely to ecclesiastical work, and repudiating the Classical styles

altogether. Mr. Scott soon took the lead. In 1832 we had in his Cumberwell Church a remarkable step in advance, in purity of style: a short time afterwards, at Hamburg, he took the prize for St. Nicholas's Church: since then his success in his particular walk had been the basis, and only of the profession, but of the country, and, at length, as A.R.A., he was the first who had attained that honour on Ecclesiastical merits, Wyattville being his only Gothic predecessor in the Academy.

The great moving agent of modern ecclesiasticism in our art was Pugin. Take him with all his faults, he was one of those rare spirits—Nature could not afford to produce many of them—in whom the very power of intellect was its own destruction. The common record of such men was that they were eccentric, visionary, impracticable; but what cared they for common record? If they lived in turmoil, in storm and cloud, such was the destiny of the heroic; if they even perished in despair, it was genius passing away in a chariot of fire.

*Latitudinarianism.*—As yet it must be remembered that in Classic and Gothic, and all else alike, copyism and precedent prevailed absolutely. The search for novelty under the Palladian régime had expended itself in the endeavour to invent a new "order." The Italians attempted it earnestly: the architects of Louis XIV. did so too; prizes were offered for success: in the time of Chambers the case was the same, and in his "Civil Architecture" he suggested no fewer than six examples,—all were variations of the Corinthian capital. Under Sir John Soane the idea had got into disrepute, so that the professor himself styled it "the philosopher's stone of architecture," and actually sued a critic at law for libelling him by the assertion that he had attempted a new order in certain Regent-street houses. In 1815, Mr. Leeds had for many years been an active writer in favour of abstract freedom. In that year, Mr. Lamb, in his "Examples of Domestic Architecture," ventured upon a very outspoken protest against copyism, and was answered gravely by an eminent practitioner with the assertion, that the art was in a state of utter degradation, and could only be assisted to recover its vitality by the faithful copying of the designs of better days. Other writers followed, laying stress upon the artistic element; but the expression that architecture was a fine art was ridiculed, although, since that time, the principle had gradually acquired the force of a fundamental axiom. The young men and students began to revolt against archaeology and the authority of precedent, and when they formed themselves, in 1817, into a junior society,—the Architectural Association,—the enfranchisement of design was their motto, and there were many amongst the most esteemed designers now who attributed much of their success to the discussions and competitions of that society. Then came Mr. Ruskin. He was claimed by some as an ecclesiologist, but without reason: he was a latitudinarian from first to last. He preferred Gothic for its picturesque and romantic character; but why did he lean so much on Venice? Because, said he, Venice was peculiarly mercantile and non-ecclesiastical. A commonwealth of this kind, existing in the midst of feudalism and ecclesiasticism, would consequently possess in its art the elements of the styles of both conditions, that is, both the old Gothic and the new Classic elements. Mr. Ruskin's first work, in 1813, the "Modern Painters," took the ground that the ancients, instead of being our superiors, were our inferiors,—latitudinarianism the most daring. In 1819 he applied himself to architecture in his "Seven Lamps," and in 1851 he began "The Stones of Venice." In 1819 Mr. Ferguson published his "Inquiry into the Principles of Beauty," in which he also proved himself an extreme latitudinarian. Since that time the principle had been strengthened continually.

But the high priest of all latitudinarians was Mr. Ruskin. Not to speak of his elegance of diction and graceful form of thought, which were but the superficial covering of solid matter beneath, the honest pluck and audacity at the root of all was delightful. He might compare with John Bright. Talk of looking before you leap! he neither looked nor leaped: with one stroke of his penions he was amongst the clouds and winds: a moment more and he had reached the goal of his endeavour: how he had reached it the clouds and winds only knew; but let him shake him in his seat who could.

*Present Position and Prospects.*—In Classicism, of late years, the Royal Exchange (1839), St. George's Hall of Liverpool, and the Town Hall at Leeds were the chief works of the grand monu-

mental class, and, with various others of less magnitude, very successful; while, for more ordinary civil and domestic buildings, the Palladian Italian style had been almost universal, and exhibited by great merit. The present tendency, however, was towards the early Italian manner,—the Gothic germ. The picturesque also was much sought,—a step in the same direction.

In *Gothicism* it might be said that, in the course of a rapid and brilliant career of revivalism, the native English styles had successively gone out of fashion in favour of Continentalism: even Mr. Scott rested upon thirteenth-century French as the great central point of excellence. The tendency, however, was now very strong towards Medieval Italian,—the before-mentioned germ of the Palladian. The use of colour was a step in the same course. The endeavour to adapt the style to common domestic forms was the same. The merit of our Gothic domestic designers could not possibly be overrated. Carpenter, Butterfield, and numerous others might be alluded to; but the remarkable felicity of design and draughtsmanship in Mr. Burges and Mr. Street, as displayed in the competitions for Lille Cathedral and the church at Constantinople, took us by surprise, and led us to look for universal merit in the works of rising men of such great power. In the Government Offices competition, also, the drawings of Mr. Scott and Mr. Street, and, perhaps, more than all, that of Mr. Woodward, were strikingly fine. But Mr. Scott had lately drawn attention to a point which young Gothicists would do well to consider. They were deficient, said Mr. Scott, in grace and proportion. This was undeniably true, and it was really the most important of all present questions affecting the style, whether all spirit of more elegance and refinement of form could not be cultivated. Whether the Gothic style was likely ever to prevail in England for every-day purposes was a point much argued; but, however unsuitable, as at present practised, time and much modification might do a great deal for the style with this view, provided Mr. Scott's complaints were not neglected.

In *Eclecticism* the latest remarkable occurrence was the Government Offices competition in 1857. In that transaction the question of style had been left open as if to promote a settlement of the point; but the result had been most unsatisfactory. The excellence of the Gothic designs had been just alluded to. The design of Mr. Garling might be safely pointed out as one of several equally excellent on the other side.

In *Eclectology*, of late years, theory had become more subdued; but the practice of Continental style and arrangements, if not kept in check, might rouse the susceptibilities of Protestantism, and it was time that some of the Gothic school should take up Protestantism as fundamental ground.

*Latitudinarianism* had served its purpose, so far as theory went; copyism was almost extinct, and precedent a dead letter: clever novelties were the rule, and the drawings then in the Architectural Exhibition would have been considered, some twenty years ago, not merely as extravaganzas, but as the outlandish products of some other sphere. The picturesque, however, was much overvalued, and fantastic design was the bane of both Gothic and Classic efforts. Dashing drawing, also, was much to be condemned, as the most treacherous of all things to the student, causing him to overlook all the delicate questions which constituted the very life of architecture in the solid, but which, in the midst of masterly picturesque sketching, red, blue, and yellow colouring, and artificial *chiaroscuro*, were utterly lost sight of.

In conclusion, the *battle of the styles* seemed thus to be approaching near the end of all honourable and creditable conflict, namely, alliance. If Classicism was tending towards the early Italian, the Gothic germ of the later style, and becoming also more and more picturesque, and, therefore, more and more Gothic (the picturesque being the essence of Gothic taste); and if Gothicism was similarly tending towards the examples of Italy, and becoming more and more graceful and refined, and therefore more Classic (grace and proportion being the Classic essence); then it might surely be said that the rival styles, mutually modified, were approaching one common centre. The result might not be any new style,—for it was questionable whether the phraseology of architecture, except in respect of new materials, was not exhausted long ago (like that of music, and perhaps that of painting and sculpture); but there would be a federation and union of purpose; the *quasi* Classic on one side of the way, and the *quasi* Gothic on the other, although clearly distinguishable in criticism, would display accordance and sympathy, and look

each other fairly in the face. If the impression created by the present argument had been to this effect, exhibiting the battle of the styles as not a party squabble, but an intellectual process, honourable to all engaged in it (and honourable, by the bye, to England as having had little or no help from abroad throughout its whole course), then the least we had at any rate left the world a little better than an hour ago it had found it.

To show that the lecturer's *personal* remarks were not made in an arrogant or unpleasant spirit, we may mention the fact that his allusions to the distinguished architects of past and present time, and also the references to the current questions of the day, were received by the audience with approbation throughout.

#### THE PARIS OPERA.

We mentioned in one of our later numbers, that the plan relative to the construction of a new opera-house in Paris was exposed to public inspection at the Mairie of the 9th arrondissement, in the Rue Dronot. The following history of the French opera will interest some of our readers. The French opera carries us as far back as the poet Baif, who, under the reign of Charles IX., assembled together a musical company, exclusively devoted to religious compositions. They held their meetings in a house in the Rue des Fosses Saint Victor, and were protected by the King. It was not until the ministry of Cardinal Mazarin, that the opera was in earnest introduced into France; at that period the words and music were Italian. The first opera in the French language was produced at Vincennes, and afterwards at the Hôtel de Nevers, in 1659. It was a "Pastorale" in five acts,—the words by Abbé Perrin; music by Gambert, organist of Saint Honoré, and composer to the queen mother. Ten years afterwards the Abbé Perrin obtained letters patent, authorizing him to "establish in Paris, and other towns of the kingdom, musical academies for singing in public, as carried out in Italy, Germany, and England." A theatre was soon opened in the tennis-grounds of the Rue Mazarine; the opera of "Pomona" was represented, but without success; and the establishment was threatened with complete ruin, when Louis XIV., by new letters patent, invested Lulli with the privilege of founding in Paris, on the largest scale, a royal academy of music. It was on the tennis-grounds of Bel-Air, in the Rue de Vaugirard, near the Palace of the Luxembourg, that Lulli placed his theatre: it was opened on the 15th November, 1772; by the first representation of "Les Fêtes de l'Amour et de Bacchus." The death of Molière having left the theatre of the Palais Royal unoccupied, Lulli transferred his opera there. On the 6th April, 1763, a terrible fire destroyed the opera-house; and the 24th January following, the singers took possession of the "Théâtre des Machines," which formed part of the Palace of the Tuilleries. In the meanwhile the reconstruction of that of the Palais Royal proceeded actively, and the inauguration took place on the 26th January, 1770; by the reproduction of Rameau's opera of "Zoroaster." A new conflagration reduced the building once more to ashes. "On the 8th June, 1751," says Mercier, "a rope of the proscenium took fire by coming in contact with one of the lights, set fire to the curtain, the curtains to the scenery, which spread the flames throughout the boxes. All the theatre was consumed."

In seventy-five days a temporary house was constructed on the Boulevard Saint Martin, under the direction of Lenoir (called Le Romain), an architect of some talent. This theatre, actually that of the Porte Saint Martin (in which the "Closerie de Gènes," a *chef-d'œuvre* of the modern French drama, is now nightly represented), was first opened to the public by the first representation of "Adele de Pontieu," an opera in three acts, the words by Saint Marc, music by Piccini.

In 1794, the opera quitted the Boulevard, and was installed in the theatre built by order of La Demoiselle Montansier, in the Rue de Richelieu, opposite the Bibliothèque Impériale, where it remained twenty-four years. On the opening representation in this house, for the first time benches were placed in the pit. The present French Opera-house was built on the spot formerly occupied by the Hôtel de Choiseul, by M. Debret, architect.

*EXAMINATIONS AT THE INSTITUTE.*—The examiners of candidates for district surveyorships under the Metropolitan Building Act 1855, at their meeting on Tuesday last, returned the name of Mr. T. M. Rickman to the council as entitled to receive certificate of competency.

THE "MENDELSSOHN FESTIVAL" AT  
THE CRYSTAL PALACE

The anticipations we expressed, based upon the success that attended the great Handel festival of 1859, seem in course of realization. A year has not expired since that significant event led us to predict a new era in the annals of the chorus, and already another gigantic demonstration has conferred fresh honour upon its projectors, and proved that that success in both instances may be ascribed to causes more legitimate than the mere love of novelty. The musical festival has long been one of the institutions of the land, and Liverpool, Birmingham, Leeds, Bradford, Hereford, Gloucester, and Worcester are amongst the favoured spots where Music alternately holds her court, asserts her supremacy, and receives the homage of her votaries. In London, the "season" may be said to represent the great metropolitan festival in honour of Apollo; and, certainly, if the patronage bestowed upon operas, oratorios, and concerts, to an amount unparalleled in any other city of the world, may be taken as a criterion, it must be confessed the title is not altogether misapplied. The term, however, in its strict meaning, implies a congress upon a large scale, and the want of a building for its assemblage suitable in proportion to the extent of this vast metropolis, has delayed the observance of these monster reunions in its precincts, long after they have conferred an enviable distinction upon certain cathedral and commercial towns with whose names the practice has been now for many years honourably associated. The appropriation of the Crystal Palace, however, to this amongst its many other uses, has supplied a means of assemblage for such orchestras and audiences as the world has never before witnessed; and, in the absence of those acoustical excellences which distinguish some of our provincial music-halls, we may console ourselves with the superior size and singular beauties of a building which, filled with thousands, radiating with sunshine, and overflowing with the richest treasures of nature and of art, confers an *éclat* upon the colossal *fêtes* enacted within its walls which no other structure can supply.

In the Oratorio we imagine all that is sacred, sublime, impressive, and elevating that music can portray, and the appeal to the senses through its medium—such music as the great masters of the modern age have bequeathed to us, and the skill of modern performers presents to us,—will at once strike home to the heart through the medium of the ear, where the picture presented to the eye alone; unaided by the "concord of sweet sounds" which the genius of the painter, the sculptor, and the architect may create, will fall short of that ideal standard of excellence that we have preconceived for ourselves, and fall to create that impression that we expected to receive, in spite of our better judgment. Not a less singular and significant feature, too, of the oratorio, is the fact that the strictest opponents to aestheticism in matters of religion object not to assist at these sublime ceremonies, wherein the religious feelings of the mass are certainly wrought upon more effectually and unanimously by the conceptions of a Handel, a Mendelssohn, or a Spohr, than by those of a Raffaele, a Rubens, or a Michelangelo; and in the sublime choruses of Handel (first of all sacred composers) the sculptured and painted treasures of the world's art seem concentrated, and at the voice of his inspiration scepticism itself for once abandons doubt and is convinced. If, therefore, the appeal to the heart through a particular sense can obtain a response that the most rigid Puritanism may fail to elicit, let us welcome the oratorio as a compensation, or, we should rather say, a substitute, for those æsthetic aids which a prudent restriction denies to Protestantism; and in the humanizing effect produced upon us by clothing the most sublime truths of religion in the most beautiful strains of harmony and melody, believe that there are occasions when religion and the world are not incompatible.

Putting aside, then, that minute section of the public whose scrupulous objections lead them to apprehend danger in a practice so morally elevating and religiously inspiring, we view the progress of public taste for the oratorio as a matter of national congratulation, and regard its establishment as a permanent benefit. The appetite for these magnificent choral demonstrations once roused, it seems to us that nothing short of annual repetitions can appease it; for centenary anniversaries are rare occurrences, and even after embracing those of the lives and deaths of all the greatest writers of sacred music, and again subdividing the same into sections of centuries, a wide vacuum would remain between each. Time,

however, will bring its own suggestions, and experience its own conclusions.

The festival in honour of Felix Mendelssohn Bartholdy, which was held in the Crystal Palace, on Friday, the 4th instant, had no reference either to the birth or death of that gifted composer, who was born in 1809 and died in 1847, but was simply suggested as a fitting accompaniment to the ceremony of the inauguration of his bronze statue, cast by Messrs. Robinson & Cottam, from the model of Mr. Bacon. Shortly after the death of Mendelssohn, a subscription, headed by the Queen and Prince Consort, the Sacred Harmonic and Philharmonic societies, and the leading musical professors, was set on foot to provide a monument to the gifted man whose career was so intimately associated with this country. Unforeseen difficulties as to a site having been raised, the fund remained for years unemployed, until at length it was determined to expend it in a bronze statue, to be placed in some prominent position in the open air; and the result is the memorial in question, at present placed on the lower terrace of the Palace.

The career of Mendelssohn, like that of Handel, Haydn, and Beethoven, was much influenced by the appreciation of his works in this country, and from his success here a new stimulus was given to the exercise of his genius, and a sympathy for England awakened in his mind which he cherished to the last. To his tour through Scotland, in 1829, we owe the splendid overture to "Fingal's Cave," and to the same inspiration may be ascribed the symphony in A minor (called the "Scotch"), though not completed until fourteen years later. With our language and our literature he was as familiar as with his own; and his overture and music to Shakspeare's "Midsummer Night's Dream" have for ever connected his name with us and our immortal dramatist.

To attempt to recapitulate the works of Mendelssohn would greatly exceed our limits. His sonatas, concertos, preludes, fugues, "Lieder ohne Worte," and numerous other compositions for the pianoforte and organ; his symphonies and overtures; his instrumental octets, quartets, and trios; his music to Racine's "Athalia" and the "Antigone" of Sophocles; his "Hymn of Praise," "Lauda Sion," and psalms; his "First Walpurgis Night," his unfinished opera of "Lorely;" his innumerable songs, duets, and choruses; and, lastly, his superb violin concerto, have all become in this country "household words." How much more he would have done had he been longer spared we may judge from his posthumous works, including the "Edipus" of Sophocles, the oratorio of "Christus," and the *finale* to "Lorely."

But his greatest works we have reserved to the last,—his oratorios of "St. Paul" and "Elijah." The first of these was produced in London and Birmingham in 1837; the latter at Birmingham on the 26th of August, 1846, the crowning labour of his life; for he survived its magnificent reception but little more than a twelvemonth; since which it has come to be regarded as a masterpiece only excelled by those of Handel.

A lovely day, and the fame of "Elijah," brought together a concourse of visitors numbering between 17,000 and 18,000. The orchestra, of nearly 3,000 performers, comprised the chorus of the Sacred Harmonic Society, the leading professional choristers, with deputations from the principal metropolitan and provincial choral societies and cathedral choirs, and a band of first-rate instrumentalists, composed of the same materials as that of last year, the stringed instruments of which alone exceeded 250 in number. We thought the Palace had never looked more lovely,—and when, at three o'clock, Mr. Costa entered the orchestra, the appearance of both the building and the audience exactly resembled that of the Handel Festival last year.

The advancement in the art of orchestration since the time of Handel, whilst increasing the elaboration of the instrumentation of the works of subsequent writers, may have detracted from the grand simplicity which renders the choruses in his masterpieces unrivalled. At all events, the effect of the choruses of "Elijah" was not equal to those of the "Messiah" and "Israel in Egypt;" nevertheless, great effects were obtained, and a great success may be recorded.

We abstain from entering into any detail of the performance, as such may be found in any of the musical *critiques* upon the occasion. The first part of the performance, from some cause or other, failed to awaken much enthusiasm in the audience; but in the second part the charge was redeemed, and the choruses "Be not afraid," "Woe to him, he shall perish!" "He watching over Israel," and "Behold God the Lord passed by," were received

with an enthusiasm which only found its climax in the final "Amen."

Mlle. Parca and Miss Fanny Rowland were the principal sopranos; Mlme. Sainton-Dolby and Miss Palmer the contraltos; Mr. Sims Reeves, tenor; and Signor Belletti, bass; Messrs. Evans, Smythson, and Thomas joined in the concerted pieces.

The only *encores* of the day were awarded to Mr. Sims Reeves, in "Then shall the righteous shine forth," and to Mlme. Sainton Dolby, in "Oh, rest in the Lord." The other soloists exerted themselves to the utmost, but the concerted pieces, nevertheless, were coldly received. In conclusion, this first performance of "Elijah," at the Crystal Palace, may be regarded in the light of a trial, upon a grand scale, a large section of both audience and executants who are well versed in the oratorios of Handel being as yet novices in those of Mendelssohn. As such, however, it was a great achievement, and a great success. The unveiling of the statue followed too closely upon the finish of the oratorio to allow more than a portion of the visitors to see the ceremony, especially as regards those most interested in it, the performers. Beyond its moral, however, they did not lose much, as the statue appeared to us deficient in dignity, expression, and symmetry. We had but a hasty view of it, however, and a second one may cause us to modify our opinion.

The torch-light procession was highly successful, and the effect of the coloured lights upon the fountain marvellously beautiful.

ROYAL INSTITUTE OF BRITISH  
ARCHITECTS.

ELECTION OF OFFICERS.

THE annual general meeting of the Institute was held on Monday evening, the 7th instant, to receive the report of the council on the state of the property and affairs of the Institute, and an account of the funds; to elect officers of the Institute, and examiners under the Metropolitan Building Act, for the ensuing year; Mr. C. R. Cockerell, president, in the chair. There was a good attendance of members. Mr. T. Hayter Lewis having read the report, which was mostly congratulatory, and showed a satisfactory state of things.

Mr. Tite, M.P., moved a vote of thanks to the president, embodying a request that he would continue to hold the office, and enforced it by some cogent observations.

Mr. A. Beresford Hope asked permission, as an honorary fellow, to second it, and strengthened the remarks made. The resolution being carried by acclamation, Mr. Cockerell assented, gratefully.

Thanks were then voted to the vice-presidents and other officers of the past year, especially to Mr. C. C. Nelson, on his retirement from the duties of honorary secretary; and the ballot was taken for officers for the coming year. The following were elected:—

*President*.—Mr. C. R. Cockerell, R.A.  
*Vice-Presidents*.—Professor Donaldson, M.A. G. Godwin, and Mr. M. D. Wyatt.

*Honorary Secretaries*.—Mr. T. Hayter Lewis and Mr. James Bell.

*Honorary Secretary for Foreign Correspondence*.—Mr. F. C. Penrose.

*Ordinary Members of Council*.—Messrs. B. Ferrey, F. J. Francis, W. Haywood, G. Morgan, C. C. Nelson, J. Norton, F. W. Porter, R. L. Roumie, I. H. Steveson, and G. Vulliamy.

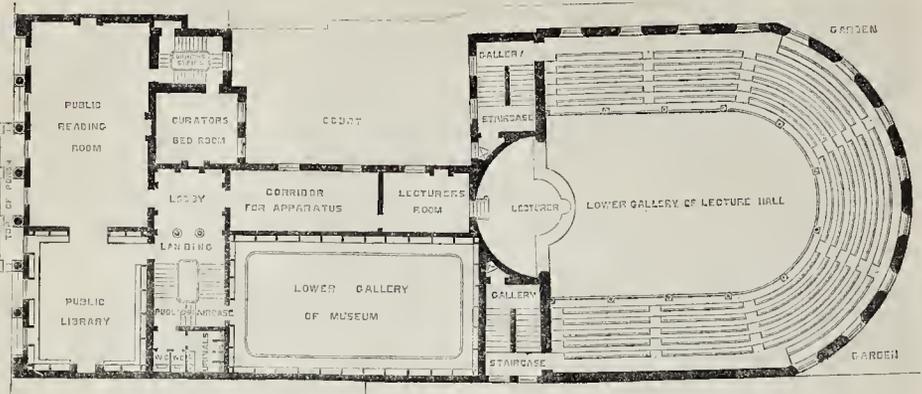
*Treasurer*.—Sir W. R. Farquhar, Bart.

*Honorary Solicitor*.—Mr. W. L. Donaldson.

*Auditors*.—Fellow: Mr. J. J. Scoles; Associate: Mr. J. T. Christopher.

The following were appointed to act as examiners under the Metropolitan Building Act 1855.—The president, the vice-presidents, and the honorary secretaries for the time being, with Messrs. Cole, Fowler, Gibson, Hesketh, Jennings, C. C. Nelson, J. W. Papworth, Pemettorne, Penrose, Scoles, Smirke, and Whitchord, fellows.

THE REPAIRING OF FLEET-STREET.—The repairing of the carriage-way of Fleet-street with new Aberdeen granite blocks, 3 inches wide, was completed on Saturday. The traffic had worn the old stone, which when laid down in 1846 was 9 inches in depth, to 4½ inches. About 6,000 yards of granite have been taken away, and new substituted, and the weight of material removed and replaced amounts to about 7,600 tons. The contract has been carried out by Messrs. Mowlem, Bart, & Freeman, of Millbank, Westminster, under the superintendence of Mr. Mortimer, on behalf of the City Commissioners of Sewers.



PROPOSED HARTLEY INSTITUTE, SOUTHAMPTON.—PLAN OF FIRST-FLOOR.

## HARTLEY INSTITUTE, SOUTHAMPTON.

The design, a view of which is given on the opposite page, was chosen from forty-four sets of drawings, submitted in competition for the building by the committee of the Town Council. Our readers already know something of the circumstances attending the selection. The design, according to present arrangements, is to be carried out at once, at a cost of 9,000*l.* for the building, and a further expenditure of 2,000*l.* for fittings, heating and ventilating, lighting, &c. The frontage is in the High-street, near the port, and is to be built of Portland stone. On the ground floor three doorways enter into an ample hall, for the display of statuary, on either side of which is a large class-room, one communicating with a laboratory and the other with the museum, which, with its two galleries, will afford large accommodation for the collections of curiosities, &c. A central passage on the ground-floor, with a staircase on either side, conducts to the lecture theatre, holding 2,100 persons, on the ground-floor and the two galleries. This lecture theatre is also to be used as a concert-room, the recess for the lecturer being available as an orchestra, and approached on the principal floor by a wide corridor, also used as a store for apparatus, &c. The whole frontage on the principal floor is devoted to the library and reading-room, at the back of which is situated a laboratory and the principal staircase, leading to three large class-rooms on the second floor and two floors of laboratories and two private studies for professors. The features of the design which caused its selection by the committee were the ample accommodation given by the class-rooms and the commodiousness of the lecture theatre, every window of which on the ground floor is available for ingress in case of alarm. Messrs. Green & De Ville are the architects.

## THE PROPOSED NEW ROAD ACROSS HYDE PARK.

SOME years since the great inconvenience to the districts north and south of Hyde-park, from want of a direct route of intercommunication for vehicles and foot-passengers at all times through the park, was started and fully discussed in the *Builder*, and a sunk road with fences and flying bridges suggested, as the best mode of effecting, amongst other arrangements, the object in view.

The subject just now has been revived with additional force, on account of the continued increase in the buildings and population both north and south of the park; the prospect of the opening of the Exhibition of 1862, in this vicinity, the new Museums at Brompton, and the formation of Horticultural Gardens, as well as of streets and squares on the property of the Royal Commissioners.

An association of noblemen and gentlemen for the promotion of the requisite communication between the northern and southern districts has been formed, and meetings are being held in the rooms of the Society of Arts, Adelphi, the council

of which society are desirous of promoting the object in view. At one of these meetings, it was said Mr. Page, the engineer, had stated that the whole work could be done for 30,000*l.* A numerous and influential deputation from the Association had an interview with the First Commissioner of Works (Mr. Cowper), and with the Ranger of the Public Parks (the Duke of Cambridge), urging the necessity of some sort of public road being opened across the park. Mr. Cowper admitted that the subject was well worthy of consideration, and promised that it should receive his best attention. As the road, he observed, to be of any public utility, must be accessible to omnibuses and cabs, and open at night, if such a road were made on the level it would seriously interfere with the comfort of the multitudes who frequented the park for recreation. If, therefore, the road was to be made on the level, he could not hold out much expectation that it would receive the consent of the authorities, but plans had been proposed for sinking a road below the level of the park, and he thought these plans were very well worthy of consideration. It had been suggested that a sunken road could be constructed from the Uxbridge-road to the Kensington Gore-road, along which cabs and omnibuses could pass without being seen by any one enjoying the park, and if such a scheme could be adopted the objection to it would not be very great. Then arose the question of expense. Just now such large works were being carried out in the metropolis, that it was almost hopeless to expect the ratepayers to bear any further taxation, at least until the main sewers were carried out. He would take care, however, that the subject should be considered by those who had the power of accomplishing the object the deputation had in view. He was glad that the deputation had not thought it necessary to propose any scheme of their own; because, in a matter of this sort, it was best to leave everything in the hands of the executive.

The Ranger said the subject was one which would require great consideration, and therefore he could not be expected to give an answer of approval without having first heard both parties interested. It was absolutely necessary that, in places such as London, large open spaces should be maintained for the health and recreation of the general public; and before he could give his assent to any plan for making a carriage-road across Hyde-park, he must see that these objects were not interfered with. The proposed road would also be attended with expense, and he did not think the public would like to spend a large sum of money for the convenience of any given locality. If the road were made, a new bridge would have to be made across the Serpentine, as that in existence would be of no service. However, he should be happy to assist the deputation as far as he could, consistently with his duty to the public. Mr. Fife, M.P. suggested that a sunk road might be made, and that they could go under the Serpentine. His Royal Highness said he would give the subject his best attention.

The road leading from the Marble Arch towards

Knightsbridge, and some of the other footpaths, we may here remark, present a very unsightly appearance, in consequence of the want of a properly-defined margin. In parts, the grass is trodden and withered to a very great width. The route has now become an important thoroughfare, and the number of foot-passengers is constantly increasing; but this should not prevent the careful preservation of the grass. The road should be made sufficiently wide, and then strict measures taken to keep the lines of grass neat and trim. It is this precision which gives so much beauty to all parks and ornamented grounds. In Kensington-gardens, and in the Regent's and Victoria and other parks, we do not notice this defect.

During the past winter, several of the fine old trees have been damaged by the storms; several during the past dozen years have either been removed or else have become shapeless trunks, and the young trees seem to be very slow in taking the place of the old ones. It has been suggested that manuring the gravelly soil to some extent would increase the growth.

The water of the Serpentine is just now clearer than it has been for some time past. It looks beautiful in these bright spring mornings; and it is to be hoped that the failure which has just been made at improvement will not cause the matter to be lost sight of; for it will be noticed that, although at present the water looks comparatively clear, a white murky sediment is stirred up by bathers.

## FALL OF A BUILDING IN LOMBARD-STREET.

THE houses previously occupied by the London and County Bank, in Lombard-street, together with some adjoining premises in Nicholas-lane, have recently been sold, and the work of removing the lots had been actively going on during the last week. On the 5th, while the men were engaged in taking down the old materials, the upper floor, encumbered with brick rubbish, fell with a terrible crash, carrying with it the lower ones to the cellar and basement, and killing one man.

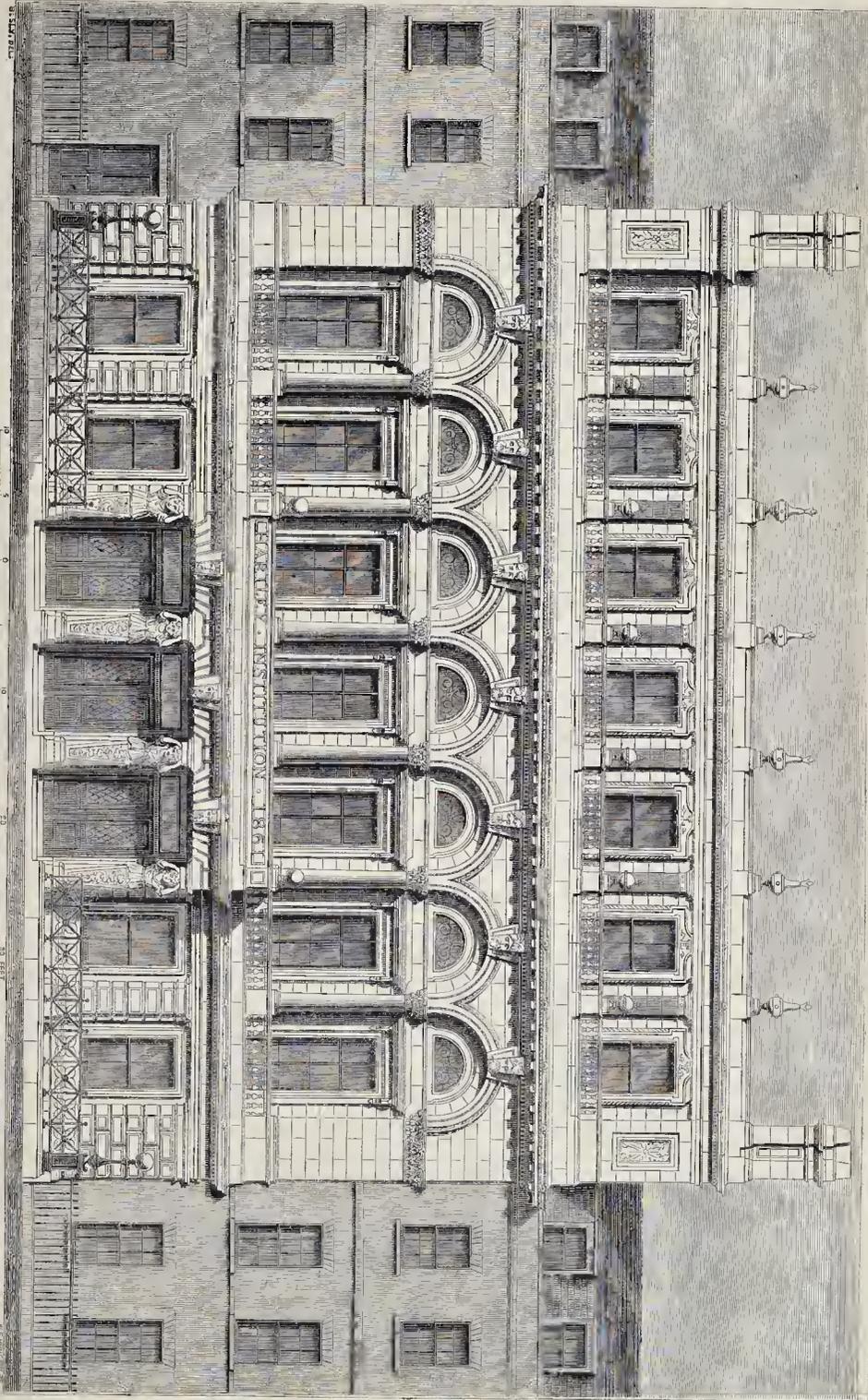
On Wednesday an inquest was held, before Mr. Sergeant Payne, in the course of which Mr. Lightfoot, clerk to Mr. Young, the district surveyor, pointed out that the district surveyor had no authority over buildings in course of being pulled down, unless they had been condemned.

The Coroner remarked that it would be useful if the surveyor would take a cursory view of premises when he saw they were being pulled down.

Mr. Lightfoot.—But if he saw anything wrong he had no power to give any order.

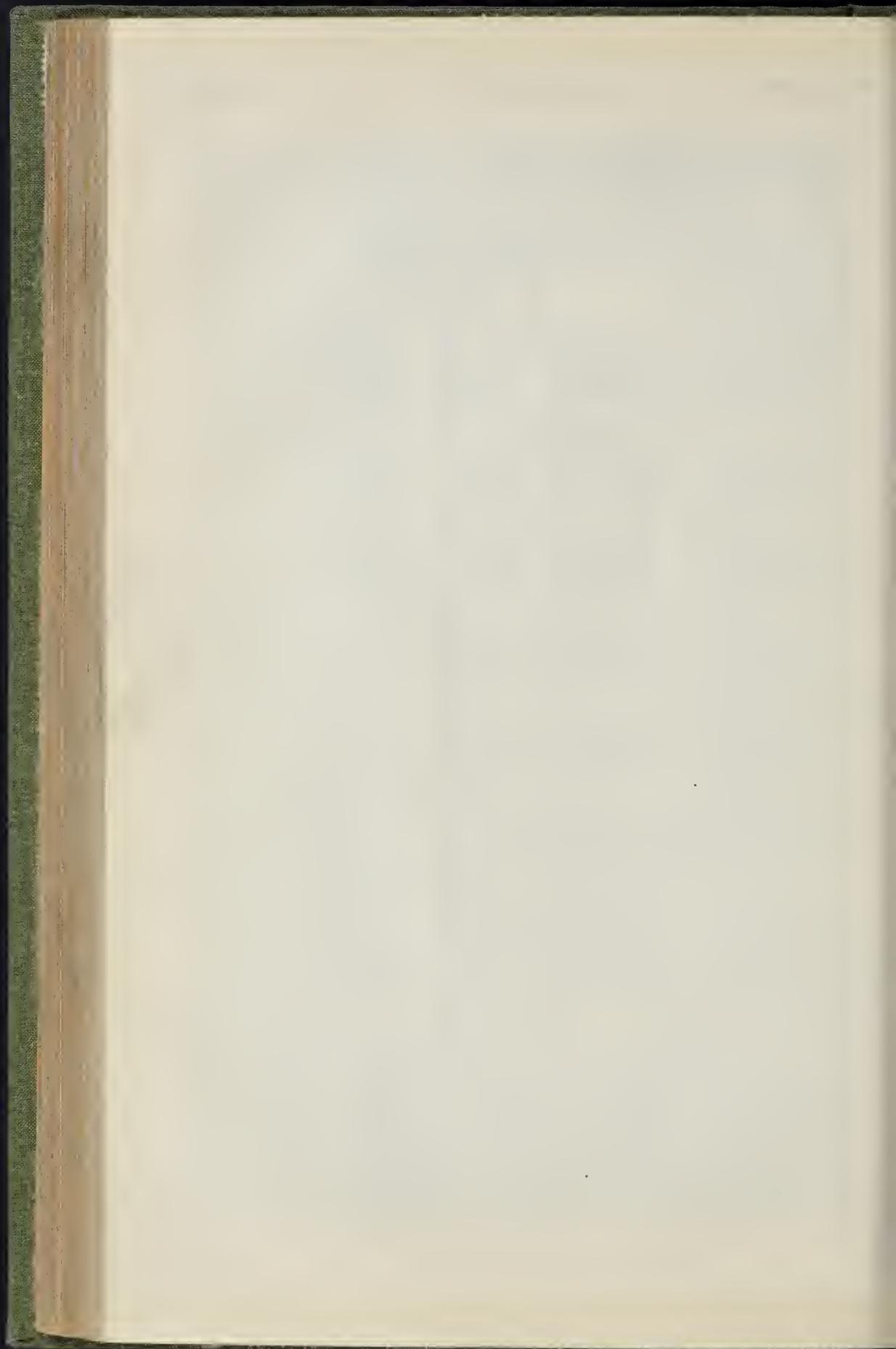
Mr. John Young, surveyor, said he had examined the broken girders of the floor which gave way, and found them to have the dry rot. He attributed the accident to the weakness of the girders and the weight which was put upon them. Had they been sound they would have borne a greater weight than had been placed on the floor. It was the duty of the person who used the floor for the bricks to examine the timber and see that they were in a state to bear the weight.

The jury returned a verdict of accidental death, with an expression of their regret that there was not sufficient protection afforded to the public and the men employed in pulling down buildings in the public thoroughfares, and if there was not adequate power vested in the district surveyor to enforce any order which required that security, that the coroner be desired to communicate with the Secretary of State for the Home Department, urging the introduction of a measure which would give the necessary authority.



SELECTED DESIGN FOR THE HARTLEY INSTITUTE, SOUTHAMPTON.—MESSRS GREEN & DE VILLE, ARCHITECTS

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LIVERPOOL ARCHITECTURAL SOCIETY.

The concluding meeting of the session of the Liverpool Architectural and Archaeological Society was held on Wednesday evening, the 2nd inst.

The president, Mr. F. P. Horner, in the chair. Mr. Huggins exhibited and explained his diagram, "The Genealogy of Architecture," showing the simultaneous origin of the various known styles practised in the world, from the earliest time to the present century; and which was graduated by horizontal lines representing the centuries before and since the Christian epoch. The Greek, generated by the mingling of Pelasgic with Egyptian and Assyrian elements, and the Roman, originating in the Etruscan and the Greek, and changing in the course of ages into the Christian Romanesque and Romanesque of lower Italy, formed the central and main trunk, from the sides of which flowed out, on the east the Byzantine, on the west the Lombardic. From the eastern side of the Byzantine, again, the Saracenic of Egypt, Syria, and Persia, and other styles were seen emanating in their chronological order, and from the other side of the same style the Sicilian and Venetian Gothic styles; while the development and relationship of the various Gothic styles of the north,—German, French, Spanish, English, Belgian, &c., were indicated. The origin and connection of the styles were shown not by line only, but by colour, which was applied to each style according to its characteristics, the trahéted and severer styles being shown by cold colours, and the arcuated and more ornamented by warmer and brighter.

The chairman then proceeded to criticize the various designs for a villa which had been sent in by student members in competition for the society's prize, and which were displayed on the walls of the room. Mr. Raffaele C. Isaacs, the author of the successful design, "V. A.," was authorized to select his prize.

The chairman then read his closing address to the meeting. In the course of it he said,—

"The question on which I dwell at some length, when addressing you at the opening of our session,—the design for the new Foreign Office,—remains yet in abeyance, and bids fair for some time to continue so. Whether this will lead to any alteration or modification in the views of the architect, or of those who decide on the matter, remains to be seen; but the subject, whenever it may be revived, will scarcely, I think, have lost anything of its primary interest or importance. The main question involved in every case of the kind, is, whether the design proposed is such as to merit the preference to be given to one or other pending buildings for Canada have been designed in a style much resembling that of the Oxford Museum and the Manchester Assize Courts (the two last-named having much in common), and in competition with Parliamentary buildings in Australia calls for the consideration of the style. If one is to have precedence, best adapted as a foundation for modern architectural design, and affords occasion also for duly weighing the question as to the part which circumstances of climate, quality, and available materials should bear in determining in every case the form of design; and, should any of the merits be engaged in the competition last named, or others pending on the Continent of Europe and in the Spanish Peninsula, I would desire to press upon their attention how much they owe to the cause of sound architectural design, and to the reputation of their profession abroad, to throw aside prejudices and give earnest heed to the bearing which the points I have named and other arguments have upon their choice of a style and their mode of treating it. The differences lately existing between the metropolitan contractors and their workmen for the time to have subsided, but as usual have left many marks of their existence, and one most serious and not readily antiquated, in the increased mortality among the working classes of London. The returns of the Registrar General distinctly point out this effect, and arguments were wanting to convince any of the folly of these disagreements in the form which, on the part of the workmen, they now usually take, this grave additional evil should surely weigh with the classes it relates to, so in the end are almost always the losers, and who as a general rule are urged on by interested and designing persons to press demands often utterly incompatible with the true relations of capital and labour, and of the practicability or probable effect of which they are very little capable to form a judgment. The death of the late noble president of the Royal Institute of British Architects has occasioned a vacancy which has, much to the satisfaction of the members of that body, and of the profession generally, been filled up by the election of one of the veterans of the profession and one of its most learned and experienced members. It is to be hoped that this step may mark a new era in the management of this central body of our profession, as, however valuable to a new society the support and continuance of an intellectual and influential person, as its president, may be, such a society as that of ours, whose object is so extensively and variously extending to all experience, be duly advanced and prospered by the direction and exertions of the leading members of the profession it represents.

The question of architectural examinations, not infrequently mooted among us, has been made the subject of grave consideration and of discussion and report, by the members of the Institute, the result of which is published in the minutes. The subject is as undeniably a very valuable one, as tending to insure at least a competent degree of knowledge in those undertaking the profession of architecture, and the Institute of British Architects, being the body of architects in the profession, seem the fittest to understand the responsibility such examinations would involve; but, as regards the higher examination proposed by the Council of the Institute, it seems to me not improbable that men in established practice may often prefer to forgo the honour of that title if it be obtainable

only at the cost of the irksome ordeal which is proposed, and, however desirable the proof that a new practitioner is competent for what he undertakes to direct, others, whose works give them a right to the title which they assure, may well be content if they decline to submit to admission to the leading body of the profession by the temporary negation of their claims implied in their submission to be examined as tyms.

The importance of iron as a constituent in architectural construction—a point I have before dwelt upon—is becoming constantly more obvious, and from time to time new forms of the material, in simple rolled bars, adapted for greater stress than has heretofore been laid on such, are presented to us. These, and the general substitution of wrought for cast girders, will certainly influence design; and it is well worth our thought how these can be best applied to insure constancy of design as well as sufficiency of construction. As I have before taken occasion to say, my own opinion is opposed to the extensive use of iron where architectural impressions of importance are aimed at. Much of this may be the result of habits of thought, but much too, I think, is founded on principles of art; and I touch on the subject, which recent circumstances have recalled to my mind, to draw attention to the necessity of duly weighing such questions if we are to have at once consistent architecture and the full use of our present improved means of construction. Reserving to subjects of local interest, a most liberal offer on the part of Mr. William Brown, to cover in a portion of the new Free Library and Museum, intended to have been reserved for purposes of future extension, and to devote it to matters connected with inventions in practice, has been lately the subject of consideration by a joint committee of this society and others. The matter interests the architectural profession, as opening the prospect of a manna of new materials, and applied science, and the committee at large are much indebted to Mr. Brown for this further proof of his generous liberality.

No buildings of much importance have, I think, been commenced in Liverpool or its neighbourhood during our past session, but many have been carried towards or to completion, and the great business centre of the town gains yearly year in the importance of its architectural features. The subject of the proposed public offices, equalled in interest by that of the projected improvements in the external and internal lines of communication of the town. It is to be hoped that the way may be seen to carry forward these most necessary projects, which have a special interest for our society, as embodying many of the points recommended by the Improvement Committee organized in great part among ourselves, and to myself they have the additional interest, that they coincide in their general tendency, and in several leading features, with what occurred to me when engaging in the competition for town improvements some years ago.

The subject of fire-proof construction, which, perhaps, I should have coupled with that of the use of iron in building, demands more attention generally than I think it has yet received; and I am reminded of it by the recent disaster to one of the leading buildings connected with benevolent objects in Liverpool. I cannot but hope that, in the reconstruction of this and in the erection of future buildings of the same kind, the character of the endeavour will be made to secure greater safety for life than at present generally exists; and in this instance I feel sure that the able architect originally designing the Sailors' Home would second such an object to the heart. The substantial and faithful character of the main building is evidenced by the small external damage it exhibits; and so firm an external frame would seem a most suitable recipient of fire-proof internal construction.

The question of lighting by gas, in my opinion, likely to take a new form, and, consequently, to demand the renewed attention of architects through the economy which seems likely to result from the use of the lime light with mixed gases. We should do well to keep our eyes always open to such questions and their various advancing phases.

An architect may at any time be called to give an opinion upon or to propose some new method or system of lighting, ventilating, or warming buildings; and, unless he take pains to keep his knowledge up to the mark of the continual progress of scientific and practical knowledge, he may find himself at fault when he least expects it.

No branch of knowledge is foreign to our art, and neither the youthful student nor the experienced practitioner can wisely neglect to cultivate in his stores of information on general art, on the various branches of physical sciences, or on the practical appliances at his command; and on the young and the practised alike it is the duty of those who love at heart the interest of their profession—the general community—of civilization and human improvement—to impress the obligation which they are under to make their profession honourable by the services it renders to the comfort, the happiness, and the intellectual enjoyment of their fellow-men."

COMPARATIVE PROGRESS OF ARCHITECTURE IN ENGLAND AND FRANCE.

ARCHITECTURAL EXHIBITION.

On Tuesday last, Mr. Parker read a lecture on the "Comparative Progress of Architecture in England and France during the Middle Ages." He began by fixing the year 1000 as the starting-point, on the ground that in the interval between the fall of the Roman empire and the eleventh century it was the usual habit of the people of both countries to build of wood. There are a few exceptions, such as, in the walls of the crypts of Hoxham and Ripon, and in the walls of churches at Brixworth and Dover; in France several crypts and some churches of the time of Charlemagne; but though of historical interest, they are not of much architectural value, and not numerous enough to preserve the arts of quarrying, cutting, and carving stone, which were lost for want of practice, and had to be learnt again from the study of Roman remains, when the fashion of building in stone was revived, immediately after the year 1000.

The Roman remains were more numerous and finer in some districts than in others, and were at

first freely used as quarries. The provincial character prevailing in different parts of France is partly to be attributed to the style of the favourite Roman model in each district. Thus, in Lyons and Burgundy, fluted pilasters continued to be used throughout the Gothic period, and, in many parts of France, plain round columns, with Classical capitals, were never entirely disused, even in the finest Gothic buildings.

In England there were scarcely any Roman buildings remaining at that time, sufficiently perfect to serve for models; and although the fashion of building in stone soon spread to England, the Anglo-Saxons were obliged to copy their own wooden buildings, for want of any other models. By this means they invented a style of their own during the first half of the eleventh century, which, although rude, is not devoid of merit. The earliest dated example is Deerhurst, in 1056, of which the original inscription is preserved, but there is no doubt that some are earlier and some later. This style was sometimes continued after the Norman Conquest, as at Lincoln and St. Alban's.

In France, much greater progress was made in the art of building in stone, and about 1050, Edward the Confessor sent to Normandy for masons to build his abbey at Westminster, the choir of which was completed and consecrated just before his death in 1066; the dormitory, with the vaults under it, which still remain, were probably built at the same time, as the monks who had to perform the service must have had some place prepared for them to sleep in. This is the earliest Norman building in England, and is probably about as much advanced as similar buildings in Normandy at the same time.

In Aquitaine, from the greater number and richness of Roman remains and the more civilized state of the people, the progress had been more rapid.

In Perigord, which is a part of Aquitaine, the Byzantine style had been introduced; but neither domes nor good masonry, much less sculpture, had then reached Normandy. Accordingly, the work at Westminster is quite plain; whatever sculpture there is was executed long afterwards.

After the Norman Conquest, England and Normandy became one country, and for about a century their architecture is the same. But the south of France was much in advance of Normandy. At Toulouse and Moissac the art of sculpture in stone had attained a degree of perfection to which it did not reach in the north for nearly fifty years afterwards. Gervase distinctly tells us that the chisel was not used in the "glorious choir of Conrad," built between 1100 and 1120; and a careful examination of the remains of that building fully bears out the fact. It is not probable that other churches were in advance of the metropolitan cathedral of Canterbury, and our examination of other buildings of the same period bears out the same fact. Where the capitals were within easy reach, as in the crypt of Canterbury, the cellars at Westminster, and the chapel in the White Tower, London, they were often carved afterwards, and this has tended to mislead inquirers as to the time carving in stone was introduced into England.

During the eleventh century it is clear that France was in advance of England, and some parts considerably in advance. The ruins of Reading Abbey, and the Priory Church of Leominster, in Herefordshire, part of the same foundation, in 1121, are so massive, plain, and rude, that if their history was not perfectly clear, they might pass for fifty years earlier.

Fine-jointed masonry was first introduced into England by Roger, Bishop of Salisbury, a native of Caen, about 1120, and the art of sculpture in stone about the same time.

It is recorded that two Greek priests were present at the foundation of St. Bartholomew's, Smithfield, in 1123, a proof that there was at that time considerable intercourse between England and other parts of the world, and which gives a probability to a certain mixture of Byzantine style in English Gothic. It probably came to us through Anjou. The long peaceful and prosperous reign of Henry II. was very favourable to the progress of architecture, and the great change of style called the Transition took place during this reign.

He held his court frequently at Angers, and the whole of the western provinces of France, nearly one-third of the territory, belonged to his crown, and formed one kingdom with England. The meeting of the bishops and nobles of all these provinces, from the north of England to Gascony, at Angers as a central point, and this at a time when architecture was a subject on which all the

greatest minds of the age were engaged, could not fail to have considerable influence and accelerate its progress.

The style of Anjou and Poitou at that time was a mixture between the Byzantine of Perigord and the Romanesque or Norman. Instead of actual domes forming the roofs, domical vaults were used under timber roofs, and these seem to have led the way to the English system of vaulting, which is different from that practised in the royal domain of France.

The Abbot Suger had there begun the change of style at St. Denis; but his work is so heavy and has so little of the Gothic element that Mr. Parker did not consider it at all in advance of English work of the same period. The pointed arch alone does not constitute the Gothic style.

He considered that the French Gothic of the royal domain and the English Gothic of the English dominions was developed almost simultaneously and independently one of the other, that one is not copied from the other, and it is difficult to say which has the priority of date.

English Gothic was fully developed between 1190 and 1200; French Gothic not at all earlier. The ornaments commonly used in England in the thirteenth century, such as the tooth-ornament and the ball-flower, are frequently, he said, found in the English provinces of France in the twelfth, and are scarcely found at all in the real French Gothic of the royal domain.

Gothic mouldings were freely used in England between 1190 and 1200, as at Lincoln, Winchester, and Ely; at that time they were scarcely used at all in France, and the rich suites of mouldings so common in England are rare in France. French windows have usually no mouldings at all; the opening is merely cut through the wall, and left quite plain. Clustered pillars are also comparatively rare in France; plain round columns, with classical capitals, are used in some of their finest Gothic buildings; and the round abacus is very rare in France.

Plate tracery appears to have been introduced at Lincoln by S. Hugh, of Burgundy, from that province, but this is rather a doubtful question. It was certainly more used, and developed to a greater extent and on a larger scale there than in England; but a complete series may be found at home without going abroad for it.

Bar tracery appears to have been first used in the Sainte Chapelle at Paris, and immediately afterwards in the Chapter-House at Westminster.

English chapter-houses are unrivalled: the octagonal vaults, with a single central pillar, do not occur in France. On the other hand the vestry is a much more important feature in French churches than in English ones. The large doorways and porches of the French churches have no counterpart in England; on the other hand, the whole west front covered with sculpture, as at Wells and Exeter, or the lofty arches of the west front of Peterborough, are unknown in France. The French churches in general have greater height, the English greater length, and a better proportion of the parts to each other. Fan tracery vaulting is one of the great beauties of English Gothic, and is unknown in France. There is a much greater variety of window tracery in the fourteenth century in England. The French Flamboyant and the English Perpendicular show how far the styles of the two countries had diverged from one another; and yet they have many things in common.

There is much to study and to admire in the styles of both countries, and it is not necessary to depreciate the one in order to raise the other.

#### CHAMBERS FOR THE INDUSTRIAL CLASSES.

On the north side of Holborn, once the back part of an old-fashioned hostelry called the Black Bull Inn, some substantial buildings of brick have been raised, with staircases leading to various sets of apartments, something similar to the dwellings erected in Streatham-street for the industrial classes by the society presided over by the Earl of Shaftesbury.

In large towns, where space is expensive, it cannot be doubted that houses on this plan, which may be erected for those who can afford to pay only a small amount of rent, offer an advantage, provided that the ventilation of the apartments is properly considered.

In the "Black Bull Inn Chambers" the houses, arranged in the present manner, although built of more substantial materials and less picturesque in general appearance, remind one of the old London inn-yards in which, in times gone by, many an anxious traveller in search of fortune and

fame had been put down in this great metropolis. Although the Black Bull Inn Chambers have not been finished, all are let to respectable tenants at the rate of 6s. per week for two rooms, and a proportionately larger sum for three apartments. We are told that this place, on which had formerly been stables of but little value, now returns upwards of 10l. a week—more than 5000l. a year—a sum sufficient to give a very good profit on the capital expended. This is a private speculation, and ought to be an encouragement for others to give a careful eye with a view towards improvement to the hundreds of places which, even in the City, are at present waste and unprofitable.

Not wishing to be intrusive, we only examined two rooms, which were unoccupied, and found them rather small for a family; but were told that the others were much larger and more airy. On the west side the apartments have been built against old premises; the other parts are open. On the west side, however, the ventilation of the rooms might be greatly improved at a small cost. As regards the size of the apartments the superintendent said that care had been taken not to let even the sets of three rooms to persons who had more than three children. This is one of the difficulties attending persons of moderate income in London. As the family of a working man increases, his expenses become greater, while the wife, in consequence of household duties, is unable to work at any employment which might improve their means, and consequently to find proper house accommodation, although the used is greater, becomes more and more deficient.

In connection with the Black Bull Inn Chambers there is a washhouse. Water is plentifully supplied on the different flats, where there are closets; and shafts have been provided for the dust and refuse.

In erecting such blocks, an architect conversant with the best arrangement and ventilation of dwellings of this description should be consulted: space might thus be made of greater use and more healthy conditions provided. We hope that what has here been done will lead others to look carefully at dilapidated back slums, and consider if, by careful drainage and the erection of well-planned dwellings, a safe income might be assured, and a comfortable home provided for workmen who are obliged to labour in the heart of the metropolis.

#### EMBANKMENT OF THE THAMES.

A REFERENCE on this subject took place on the 4th instant in the House of Commons, when Sir J. Pakington moved for a select committee on the subject, said that whoever had watched the thoroughfares of London for the last thirty years must have remarked that they were gradually becoming impassable. It took a longer time to go from London-bridge to the Great Western Railway than from London-bridge to Brighton, or than from the Great Western to the terminus of the Metropolitan Board of Works was carrying out a general system of drainage, and had in hand the construction of high-level, mid-level, and low-level sewers. If these plans were executed there would be no open communication between the West End and the City for the space of two years, and the carrying away of materials from the tunnels for conveying the sewage would create a serious nuisance in the principal thoroughfares. The scheme of Mr. Bazalgette for taking the low-level sewer along the bank of the Thames was concurred in by the late Mr. Stephenson; but, owing to the difficulties it encountered, it was afterwards determined to take it along the Strand. It was the more important, therefore, that the subject of the embankment of the Thames should now be taken into consideration. Various plans hitherto framed for that object had been opposed by the wharfingers; but, if the committee for which he had now asked were granted, it would be shown that the execution of so magnificent a metropolitan improvement, so far from injuring, would much enhance the value of the property of the wharfingers. Moreover the railway companies now proposed to cross the Thames with their lines, and the question of the embankment of the river must be settled before these companies obtained their bills, otherwise it could never be carried out. He believed the Select Committee would report in favour of the execution of this great work, and then would come the question of the means to be provided for that object. The Metropolitan Board of Works proposed to expend on the making of the low-level sewer a sum of 2,310,000l., and that would, of course, form part of the embankment scheme. The Board of Conservancy of the Thames were also most anxious that the undertaking should be accomplished, and were willing to consider whether a portion of the revenue to be obtained from the wharves should not be applied to that purpose. In his opinion this was not a local but an Imperial question. Non-members might say "No," but he put it to the House whether the saving of time to the vast number of people in that object, the habit of passing to and fro in London which would be effected by this scheme was not a sufficient reason why the Imperial exchequer ought to contribute to its execution. Large grants were made for the improvement of various parts in the kingdom, and he did not see why there should not also be a grant for improving the navigation of the Thames. Besides improving the navigation the embankment would be extremely valuable in a sanitary point of view, both by supplying a fine public walk and facilitating the cleansing of the river. Sir Joseph then moved for a select committee to be appointed with a view of providing for the increasing traffic of the metropolis by the embankment of the Thames.

Mr. Cowper thought the House would have no objection to the motion. It did not require any argument to show the necessity of free communication between Charing-cross and London-bridge. It was generally admitted that the embankment would be of advantage to the navigation of the river; but the threatened stoppage of the central traffic of the metropolis during the construction of the low-level sewer along the Strand and Fleet-street, undertaken by the Metropolitan Board of Works, rendered it very urgent that the committee should proceed to consider this subject immediately. It was to pass very near to the foundations of Somerset-house, and not far from the foundations of St. Paul's Cathedral. The great weight of the latter and the character of the soil on which it rested afforded a strong reason why a committee should at once be appointed to consider what ground there was for apprehension of danger to that magnificent structure. He must altogether demur, however, to the allegation that this project could be effected in any way upon an Imperial question. It appeared to him more entirely local than almost any other that could be mentioned.

Various other speakers took part in the discussion. Lord Palmerston said he was sure the House would not agree to expend any portion of public revenue on these local improvements of the metropolis. But it might be that the committee might think some fund could be formed and some mode devised of offering a fair remuneration to capitalists who would invest money to works connected with this embankment. The inquiry, therefore, seemed to him to be one very fitting for a committee to undertake, and they were not, in his opinion, superseded at all by the existence of the Metropolitan Board of Works, which had opened to be a member of a committee appointed two years ago to inquire into the state of the Thames, and they had evidence given to them showing what great advantages would arise in every point of view from a good embankment of the Thames on proper principles. It would secure greater purification of the bed of the river: it would improve the navigation; it would be conducive to the general convenience of the metropolis. In every point of view it was a scheme proper to be encouraged.

Mr. John Locke said the inhabitants of London did not care to expend any portion of public revenue to delight the eyes of gentlemen visiting the metropolis from every part of the country, the expense ought to be met, to a certain extent, by the Imperial treasury. Sir S. St. John said the metropolis was committed to the expenditure of 7,000,000l. on the drainage scheme, and the ratepayers were already crying out that they derived no benefits proportioned to the rates levied. They were consequently not likely to contemplate with pleasure the feelings the present proposition. He did not wish to introduce an Imperial *régime* into this country, but he could not help regretting that the Government should have taken the Government shrank from dealing with great questions when he saw the improvements which had been effected in Paris. All that was needed was that the noble lord the member for Tiverton should carry it out in the same firm manner in which he had carried the Snake Bill, which reflected honour upon him.

The motion was finally agreed to, an amendment as to the amount of funds from the district benefited having been negatived.

#### COMPETITIONS.

**Faling Cemetery.**—The Burial Board of the Faling Cemetery has selected the design sent in by Mr. Charles Jones, of Lombard-street; Chambers.

**Exeter Branch Bank.**—With respect to the paragraph which appeared in your last number, I beg to state that I have made use of the same phraseology as that employed by the manager in announcing to me the award, without any intention of misleading any one; and I desire to take this opportunity of expressing my perfect confidence in the uprightness of all parties concerned in this competition.—I am, Sir, &c.

EDWARD C. ROBINS.

*From the Manager to Mr. Robins.*

"DEAR SIR,—The directors of the Bank selected yesterday the design they will adopt for building the Bank-house at Exeter, the motto being 'A wise fan,' and Messrs. Leunedy & Rogers, of London and Bangor, the architects.

The first premium of 10l. 10s. was awarded to the design marked 'M. I. B. A.,' and the second to 'Use,' &c.—I am, Sir, &c.

D. DEBAY, General Manager."

#### NEWS FROM DUBLIN.

The metropolitan churches, so long discredited, with few exceptions, in an architectural point of view, are displaying marked improvement, and Dublin will before long boast of some good ecclesiastical structures. St. Saviour's is now being completed internally, and will contain the last work of a "pieta," of the late eminent sculptor, John Hogan. John-street chapel is to be thrown down, and a handsome Gothic building erected in its stead. We hear that Church-street chapel is likewise doomed.

At Leeson-park, the Molyneux new church and asylum buildings are rising up, and will cost about 12,000l. The church will comprise nave (97 feet by 25 feet 5 inches), aisles, transepts (93 feet 8 inches by 25 feet 6 inches), apsidal chancel, tower, porches, &c.; and he early Gothic in style: the tower and spire placed at north-east angle, attaining an altitude of 132 feet. Material, granite, with chiselled dressings. Mr. R. Carroll is the architect; Mr. Bolton, builder.

St. Andrew's Church, recently destroyed by fire, is to be rebuilt, and several sets of plans sent in competition are before the committee. We believe that Gothic is in the ascendancy.

St. Ann's Church is being repaired, altered, and renovated, internally, with what amount of

judgment we cannot of ourselves say, but accounts are unfavourable to some of the works.

At Rathgar, the foundation-stone of a new Roman Catholic Church has been laid; and new Protestant Presbyterian and Baptist churches are building, or being commenced, in the neighbourhood. A town has sprung up here within the last few years, and building ground formerly disregarded is now valuable.

#### ELLSMERE MEMORIAL, WORSLEY.

On Tuesday, the 1st of May, the top-stone of this monument, an engraving of which was given in our pages, was laid by Mr. Webber, architect. The Rev. St. Vincent Beechey, M.A., rector of Worsley, in a short congratulatory address to the men, made allusion to the fact that not a single accident had happened to any of those employed upon the work, notwithstanding its being carried forward through one of the severest winters known for years.

In a few weeks we understand the whole of the works will be completed, as the carving and iron-work will be proceeded with rapidly. We are glad to hear that, in spite of the severe weather and heavy gales, the monument, though standing 40 or 400 feet above the level of the Liverpool and Manchester railway, has not been disturbed or affected, but has been proved to be perfectly correct and true from base to final point.

#### CHURCH-BUILDING NEWS.

**Kegworth (Leicestershire).**—The works of restoration at Kegworth Church have been carried out on designs by Mr. Joseph Mitchell, of Sheffield, architect. The church will now accommodate 100 persons.

**Wymondley (Hants).**—Within the newly-erected porch of St. Mary's Church, says the *Cambridge Chronicle*, a monument, of peculiar design, has been erected to the memory of the late Colonel Plumley. The style is Early English, and the monument is carved, and so arranged as to occupy the whole side of the east wall. The upper part consists of two small discontinuous arches, with carved spandrels on either side, representing branches of the rose and thistle; in the centre is a pierced quatrefoil, containing a white statuary marble tablet, upon which is engraved the inscription; the whole being supported by four small pillars of Belgian marble, with bases and capitals of stone. Between the two centre pillars is a base, containing a brass plate, enumerating the events of the principal battles in which the deceased colonel was engaged. The monument was designed by Mr. A. W. Blomfield, son of the late Bishop of London; and executed by Mr. Thomas Whitehead, of Royston.

**Ely.**—Ely Cathedral is constantly progressing in ornamentation, through the addition of stained glass and other decorations. The six clerestory windows over the steepled portion of the choir are to be filled by the Sparke family; two are now almost completed. The beams and rafters in the triforium are being painted in the same style as the roofs of the transepts. One bay is finished, the thistle is the predominant ornament; the design in the other bays is to be varied. Mr. Le Strange's task of painting the roof of the nave is progressing. The sides comprise a series of medallions, each containing the head of one of the patriarchs, being united by continuous tracery, and representing on either side the genealogy of our Lord, commencing at the east and terminating in the west end, where, at the words, "which was the son of God," the scroll unites itself with the central portion of the roof. The first fresco is a representation of the creation of man; and then follow eastward subjects taken from the Bible history, supported on either side by figures of prophets.

**Kettering.**—On Tuesday before last a paper kite, constructed for the purpose, was sent up over the church spire, with the view of attaching cords to the top, by means of which the lightning conductor is to be mounted. The workmen succeeded in attaching the cords to the summit of the spire.

**Hanley.**—A new public cemetery for the borough of Hanley, and the first which has existed extra-murally in the Staffordshire Potteries, has just been opened. It is situated on the left of the highway from Stoke to Hanley. The whole area of the cemetery is twenty acres. The cost of the erection is 2,750*l.*; and the total cost, including purchase of land, will approach 13,000*l.* when the cemetery is fully completed.

**Bridgnorth.**—At a recent vestry meeting as to the restoration of St. Leonard's Church, and for the purpose of appointing a committee in this

matter, the chairman opened the business of the meeting by reading a letter from Mr. Griffiths, architect, Quatford, after which a warm discussion arose. The bone of contention was the appointment of architect, the parish being in favour of Mr. Griffiths, whilst the patron of the living, the incumbent, and the whole of the clergy advocated the employment of Mr. Scott. The election of architect will, it appears, be left in the hands of the building committee, which was appointed.

**Worcester.**—The work of restoring the cathedral has been re-commenced. The south side of the cathedral is the point to which attention will first be turned, as being in a state of greater decay and requiring more substantial repair than any other portion. The western end has already been made secure, but it is hoped that the re-opening of the ancient entrance there will form part of the proposed plan of restoration. So extensive are the works contemplated that they will probably be four or five years in hand.—The *Worcester Herald* laments that the fine old relic of Medieval architecture known as the "Guestern Hall," is doomed to be destroyed, unless the friends of ecclesiastical architecture come forward for its preservation. This foreboding appears to have arisen from the fact that the Dean and Chapter property has passed into the hands of the Ecclesiastical Commissioners.

**Lancaster.**—Upwards of 1,000*l.* have been subscribed towards the restoration of Lancaster parish church.

**Stainland (Yorkshire).**—Messrs. John Bailey & Co., of Manchester, have just completed a large clock—now going in the tower of Stainland Church. This clock strikes the hours and quarters upon steel bells, made by Messrs. Naylor, Vicars, & Co., Sheffield. The dials, four in number, are each 6 feet in diameter. The main wheels are each 18 inches in diameter.

**Richmond (Yorkshire).**—The opening of the Church of St. Mary's, at Richmond, after restoration, took place on 10th April. The plans of the new church are by Mr. Scott, who has adhered, as far as possible, to the old ones. The tracery of two of the east windows has been presented, and that of the third has been inserted to correspond with the lancet windows of the south aisle. The arches which separate the chancel from the aisles have been changed into Early English double arches, with a quatrefoil, pierced in the spandrels. The capitals of the shafts are enriched with oak and ivy leaves. The piers of the nave, except the two nearest the tower that have been retained from the old church, are clusters of eight shafts with plain Early English capitals, from which spring two centred arches. The clerestory is pierced by ten windows of the same character as those of the old church—flat-headed perpendicular,—but with deeper splay. The carved roof of the chancel is panelled in squares, which are crossed by diagonal mouldings. The roof of the nave is open. Both are of plain varnished deal. The interior mouldings of the chancel arch spring from a cluster of shafts in each side, which form corbel tables, the bases of which are decorated with leaves and clasping tendrils. The north porch has been restored, and the south altogether rebuilt. The walls are of stone, pierced by trefoil-headed windows. The east windows have been filled with stained glass; that in the chancel—a five-lighted window—is by Mr. O'Connor, of London. The pulpit is of white stone, and of an octagon shape. It contains sound pipes, which are connected with others in the church for the use of deaf people. The seats, of varnished oak, are low, with a plain square moulded head. The church is warmed by hot-water pipes, and fitted up for gas. The dimensions of the new buildings are as follow:—Chancel: length, 41 feet; breadth, 17 feet 3 inches; height, 28 feet; breadth of each of the chapels, 18 feet 5 inches. Nave: length, 86 feet; breadth, 23 feet 3 inches; height, 33 feet; breadth of each aisle, 15 feet 3 inches.

**Hull.**—The committee for the erection of the New Church, Beverley-road, Hull, on the 25th ult., passed a resolution, by which they accepted the design submitted by Messrs. R. C. Sutton & J. L. André, of Nottingham and London, architects. The church will be of red brick, in the Geometrical style. The plan shows a broad clerestory nave, with lean-to aisles, divided from it by arcades of five bays each, a chancel with aisles extending nearly to the east end, and a vestry on the north. A lofty tower and spire is placed at the south-west angle of the nave, forming a south porch; above this entrance, an iron bracket projects from the wall, carrying an ornamental clock-face. The chief portion of both the external and internal decorations will be obtained by the orna-

mental disposition of the brickwork, stone being used for the window tracery and door heads. The accommodation on the ground-floor will seat 800 adults, whilst a west gallery will contain 250 children, making a total of 1,050.

**Carlisle.**—The foundation-stone of a new Congregational chapel has been laid in Charlotte-street, on a triangular plot of ground, where that street joins Milbourne-street. The foundations of the whole building are laid out, and the walls have reached a few feet above the ground. The church will consist of an octagon, in which a circle of 56 feet diameter may be inscribed. There will be school accommodation for children, both boys and girls, to the number of 500, and class-rooms and vestry-room will be attached, together with a residence for a chapel keeper. The site being below the level of the bed of the river Caldew, the architect has endeavoured to raise it as much as possible above the level of the surrounding houses, and at the same time to give it the distinctive character of a religious edifice. The material used will be a white Lazonby stone—a new material, according to our authority, the local *Journal*—in Carlisle architecture. The style adopted by the architect—Mr. Ralph Nicholson, of Halifax—is Early English Gothic, treated freely to allow the admission of as much light as possible. The level of the floor of the church will be raised 11 feet above the surrounding ground, and will accommodate, when completed, about 750. The seats and woodwork will be stained and varnished, and the church warmed by Gurney's stoves. The works have been contracted for severally by Messrs. Armstrong, Robert Creighton, Norman, Ormerod, Blaylock & Pratchitt, Binin, and Tweddle.

#### PROVINCIAL NEWS.

**Cardiff.**—The new gravng dock, built by Messrs. Hill, shipbuilders, is nearly completed at Cardiff. The length of the dock is 408 feet; width, 70 feet at the upper part, and 48 at the entrance. An engine of 26-horse power has been erected alongside, the contract being taken by Mr. Dawson. Messrs. Hemingway, Penson, & Cooper, are the contractors for the gravng dock.

**Hereford.**—A new grocery store in High-town, on the site of the old *Sau Tavern*, is described by the local *Times* as a city improvement. The front of the premises is worked in Bath stone, except the pillars supporting the basement and the surbasses, which are of Gristead sandstone. The ground-floor forms an arcade, an arched doorway separating two plate-glass windows, about 12 feet by 6 feet, with brass-drawn sash-bars. This part of the building is separated from the first floor by a cornice and façade, above which are four pilasters with composite capitals. The windows are enriched with architrave mouldings, surrounded by carved drapes of fruit, flowers, and foliage. The entire front elevation is a little over 30 feet. The architect was Mr. T. Nicholson, and the builder was Mr. Richard Welsh, both of this city.

**South Shields.**—We are requested to state that the solar lights for the large hall of the new Mechanics' Institute here were manufactured and supplied by Mr. James Faraday, of London.

#### SCHOOL-BUILDING NEWS.

**Grantham.**—A new Wesleyan day school, on the Wharf-road, has been opened. The design of the building is simple. The north or principal front is Elizabethan, with mullioned and transomed windows, and has a bell-turret at the north-west angle. On the ground-floor is an infants' school-room, 41 feet by 24 feet, with class-room 20 feet by 14 feet adjoining, and above a mixed school-room 49 feet by 24 feet, with a class-room 26 feet by 14 feet. The building is of red and white bricks, with Ancaster stone dressings. Mr. W. Thompson, of Grantham, is the architect, and Mr. F. Brewin, the builder.

**Long Melford (Suffolk).**—The foundation-stone of new schools was laid on April 27th by Lady Parker. The buildings comprise a school for 72 boys, with class-rooms; a school for 72 girls, with class-room; and school for 100 infants; with residences for master and mistress. Mr. A. H. Parken, of London, is the architect; and Mr. Fordham, of Melford, is the builder. The contract is taken at 1,581*l.*

**Bedford ( Beds ).**—A national school has been erected in this parish. The building is designed in the Gothic style, by Mr. Jas. Horsford, of Bedford, the outside being of white brick, with stone dressings to the windows. A bell-turret of stone rises in the centre. The length is 52 feet; width 20 feet; and the cost about 550*l.* Mr. Cunvin, of Bedford, was the contractor.

**Liverpool.**—The foundation-stone of the new parochial schools about to be erected at the village of West Derly has been laid by Messrs. J. P. Heywood. The site is in immediate proximity to the new parish church, and the land has been given jointly by the Earl of Sefton and H. B. H. Blundell, esq. Mr. H. P. Horner is the architect; and Messrs. Nicholson & Ayre are the contractors. The cost of the erection is defrayed by the grant from the Privy Council of 1,567*l.*; and private subscriptions, 2,450*l.* The schools will be erected in the same style of architecture as the parish church.

**Newton-le-Willows.**—New schools are in course of erection at Newton-le-Willows, about five miles from Warrington. The building will consist of a boys' and girls' school in the centre, with a dwelling at each end for the master and mistress. Government has made a grant of 1,200*l.*

**Manchester.**—The foundation-stone of new Wesleyan schools, to be erected on a plot of land at the corner of Duke-street, Gravel-hane, Salford, has recently been laid. They are to be two stories high, of brick, with stone dressings, and will accommodate 1,000 children. The land has cost 800*l.*, and the estimated cost of the building is 2,500*l.*; making a total of 3,300*l.*, the whole of which sum has been, or is to be, raised by voluntary contributions.

#### MIS-STATEMENTS OF AUTHORS.

SIR,—My attention has fallen on the following paragraph in "Pagan or Christian?" by W. J. Cockburn Mair:—"It is satisfactorily shown by Mr. Watkins Lloyd that the proportions of the entire designs of Greek temples were ruled by fixed ratios, based on the *hecatonpedon*, or 'hundred Attic feet in the breadth of the front,' so that, certain great dimensions being given, the whole of the rest can be supplied. Just as we find all the particulars of a triangle from any three of its elements" (page 73). It is not the fact that I prove, or assert, or furnish grounds for proving against the Greek architects any system so absurd. As my real results are at present on record only as an abstract of a lecture in the transactions of the Architects' Institute, and therefore not in the way of defending themselves, may I request the publicity of the *Builder* for this repudiation?

Surely, when a writer has the large privilege of writing unlimited nonsense in his own name, he might, whether Pagan or Christian, abstain from making free with another's.

W. WATKISS LLOYD.

#### Books Received.

*The Larch Disease, and the present Condition of the Larch Plantations in Great Britain.* By CHARLES M'INTOSH, Garden Architect, &c. Blackwood & Sons, Edinburgh and London. 1860.

The larch tree, upon which so much dependance has been placed by landed proprietors, especially in Scotland, during upwards of a century, appears now to be, in the majority of situations in this country, in a state of decay.

The most opposite views have been held by different authorities as to the cause of disease in the larch. Among these may be mentioned,—degeneracy in the seed; too wet and stagnant soils and subsoils; want of sufficient moisture at the roots; soils and subsoils surcharged with oxide of iron, or other deleterious mineral matters; microscopic fungi; insects; ungenial climate; atmospheric influences; and bad management.

These have all by turns been charged as the source of the disease, and most or all of them, Mr. M'Intosh thinks, contribute their share; but the action of these causes, in many cases, he remarks, remains very obscure, and hence the great variety of opinions that have been advanced on the subject.

As to the value of the larch as a timber tree for the purposes of domestic and naval architecture, the author says,—

"There are purposes for which it can never be put on an equality with English oak in the latter case, or Baltic pine in the former, even had it continued in a healthy state. It is no doubt occasionally used by some architects in house-building, where large unworked timbers are required, as in roofing, joisting, &c. But even for this purpose the tree should be of iron firmity to one hundred years' growth, and even in these it is important that no symptoms of disease should exist, for the fungoid, or what is called the dry rot, attacks are much more likely to be encouraged in the dead than in the living tree. It is a well-known fact that a diseased plank of larch has communicated the fungoid disease to the adjoining timbers, and caused the destruction of the whole fabric; and cases

have occurred where whole roofs have had to be removed in consequence of the warping of the timber by the heat of the sun transmitted through the slates. As regards application to domestic architecture, as a substitute for Baltic pine, unless for buildings intended for a temporary purpose, or those of an inferior description, such as cottages, agricultural offices, and the like, it is quite a fallacy to suppose it economical. On this point architects entertain but one opinion. "The extra expense of working it, and the time and labour bestowed in attempting to prepare it by seasoning, even presuming it growing on the proprietor's own estate, are admitted greatly to exceed the expense of the carriage, under all ordinary circumstances, of the best Baltic pine from the nearest port. For internal furnishings, and the other departments of the joiner, the larch is wholly unfit, in consequence of its great tendency to warp, and the expense of working."

It is no doubt a useful tree for fencing, coal-pit props, telegraph poles, hop poles, and, when it attains a sufficient size, for railway-sleepers, because it is easily converted to such purposes, with no labour being required upon them; and, when sound, its durability is a recommendation. But when we see so many plantations, sometimes of great extent, in all parts of the country, and of all ages and sizes, and of which scarcely one tree in three is found in a sound state, we are induced to conclude that, under its present treatment and condition, it is a tree unfit which by far too much reliance has been placed, and that, if its cultivation is continued to the extent it is, the consequences to landed proprietors will be most disastrous."

*Account of the Lock-out of Engineers, &c. 1851-2.* By THOMAS HUGHES, Barrister. Macmillan & Co., Cambridge and London. 1860.

This pamphlet was prepared for the National Association for the Promotion of Social Science, at the request of the Committee on Trade Societies. The information, however, as admitted, was mainly derived from sources favourable to the operatives, although it was no fault of the author that the masters declined to aid in opening up the subject afresh. Mr. Hughes is of opinion that trades' unions ought to be recognized on all hands as an unavoidable fact, whatever be their merits or demerits, and the most made of them, by legislative enactment, or otherwise, that the circumstances will admit of:—

"For my own part," he says, "after years of watching these societies, and disliking many of their doctrines and doings as much as any man, I am most firmly convinced that we are only mischievously shutting our eyes to the truth when we go on declaring that they have not the confidence of the body of the mechanics and artificers of the nation,—that they are got up on a led, not by good workmen, but by designing and idle men for their own purposes,—that they exercise an unpopular tyranny and surveillance over the trades, &c. &c. The contrary of all this is the truth, and will be found to be so sooner or later; though it is quite possible that here and there a mischievous man may be in office, or a tyrannical custom or rule in force. I believe that there is quite time (if we will only recognize the facts of the case, and treat the unions both in legislation and in the ordinary dealings of life as they have a right to be treated) to render their influence and action wholly beneficial to the great common interests of the nation. I believe that the present disastrous state of feeling between employers and employed can never be improved, will only become worse, while the unions remain unrecognized by the law, and misrepresented, hated, and treated by all classes of society except that great one of which they are exclusively composed, and whose ideas and wishes they do, on the whole, faithfully represent and carry out."

#### VARIORUM.

A BRIGHTON lady having offered a prize of two guineas to working men, married, and members of the Brighton Mechanics' Institute, for the best essay on the questions started by Lord Shaftesbury, at Bradford:—"Whether it is not better for married women to stay at home than to go out to work? Whether the absence from her domestic duties than he gains by her earnings and industrial employment away from her family?" Several were sent in, and the prize was awarded to an essay by Mr. H. Stallwood, which has been published by H. & C. Treacher, of Brighton, under the title of "Married Women at Home." Another tract, on the same subject, titled "A Few Words on Women's Work; showing the paramount importance of Home Duties; with some Remarks on Watch-work, Wet-nursing, and some of the other Fallacies and Evils of the present Day;" by a lady who gives her initials as "M. A. B." (and who, in fact, appears to be the intelligent awardee of the prize alluded to), has been also published at Brighton (Simpson & Co.) and by Tweedie, 337, Strand, London. This latter tract is a reprint of an essay which originally appeared in the *English Woman's Review*, and was quoted at length in the *Philanthropist*. The author's ideas on the interesting and important subject treated of may be gathered from her remark that "the want of domesticity amongst women—of the working classes especially—is a great cause of most of the social evils which are as a plague-spot upon the nation at the present time," a remark involving matter for very serious consideration. —We are glad to see monthly publications, such as "The Welcome Guest" (Houlston & Wright, Paternoster-row), and "The Family

Economist" (same publishers), making their regular appearance, and sustaining their position in all respects, as they appear to be doing.

#### Miscellaneous.

No. 20, CHURCH-STREET, ISLINGTON. — We would advise every one to go and see No. 20, Church-street. A visit to that unpresumpting domicile would at one time have been a very distasteful business. Small as it is, there were once no fewer than thirteen families dwelling in it, and when we say that one of these families consisted of a man, his wife, and their grown-up son and daughter, all living and sleeping in one room, our readers may form some conception of what a nice place No. 20 must at that time have been. A visit now-days to No. 20 will not call up these reflections, for it has now foregone all such bad habits as overcrowding and dirt, and "breeds cleanly" as a house should. Indeed, No. 20 does more. Not only is it cleanly itself, but it is the cause of cleanliness in others. Boys who used seldom to wash, now wash and bathe too within its walls, learn there all manner of orderly and decent habits, and issue thence from day to day armed with all necessary weapons to carry the war of cleanliness up to the very toes of the enemy. Their war cry is "Clean your boots, sir!" and when the combat has been very dire they have been known to carry dismay into the enemy's camp, and often to win a forlorn hope by the semi-sarcastic addition, "They're very dirty, sir." Behind, on one side of the back-yard, is a school-room, with a bookcase in it containing a small lending library, and across the yard are convenient lavatories and a bath-room. The latter, on inquiry, we found to be much valued by the boys, and the former they are of course required to use. We learnt that there is a mutual system growing up between institutions of this kind. The Islington boys' boxes and mats come from the Grotto Passage Reformatory and the Blind School, and the badges are made by the girls at the Lisson-grove Refuge. All this points in the right direction, and augurs well for the practical result of the beneficent agencies of the generation. —*Islington Gazette.*

ST. PETER'S, SANDWICH.—The rector is now seeking to raise funds to restore the chancel of this once magnificent church. The net income of the living for the last seven years has only averaged 79*l.* 12*s.* 8*d.* He therefore appeals to the public to aid him, especially as the parishioners are shortly about to do their utmost towards the restoration of the other parts of the fabric. Contributions will be received by the Rev. Horace Gilder, St. Peter's rectory, Sandwich; and by the London and County and National Provincial Banks, Sandwich, to the credit of the St. Peter's Chancel Restoration Fund. The plans of the present state of the structure, and for the proposed restoration, may be seen, and information obtained, at the offices of the architect, Mr. James G. Smither, 32, Falcon-court, Fleet-street, London.

THE AMERICAN TIMBER TRADE.—Every year there is floated down the Mississippi at least 250,000 feet of pine timber, and the quantity will increase with the demand, since the supply is so great that it cannot be exhausted with the present generation.

ACCIDENTS.—A large proportion of the Easton Hotel, in Easton-square, London, was last week destroyed by fire. Each of the two portions of this hotel contained ninety-three sleeping apartments alone. Of one of these, sixty-two rooms have been partially destroyed, and the roof burnt off. Ninety-three beds had been engaged, but fortunately the fire did not occur through the night.—An accident has occurred at a chapel in course of erection at the corner of Hanover-street and Spring-lane, Sheffield, to a joiner named Lindsey. He and four other men were engaged in putting up the wood-work of the ceiling, and they had all occasion to stand upon one ladder of the scaffolding. The supporting cross hatten broke and let down the plank on which the men were standing. The four men who were at the ends were all fortunate enough to scramble upon the adjoining scaffolding; Lindsey, however, being in the middle, was precipitated to the bottom of the school, under the chapel, a depth of over 30 feet. One of his limbs was broken, and he was seriously injured about the chest, chin, and in other parts of his body.—The roof of an old building at North Washham, belonging to Mr. George Cahill, ironmonger, of that town, fell in last week, but fortunately no one was by it at the time.

**THE NEW HIGH LEVEL EXTENSION OF THE SEEDS WATERWORKS.**—These works, which have recently been opened, were constructed to meet the demand for water in those parts of the borough which the reservoirs connected with the old works are too low in level to supply. This object has been attained by the excavation of a new summit reservoir on the top of Becroft-hill, Bramley, by the erection of a pumping-engine at Headingley, and by laying down nearly 12 miles of iron main-pipes. The reservoir is excavated out of the solid rock, and is made water-tight by lining of stiff puddle clay, half a yard thick, protected by asphalted paving. It is 12 feet deep, and will contain two and a quarter millions of gallons. The pumping station at Headingley is ornamentally constructed and laid out, the engine-house and chimney being in the modern Elizabethan style, faced with stone rustic work, and having ashlar stone quoins and dressings. The main-pipe from the pump to the reservoir is 30 inches in diameter, and upwards of three miles long. In crossing the valley at Kirkstall it dips 70 lbs. per square inch, when the reservoir is full. The railway-bridge at Kirkstall was the source of some difficulty in laying this main, owing to the shallowness of the earth upon it, but this was overcome by putting down two 8-inch pipes in lieu of one 10-inch; and, to guard against accident by fracture, the pipes were made of wrought-iron boiler-plate—these were supplied by Messrs. Whitlam & Son, of Kirkstall-road. The whole of the works, including the engine, were designed by Mr. Filiter, C.E., borough surveyor, and completed under his superintendence. The engine was made by Messrs. Robert Wood & Son, of Hunslet. The engine-house and buildings were erected by Messrs. William Wilson & Sons, of Headingley. The reservoir was constructed by Mr. Silas Abbey, of Leeds. The cast-iron pipes were supplied by Messrs. Cochrane & Co., Mid-esham-on-Tees. The total cost of the works is nearly 15,000*l.*, and they have been completed within the borough surveyor's estimate.

**LONG'S PATENT SCRAPERS AND FILTERING SEWERS.**—A plan "for the profitable conversion of the sewage of large towns" has been put forward, in a lithographed form, with diagrams, by Messrs. James Long & Co. of Great Yarmouth. The scheme is not very clearly or intelligibly described, but it seems to comprise an upper and lower series of filtering sewers, and patent scrapers in run along a rail above the upper series for the purpose of collecting the residuum from the filtration. Surmounting the diagrams is an explanatory note to this effect:—"The following plan is intended to receive the entire sewerage of the town, which is divided into two sections for the supply of the four series of five filtering sewers each—12 in length in number; each sewer being 50 feet in length, by 10 feet in breadth, and presenting a filtering surface of 10,000 square feet in the aggregate, and allowing 50 gallons sewerage to each square foot, capable of filtering 500,000 gallons sewerage per diem; from which, if 5 per cent. of silt is extracted, 223 tons of manure could be collected daily, or 83,208 tons per annum; yielding, at the low rate of 5s. per ton, 8,802*l.*; to which, if we add the cinder and other rubbish usual in a town, the sum in question would prove more than double."

**THE BAND OF HOPE DRINKING FOUNTAIN AT BRADFORD.**—The fountain about to be erected opposite the Grammar School, Manor-row, from a design made by Mr. T. C. Hope, Architect, is the same in design with that made by him for the monument memorial fountain. It is in the Italian style, square on plan, having detached Corinthian columns and angular pilasters at the corners, supporting the entablature and cornice. From the cornice springs a square dome, surmounted by a lantern and ball. Each side of the dome will be embellished, and each angle will have raised flat ribs enriched with a string of convolvulus flowers and leaves carved in relief, and terminating at the lantern in carved scrolls linked together with festoons of flowers. Between the Corinthian pilasters at the angles are dwarf pilasters about two-thirds the height, supporting semi-circular niches moulded and paneled. The structure stands upon a moulded plinth projecting at the angles to receive the Corinthian columns. A stone curb 6 inches high is fixed between the projections, leaving a space of 10 inches on each side of the plinth for dog troughs. The water rises up to the height of 7 feet from a rough natural rock, fixed in the centre of the basin. The overflow runs into the four drinking basins through fan shells, and thence into the dog troughs.

**THE SPIRE OF ST. ALKMUUND'S CHURCH, DERBY.**—A severe gale, which visited Derby on the 27th of February, blew down several feet of the top of the spire of St. Alkmund's Church. The work of restoration has been intrusted to Mr. James Brown, builder, Sheffield, who has commenced his task. The height of the spire from the surface is about 215 feet, and the mode adopted by Mr. Brown, to attain the summit without the erection of scaffolding, is simple and ingenious, but has before been adopted (perhaps it was by Mr. Brown himself). Mr. Brown, says the *Derbyshire Advertiser*, brought with him a number of ladders, each 23 feet long, and these (commencing at the top of the tower) were raised perpendicularly one above another, and secured by holdfasts. Mr. Brown, who is assisted by two men, had occasionally to suspend himself by hooks fastened to a belt round his waist to the ladders, whilst he performed some work requiring the use of both hands, or when he desired to rest for a time. The scaffolding at the top does not appear to occupy much space. The cost of the restoration, including the fixing of a lightning conductor, will be between 200*l.* and 300*l.* It was suggested, adds our authority, that "mine host of the 'Lamb'" (Mr. Marshall) should be clerk of the works, but the latter says he has no wish to a spire to so high a situation. Funds are still required to complete the work of restoration.

**DRAIN PIPES.**—Mr. Blanchard writes to us, stating that he used glazed stoneware socketed pipes for draining some property at the corner of Tower-street, Westminster-road, in the beginning of the year 1845; and says, "these pipes are socketed into each other, and are in 3 feet lengths and 7 inches diameter; they were made for me by Mr. James Stiff, of High-street, Lambeth, in a satisfactory manner, in the latter part of the year 1844."—A long letter has been sent us by Mr. Thos. Lucas, animadverting rather warmly upon a communication which appeared in the *Builder* of 28th ult. The writer, so far as relates to socketed stoneware drain pipes, repeats the claim for Mr. Northern, of being the inventor. Mr. Hardinge's letter set forth, that "having used strong stoneware pipes, manufactured at Burslem, as chimney flues, and also as drain pipes in 1812, finding that they were thoroughly effective, he first brought them under the notice of the Sewers Commission in 1845; and that the first lot purchased (under the sanction of Mr. Phillips) was had of him." He did not pretend to be a manufacturer of pipes, much less the inventor of sockets; therefore the publication of a long and acrimonious correspondence upon this point would be cumbrous, and of no public utility.

**HASTINGS COTTAGE-IMPROVEMENT SOCIETY.**—The sixth half-yearly report of this active and successful society, for the six months ending April 7, 1860, has been issued in a printed form. According to this report, the number of the society's houses now amounts to about one hundred, and the number of tenants to about one hundred and five. The principal purchase made by the committee during the last half-year has been in the Crown-land, in the parish of All Saints. This property had been suffered to fall into a very dilapidated condition. The society's capital has increased during the past six months from 6,650*l.* to 9,450*l.*; the number of shareholders from forty-three to forty-five, and the average amount of each shareholder's investment from 155*l.* to 172*l.* The price of each share is at present 10*l.*, and is to be raised to 105*l.*, when the capital amounts to 10,000*l.* During the past six half-years the society's average total income from all sources has been at the annual rate of 1270 per cent. on the paid-up capital, and the net income has been at the rate of 758 per cent., out of which sum the shareholders have received a dividend of 6 per cent., free of income tax (which is paid on the gross rental by the society), and the remainder has been added to the reserve fund.

**THE TRANSMISSION OF SOUND.**—An extraordinary contrivance for transmitting sound to very great distances, which has just been presented to the Academy of Sciences by the Abbé Laborde, is alluded to somewhat obscurely in *Galignani's Messenger*. As the action of the electric fluid may be transmitted to any distance, "it follows," says *Galignani*, "that, if properly modified and improved, the apparatus we have described may enable persons in Paris to hear a tune played in London, or even at St. Petersburg." Perhaps this means no more than the simultaneous performance of music at distant places by help of electrical (not acoustical) transmission, which was long since suggested in the *Builder* and other journals.

**COATING IRON SURFACES.**—An opinion was published a short time ago by a French gentleman, that red lead used as paint for iron ships was "wrong in principle." From observation and experience, says a correspondent of the *Mechanic's Magazine*, I think his statement quite correct. It has since been recommended by the Dutch royal engineers to use peroxide of iron for that purpose. This may be rather better than oxide of lead, but I think the best paint that can be used for iron ships' bottoms, gasometers, ironwork in railway station roofs, and all exposed ironwork, is oxide of zinc, mixed with oil, and a little patent dryer. It might be tinged with a small quantity of common rose pink, to make it look warmer, or with other colours for different shades. But, where a perfect white is required, white vitriol must be used as a dryer. I might also add that I am of opinion it is equally wrong in principle to use lead for fixing iron palisades into the stone base: by using zinc instead, they would be preserved for a much longer period of time.

**AN INVENTION WORTH QUABRELLING FOR!**—A most extraordinary case was, a few days ago, submitted to the Civil Tribunal of Lyons:—A cobbler, a tinker, and a small tradesman, pleaded each against the other to be declared sole owner of what they all described as a most marvellous discovery, namely, the placing of a lamp in the heel of a boot, with pipes running from it beneath the sole, so as to heat the foot! After examining the different pretensions of the parties, the Tribunal declined to pronounce on the question of ownership, but condemned the cobbler and the trader to pay the tinker 150*l.* for work done.

**SLATERS' STRIKE.**—The journeymen slaters in Falkirk and Grangemouth are this week out on strike for an advance of wages. The increase demanded is three shillings per week, and to work only seven hours on Saturday. One of the masters, we believe, made an overture to his men on Monday week of meeting them half way, but with this they have not as yet thought fit to comply.

**LEAD POISONING.**—Dr. Hassall has addressed a letter to the editor of the *Lancet* on "Unsuspected Sources of Lead Poisoning," a subject which was first prominently brought before the public in the *Builder*. In the course of his observations Dr. Hassall says:—"The whole subject of lead poisoning is one of the greatest importance, and it behoves the public to be thoroughly on its guard against this source of danger to health. For the employment of leaden vessels and pipes, in nine cases out of ten, no absolute necessity whatever exists, and in certain cases they ought, for the better protection of the public health, to be entirely prohibited. From the number of samples of water which I have received containing lead, I am induced to believe that that metal is more frequently introduced into the system in this way than is commonly suspected. Indeed, so many well-ascertained cases of lead poisoning arising from the use of water contaminated with it have occurred, that I am of opinion that the use of lead for the storage and conveyance of water ought to be entirely discarded, especially in the cases of small towns and single houses. Now this may be readily done by the use of slate cisterns for the storage and gutta percha tubing for the conveyance of water. By means of Chatterton's very ingenious invention, an outer coating of lead is drawn over the pipe without any application of heat, the gutta percha being quite uninjured."

**THE TOMB OF JACQUES VAN ARTEVELDE.**—A discovery has been made at Gand of an ancient tomb, in a perfect state of preservation, that of Jacques Van Artevelde, reported to have been destroyed by the iconoclasts of the sixteenth century, and its contents scattered to the winds. In excavating the ground, near the Hospital of Bylogne, for the foundations of a dwelling-house for the director of the establishment, the workmen came upon a flat stone covering a vault containing a skeleton. Extraordinary to say, on exposure to the air the remains did not, as is usually the case, crumble into dust. A rusted plate of metal bore the following inscription:—"Jacob Van Artevelde, Upperoofoeman Hoymaend, MCCCXXXV."—leaving no doubt as to the authenticity.

**HAYMARKET THEATRE.**—A singularly good scene has been painted and built for the opening of Mr. E. Falconer's drama called "The Family Secret," which was produced by Mr. Buckstone with very considerable success on Wednesday evening last. It represents a villa on the Lake of Como. The architecture is very well painted, the water well managed, and the whole scene sparkling and effective. The piece gives an opportunity for some very good acting, and will run, we have no doubt.

**A BOARD OF HEALTH FOR NEW YORK.**—Under this heading, the *American Gaslight Journal* speaks of the endeavours to establish a Board of Health in New York. "Some change," it is remarked, "in the sanitary arrangements of the city of New York seems now likely to be undertaken in earnest. Every one admits that something must immediately be done. Last year a new sanitary measure, appointing a competent Board of Health, was pushed forward at Albany, with promising vigour, and would inevitably have become law, had not a patriotic and high-principled legislator, to whose guardianship the bill had been confided, and to whose energy it owed the success which attended its first introduction into the House, suddenly discovered, at the eleventh hour, as we are credibly informed, that two friends of his would lose office if the Bill passed. We trust the promoters of the measure now before the Legislature will be more discerning in their choice, and more careful in whom they put their trust. Every year the necessity becomes more imperative for the origination of some barrier capable of checking the spread of pestilential disease. In London, Paris, Boston, Providence, and Philadelphia, a safeguard has been found in the establishment of Boards of Health, composed of men skilled in sanitary science, and armed with the powers requisite for efficiency. Under such arrangements, mortality in those cities has diminished. In New York, where no such board exists, mortality is fearfully on the increase. In the tenement house, death has long held an almost uninterrupted carnival." A sanitary report, quoted in the same paper, concludes an exposition of many local sanitary evils, by urging "the imperative necessity of some legislative measure which shall meet the difficulties and correct the evils indicated."

**MIDLAND COUNTIES ARCHÆOLOGICAL ASSOCIATION.**—The annual meeting of this association was held at the Midland Institute, Birmingham, last week, for the election of officers and the transaction of general business. The report for the past year stated that the receipts amounted to 175l. 1s. 4d., and the expenditure to 166l. 18s. 1d., leaving a balance in hand of 8l. 8s. 3d. To the latter would be added unpaid subscriptions for 1855 and 1859, 327l. 15s. 6d., and 1l. 10s. due on excursion tickets, making the total amount available for future operations 422l. 8s. 9d. The report was adopted, and Sir Francis Scott was unanimously requested to act as president during the ensuing year.

**IRON CHURCHES.**—With reference to a statement at Coventry, mentioned in our last, respecting the cost of temporary iron churches, as compared with wood, Messrs. Topper and Co. wish to state that an iron church can be erected in any part of the kingdom, fit for divine service, with pulpit, reading desk, communion table, &c. (exclusive of apparatus for warming and gas fittings), at the rate of 20s. per sitting, allowing for each person the prescribed area of 20 inches by 30 inches.

**CHAPEL ROYAL, SAVOY-STREET, STRAND.**—This ancient chapel has recently been restored by command of her Majesty, under the direction of Sir George Grey, the Chancellor of the Duchy of Lancaster. The restorations were entrusted to the care of Mr. Sydney Smirke, R.A.

**THE STEREOSCOPE FIFTEEN HUNDRED YEARS OLD!**—At the sixth monthly meeting for the season of the Photographic Society of Scotland, Sir David Brewster, president, in the chair, the president read a paper entitled "Notice respecting the invention of the Stereoscope in the Sixteenth Century, and of Binocular Drawings by Jacopo da Empoli, a Florentine artist." Sir David said that, inquiring into the history of the stereoscope, he found that its fundamental principle was well known even to Euclid, that it was distinctly described by Galen 1,500 years ago, and that Baptista Porta had, in 1593, given such a complete drawing of the two separate pictures as seen by each eye, and of the combined picture placed between them, that we recognize in it, not only the principle, but the construction of the stereoscope. Last summer, Dr. John Brown, while visiting the Musée Wicar at Lille, observed two drawings placed side by side, and perfectly similar. These drawings were by Jacopo Chimenti da Empoli, a painter of the Florentine school, who was born in 1554, and died in 1640. They represent the same object from points of view slightly different. That on the right hand is from a point of view slightly to the left of that on the left hand. By converging the optic axes, the pictures could be united so as to produce an image in relief, as easily and as perfectly as with an ordinary stereograph.

**INSTITUTION OF CIVIL ENGINEERS.**—On May 1, Mr. Bidder, president, in the chair, the paper read was, "On Coal Burning and Feed-Water Heating in Locomotive Engines," by Mr. D. K. Clark. The object of this paper was stated to be, to discuss and compare the existing practices of coal-burning on railways.

**FATAL ACCIDENT BY BLOWING UP SAFES.**—At Burnley, last week, a boy was killed, and two men were seriously injured, by fragments from one of Price's patent safes, which the local agents for Milner's patent safes had been induced to blow up by gunpowder, in consequence of a public defiance by Mr. Price to "the fight for the championship in the construction and manufacture of drill-proof and burglar-proof safes." Mr. Price having also previously blown up one of Mr. Milner's.

**TENDERS**

For farm-house, buildings, and cottages, in course of erection, on the estate of Sir Henry M. Vavasour, Bart., at Spaldington, Yorkshire. Messrs. Stevens & Robinson, architects:—

Frost	£5,505 0 0
Adley & Nicholls	4,999 0 0
Stidialis	4,979 0 0
Neill	4,869 0 0
Bullock	4,856 0 0
Lax & Moody	4,803 0 0
Chadwick	4,758 2 0
Tomlinson	4,687 2 0
Brown	4,591 10 0
Fly & Kennett	4,553 9 0
Weatherley	4,544 16 11
Lilley & Smith	4,464 9 9
King	4,257 2 0
Bellamy	4,215 0 0
Meggison & Co.	4,001 13 5
Illingworth	4,004 10 0
Lewis (accepted)	3,952 11 4
Andrews	3,932 1 3

For rebuilding the "Hat and Feathers" and two houses corner of Wilberness-row, Goswell-street, for Mr. Leask. Mr. Finch Hill, architect:—

Dure, Brothers	£4,665 0 0
Lawrence	3,990 0 0
Brass	3,730 0 0
Turner	3,550 0 0
Elkinton	3,500 0 0
Patriek	3,507 0 0
Hill (accepted)	3,492 0 0

For the building of a new church at Stanley end, near Stroud:—

Downing	£2,595 0 0
Reckisall	2,385 0 0
Wicks & Stork	2,550 0 0
Acock	2,325 0 0
Harrison	1,990 10 0

For the erection of balustrade, walls, terraces, and garden-steps, also formation of court-yard and entrance-gates, exclusive of balusters and ironwork, to the mansion at Aithorpe, Northampton, for the Right Hon. the Earl Spencer. Mr. W. M. Peulton, architect:—

Whitby	£2,881 0 0
Smith, Brothers	2,736 0 0
Irons (accepted)	2,244 0 0

For house and farm-buildings, Woodford, for Mr. Macnamara. Mr. Noble, architect:—

Read	£2,567 0 0
Saxelle	2,529 0 0
Hedges	2,457 0 0
Perry	2,442 0 0
Hill (accepted)	2,272 0 0

For rebuilding and enlarging Gilmorton Church, Leicestershire. Mr. Wm. Smith, architect:—

Young & Co.	£2,200 0 0
Ludley & Firm	2,095 0 0
Howes	1,730 0 0
Law	1,748 0 0

For a new warehouse in Great St. Thomas Apostle. Messrs. Tress & Chambers, architects:—

Macey	£2,129 0 0
Hayter	2,008 0 0
Couder	2,026 0 0
Ramey	1,997 0 0
Lawrence & Sons	1,950 0 0
Evans, Brothers	1,967 0 0
Coleman & Son	1,956 0 0
Brown & Robinson	1,914 0 0

For two chapels, lodge, and gate, at the new cemetery, Uttoxeter, Derbyshire. Mr. Benjamin Wilson, architect, Derby. Quantities supplied:—

Burrows	£1,674 10 0
Young	1,613 10 0
Furcaster	1,561 5 0
Thompson (J. W.)	1,549 0 0
Thompson (E.)	1,509 0 0
Cooper (accepted)	1,335 0 0

For building the carriage of a house in the Mortimer-road, Kibworth, for Mr. George Brown. Messrs. Fixman & New, architects:—

Wicks	£1,450 0 0
Cross	1,324 0 0
Foskitt	1,249 0 0
Cowland	1,193 0 0
M'Leaman & Bird (accepted)	1,173 0 0

For chapel at Edmonton. Mr. Laws, architect. Quantities supplied:—

Palmer & Fotheringham	£1,124 0 0
Glenn	1,080 0 0
Butters	1,037 0 0

For repairs and alterations to Nos. 31 and 32, King-street, Covent-garden. Messrs. Nelson & Innes, architects:—

Thomas & Poole	£1,421 0 0
Simpson	1,350 0 0
Howard	1,333 0 0
Senger (accepted)	1,220 0 0

For two new houses and shops at Hounslow. Messrs. Nelson & Innes, architects:—

Read	£1,349 0 0
Adams & Sons	1,290 0 0
Carter	1,195 0 0
Jacklin	1,125 0 0

For repairs and alterations at No. 11, Chatham-place, Blackfriars. Messrs. Nelson & Innes, architects:—

Todd	£933 0 0
Slowman & Dunkley	878 0 0
Fish (accepted)	875 0 0

For alterations to house, Bank plain, Norwich, for Mr. Arthur Preston. John Daymond Ellis, architect:—

Read	£899 10 0
Rump	817 0 0
Minns & Foyson	759 0 0
Lacey	740 0 0

For rebuilding cooperage, Lovat's buildings, Upper East Smithfield, for Mr. Worley. Mr. Law, architect:—

Holland & Hannen	£742 0 0
Mansfield & Sons	730 0 0
Longmire & Budge	714 0 0
Bird	698 0 0
Asby & Horner	635 0 0
Litt & Son	593 0 0
M'Leaman & Bird (accepted)	585 0 0

For additions and alterations to the district church of Bracknell. Mr. Henry E. Coe, architect:—

Holls	£695 0 0
Lawrence	679 5 0
Oades & Son	658 0 0
Gray	545 15 0
Davis	540 0 0

For constructing the roads and planting, under the same architect:—

Cooper	£395 0 0
Thomlinson	385 0 0

The tenders for police stations at Willesden, Southgate, Ilford, and Loughton, according to schedule of prices, were opened last week, and that of Mr. Hill's, of White-chapel, accepted.

**TO CORRESPONDENTS.**

*Concrete Strength of Cement.*—W. G. F. asks to be informed what the cohesive strength of good cement amounts to.

Mr. H. B. (having appeared elsewhere, has been cancelled). W. L.—W. S.—E. P.—T. B. & Co.—W. S.—C. W. H. (the question is not altogether settled, but we should maintain that it belongs to iron architects). J. W.—J. W. C.—Dr. G.—J. A.—H. H.—G. C. F.—C. H. C.—C. W. S.—J. N.—B. S.—W. R. G. (we have already reviewed the *Fish-bowl*). W. B. G.—F. P.—S. H.—W. H. V.—S.—H. & H. (there is no such general rule. The 4' x 6' is given without reference to other matters). A. Suberster.—H. E.—T. D. (we are always thankful for correct information). J. N. D.—Mr. W. (in 1799)—J. B. W. (has been looked to next week).

**NOTICE.**—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

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**[ADVERTISEMENT.]**

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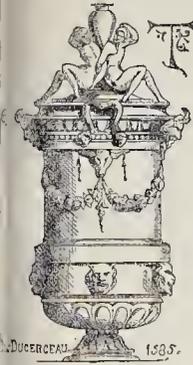
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# The Builder.

VOL. XVIII.—No. 902.

The late Sir Charles Barry.



THE task we have to perform is a sad one. During this week, our readers have learned from the newspapers the fact of a loss sustained by the profession and our art, in the death of the most illustrious architect of this century. Sir Charles Barry died on Saturday last, the 12th instant, at his residence, Elm House, Clapham Common; and this

day of national festival, on which he might have hoped to crown with the Royal Standard the grandest feature of his greatest work, was named in the first instance as the day of his funeral. He is now to be buried in Westminster Abbey, as mentioned in our report on another page, of proceedings at the Institute of British Architects.

It is difficult to say whether the feelings of personal regard, or of admiration for the talents of one who was eminently the representative man of British advancement in architecture, most prevail to excite the regret with which the simple announcement of the loss is read. Sir Charles Barry was emphatically an architect, and was the artist amongst all; but he was endeared to all who knew him well, and to many who had scarcely the advantage of his friendship, by the goodness of his nature, and the modesty of pretensions that did hardly justice to his remarkable gifts, and to the merit for benefits present and which were to come, of his professional career. Throughout those Estates of the realm whose habitation he built and adorned, having brought to his duty the greatest combination of convenience in planning, skill in construction, business management, and true art, that the world has seen; amongst whomsoever have proudly defended him, or at any time increased the anxiety of his position; throughout all the factions into which our calling is divided, and with the members of the profession in foreign countries as in these isles, and wherever in distant colonies art in building has gained a footing,—with all, there will be one feeling of sorrow or regret, at the sudden termination of a life never inactive, and which seemed to have an important part yet to fill for the national honour and the large development of that progress which it had inaugurated, and to which it had to the last contributed by works, by teaching, and by example. The event which we deplore was unlooked for, and in the manner in which the idea of death should be always present to those in health, up to within the hour of its occurrence. Sir Charles had been at Westminster on Friday last week, attending to his usual avocations; and on Saturday he was so far well that he appeared better than usual; and he spent the greater part of the day at the Crystal Palace, his disease was of the heart and lungs. He was in his sixty-fifth year.

It is scarcely possible, amidst the affliction which has fallen upon the family of Sir Charles Barry, to collect all the particulars that are necessary to the biography of such a man, or to unnerve as we are ourselves by the occurrence, calmly and dispassionately to review the facts and the hearings of his professional existence. We should the record which is due to such a life be consigned to fitting hands, an estimate even

higher than has been derived, whether by the profession or the public, will be formed of the man and of the artist-architect, and of what is owing to the influence starting from the labour of his untiring hand and the fulness of his well-balanced mind. It has been said of many a great man, that he lived some years too soon; and the assertion might be hazarded of Barry, by those who, not irreverently questioning the order of this world, would reason upon what might have been. Could a life so valuable have been prolonged in vigour, to the age of Sir Christopher Wren and of one or two other conspicuous names in our art, what might not such a life have achieved in the future which there is for architecture, and freed from the exaction of a duty which some are now of opinion was delegated to him in error, so far as initiation rather than work of mind was the idea of the basis imposed? Enough that after this, Barry was not merely the architect of the finest modern Gothic building in the world, or that in another manner he introduced an entirely different character into the architecture of streets, villas, and club-houses, wherein, by himself and others, art in architecture has been eminently shown; he was the artist in whatever he laboured on, the man of ready pencil and of active brain, and the architect chief of workmen, and revivifier or producer of numerous attendant arts. It is not the Gothic detail so accurately harmonizing with the cloisters, and other parts of the old building at Westminster, and with the neighbouring Henry VII's Chapel, that most reflects the power of his mind; it is that grandeur of the Victoria Tower, which is beyond the Mediaeval works of almost every country and place; it is the perspective of his corridors and courts, the fretted vaulting of his halls, the fine effect of his entrances and staircases, and the combination of sculpture as of the other arts with architecture, that mark the Palace at Westminster far out of the category of revivalism, as far above the appreciation of some who, from the old or new bases of criticism, have cavilled at the exuberance, or at some other characteristic of its detail. Enough that whatever it be else, the Palace has what our architecture almost wholly lacked till Barry appeared; and that as a work of building and of art, commenced under the greatest disadvantages of knowledge, and of skilled labour and art-manufacture, pursued under the greatest injustice that has ever been the lot of architect employed for a nation or a government, and completed in little more than twenty years under one direction, it remains the most remarkable work of this, or of any time. Without disparagement of his many able pupils, it is the work, too, of the one hand. Barry indeed had the faculty common with great men, for perceiving and using the abilities of others. Many who worked with him he warily attached to himself; and those not inclined for work he, under pressure of business perhaps, could not tolerate. But over all that had to be built, or chiselled or cast, his pencil had gone: so that if the metropolitan cathedral be the fitting monument of Wren, as the inscription there points or did point out, the Palace at Westminster must be considered a work in which the memory of an equal name is inscribed in the effect from every point of sight;—

“ \* \* \* quocunque vides, quocunque movetis,”  
and lives in every form, and along every line. But the Westminster Palace, and the decorative arts which are contributing at this time when we write, generally to architecture, are not the only work of Charles Barry. So long as there exists any vestige of the school of taste which he introduced in the Travellers' Club, and elaborated with more than Italian elegance in the Reform, and in his best work of that class, Bridge-water House,—so long as there remains the elegant façade in Whitehall,—so long as architectural design is displayed predominantly in fenestration and *cornici*, rather than in application sometimes slavish of the orders,—so long will there be monument, and debt due, to Charles Barry. In Manchester, where an influence from his art was born even earlier than in London, it is difficult to say what may not be attributable primarily to his works there.

To trace the life of such a man, precise dates are required; and of these on the instant, we are able ourselves to supply only a moderate number of those that we possess. The facts we can mention, however, will be valued; and the general view we are able to take of the artist's life and character, may possibly not be unworthy of perusal.

Charles Barry was born on the 23rd May, 1795, in Westminster,—in Bridge-street, as he lived by his family. His father was a stationer in a comfortable position—having a running contract with the Stationary Office, which enabled him to leave his family moderately well provided for. The son's education was commenced at private schools,—in Lambeth, and one we believe in Bedford. He was articled to Messrs. Middleton & Bailey, surveyors to the parish of Lambeth, and was the favourite pupil of the former, who left him a handsome legacy. They could scarcely be called architects. He had no other professional education except that due to his exertions: but his surveying acquirements were not unimportant to his architectural attainments and his course in after-life. Always from his earliest years he showed taste for drawing and design.

In 1817 he determined to travel, and to that end to devote (very foolishly his friends thought) the whole of the small property he had inherited from his father. He remained some time in France, principally in Paris and Rouen, and then proceeded to Italy. In Rome he met with Mr. Eastlake (now Sir Charles), Kinnaird, the editor of “Stuart's Athens,” and Johnson, afterwards a professor of Oriental languages at Haileybury. With them he visited Athens and other parts of Greece. While there, his drawings attracting attention, he was engaged by Mr. Ballie, a gentleman of fortune, as his travelling artist, and with him visited Constantinople, Asia Minor (where he was interested about the Bosphorus marbles, now in the British Museum), Syria, Palestine, Mount Sinai (where he became acquainted with the late William Bonkes), and the Decapolis, where he made accurate plans of Jerash (Geraza), then little known. He with his party attempted a journey to Palmyra, but was disappointed by a quarrel with the Arabs. He visited Egypt, up to the second cataracts, his party consisting of Mr. Ballie, Mr. Wise (now our envoy at Athens), Mr. Godfrey, and himself. One of his sketches made at that time will be remembered in Mr. Gwilt's edition of “Chambers's Civil Architecture,”—the matter of which, relating to the tombs of Beni-hassan, is of some importance to the comprehension of the relation between Egyptian and Grecian architecture; and probably at the time of its appearance put that subject in a new light. Results of these journeys, however, are but slightly known to the profession or to the world. There exist, we believe, numerous sketches of places and remains of the utmost interest, besides journals closely packed with Barry's characteristic handwriting; and, shortly before his death, we heard of his being deeply engaged in the preparation of an article on the Holy Land, for the Dictionary of the Architectural Publication Society.

Barry returned to Rome, his engagement with Mr. Ballie having terminated, and he became famous for his sketches, which for facility, accuracy, and expression, were then unrivalled. It was at this time he became acquainted with Mr. Wolfe; and their friendship has ceased only with the life of Barry. He was devoted, when Mr. Wolfe first knew him, to his profession of architecture, but cared for little but Greek, concerning which he was enthusiastic. Wolfe, a pupil of Joseph Gwilt, had gone out from home a *Palladian*; they both felt the beauties of Gothic; but believing it would not be useable, paid little attention to it. They carefully studied *Italian*—measuring in detail the best examples at Rome, and at Florence—where he measured the Trinita-bridge,—Venice, and the rest of the north of Italy. There Barry became an enthusiastic admirer of Palladio, Sansovino, and Sannicichello; and some of the incidents of that period, such as lighting up with torches the so-called house of Palladio at Vicenza, to see the effect of the foliated

capitals, show the enthusiasm and energy with which he pursued his object. It was the same when in Rome—nothing was passed by; everything that could be drawn was looked at. His study was unintermittent; his perseverance indomitable. The world often forgets in the case of men called "fortunate,"—of men in the possession of powers—the struggles by which Fortune was made servant, the labour with which the powers were attained. In July 1820 he left Italy, and returned straight to England, with little money remaining, and after an absence of three years and four months. His first works in architecture were St. Matthew's Church, Manchester, and another at Stand, in the neighbourhood. Of nearly the same date was the erection of St. Peter's Church, Brighton,—wanting a feature of the original design, the spire, which has not since been supplied. One or all of these works he had obtained by competition, not long after his return. Soon afterwards, the late Daniel Wilson gave him three churches to erect in his parish of Islington—Ball's-pond, Cloudesty square, and Holloway. Sir Charles Barry had not much studied the detail of Gothic when he built his first churches; but soon afterwards he made a tour in England for the express purpose, and from that moment he became as great a lover of Gothic as of Italian architecture.

Though none of his early Gothic works were much admired by himself in later years, they were, several of them, differently regarded by the public at the time of their erection; so that they did service in their day, and conducted to the widened field of perception of our art. The churches at Manchester and Stand, the former with a needle-like spire, and the latter with square tower, and each having lofty lancet-formed openings at the base of the tower, are faulty in detail and defective in proportion; but they, nevertheless, have merits not undeserving of notice even by the more recent Gothicists. He does not appear to have done much further in the same department of practice, till about the year 1836, which is the date we should fix for the commencement of his Unitarian Chapel at Manchester, a work which, of Early English character, with high-pitched roof, and deeply-recessed arch enclosing the window and doorway of the western end, was as much as the previous works, remarkable in the district, showed the great advance he had made in the management of detail for its effect, and in the knowledge of Gothic; and which still remains a work of merit. We have little knowledge of his works in London, of a general class dating immediately after the Brighton Church: but about that time he was engaged in the building of a house for Mr., afterwards Sir Thomas Potter, at Bute-hill, near Manchester. Drawings of the internal finishings of this house show that the ornament was of Greek character; and it is marked by the refinement of design and excellence of delineation, belonging to everything that he did. His Manchester connection shortly procured him the work of erection of the Royal Institution of that town. This was in progress in the year 1828. Beyond its conspicuous position in one of the principal streets, and its comparative dimensions, and the frontage to three sides, the building was one of great importance, historically speaking, and in results already adverted to. By contrast with the pseudo-Greek which was general in public buildings, and which in Manchester had even degenerated from the time of Harrison; it presented what was at once Greek derivatively, or Greco-Roman, in details or in impress, and yet was work new or original,—work of art and mind. The portico as a feature of architecture was used, but not spoiled; that feature, and the remainder of the building, became grouped together, instead of as in Greek of that day, where a portico was tacked on to a many-windowed facade; whilst the staircase-hall of the Manchester building, grand in proportions within, and culminating to a central feature of the exterior, was the forerunner of later efforts of the kind by the same architect, and by others. It was after this time that he adopted the style of architecture which he first exhibited in 1831, in the building of the Travellers' Club, a work to a certain extent modelled upon the Pandolfini Palace, and unfortunately of cement, yet valuable for the art which there is in it, in each of its fronts, and in its internal planning and decorative character, as it was important in its results. The Athenæum, Manchester, in the same style, and marked by still greater beauty in its mouldings, and of stone, must have been designed about the year 1836, and not completed till about 1839. In the Reform Club is to be traced, as in the Travellers', the in-

fluence of a model of the Romano-Florentine school—in this case the Farnese Palace; but the result is a work finer than the model. In designing this building the drawings were, like all those from Barry's hand, subjected to most careful revision; and an entire second set was made on account of an enlargement which he decided upon of the windows. Both the buildings in Pall-mall are remarkable for the feature of the balustrade of the area-enclosure, a feature which, with the analogous base and foreground given by the terrace-garden in a villa, he both perceived the importance of and understood how to manage. The Reform Club is especially remarkable for its hall adapted from the quadrangle of the Italian palace.

Up to the date of the competition for the Houses of Parliament in 1835, and throughout the period of progress of a work which would have sufficed for the whole time of an ordinary man, he was largely occupied in works of which we have yet named only a selection. Amongst the number was Lord Tankerville's villa at Walton-on-Thames, a work of the Italian style, with a square tower modelled after the campanile, which may be said to have chiefly conducted to the prevalence of the erection in later works of architects. His Birmingham school should be named as the precursor in character of style, of the Houses of Parliament.

It was in progress in 1833, and at the time of its erection was regarded as an adaptation from the collegiate and civil with the ecclesiastical Pointed architecture of the Tudor period. A writer of that date considered it as likely, when completed, to afford a "distinguished proof that novel and beautiful combinations" might be made of approved models, "without either servile copying, or tame imitation." It has the character anticipated; and such is the character of all Barry's Gothic. In 1834 and 1835 we find him at work on the new front of the College of Surgeons. The ground adjoining the original site being taken in, a new front was required. One of the columns of the portico was shifted, and two were added to place the new portico in the centre. The work was done chiefly in artificial stone. As the portico has not a pediment, and the details have the merit of everything that came from Barry's pencil, there is a satisfactory effect produced very different to that of most of the pedimented porticoes then recently built, and notwithstanding any error that there may be in the use of such a feature in advance of windows. The cornice of the building has some elegance. Amongst his works within recent recollection, besides the Reform Club and Bridgegate House, which we have named, and the front of the Imperial Insurance Office in Pall Mall, which we have not, was that of the arrangement of Trafalgar-square, with the basins and fountain—the least successful of his productions; though many of the details are palpably the work of no less skillful hand. But, as we have said, he was never idle. Work went on without affixing dates, the extensive works in which he was engaged for the Duke of Sutherland, the chief of which extended over a period of eight or ten years, and should, in point of fact, be regarded as new building. They included the works at Trentham Hall, Staffordshire; at Cliefden House, near Maidenhead—perhaps entirely new work; and at Stafford House, St. James's, so far as regards remodelling the interior; also, he made designs for alterations to Dunrobin Castle for the same nobleman; but we do not recollect whether these were proceeded with. For the Earl of Carnarvon, at Highclere, he carried into effect works which entirely changed the character of the building from that of pseudo-Greek to an Italianized form of Jacobean architecture. To Harwood House, near Leeds, a well-known building, he added wings, and he also re-arranged or added a terrace-garden which is one of the examples of his skill, already referred to, in an important element of effect. The same skill was displayed in his terraces and pavilions at Shrubland-park, the seat of Sir W. Hamilton. Other alterations and additions, most of them considerable in extent, were made by him to the seat of the Earl of Maclesfield; to Duncombe-park, for Lord Eversham; to a house for Sir John Guest; to Gwathorpe Hall, for Sir James Shuttlesworth; to Dalwich College and to Kingston Hall, Dorsetshire. To the College he was surveyor many years, till succeeded by his eldest son Charles, now in partnership with Mr. Banks, who had been with Sir Charles previously, many years. His works further include alterations and new gates at Bowood, the residence of Lord Lansdowne; the spire of Petworth Church, and churches at Saffron-hill, London, and Hurstpierpoint, Sussex, which (and perhaps there may be others) we have omitted to take into account in the previous view

of his ecclesiastical architectural labours. There are, however, yet several new works to be added. They comprise the wing of University College, Oxford, including the library, a building in the style of the Birmingham School; the Sussex County Hospital; a new wing and other work to St. Thomas's Hospital; and a late work, the Downhills Schools. It is impossible, however, just now to complete the list. The importance, architecturally, of his alterations, or most of them, where he used the old materials, is perhaps best shown by the example of the Government Offices in Whitehall. His designs, exclusive of some which were sent in competitions, but not carried out, are scarcely less deserving of notice than those of his executed works; since, besides his reports, these were made for works of the greatest public importance. The designs, giving those for the public works last, include some for alterations to Worcester College, Oxford; and for Lord Willoughby, to Drummond Castle; for a restoration of Drumlaugh Castle, for the Duke of Buccleugh; and for works at Buchanan House, for the Duke of Montrose; for a new residence for the Duke of Northumberland on the site of Northumberland House, and for one for the Duke of Newcastle, at Clumber; there were those for the new Westminster Bridge, which may be regarded as being partially carried out in the works now in progress; for the re-arrangement and enlargement of the British Museum, and of the National Gallery, Trafalgar-square; for new Law Courts proposed in Lincoln's-inn, wherein Grecian Doric architecture was used; for the improvement and enlargement of the Horse Guards; the completion of the Palace, at Westminster, at New Palace-yard, and on the site of the present Law Courts; and for the Royal Academy, on the site of Burlington House. His principal reports,—exclusive of those, which were numerous, on the construction and decoration of the Palace,—related to Westminster-bridge, to the Thames embankment, for which he tendered a design as a member of the commission which sat thereon, and to the British Museum. His design exhibited at the Royal Academy, for the Government Offices, wherein he proposed (as did his youngest son, in the competition, in a different design), to treat the offices as one building, of which the present structure in Whitehall should form part, was noticed by us when it appeared; and our readers are also aware that he prepared designs for the street-improvement of Westminster and parts adjacent, and of the great value of the suggestions which were therein made. It is to be hoped that some of these designs, in the hands of those who survive him, and who have participated in his labours, may yet be turned to public advantage. Of his latest works, Westminster Palace is hardly to be called complete; though all for which designs had been approved or may be said to be so, save the final coronal or apex to the roof of the Victoria Tower, intended to bear aloft the standard he did not live to raise. The Halifax Town-hall is but little advanced. The loss to our art from the severance of his connection with that building is, in the present state of architecture, not the least important part of the general loss which has been sustained. We were permitted to engrave his design; but what he would have made of the building, only those who knew his mode of working can form idea of. We are inclined to think that the termination of the tower would have become different; at least, we judge so from observations of his respecting it. We doubt not, the building, called Italian in style, would have been a rival to the art-work of the Netherlands; and it could scarcely but have helped to solve questions which are rife, and to remove the impediment to progress which there is by the pursuit of style in place of art. Of what he really did at an important juncture we cannot further speak at the length which the case deserves. Under the disadvantages of a time when architectural education was supposed to consist only in the observance of ancient models, and practice in the imitation of them; when such old works in any number, were drafted into use, and there was no more regard for general consistency and public appreciation of art (unless only in painting and sculpture) than there was of a breathing architecture by architects themselves, when æsthetics and criticism, and the prolific literature of every kind bearing upon architecture, had to be created, Charles Barry may have gone to the limit of dis-cussiveness in the common pursuit of many different styles. The wonder is that he could become equally familiar and could equally infuse art into all; and perhaps by him alone was such infusion thoroughly accomplished. There were, however, evidences in the later period of his

career, that he would have been able to give to the aesthetics of architecture, and the adjustment of any question of art and style, more than he could have derived therefrom. He deliberately proposed, on the question of the Foreign Office, whilst reversing the opinion of one side, and that expected by the other from himself, to erect a building of classical style opposite to the Gothic of the Westminster Palace, and said he would not care to object to a Gothic building on the score of the difference, were its position opposite St. Paul's Cathedral. Were this the continuation of old opinions and practices, there might have been little to hope for; but, combined with well-known disapproval of much of later practice, his condemnation of extravagance in colour, and the manner of his more recent designs, or notably the Halifax Town Hall, it appears to be rather a form of assertion of the supremacy of the art-element over style; whilst had he his course to go over again, it would have been marked by less of the discursiveness, and would have gained in art and appreciation by that concentration of effort, with comprehensiveness of study, for which all now contend.

But, we must on another occasion pursue the subject of the influence on our art, of the life and works of the artist-architect—Charles Barry. We have supposed our readers informed,—if only from the articles in our journal, on architecture at the commencement of this century,—of many of the circumstances under which his career began, and acquainted with the progress of the works of the Palace at Westminster.

The building, commenced in 1837 as far as the coffer-dam was concerned (the competition having been in 1835), was brought so nearly to completion in 1852, that on February 2nd, the new House of Commons and all the grand halls and corridors were opened, and the Queen alighted for the first time under the great Tower; and on the 11th of the same month, the architect received the honour of knighthood at Windsor Castle.

The Houses of Parliament themselves may be considered finished; but work on the Palace remains to be done. Sir Charles's wish as to his successor is shown by the circumstance that he has specially bequeathed the whole of the papers, drawings, and books relating to the New Palace, to his younger son, Mr. Edward M. Barry, he having been especially connected with him in carrying out the work.

Sir Charles Barry was a member of the following societies and institutes:—The Royal Academy of Arts, the Royal Society, the Institute of British Architects, and the Society of Arts; and of the foreign academies of Rome (the San Luca), of Stockholm, Antwerp, Belgium, Prussia, Russia, and Denmark, and of the American Institute of Architects. He received the Royal Gold Medal of the Institute of British Architects; and the Grand Medal of Honour of the French Exhibition, which exhibition he visited in a public capacity; and he received a diamond snuff-box, with cipher in brilliants, from the Emperor Nicholas of Russia; further, he was a member of the Commission of the Exhibition of 1851.

It was first arranged that the remains of Sir Charles Barry should have been buried privately in the cemetery at Norwood on this Friday; but it was felt by some members of the profession that a more eminent resting-place and a more public demonstration were deserved and desirable. Mr. Cockerell and Professor Donaldson, therefore, with the concurrence of the family, went to the Dean of Westminster, and in the name of the Institute requested that the body of Sir Charles might be buried in the Abbey. This request was granted most readily, as we understand; and the funeral will take place on Tuesday next, at one o'clock. The Dean of St. Paul's, likewise, expressed a willingness to permit the interment of the remains in the cathedral, side by side with those of Wren; but a wish often expressed by Barry, the probability that he was born in the parish, and the neighbourhood of his greatest work, fixed Westminster Abbey as the proper place. We have but few words to add.

The circumstances of his death were very terrible. He died in a quarter of an hour after he was taken ill. The cause was disease of the heart, acted upon by congestion of the lungs. He expired in Lady Barry's arms, between eleven and twelve p.m., and before the doctor, who had been sent for, could arrive. We could say much of the love he bore his family,—the love they, united and happy, felt for him, and the sorrow into which his loss has plunged them; but this would take us beyond our province. Let it comfort them to know that this grief is shared far and wide, and most by those who know him best.

#### THE SEASON FOR EXERTIONS.

GLOOMY WINTER has lasted long, and yet seems unwilling to depart. April's tears were frequent, and May's smiles, at present, are but cold and few; yet it is a time of hope for all. In the metropolis and in the suburbs, a large army of artisans will be kept busily at work. Some important buildings are in progress, or about to be commenced, both in town and country. London is growing, and houses of different classes are rapidly rising. Business seems steady, and, if the blessings of peace be continued, there seems every prospect of a successful summer for those connected with the building trade.

In spite of the sharp weather, the unusual snow and hail-storms of last month, both the court end and the city are beginning to assume their seasonable appearance. In Covent-garden and other great markets are seen the early flowers: in dismal alleys and courts the easter-mongers seem hurried in the multitude of spring plants: the cry of "Cowslips and primroses" resounds in quiet parts of the city: ivy, "creeping Jenny," and other climbing plants are temptingly exhibited; and it is extraordinary in what large quantities these are sold, and in what strange and unlikely places attempts are made to grow them. The sight of these plants leads the thoughts of many to country places, where, in the spring time,—

"All nature laughs, the groves are fresh and fair,  
The sun's mild lustre warms the vital air."

In the suburbs the trees and gardens begin to present a pleasant appearance. In the orchards the blossoms of the fruit-trees afford both beauty and promise. At no time of the year are the clouds of such a pure pearly hue: they roll in varied forms, and throw bright and dazzling edges to the sun. Rare and tender colours of the mosses on tree trunks and branches form delicate harmony with the bursting buds, and the imprisoned song-birds of the town give cheerful voice. We see, in the advent of Spring, as Longfellow says, the great annual miracle of the blossoming of Aaron's rod repeated on myriads and myriads of branches! To some the returning sunshine and warmth bring hopes of health; to others, thoughts of pleasure and amusement; to all, encouragement to renewed exertions.

The changes which have recently been made in our foreign relations will call for renewed exertions on the part of both manufacturers and workmen. It is asserted that for a time the ribbon weavers of Coventry will be thrown out of employment; that the importation of French clocks and watches will destroy the trade of Clerkenwell and other parts; and that it will seriously, to a further extent, damage the already depressed business of the Spitalfields silk weavers. There are other branches of trade and commerce the effects on which are viewed by many with feelings of alarm. Other trades, on the contrary, will be forced into activity.

It is a distressing feature of changes which produce much general good that important interests severely suffer for a time, and that many are left to struggle with poverty and the sad effects of the want of employment. It was so when steam power was brought to bear on hand labour, and when the locomotive superseded other methods of land conveyance. This temporary evil passed away, and such immense benefits have resulted that none in former years could have calculated their extent. In these and other changes the greatest amount of evil happened to those who obstinately refused to move with the stream, who opposed or laughed at the improvements. Many instances might be mentioned in illustration of this, but few are more instructive than that of the clock and watch makers of Clerkenwell. At one time the chief part of the manufacture of church turret and other clocks, not only for the use of the United Kingdom but for many foreign countries, was in their hands. Unfortunately, when science was rapidly advancing in France, when French workmen were receiving mathematical and artistic education, and applying new methods, the English workmen were continuing on the old plan, and not caring for advanced intelligence in the pursuit of their craft. In Paris persons of ability applied their earnest attention to the general principles of clock-making, and workmen strove by the subdivision of labour to acquire excellence in particular branches. The consequence of this has been that the manufacture of clocks is now almost entirely confined to Paris. If proper energy and intelligence had been used, the men of Clerkenwell might still have been the makers of the more important description of clocks for the whole world. If proper means are not used, the watch-making trade will also depart. On this point

Mr. Bennett remarks that in Switzerland, whence a vast number of watches are sent to so many nations, apart from the better system adopted there, and the extensive employment of female hands, their admirable system of general education is at the root of the matter. The Swiss belief for years past has been that, to obtain a perfect work, it was absolutely necessary to educate the workman. They could not expect workmen to adapt themselves readily to the altered requirements of the public taste here and abroad without a high degree of cultivated intelligence. Ignorance was opposed to all change, because it was unable to see how to effect it without injury to the workmen who had been brought up by the mere rule of thumb.

In Switzerland the education of the people is to a considerable extent a national affair: half of the expense is drawn from the Federal funds, half the rest from local taxation, leaving only the fourth to be paid by the parent, a payment of about thirty francs a year. In the case of a widow's poverty, even this fourth is remitted; and in certain districts, in the case of a poor parent to whom the child's labour would be remunerative, the local authorities actually pay to the parent a sum in lieu of what the child would have earned.

Nor is this education limited to the bare rudiments of common English schools; but the knowledge and practice of mathematics, of a foreign language, and the elements of natural philosophy, embracing mechanical science, are ably and effectually taught, as well to girls as boys: vocal music is also taught, and every school is made a school of design, where a taste for art is systematically taught to every child. Who can wonder that the watches produced by a people thus trained should be found more elegant and cheap than those produced in such very different circumstances at home.

In natural ability, perseverance, and skill of hand, the English workman may compete successfully with those of any other country; but notwithstanding, it is difficult for them to compete fairly against competitors with such advantages as those above mentioned.

As regards the Coventry ribbon-weavers, it will be the improved skill in design, the cultivated taste, and the educated eye for colour, with which the French may, if proper measures are not taken, permanently injure this branch of our manufactures. This shows how necessary it is, by every possible means, to improve and extend our schools of art, as well as those intended for general and national education. Vigorous exertions are required, not only to advance and develop our established branches of industry, but also to establish and encourage new ones, which may be the means of employing labour, and adding to the wealth and prosperity of the country. Admitting that great efforts will be for some time to come required to compete successfully with certain advantages elsewhere, it should be remembered that the changes in the tariff during the last few years have vastly increased both trade and commerce; that both the necessities and luxuries of life, clothing, &c., have been lessened; and that, if one branch of industry for a time suffer, others are greatly improved. The reduction of the export duty on English coils will give employment to, and improve the condition of, thousands of miners, will add to the general wealth, and make the peace of England more necessary to France. It is, however, as we have already remarked, absolutely necessary that Government, manufacturers, workmen, and the community at large, should all use their best endeavours to improve both the general and art education of the people.

#### GOTHIC ARCHITECTURE AND DOMESTIC BUILDINGS.

LECTURES IN CONNECTION WITH THE ARCHITECTURAL EXHIBITION.

MR. G. E. STREEP delivered a lecture last Tuesday evening, in the Gallery, Conduit-street, "On the Application of Gothic Architecture to Civil and Domestic Buildings."

In the absence of Mr. Beresford Hop, the chair was taken by Mr. Robert Kerr.

The Chairman, in introducing the lecturer, said he could not begin the business of a meeting like the present, without alluding to the decease of one who had just been removed from amongst them—Sir Charles Barry. It was only a fortnight since Sir Charles had received the applause of a like audience to that now assembled, which was called down in recognition of his merits as a designer. Every one acquainted with the subject acknowledged Sir Charles to be the most successful of the Eclectic School that modern

Europe has produced. He was almost tempted to say that his loss was irreparable, did he not reflect that the genius of art was raising up others to close the ranks, if not to fill the place vacated by those who were passing away from amongst them.

Mr. Street said he felt that the subject was one which had occupied the attention of the public lately, principally through the discussions in which members of the profession had engaged. The statement was constantly heard from the opponents to the revival of Gothic architecture, that it could never be suitably introduced except in ecclesiastical edifices; that it was unsuited to this progressive age; that it could not be adopted with any degree of comfort; that it was costly, and ascetic. Some persons charged its admirers with a love of savageness for its own sake, and ignored therein Westminster and Florence; others associated it with the grotesque; forgetting that in so doing there was both good and bad grotesque in the world. The different views on the subject had divided architects into separate and often hostile camps, which of itself tends to affect public opinion against Gothic. Yet, if an opinion was to be formed from the Press, Lord Palmerston's declaration on the subject found few in its favour. The *Quarterly Review* was the only periodical which had supported that statesman's opinion, whilst on the opposite side were to be found the leading public journals. But if they looked inside the profession, there were two classes quite opposed to the revival of Gothic architecture: one of these was one of which he desired to speak with especial respect, especially as the president of the Royal Institute had indissolubly associated his name with it: it was that class which followed out Classic architecture. This class, though much opposed to their own (the Gothic), and though he deprecated the main feature of their school, that of working in a foreign style, he admitted had many excellencies which could be safely adopted by themselves. The other class who decried against the revival of Gothic architecture consisted principally of younger men, who had started with the notion that the architect should work equally well in all styles, and should be prepared to undertake any class of designing, if he hoped to make his profession remunerative. It was natural that the Gothic should excite the enmity of this class: the former argued for the use of one style, and demanded some mark of the artist in every building he designed; nor was it by chance that the Gothic thus claimed a single style, for it knew well that since the creation no school has been successful that has worked in more than one. This class had in some instances carried its antipathy to the Gothic to an extreme: they had demanded, in the case of Mr. Scott, that he should be deprived of all control over the new Foreign Office. The favourite argument with this class was, that Gothic did not pay, and therefore was not suited to the age. They looked up to Sir Christopher Wren as their model, forgetting that we owe his Gothic works to the instinct of his employers, who, intently alive to the requirements of the age in which they lived, would not allow him to follow the bias which his studies had imparted to him.

This class, however, had showed its readiness to throw in their lot with those who offered greatest freedom, and would gradually decrease in number and in influence. An objection frequently urged against the Gothic was its incapability of revival unless by departure from its original principles. Our opponents here forget that the Classic has its Renaissance, and whilst the Gothic in seeking its natural and healthy development is not bound down to an old style, refuses to introduce sham productions into architecture. The effect of the Eclectic school upon the country has been unfortunate. To judge of it we had only to look upon the painters, sculptors, masons, workers of textile fabrics, goldsmiths, jewellers, carpenters, whom the last two centuries of Renaissance had originated. Impoverishment of genius has been the result. To take the instance of sculpture: the school of architecture had always depeuded upon sculpture: it fell to the lot of Renaissance to separate them: this produced inferior works. The greatest sculptors threw away their time on busts: the second-class men looked to truncated obelisks and monuments in St. Paul's as the sole resources upon which to employ their intellects. But the Gothic revival was fast establishing the connection between sculpture and architecture. In the same way the carpenter had been debased in the lowest mechanical drudge, but under the influence of Gothic revival would learn once again that there were higher aims to which his calling would raise him. He would now proceed to show that Gothic architecture was equally applicable to civil and

domestic as to ecclesiastical buildings. To allow that Gothic was only suited to sacred edifices would be an objection fatal to the entire art; for he believed that no architecture could be healthy whose ecclesiastical buildings were not put up in a style suited to ordinary buildings. No art could be successfully pursued which had not seized hold of the hearts of the people, and the limitation of Gothic to one class of buildings would in itself prove that it was not indigenous. But a uniform development of the Gothic style was alone suited to the requirements of this age: to prove this, he need only maintain that it must be by the development of one style that success could be obtained. He should merely point out the effects of the Renaissance school, which had as yet given no proof that it could adapt itself to the wants of the day, and he would show that the nature of Gothic was eminently what the age required. Indeed, he might go further, and appeal to history, to religion, to romance, in his favour; that the Gothic style was alone indigenous—was the only one which had been begun, developed, and perfected by Christianity; he might call in aid the feelings and instincts of his audience, but he preferred at present to meet his opponents on a higher ground. He claimed a preference for Gothic architecture in domestic buildings, because it was a style especially practical, real, truthful, and free. If we looked to the domestic buildings of Greece or Rome, we found them suited to the purposes for which they were put up; and if we went back to the earlier or to the foreign Gothic, we saw that the design for a chapel was not identical with that for an infirmary: the principal rooms in the private dwelling-house were not packed four square, with windows exactly the same shape and size. Whether the building was a castle or a church, the rooms intended for study or for amusement, each had its characteristic externally, with which the interior arrangements naturally corresponded. To go into a modern house, you find no room which possesses a single speciality, nothing to attract love for the home; but instead thereof the working out of an iron law which had impressed itself on architecture, and left man little better than a machine. The lovers of the Gothic built no enormous porticos, such as in the British Museum or the National Gallery, under which an awning must be improvised to protect the visitor from the weather. The Elizabethan and Jacobean dwellings which are still to be met with in various parts of the country are the result of this clinging after the ancient Gothic, which was consecrated by its national and religious character, which was connected with that heraldry that still found favour in the Anglo-Saxon breast, and which was recommended by its utilitarian character. An assertion was frequently made that the developments of Gothic art must destroy the Gothic character of the work. A dream inspired the minds of those who fancied this, that the student in Gothic would import foreign copies, which would be unsuited to our own country. He quite agreed that Venetian palaces put up amid the trees and parks of England would not correspond to the landscape; but he felt that as the Italians were little behind the French in love of Gothic, they could aid us in erecting buildings "light, airy, and cheerful," according to Lord Palmerston's description, with windows ample in width, from which the use of plate-glass would not be debarred. The plan of an Italian window was not unknown in our own country. Indeed, in Classic buildings the window is an inconvenience. In Gothic it is the principal feature. The same advantage would present itself in favour of doors; they could be hung with the greatest liberty on the plainest hinge of iron to the most finished of polished brass. The inside finishings of the house could correspond; the ceilings open or covered, with one exception, that plastering could not be permitted as a sham imitation of stone. In the internal fittings our ancestors used oak, because it was readiest to their hands; but we must seize whatever material came in our way, and adapt it to our purpose, a privilege which the freedom of Gothic permitted. In the matter of furniture, the Gothic feared no comparison with the Renaissance. The wretched productions of modern times were the result of this system, in which workmen do not aim to arrive at a high standard. But before that a Gothic house could be suitably furnished, some attempt must be made to improve modern upholstery, and, following in the steps of Pugin, we must establish a Gothic manufactory. One of the main results of the Exhibition of 1851 had been to convince those most conversant with our textile fabrics that, if we hope for improvement, we must submit to take lessons from the

East, whose works in this class were of the same kind as those of the barbarous Gothic. One good effect resulting from this had been the working of Medieval embroidery, which, though at present confined to our churches, would soon, in the hands of ladies enthusiastic on the subject, be introduced into private dwellings, and supersede the mechanical works in wool and muslin, which for too long a time had engrossed the female fingers. The application of iron to Gothic architecture had been successful: to show this, he need only point to the museum at Oxford, for the design of which we are indebted to Gothic artists, and the erection to Gothic workmen. A similar instance of the application of iron to Renaissance could not be pointed out, to which it must ever prove foreign, through its eagerness to conceal the material used in construction. The cost of Gothic was alleged against its use, and if a comparison were made between a speculative Classic house intended to last ninety-nine years, and a substantial Gothic built for perpetuity, no doubt the estimate would be in favour of the former; but a permanent dwelling in either style would demand the same outlay of money. He might now be allowed to point to the reasons why Gothic buildings had proved unsuccessful, and he found them in the facts that architects had adopted the new Gothic only in their erections, had sought external effect to please the eye, and had overlooked the comfort of the interior; had become Gothic to so exaggerated a degree as even to alarm Gothic men; and that those who had worked out the Gothic had been trained in Classic and Renaissance, and had found themselves unequal to rise above early prejudices. In conclusion he felt that there were men now devoted to the pursuit of Gothic architecture whose works would be the best proofs of his remarks in favour of the application of this national style to the buildings of our country.

The Chairman, in proposing a vote of thanks to the lecturer, said the audience had had the advantage of hearing one of the ablest supporters of the Gothic school.

The vote was accorded amid general applause.

#### DOINGS IN PARIS.

THE transforming of the plantations, on the right side of the grand avenue of the Champs Elysees, into flower-gardens and shrubberies, continues actively. Considerable quantities of earth have already been shifted for the flower-beds and grass-plots of this side, which is to imitate the present disposition of the left side of the road. Thus, straight alleys will be carried round each plot, and large open spaces (*correfours*), where many alleys meet, will be established near the cafés and other places of amusement. The walks are to be of ample size for the demands of circulation, and double seats, with a back, are to be provided for promenaders. Water conduits are being laid down, with all necessary appendages, for irrigating the grounds.

An order of the Prefect of Police has nominated commissioners of public health for the twenty arrondissements of Paris, Sceaux, St. Denis, St. Cloud, Sèvres, and Meulan. Sanitary commissions in Paris are not of new creation: as early as 15th December, 1851, a decree formed them, and the members worked with the greatest zeal till 31st December, 1859, in the twelve arrondissements. Owing to the increase of the territory, Paris can boast of twenty committees.

The works of the subterranean canalization of Paris proceed actively. It is proposed that the Seine shall be relieved from all the drainage water now brought into it by the actual sewers, and that they shall be turned into the grand collecting sewer of Asnières. At present a deep excavation is being made on the Boulevard de la Madeleine, beginning at the Rue St. Honoré, for a sewer destined to unite with that of Asnières, the drain which passes under the Neuve St. Augustin, and which receives the water from this thoroughfare and all the quarter.

The Pont au Change, now in course of reconstruction, upon which the works were for some months past interrupted by the overflows of the Seine, was re-taken into active hands on the 18th ult. A powerful dredging machine has been moored between the two river piers already commenced, in order to deepen the bed at that spot, while it temporarily closes up the navigable channel from the passage of boats likely to interrupt the work. A great number of men have been set to work at the left abutment, and the least advanced of the piers, that near the Quai des Fleurs, has already its caisson up to the level of the river. Meanwhile the walling of the Quay de l'Horloge,

at the north of the Palais de Justice, advances rapidly. At present the parapet is in a forward state: it is of Jura limestone, capable of receiving a high polish, equal to that of marble,—the same stone which was successfully employed on the St. Michel and Solferino bridges in Paris. This quay has been considerably widened out between the Boulevard de Sebastopol, in the "Cité" and the Rue de Harlay. At the new Place du Louvre the works for raising it to the level of the adjoining streets are terminated. A carriage-way, paved with asphalt, has been laid down all round the plantation of trees in front of the Church of St. Germain-l'Auxerrois and the mairie of the first arrondissement; also, the avenue in front of the tower which separates these two buildings is similarly paved. This open space, formerly plunged in total darkness during the night, is now brilliantly lighted by gas candelabra spread over the two plantations. Benches have also been placed for the convenience of pedestrians: they are of the same model as those in the Champs Elysées and the Boulevards, with two seats, and a back in the middle.

#### THE ARCHITECTURAL ASSOCIATION.

The special business meeting of this session was held on Friday evening (the 11th), at the house in Conduit-street. Mr. Penfold, President, in the chair.

The minutes of the last meeting having been read and confirmed,—

Mr. Arthur Cates proposed the following resolution:—"That this meeting expresses its satisfaction at observing that a series of propositions has been issued by the Council of the Royal Institute of British Architects for an examination of their members as the initiation of a scheme which they hope to see further developed and extended to all members of the profession." Mr. Cates, in introducing the resolution, congratulated the members that a standard was about to be established by which a criterion could be formed as to the merits of young men entering upon the profession of architecture. The Association had always shown an anxiety in this matter, and had discussed it frequently, but they had met with discouragement in their attempts. He thought that the Council of the Institute had acted wisely in confining the measure, in the first instance, to their own members. They were not, in his opinion, of sufficient strength to carry out a public examination; and if they attempted it and failed, they could never afterwards recover their position.

When the experience which they would derive from the present movement would form the foundation of a more extensive and, he hoped, successful scheme.

Mr. S. C. Cates seconded the resolution. Mr. Billing objected to the principle. It was, he said, absurd to demand a qualification for an artist. As well might an examination be appointed to test proficiency in painting or in sculpture as in architecture. The test would be only limited, and not extended to all branches of the profession. So it would prove a failure.

The Chairman was glad to say that the Royal Institute had adopted the views of the Association on this important subject.

The resolution was put from the chair and carried.

Mr. Arthur Cates then proposed that the secretaries of this Association be directed to communicate to the secretaries of the Institute the foregoing resolution.

Mr. T. M. Rickman, in seconding the proposition, drew the attention of the subscribers to the nature of examination, which was, in his opinion, more valuable than any tests introduced by the Universities.

Mr. Bunker moved, as an amendment to the foregoing, "That the meeting proceed to the next question."

The amendment was seconded by Mr. Billing, and carried.

Mr. Bunker next proposed, and Mr. Cates seconded, the following resolution:—"That the members of this Architectural Association have not afforded and do not afford that practical support in its working which is needed for carrying out its objects, and that it is, therefore, desirable that the committee should further consider and report whether there is any course short of closing its operations which they can recommend for the adoption of the Association."

The resolution was put from the chair and unanimously carried.

The proceedings then terminated.

#### CAMP HOSPITALS A HUNDRED YEARS AGO.

THE century whose date-marks record famous deeds by England's two most famous captains,—the culminating glories of the first, the brilliant promise of the second,—was one in which the temple of Janus was but seldom closed, and then but for brief intervals of repose. In both hemispheres and on every continent, British soldiers marched and fought. British fleets sailed on every sea. When we inquire, however, from which of the many fields that were traversed there have come down to us records bearing on the personal conditions and the hygienic circumstances under which these operations were carried on, it will appear that they are very limited. As to the fleets, we are very much indebted to Lind, Blaine, and other physicians who accompanied them, men of great judgment and ability, to whose scientific foresight, and not to a slothful and corrupt Admiralty, it was owing that ships were enabled to remain at sea long enough for the fulfilment of their objects. These physicians have taught us much on the subject of personal hygiene, not without a glance at questions of hospital construction, the good effects of which we can see, even now, in the well-built naval hospitals which have always so favourably contrasted with those provided for the army. The field of medical observation, as far as the army was concerned, seems to be limited to the various campaigns in the Low Countries and Germany, and to the experience of the large standing camps which, on the threat of French invasion, were established at various points for the purpose of covering the metropolis. Having already endeavoured to briefly utilize and deduce one or two lessons, useful at the present time, from Dr. Brocklesby's experience of camp life and disease in England, and from Sir John Pringle's experience in the Low Countries and the Culloden campaign,\* we shall now make Dr. Donald Monro's "Observations on the Means of Preserving the Health of Soldiers, and of Conducting Military Hospitals," the text for a few further remarks. If called on to supply a student with one book on the army sanitary history of these times, we would put this book of Monro's into his hands rather than Pringle's much better known work. And for this reason, that the former is more the more systematic of the two; and also that the close personal observations which it is his chief purpose to record, were made after the publication of the latter, and under the influence of a teaching which is always gratefully acknowledged.

If a head-roll of names eminent in science and letters can ever make a family distinguished, Dr. Monro was one of a stock than which few have been more illustrious. It was founded by John Monro, a surgeon in William the Third's army, and who established the famous medical school at Edinburgh, and its last notable representative died, a professor in that school, only a few months ago. Our author was the son of the first Alexander Monro, and brother of the second and most distinguished anatomist of that name. Shortly after the battle of Minden, he joined the British Contingent of the Allied Army in Germany, commanded by the Marquis of Granby, which was taking part in the Seven Years' War under Prince Ferdinand of Brunswick. With it he remained for three years, at the end of which time he returned to his duties at St. George's Hospital. In 1778, and again in the following year, he was physician to the great camp at Coxheath, near Maidstone, which, with one at Warley-common, was established in the expectation of a French attack, and at which Sheridan has laid the scene of one of his best military farces.

With regard to these old-fashioned books,—with regard to books of any period which treat of these subjects,—it is important to bear in mind that we must not look in them for any new principles,—for any theories hitherto unknown. That effete and decaying animal matter must be removed from the means of affecting the living body; that the effective agents of that removal are the three primal purifiers,—air, fire, water; that Nature abhors waste; that the effete matters should be applied to the reproduction of vegetable life; that death and life, and life springing directly from death, should proceed in a regular cycle; and that when we break her laws, even in the smallest particular, Nature is swift and certain to punish us,—these are the elementary principles on which health has been given to us. At that point—after that has been set forth—the work of the theorist is done. The work remains for the chemist and the engineer; for the chemist, to

demonstrate the connection between cause and effect; for the engineer, to give practical effect to the theories and demonstrations. There is very much for both to do. The engineer has hitherto done little more than either to pump the effete matters into tidal rivers, to be pumped back again into human habitations, there to cause frightful mortality, as was the case at Exeter in 1832, at Hull in 1843, at Newcastle in 1853, and at other places; or, on the other hand, to hurry in the sea, as is being now done, the rich treasures which should go to fertilize and beautify our fields. The great value of such books as we have been quoting lies in their multiplication of instances which exhibit the perversion of the natural laws and the certain manner in which these laws avenge themselves. For instance, the battle of Warbourg was fought on the 31st July, 1760, and the victors encamped on the site of it; many of the dead were scarce covered with earth; the camp was speedily covered with dead animals, and, in the absence of a camp police, it became covered also with the *dejecta* of a numerous army. Instantly, in the first week of August, peticular fever appeared, and raged without intermission, but with always increasing urgency, until December, when the troops went into cantonments at Paderborn. At that place there was no diminution of its intensity until the hospitals were thinned by convalescents being sent away in January. When, in February, the Guards marched for Hesse, and the number of troops was thus greatly reduced, the fever almost entirely ceased. Even then, two battalions were exceptionally crowded, and the disease assumed new virulence among them, ceasing when the men were scattered in billets. Again, at Osnaburg, in 1761, an outbreak of the same disease was traced to a neighbouring "foul ward," and when it was thinned, and the sick removed to a large, airy hospital, the disease ceased at once.

The first remark that will occur to any one who reads certain parts of this book, and who is, at the same time, familiar with discussions on kindred subjects that have been rife during the last few years, is likely to be this: that Dr. Monro seems to have anticipated these discussions, that had the methods and provisions which he lays down with care and minuteness been followed in any respect, these discussions could never have originated. The rules which he has systematized for the conduct of field hospitals, which have respect to details both large and minute, exhibit a faculty of circumspection and observation, and a regard for the possible influence of collateral circumstances, together with the power of ascending from the particular to the general,—the very gifts which go to make the efficient and successful administrator. The distinctive characters of the hospitals required by an army in the field,—the regimental hospital in front, the ambulatory hospital immediately in rear, the great general hospitals at the bases of operations,—the necessity of congregating the sick at some times, the importance of segregating them at others,—the influence of soil, temperature, character of surface, climatic peculiarities,—these subjects, together with that of the necessary order of subordination of hospital attendants, the supply of portable provisions, the rules for camp and hospital police, the supply of shirts—a most important particular, which seems to have been the first cause of shipwreck at Scutari,—all these matters, with others which it would be too tedious to mention, are discussed, and their relative importance is pointed out. In the same strain, his description of the great camp at Coxheath, of all the sanitary influences which were present there, and of the results, is a model of excellence which is well worthy of imitation.

Dr. Monro was a thorough-going contagionist. *Infectionist* would be the more correct word, but we employ the term that is in general use. His is a question about which we can hardly be said to think more precisely than they did a hundred years ago, although our loose, unprecise thoughts have taken a somewhat different direction. It is curious how persistently the most rigid contagionist notions prevail even now when quarantine, their logical effect, is almost, comparatively speaking, abolished. No one has done more for the diffusion of sound sanitary knowledge among the general public than Mr. Kingsley, but Mr. Kingsley, in his novel of "Alton Lock," has made the old theory of propagation by *foetida*, or substances such as woollens, cotton, feathers, which are supposed to acquire and retain contagious effluvia, serve the useful purpose of killing off some half-dozen of his characters. A clergyman's straight-cut coat, such a very simple instrument of death, first kills several wretched creatures who had put it together in a sweater's

\* The Builder, February 4th, and March 17th.

den, then the shopman who delivered it, then the servant who brushed it, and, last of all, the clergyman who wore it.

Again, in the autumn of 1854, the soldiers' packs were thrown overboard from every transport in the Black Sea in which cholera had shown itself. The unfortunate men were therefore quite unprovided, themselves, when they went as patients to an unprovided hospital. Thus, a practical adhesion to this doctrine of propagation by *fomites*, on the part of some ship captains, was one great cause of the first misery at Scutari. Here, on the other hand, is a case in which the contrary doctrine seems to have prevailed. During a late cholera epidemic, an army surgeon was tried by court-martial at Dublin, on the heavy charge of cowardice, because he had taken certain precautions against the supposed contagion of that disease, which were trifling indeed when compared with the rules laid down by our author. Frequent ablutions, a waxed linen coat, rolls of lint stuffed into the nostrils, and a vessel of heated vinegar held between patient and physician, are what Dr. Monro enjoins. The unlucky surgeon at Dublin had simply worn a pair of gloves, but he was found guilty. Evidently his judges did not believe in contagion, and so differed from Mr. Kingsley, and the transport captains.

When we attempt to state exactly what we really do know of the different stages of the propagation of the class of diseases which were once called contagions, but which it is now the fashion to call zymotic, it will be well to begin with a general confession of ignorance, and also to have a similar confession ready for almost every stage of the inquiry. The first remark to make is that the very term *zymotic* is inaccurate, because it expresses a theory which may be true, but which we only fancy to be true, it being as yet unsupported by a sufficient accumulation of precise and demonstrable data. The theory is that which is succinctly expressed in Hauleit's well-known lines,—

"It will but skin and flim the ulcerous place,  
While rank corruption, mingling all within,  
Infects anscen."

Ask any surgeon, and he will tell you that these lines express most accurately what he fancies to be the mode of action in certain specific diseases, which are first propagated by contagion or actual contact, and then diffused through the system by infection, or what we call, from a supposed analogy to the chemico-vital process of fermentation, *zymosis*. This notion of a humoured fermentation has been present ever since the time of Hippocrates; but it was Lichig, whose fanciful analogies have impressed the present generation so much, who first gave it the form and prominence which it now displays. If we agree with the registrar-general, to admit a terminology which expresses it, it is important to remember, what the registrar-general fully admits, that the theory is not yet admissible as founded on fact. The question then remains, What is the cause of these diseases? It can be safely asserted to be established beyond the reach of controversy, that zymotic and zymotic diseases stand in the relation of cause and effect. Here is the modern "Board of Health doctrine" put in a form which, if the spelling were a little altered, might almost read as an extract from Dr. Southwood Smith or Mr. Chadwick:—"The terrestrial causes thereof are, by common consent of most writers, as follows:—venomous and stinking vapours arising from fens, standing ponds or pools, ditches, lakes, dung-hills, sluices, channels, vaults, or the like; as also unclean slaughter-houses of beasts, dead carcases of men, as in time of warre, and of stinking fish, fowl, or anything that hath contained life and is putrid; as also, more particularly in great cities, as in London, the unclean keeping of houses, lanes, alleys, and streets; from those recited, and the like, infectious vapours, by warmth of the sun exhaled, are apt and able to infect the living bodies of men, and thereby to produce the plague, which, once produced, is too apt, by infection, to spread and become popular, as experience too much sheweth." This seems modern enough, but it is quoted from a book called "The Surgeon's Mate, written by Mr. John Woodall, Surgeon of his Majesty's Hospital of St. Bartholomew," and is the result of his observations of the great plague of London. Even when this doctrine is taken as admitted, much remains unsettled, however great a step may have been gained. It is quite absurd to say that, cause and effect being found, there remains no more room for inquiry, because, for one thing, the cause does not always produce the result; and, for another, because we have to decide—and that is a most important point—the law, in accordance with which the par-

ticular result assumes such various forms. And here an almost total ignorance must be confessed. All that it is possible to attempt is to indicate in what directions it seems probable that a fuller light may eventually be obtained. All analogy and all reasoning force us to assume that although we cannot now see or handle that which passes from the putrescing mass to the living body, still that, with greater means and more extended observation, we shall ultimately be able to do so, that the *contagium* is something real, physical, and concrete. *Es nihil aliud fit* is a maxim of the oldest philosophy, but it seems to be discarded by some persons who dogmatize on this subject. In all reasoning about material things, we must have seen or at least we must suppose the existence of material causes throughout the whole course of the inquiry. A notion that these diseases are propagated by minute insects is almost as old as the fermentation idea, and was revived, some years ago, by Sir Henry Holland; but there is so little support for it, and so much that seems opposed to it, that it may be dismissed. It appears to be probable, then, that our inquiries, to be in the right road, must run in one of three directions. For the first, we must try to see if a remote specific influence, following laws of its own, traversing a course of its own, calls into action the infecting cause in the same way that the rudimentary germs contained in the pistil of a flower are vivified by the pollen shed on them. In the second place, we have to try to discover certain specific causes for each specific disease, differing one from the other, just as the phenomena of the morbid result differ; or, if the conveyed cause is always identical, we must discover, in the third place, the law of election by virtue of which the variation of the resulting phenomena is determined. The first notion is a very old one, which has much support at the hands of some who have a right to speak with authority in these matters. In the second way, we would be able to know the physical and chemical difference which may exist between the poison which causes, say small-pox, and that which causes, say yellow fever. According to the third, the poison being uniformly and in all instances the same, we would discover why it should at one time choose to attack, say the throat and cause diphtheria, at another the intestines and cause dysentery. Whatever the exact nature of the infecting cause may be, and in what way soever it may operate, one thing is quite certain, that as yet we know of only one way of neutralizing it. That one way is by dilution in the atmosphere, and, as a matter of real, accurate knowledge, there is no other "disinfectant." Even Dr. Monro quotes with approbation his friend Lind's apophthegm,—that the chief value of the so-called disinfectants lies in their compelling attendants to open doors and windows.

A hundred years ago there were constant apprehensions of a French attack, and the mobile divisions and brigades were, from time to time, located at different points, all having reference to the defence of London,—at Sandheath, near Ripley, at Titchfield, near Gosport, at Winchester, at Chatham lines, at Hythe, at Warley Common, and at Coxheath, of which latter we have been speaking. As has been mentioned, it was at Coxheath that Sheridan laid the scene of his little musical comedy, with Bonminster in the principal part, a piece from which, if it were put again on the stage now, an audience would possibly be able to draw some jokes and allusions not inappropriate to the present time, when we, too, are thinking of invasion, and are busy, also, with camps and the movement of troops. And now, having added the complimentary allusion to a Trefoil of last century Wortbies, one is tempted, if it did not seem probable that the result would be by no means satisfactory, to institute a comparison between the men of 1760 and the men of 1860. It is the fashion to speak lightly of these old gentlemen of the last century, and modern sanitarians are careful to ignore their labours, as if afraid of indicating the sources of their own inspiration; but they were real and earnest workers, ripe scholars, and useful public servants. When they took up a matter for inquiry, they tried to reach the central truth and real outcome of it. There was no evasion in their line of research. They tried to show forth tangible results, not to put names or figures in the place of results. Never for a moment did they condescend to wear "the foolish face of conformity." To one authority, and to one only did they bend,—to the traditions and the venerable influence of a literature that is 2,000 years old. Contrast this with what may have been observed at a later period,—a total abdication of professional functions and an inglorious vitality exhibited merely by a louder and louder call for "returns." This is just what must

be the result when an exaggerated value is attached to statistics, and when they are placed in any but a subordinate position. It cannot be too well remembered that a statistic is, by the necessity of his mental organization, a fatalist and that the attitude of a true sanitarian, on the other hand, is, by the necessity of his position aggressive and offensive; and if you offer the choice of these two antagonistic attitudes to several hundred men, indifferently chosen, what think you, will he the result? Is it not very certain that the great majority will repudiate the which gives trouble, will "steep their brows in slumber's holy balm," and indolently sink back into a fool's paradise of figures? And that is precisely the direction towards which present tendencies seem very certain to lead us. An old proverb teaches that when the night is darkest, day is at hand; and when we have reached the very deepest profundity of soulless routine and statistical pedantry, there may be reason to look for some streaks of light above the horizon. Mean time, let us earnestly hope for it, and do our little best to promote it, and, looking to the thick coming troubles that seem not far distant, let us all join in the sentiment of the lines which conclude Sheridan's "Camp" at Coxheath:—

"May true glory still wave her bright banners around  
Sill with fame, power, and freedom, Old England's  
crown'd."

CWM.

## THE SERPENTINE.

In the Blue Book is recorded the result of a inquiry, which is remarkable for the ability, patience, and acumen of the investigators, and for the high standing and talent of the witnesses. 3,728 questions were asked, answered, and registered.

That which stands out most prominent is the discrepancy in the views, and conflict in opinion of the delegated writers, upon the decision of whose reports the balance was so equal, that in the division, the chairman's casting vote settled the question! As to the testimony of the eminent engineers, there was no extreme dissonance, all agreed that the plan of daily and perpetual refiltration was not what they would advise, and whenever reference was made to the works recently executed, that system was tolerated only on account of the expense already incurred,—the circulating system owing its protection to 15,000 of the circulating medium already jeopardized.

It may be permitted to an old correspondent of the *Builder*, who has for many years treated upon the Public Parks, broad waters, &c., and who has attended the committee, to note down some fact issuing out of the inquiry.

The general tenor of the evidence went to prove—that the supply of water ought to be, at least a million gallons daily; that the bed of the Serpentine ought to be cleaned, and in particular to be deepened above bridge, the sides sloping down from 2 feet at the edge to 5 feet in the centre of that section, hnt to a greater depth in the wide reach below, so as to secure a larger body and greater purity of water. No one had contemplated pouring fresh water into the dirty basin, and Mr. Hawkesley himself admitted that on the first inception of the project between him and Mr. Fitzroy, the *limitation of expense* left him no better alternative than the supplementary process of filtration which he has adopted, but which otherwise he would not have chosen.

On the 16th March, the sixth day of sitting, it became so obvious that the filtering scheme would prove abortive, that the committee resolved to stop the works in progress, without prejudice to Messrs. Bird's contract for works in hand; these works commenced in the depth of winter, and which, up to the appointment of the committee, had progressed with extraordinary despatch, were all a once forced forward with almost magic velocity, so that the mile of culvert had been completed, the dam formed, the filter-beds, pipes, and foundations laid in, and all but the ornamental figures, balustrades, and urns brought on the ground—in this case, the liability, if not the total expense was incurred.

It was not in default of engineering intelligence, from several sources that the insufficient and now condemned project was adopted. No; it was because the Chief Commissioner must limit the cost to the grant of 17,000*l.*; and because he would do something, he decided, first, to clear the flower-holders, and then to clear the stagnant waters by filtration!

So early as 20th July, 1859, Messrs. Easton & Amos were applied to by the Chief Commissioner to state—first, the time it would take to complete their plan for supplying the Serpentine with

000,000 or 2,000,000 gallons of fresh water per diem; secondly, the cost; thirdly, would they guarantee that supply? and fourthly, whether they contemplated to level and cleanse the bed?

This letter was directly answered by that firm, and the letters and replies were duly produced and read in evidence before the committee—the purport being, first, from five to six months to complete the supply; secondly, the estimate of January 1st was for pumping 1,200 gallons per minute through the 15-inch pipe now laid from St. James's Park to the Serpentine: that of the 5th August was to supply 1,600 gallons per minute through a 6-inch pipe, delivered to the upper end of the Serpentine, the whole distance, including also the supply to Kensington Palace Gardens, to St. James's Park, and Bakingham Palace Gardens; thirdly, the guarantee required was given.

From the evidence of eleven civil engineers, supplied with that of five practical professors of chemistry, it is manifest that the rivalry created by the Chief-Commissioner's literary correspondence had been in nowise abated by publicity. Opposition was courted, and estimates were therefore dragged into collision and conflict. Mr. Hawkesley proposed as follows:—

For filtering .....	£17,000
Additional for procuring water from a deep well on the site .....	3,000
For clearing the Serpentine, on Mr. Simpson's plan .....	30,000
Making a grand total of .....	£50,000
Messrs. Eason & Amos offered to concrete the whole of the Serpentine for .....	£28,000
and to supply 1,000,000 gallons a day from Duck Island for .....	9,000
At a total cost of .....	£37,000

There remains an after-consideration of some importance, viz., that the annual cost of Messrs. Eason's plan, inclusive of supplies to St. James's Park, Buckingham and Kensington Palace Gardens, and fire-mains to the public offices, would be 50*l.* per annum; whereas the proposition of Mr. Hawkesley, for the Serpentine alone, amounts to 200*l.* a year!—so much for figures. Now, in reference to the quantity of water to be furnished daily, it is by no means so clear that so large a supply can be obtained from the Paddington basin as from the lower strata of gravel already risen in St. James's Park.

As to the change effected in the gardens, by filling up of about 260 feet of the fig-end of the park, the site of the filtering-beds,—it is a happy accident: at that point the water was narrow, but 10 feet or 60 feet wide: the banks shelved down, and were overshadowed by large timber trees: the ground was doubtfully covered mud was pestilent; and a narrow haug heavily throughout the dell. Besides, in this popular angle of entrance the space was rather too circumscribed. The dedication of this small scope to Flora would be a most satisfactory information. The balustrades, fountains, urns, and other pictured addenda are sufficiently artistic or their dark position in our cold climate; nevertheless, there are five months of genial weather, when fountains, the treasured ornaments of other cities, might be tolerated in London, and be considered a luxury by frequenters of Kensington, as well as of others of our public gardens. There is this personage to whom the public is already indebted for large contributions to science, art, and moral advancement, and to him we believe such is owing for improvements in these designs originally contemplated.

Again, an allusion may be made to the proposed change of the public bathing privilege, from the side reach opposite the receiving-house to the narrower waters in Kensington-gardens. There are some doubts as to the greater seclusion of the latter, for it is more particularly the lounge of families, nurses, and children; moreover, the surface of water is less, whilst improved balneæ would more than double the number of bathers. The hours of privilege being from six to eight o'clock p.m., and eight to nine o'clock p.m., very few questioners would be found so early or so late in the latter row; and unless females—which we do not think at all probable—were to promenade the bank opposite to the receiving-house, with a view to the study of anatomical drawing, no offence could arise from continuing the liberty on the present terms. But there is an argument stronger still against the change,—and that is the distance. Artisans, children, and young business men find it scarce safe far enough: do not, therefore, impose another half mile, twice told, upon the toiling million. At present the upper lake is in a fearful state.

On Sunday last crowds were inspecting the works; but all is confusion—the water fetid—heaps of clay and gravel confounding all, and extending along the south margin nearly the whole length. Nothing can be done with the bottom during the warm months, but unless fresh water be poured in, the malaria will be pestiferous: is this to be done? and who is to do it?

As to the proposed Italian garden, there is no room for it, unless planted on the filtering-beds, three of which are complete and the fourth nearly so, numbers of men being now engaged in forcing the work forward.

QUONDAM.

EXCAVATING IN WATER.

A NEW machine has been invented by Dr. Payerne, for the excavations under water at the Port of Fécamp, which he calls the "hydrostat." It consists of a wrought-iron case, divided into three parts by two horizontal divisions. The lower story, or, if we may so call it, the working chamber, rests on the bottom of the sea, and presents an area of 5*m.* square by 2*m.* high. The double sides, enclosed at bottom, contain the necessary ballast for the sinking and stability of the structure. Thirty-five men can work at ease in the working chamber.

PICTURES ALREADY PURCHASED BY THE ART-UNION OF LONDON.

From the Royal Academy.—Full Ripe, by George Lane, 15*l.*; Merris on the Sea, H. J. Bodington, 10*l.*; The River Dovey, T. Danby, 5*l.*; The Little Whist, T. F. Dicksee, 6*l.*; Sweet Summer Time, F. W. Hulne, 30*l.*; Under the Cliff, Borchers, J. F. Cropsey, 30*l.*; Happy Moments, J. T. Peirce, 30*l.*; The Mother's Lesson, G. W. Brownlow, 2*l.*; Fruit, Miss Stannard, 25*l.*; A Farnaby Corner, J. H. Dell, 15*l.*; A Welsh Valley, T. Adam, 15*l.*; Sheep and Lamb, J. Thorpe, 15*l.*; Fresh Breeze, J. Meadow, senr., 10*l.*; Terrier's Head, T. Earl, 10*l.*; 2*l.*; Monkstone Head, J. L. Hall, 6*l.*; Home Practice, W. Weir, 10*l.*

From the Royal Scottish Academy.—Nook in Kiel's Den, Arthur Perigal, 30*l.*; the Beach at Largo, Arthur Perigal, 20*l.*

From the British Institution.—Spending a Day on Hampstead Heath, by J. Ritchie, 60*l.*; The Lacemaker, A. Provis, 50*l.*; Hvy, on the Meuse, G. Stanfield, 34*l.*; Cordelia, T. F. Dicksee, 52*l.*; 10*l.*; Grewinard Mill, Sussex, N. O. Lytton, 25*l.*; Maternal Affection, Chas. Dukes, 21*l.*; The Orange Girl, T. P. Hall, 20*l.*; Preparing the Village Guy, by Miss E. Brownlow, 20*l.*; The Lesson, C. Dukes, 20*l.*; View down the Front, from Willard, W. B. Turner, 21*l.*; The Nap, R. Hollingdale, 20*l.*; Hampstead Heath, G. D. Callow, 15*l.*; The Common, C. Smith, 15*l.*

From the Society of British Artists.—Tantallon Castle, by J. Sney, 20*l.*; Scene of the cloister, Prof. G. Smart, 4*l.*; A Trawler in a stiff Breeze, H. K. Taylor, 40*l.*; Deer and Deer Hunt, Thomas Earl, 36*l.*; 15*l.*; A Welch Lane, G. Cole, 30*l.*; The Mountain Stream, J. B. Smith, 20*l.*; Sea-coast Harbour, E. Hayes, 20*l.*; Waiting for the Tide, H. K. Taylor, 25*l.*; Village Scene, H. Desvignes, 50*l.*; The Rialto, S. G. Tovey, 30*l.*

From the Institution of Fine Arts.—The Prodigal Son, Elijah Walton, 52*l.*; 10*l.*; The Cover-side, A. E. Rolfe, 40*l.*; Self-defence, H. P. Parker, 35*l.*; Caisbrook Castle, J. Godt, 2*l.*; Welch Lake Scene, B. Shipman, 20*l.*; A Sunny Afternoon, W. B. Leader, 20*l.*; Sunset on the River Avon, H. B. Gray, 15*l.*

From the Society of Painters in Water-Colour.—Mountain Glens—the Pass of Glencoe, A. P. Newton, 262*l.*; 10*l.*; Old English Camp, G. Fripp, 30*l.*

From the New Society of Water-Colour Painters.—Rillage Point, James G. Philips, 25*l.*; An Old Tower, C. Vacher, 15*l.*

IRELAND.

THE sum of 20,000*l.* has been generously placed at the disposal of the Dean and Chapter of St. Patrick's Cathedral, Dublin, by Benjamin Lee Guinness, esq., of Dublin, for the purpose of restoring that ancient building. St. Patrick's Cathedral is, it may be said the only monument of Gothic art in Ireland, in a state at all approaching to good. Although in a sadly neglected state, it still has many very beautiful remains of the Early English period, and it is to be expected that other heauties will be brought to light in the approaching restorations. It is to be wished that Mr. Guinness's munificent example would be followed by the Dublin public, on behalf of Christ Church Cathedral, which contains some curious remains of transition work, between Norman and Early English. This very ancient building is in a most disgraceful condition. The choir underwent some alterations many years ago, and is now one of the grossest outrages on the proprieties of Gothic architecture in the three kingdoms.

The fine club-house for the Kildare-street Club, Kildare-street and Nassau-street, Dublin, Messrs. Deane, Son, & Woodward, architects, progresses favourably. It is in the Venetio-Gothic style. The exterior is of brick, with a sparing use of cut stone in arch strings, and in connection with which an effect is sought to be gained by the introduction of black limestone. The strings, capitals of columns, &c., are richly and elaborately carved.

THE HORTICULTURAL SOCIETY'S PROPOSED GARDEN.

SOME time since we published, with authority, a view of the gardens proposed to be formed by the Horticultural Society at Brompton, and the Society circulated our view as showing their actual intention. Afterwards, however, circumstances led to a revision of the design; Mr. Nesfield was called into council, and the plan we now publish has been determined on. The works are being proceeded with very rapidly. The figures 2S mark the site which has been appropriated to the proposed memorial of the Great Exhibition, on a terrace surmounting water. The following is Mr. Nesfield's own statement as to the plan:—

The architecture (the conservatory and corridors) is upon three levels, and the gardens likewise are so, exclusive of the several terraces. Although the respective sites of tall single trees and groups are indicated to render the composition of the design complete, they cannot as yet be particularized till much consideration is given to a selection of plants already prepared for removal from the society's garden at Chiswick.

Many seats and small tazze will be introduced about the gardens which the small scale of the plan renders it difficult to show: these are omitted, and sites for principal sculpture only are given.

The architecture is represented by dark shading. Trees of varied size show as circles. Grass slopes of terraces and groups of shrubs are shaded.

- A. Entrance from Exhibition-road.
- B. Centre walk to ante-garden, leading to principal garden.

- 1. Basin for Nymphæa.
- 2. Ferns and rock plants.
- 3. Tall trees, round and spiral.
- 4. Belt of evergreen shrubs.
- 5. Compartment for American plants, with grass alleys.
- 6. Belt of evergreens, to enclose the American Compartment.
- 9. Phœnautery, 50 feet by 30 feet.
- 10. Mass of Shrubs.
- 11. Aviary for song birds.
- 12. Maze, formed by yew or hornbeam hedges, about 1/2 acre.
- C. Entrance from Prince Albert-road.
- D. Centre walk to principal garden, on a higher level than ante-garden.

- 13. Basins.
- 14. Diagonal grass promenade (access by grass ramps).
- 15. Large compartment for flowers and box embroidery.
- 16. Mass of very low shrubs.
- 17. Group of low trees.
- 18. Shrubs of medium height.
- 19. Avenue of spiral evergreen shrubs.
- 20. Standard Portugal laurels on the Verges, which latter are 15 inches above the surfaces of compartments and promenades.

- E. Branch walk to conservatory terraces.
- 21. Circular compartment for flower beds and box embroidery.
- 22. Standard roses.
- 23. Dwarf evergreen shrubs.
- 24. Large basin, with cascade 18 feet wide and 11 feet high.
- 25. Compartment for flower beds (without embroidery) accompanied by

- 26. Groups of flowering shrubs, &c.
- 27. Standard rhododendron.
- F. Flower on first terrace.
- G. Second terrace.
- 28. Memorial sculpture for Great Exhibition of 1851.
- 29. Large trees.
- 30. Band houses (east and west) on circular paved platforms.

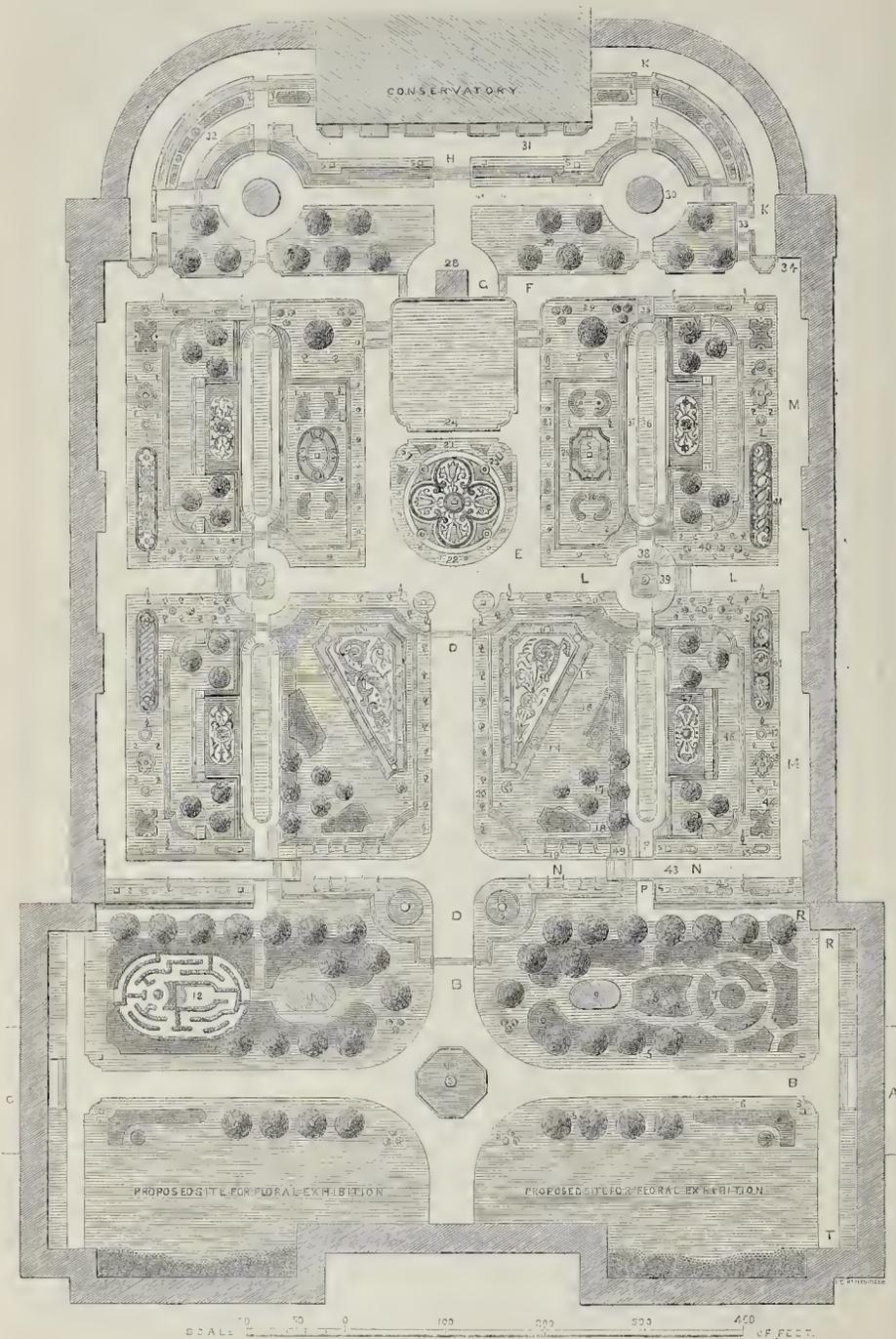
- 31. Third terrace.
- 32. Kerbed bed for flowers between steps to conservatory arcade.
- 33. Belt of shrubs.
- 34. Upper terrace, on a level with upper corridor.
- 35. Steps down to band house and lower terrace.
- 36. Kerbed bed for tall flowers.
- 37. Steps to the lowest level of the garden.
- 38. Canal for running water supplied by cascades.
- 39. Walks round canals (seats under retaining walls of east and west terraces).
- 40. Basin, with jets.
- 41. Steps to lower terraces, opposite centres of middle corridor.

- L. Centre cross-walk from east to west corridors.
- 42. Avenue of standard roses, and belts for dwarfs.
- M. Middle corridor walk.
- 43. Fricée compartments for medium-sized flowers.
- 44. Kerbed beds for tall flowers.
- 45. Moulded kerbed beds, with large tazze for tall flowers.
- 46. Group of low flowering shrubs.
- 47. Spiral plants and simple kerbed beds for tall flowers, such as dahlias and lily-beds.

- 48. Panels of east and west corridor terraces, with lime trees on their flanks.
- 49. Glacis sloping towards canals, each embellished with embroidery only (the object of the glacis is that the running water of the canals, together with all other features across the garden, may be visible from the corridor or first terraces).
- N. South cross-walk of principal garden.
- 49. Bridge and steps.
- 50. Ramp, to descend to the level of canals.
- P. Walk under the bridge, leading through the lower corridor of ante-garden (K).
- R. T. Walk from north to south lower corridor.
- S. Signifies sites for principal sculpture, whether for figures or large tazze.

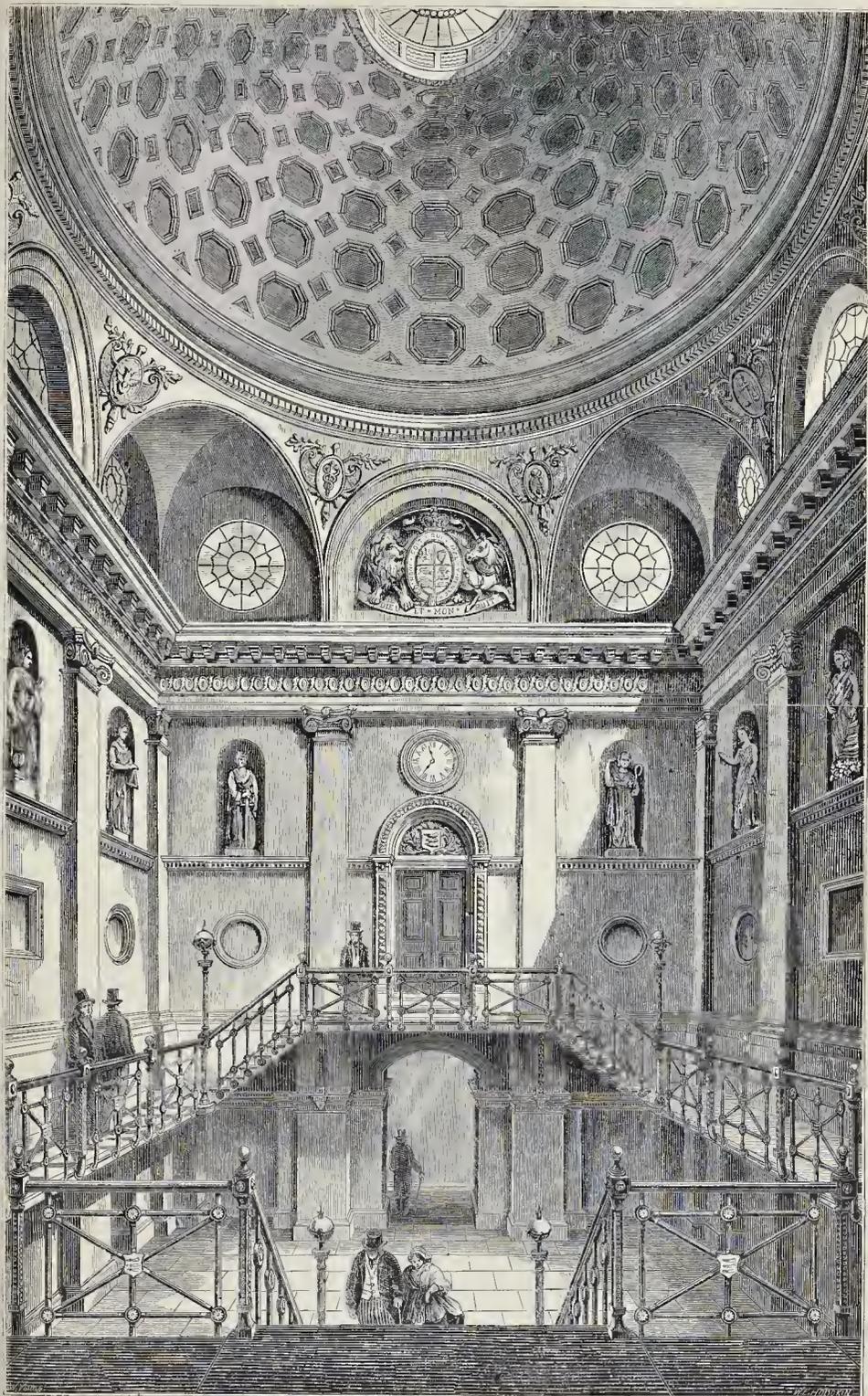
The upper terrace, K (above the band house), would be favourable for statues of eminent musical composers.

ST. MICHAEL'S CHURCH, CORNHILL. — This structure, which has been closed for nearly three years for repair and decoration, was re-opened on Sunday last, for divine service. No expense has been spared upon the work of restoration, and skill of high kind has been employed.

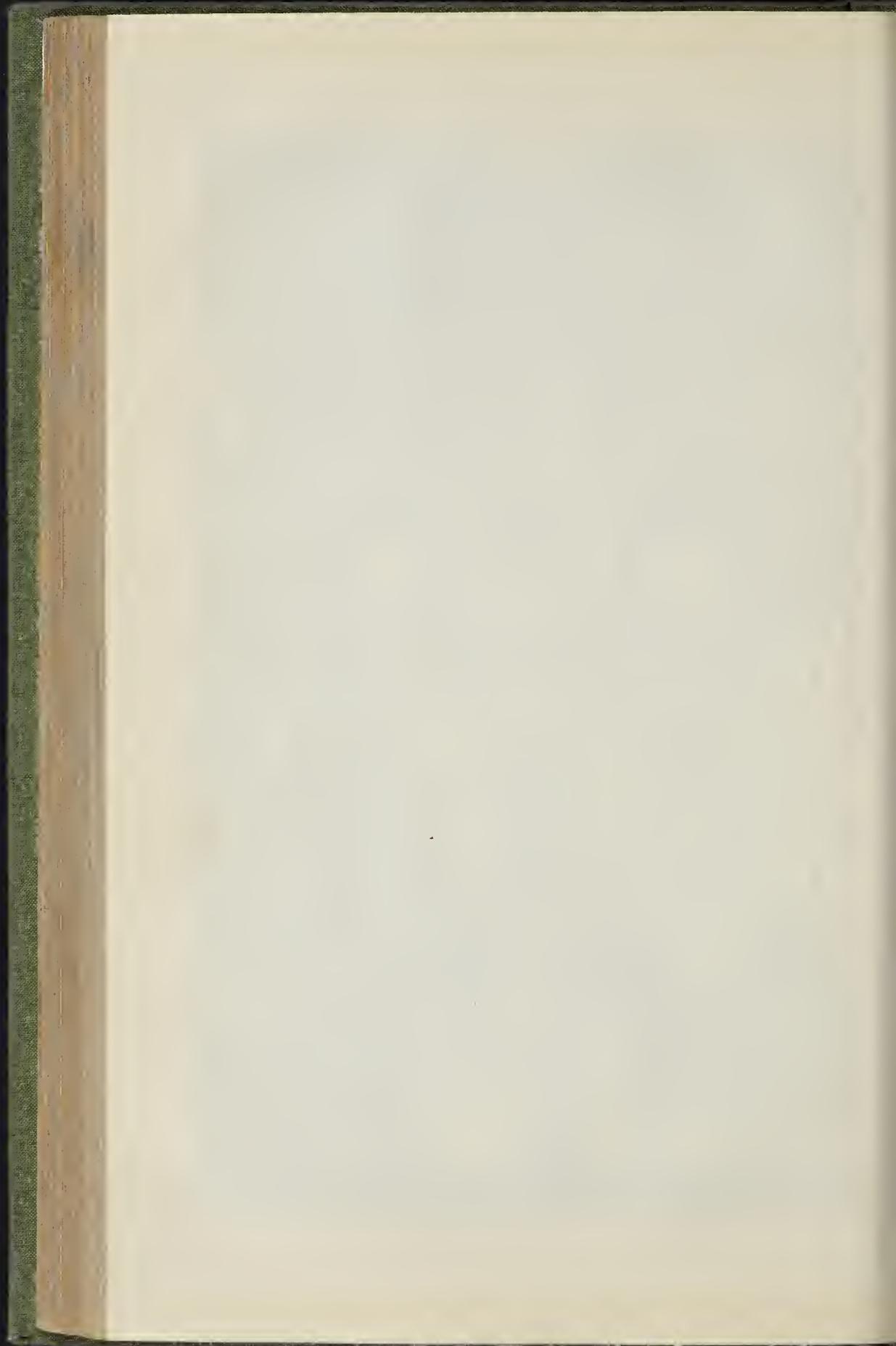


HORTICULTURAL SOCIETY: PLAN OF PROPOSED GEOMETRIC GARDENS AT BROMPTON.

*Designed by Mr. Nesfield.*



CENTRAL HALL, CLERKENWELL SESSIONS-HOUSE, —AS ALTERED.—Mr. F. H. POWNALL, ARCHITECT.



### THE MIDDLESEX SESSIONS HOUSE, CLERKENWELL GREEN.

CONSIDERABLE alterations and additions are being made at the Sessions House, Clerkenwell, under the direction of Mr. F. H. Pownall, architect. These have been occasioned chiefly by the necessity of providing a large room for the purposes of a second court, the magistrates' private committee-room having been hitherto used for such business during the sessions. This was effected by fitting up the old dining-room as a criminal court, access for the public being obtained by a new gallery and staircase direct from the central hall. A new dining-room for the justices has been built on the second-floor, with a new kitchen, scullery, serving, and retiring rooms. Very extensive alterations have also been made in the offices of the clerk of the peace, the county treasurer, and the clerk of committees. A new and enlarged back staircase has been built, by which these last-named offices can be approached without entering the main portion of the building.

A new system of warming, on Messrs. Haden's principle, has been introduced, as well for the courts as for the prisoners' cells in the basement.

The accompanying engraving represents the central hall as it now appears.

The exterior of the building has been recessed on three sides with Portland stone and cement, where before there existed only brickwork of a very unsightly character. The old stone front towards Clerkenwell-green has been cleaned down and repaired only.

The original contract for the internal works was obtained during the past year in a limited competition by Messrs. Piper & Son, of Bishopsgate-street, who have since also executed the external improvements.

The Sessions-House originally stood in St. John's-street, Clerkenwell, opposite the Windmill Inn, and was named after Sir Baptist Hickeys, of Kensington, one of the justices, who, "out of his worthy disposition," built it in 1612, and gave it to the justices of the county for ever. In the present structure, which was finished in 1782 (Mr. Rogers, architect), will be found a carved chimney-piece, of Jacobean character, with an inscription recording Hickeys's gift, and which was removed from the old Sessions-House. An engraving of this is given in our second volume, p. 562. The distances on the Great North-road were formerly measured from the site of the old Sessions-House; and many will remember stones—indeed, some may still be seen—inscribed, so many "miles from the spot where Hickeys's Hall formerly stood!"

### BISHOP AUCKLAND TOWN-HALL COM- PETITION.

WE engraved what was sent to us as the selected design in this competition, believing that it was to be carried out; and were surprised, therefore, to see an advertisement for tenders to erect the town-hall, with the name of another architect attached. The author of the design we engraved says:—

"On March 15th I received a note inclosing a cheque for the amount of the premium, and also stating, in answer to a question of mine consequent upon a report that another architect had been selected to make a modified design, that such was not the fact, and at the same time saying I did not name the 'price' for which 'I would perform the work.' To this I replied: 'of course I named no price, for it was understood an architect's charge was five per cent., and also stating I was glad to find the report of another architect being employed was not true. I considered the matter so far satisfactory, but heard nothing further, though the view was published in the *Builder*, until April 11th, when I received a note from the secretary stating that 'the directors met last evening and decided to employ a Newcastle architect to carry out our intended designs.' Against this I course protested, and demanded my designs returned; or, if they determined to retain them, I sent a nominal charge for them, stating I was desirous to have the matter tried, though I was desirous to leave the matter to arbitration, as the principle involved was one of great importance to my profession. In reply to this the secretary returned the prize designs rather than have the matter tried; but, sir, I and teachers of them have been kept, and the honesty of this course of procedure I will leave your readers to judge of. I asked who was the architect employed, but I was not informed and I saw an advertisement for tenders in your paper last week, that is, four days before my drawings were traced and returned."

One of the authorities to whom we applied for information very coolly advises us to exercise a little more caution in future before we engrave designs sent us by successful competitors, and adds, "the design we intend to carry out is an entirely new one by Mr. John Johnstone, of Newcastle." How much longer members of the profession will subject themselves to such behaviour on the part of competition committees remains to be seen.

### COMPETITIONS.

*Derby.*—The Derby Corn-Exchange Company received numerous designs. Amongst the competitors were Messrs. H. I. Stevens, Ifine (Nottingham), Bellamy & Hardy (Lincoln), Young & Bidlake (Derby and Wolverhampton), Giles & Brookhouse (Derby), Benjamin Wilson (Derby), Ordish (Leicestershire), Murray (Coventry), &c. The designs were hung up in the Grand Jury Room, at the Town Hall, and, after several meetings had been held, were thrown open to the public. The committee reduced the number of competitors from twelve down to four, the selected four being Mr. Benjamin Wilson, Messrs. Giles & Brookhouse, Mr. Ordish, and Messrs. Bellamy & Hardy. At a meeting on Friday, the 27th ult., the design of Mr. Benjamin Wilson was selected to be carried out. Messrs. Giles & Brookhouse were awarded the second premium. The design is to be erected in brick with some dressings, and is of the Italian style of architecture. The large hall is 110 feet long, 55 feet wide in the clear, and covered with an ornamented framed timber roof of laminated ribs springing from ornamental iron columns standing in front of the gallery, with circular ribs springing from them again to the wall and acting as abutments; circular ribs also spring from column to column longitudinally, supporting an open fretwork cornice, and the spandrels of the ribs are filled in ornamentally.

*St. James's Vestry Hall, London.*—The first premium has been awarded to Mr. Pearce, of Clapham; second, to Mr. H. W. Budd, of North-street, Westminster.

### THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR CHARLES BARRY.

A SPECIAL meeting of the members of the Institute, fully attended, was held on Wednesday evening last, at the House in Conduit-street, to consider what steps should be taken consequent on the lamented decease of Sir Charles Barry.

Mr. Cockerell, the president, took the chair, and announced, in feeling terms, the loss which had been sustained. He further communicated the assent of the Dean and Chapter of Westminster to the request made on the part of the Institute, that the remains of Sir Charles Barry should be interred in Westminster Abbey.

On the motion of Mr. Tite, M.P., seconded by Mr. G. Vulliamy, it was resolved, that,—

"The Royal Institute of British Architects, sensible of the honour which the burial of Sir Charles Barry in Westminster Abbey will do to the memory of their late distinguished professional colleague, tender their most grateful thanks to the Very Rev. the Dean of Westminster for the permission he has been pleased to accord."

Mr. Sydney Smirke, R.A., moved; Professor Donaldson seconded, and it was carried unanimously, that—

"The Royal Institute of British Architects, impressed with the loss the profession and his country have sustained through the decease of Sir Charles Barry, whose genius has conferred great lustre upon this age, hereby record their profound sympathy with the affliction which has fallen (more immediately) upon the widow and family of their lamented friend."

Arrangements having been made for the attendance of members of the Institute at the funeral, thanks were voted to the chairman, and the meeting separated.

At the next ordinary general meeting of the session, to be held on the 21st inst., Mr. M. Digby Wyatt will read some notes on the career of the late Sir Charles Barry.

### EXHIBITION IN AID OF "THE HOME FOR DAY WORKERS."

In a previous volume we brought under the notice of the public the "Home for Day Workers," in Great Ormond-street, Queen-square, established by Lady Hobart and the Countess de Grey and Ripon.\* We may repeat that it is intended for the benefit of young women (whose friends reside in the country) employed in milliners' and dress-makers' establishments or shops during the day, to give them a comfortable home at a cheap rate, with cheerful society and protection, as well as to assist them in obtaining work, by inviting employers to apply at the Home for workers. Bed, use of kitchen, a comfortable sitting-room, books, with fire and lights, from six to eleven o'clock every evening, are supplied for from 2s. to 2s. 6d. per week. Funds being urgently required for the purposes of the institution, an exhibition of paintings and drawings by amateur artists has been opened at 120, Pall-mall, and well deserves a

\* See also "Town Swamps and Social Bridges," p. 42.

visit, apart from the excellence of the purpose. The Queen has been to see it, and made some purchases; for example, No. 5, "Old Gateway at Rotterdam," by Col. Northey. Amongst the contributions will be found some charming works by Mrs. Higford Burr, Miss Blake, Lady Augusta Cadogan, Mrs. Bridgeman Simpson, Miss Severn, Miss Amy Hogg, the Rev. S. C. Malan, Earl Somers, Sir Countess Lindsay, Lord Northampton, and many other distinguished and accomplished amateurs.

### PROVINCIAL NEWS.

*Ulverston.*—A new temperance hall and hotel are now in the course of erection in Ulverston; and a second donation of 600*l.* towards the cost has just been made by a lady resident of Ulverston named Miss H. Goad.

*Swansea.*—For years, says the *Cambrian*, the town has been steadily progressing in the character of its public buildings, whilst at this moment it seems as though its inhabitants were striving every nerve to swell its dimensions to their utmost limit: capital, energy, and tact, all seem concentrated in the one great feature of the town, "building." Swansea is daily stretching forth its arms in every direction. In the Burrows fields alone, 400 houses have sprung into existence within the last eighteen months; and not only so, but the foundations of 200 more are prepared. The large majority of these houses belong to working men. In the neighbourhood of Fygone, houses of a superior class are to be seen springing up in every direction, whilst pretty ornamental villas bespeak the more aristocratic and wealthy owners. Six terraces, containing 210 houses, are to be erected here forthwith. Northward, in the neighbourhood of the Havod, another large and important district has just sprung into existence. Streets upon streets have been laid out, and scores of houses erected, almost every one of which, as in other parts of the borough, is inhabited before it is properly finished.

### KEENE'S CEMENT AND INTERNAL DECORATION.

In a recent number of the *Builder*, p. 261, there are some remarks on "a marble cement," which no doubt have reference to the material we manufacture under the name of "Keene's Cement."

Objection is therein taken to the use of the term "marble," as inaccurately describing the properties of this plaster, which, it is said, "does not in the least deserve the name given to it."

It ought, however, to be explained that the term "marble-like" was originally applied to the cement as indicative of the hardness and texture of marble rather than of the colour of that material in its white and in this country most commonly employed form.

It is quite true that "ordinary workmen," that is to say, the plasterers who stucco our houses, cannot produce, with their every-day means and appliances, and with the labour ordinarily allotted to lime stuccoes, the marble-like effect of which these cements in other hands are susceptible.

To do this, is a department by itself, and belongs rather to the scagliolist than the plasterer. It is, in fact, artist's work. In such hands they are capable of immense development; and, when judiciously bleuded with colours, these cements can be made the means of very beautiful and yet not very costly ornamentation.

It must be said, however, though without intending reproach to an enlightened profession, that there is an almost morbid antipathy with many architects to the use of any cements, whether for external or internal decoration. This feeling has no doubt been mainly produced by their excessive abuse; but, carried to the extent that at present prevails, it simply operates to prevent the employment of materials which in careful hands and under proper guidance in the combination of forms and colours might be made as instrumental for the decoration of wall surfaces as are the productions of the ceramic art for the adornment of floors.

It may be that climate has something to do with the non-application in this country of these polished surfaces for walls. The condensation of moisture upon them in the cold season, and the consequent absence of that feeling of the "comfortable" which is paramount with every Englishman, often to the exclusion of all effect, seem to deter from their employment. This prejudice, however, is not confined to cements, but is extended to marbles, which, except on rare occasions, are

not, as they might well and economically be, employed for internal adornment. In Paris and other Continental cities it is common to see the halls and staircases of public buildings, the interiors of churches, and even the *magazines* of trade, enriched with Lyons and other native marbles, which, by the warmth of their colours and the varied beauty of their pencillings, replace real satisfactorily the stone-coloured walls and deal surfaces which are the prevailing characteristics of English decoration.

Where, however, a different course has been pursued, and where the so-called (and rather badly-abused) marble cements have been employed, with a due regard to their nature and capabilities, the result has not disappointed the expectations formed of them.

A portion of the interior of Dorchester House is being so decorated, at the present time, in a manner as satisfactory as its cost is moderate.

At the church in Margaret-street, where all "slans" were rigidly excluded, Keene's cement was found the most fitting material in which to execute, in conjunction with marble, a not unimportant part of the decoration.

At the large and handsome range of offices in course of erection in Mining-lane, the proprietor has not hesitated, even in that locality, to line the whole of his corridors and staircases with polished Keene's cement, in imitation of coloured marbles, with a very sparing admixture of white; and, though the first cost cannot be inconsiderable, he has judged, and no doubt rightly, that decoration so effected is done once and for all; and that, in producing an effect quite unusual, he has not departed from the principles of a strict economy.

We believe, then, we can justify the application given to this particular cement, but we do not on that account disguise the fact that many of the cements of every-day use, and, amongst them, perhaps, some that we ourselves make, are called by names which either convey no idea at all, or else a very inadequate one of their properties; and, moreover, that characteristics and qualities are claimed for them, which not having been always justified by results, do render it suitable that manufacturers should, from time to time, "revise the wording of their directions and of their claims." JOHN BAZLEY WHITE & DROTHERS.

#### FEMALE SCHOOL OF ART.

UNDER the patronage of Her Most Gracious Majesty the Queen, a *conversations* will be held at the South Kensington Museum for the purpose of raising a fund for erecting the building for the Female School of Art, on Thursday, 21st June, 1860. By permission of the Queen, the Kohinoor diamond, which has been recut since the Exhibition of 1851, will be exhibited, together with a collection of ancient and modern jewellery, which the council of the Fine Arts Club has kindly consented to provide for this occasion. The Marquess of Salisbury will liberally contribute the services of the band of the Herefordshire Militia for the night. The admission will be by tickets only, which may be obtained by any member of the committee of the Female School of Art. Gentlemen's tickets will be 5s. each, and ladies' 2s. 6d. each. We understand that the Clothworkers' Company and the Drapers' Company have each sent a donation of 20l. to the school.

#### ARTISTS' BENEVOLENT FUND.

The anniversary dinner of this Institution was held at the Freemasons' Tavern on Saturday evening last. The Right Hon. Lord Staley, M.P., presided, supported by Sir C. Eastlake, P.R.A., Messrs. George Doll, H. G. Bohn, C. J. Dimond (hon. sec.), J. S. S. Hopwood, Christopher Moore, Henry Warren (president), New Water Colour Society, David Roberts, R.A., William Boxall, A.R.A., E. W. Phillips, &c. The chairman made a strong appeal in favour of the fund. Speaking of its financial position, he said its income amounted for the past year to 1,120l., of which 630l. were derived from property invested. The sum granted in relief was 880l., or nearly 80 per cent. of the whole revenue. They had also an annuity fund, which was self-supporting, the benefits of the Benevolent Fund being confined to those who contributed to the former. That limitation of the scope of the society was more apparent than real; and whatever hardship it might occasion was obviated by the labours of another institution, not a rival but a coadjutor in the same field. The progress of the Artists' Benevolent Fund, since its first establishment half a century ago, had been steady and uninterrupted.

It had accumulated 20,000l. of invested property, showing an average saving of 400l. per annum. The guests were not very numerous, scarcely seventy, but a subscription of more than 600l. was announced. The Institution is considerably indebted to its present honorary secretary, Mr. C. J. Dimond.

#### BUILDERS' FOREMEN'S PROVIDENT INSTITUTION.

THE annual festival of the members and friends of the Builders' Foremen and Clerks of Works' Provident Institution was held on Wednesday last at the Bay-tree tavern, St. Swithin's-lane. The chair was occupied by Mr. Joseph Taylor, and the vice-chair by Mr. R. Webster. About 120 gentlemen sat down to dinner. The cloth having been removed,

The Chairman proposed "The Health of the Queen," which was drunk with loud applause.

The toasts of "The Prince Consort and Prince of Wales" and "The Army and Navy" having been disposed of,

The Chairman, in proposing the toast of the evening, "The Provident Institution of Builders' Foremen and Clerks of Works," observed that he regretted the Institution had not a better advocate, but he assured them that no one could sympathize more deeply than he did in the welfare of the Institution, or had its interest more at heart. He had been in the ranks himself, and, although it was a long time ago, he could look back with pleasure to the time and could sympathize with those who were doing their utmost in their several spheres to promote the interest of their employers, and to improve their own position in society. It had been truly stated in the report that, notwithstanding the number of magnificent buildings which were rising daily in all parts of the metropolis, it too often happened that the very men who were the means of carrying them out were, in the decline of life, unable to obtain those comforts which tended so much to make life endurable. The Builders' Provident Institution had been founded to meet these exigencies, and he could point to two recent cases in which the widows of men who were in the ranks, and who had been suddenly cut off, had been saved from want by its instrumentality. He hoped the Institution would continue to prosper, and the progress which it had made was so satisfactory, that he had no doubt upon the point. When they commenced they had but twenty members, and now they had upwards of 200, with 2,000l. of capital invested. He was sure it was needless for him to dilate upon the benefits of provident institutions. Some persons in early life objected to insure their lives, for they said that they were in good health, and that they would not want it. It was, no doubt, very well to have a sovereign in one's pocket, but it was a very bad thing to be without it, and there was no one who could say that however prosperous he might be now, a rainy day might not come. He hoped that those who heard him might never have to appeal to the Institution, but it was their duty to subscribe to it, and he only regretted that it was not better supported by the great and wealthy builders of the metropolis. He knew that their governor, Mr. Lee, took the utmost interest in it, but it was within his own knowledge that many builders who had been for several years in the trade had never heard of it. It was therefore the duty of those who managed the affairs of the institution to bring it under their notice, and, by inducing them to subscribe, show them the way to remember it for the future. He hoped that all who were present that evening would endeavor, by inducing others to join the institution, to give a practical proof of their desire to increase its prosperity and extend its usefulness. He proposed in connection with the toast the name of Mr. Webster.

Mr. John Lucas, the secretary, read the annual report, which, after referring to the individual cases in which assistance had been afforded to the widows and families of deceased members, stated that there had been received, in the year ended the 30th of April last, from honorary members, 101l. 17s.; from ordinary members, 148l. 11s. 2d.; and from dividends, 69l. 10s. The cash invested on the 5th of April was 1,833l. 17s. 6d.; the balance in the hands of the treasurer and secretary amounted to 120l. 15s.; and the cash in the bank to 361l. 15s. 7d.; making the total assets 2,316l. 8s. 1d. The disbursements during the year included payments to pensioners, 93l. 11s.; funeral expenses, 6l.; and gratuities, 5l. Weekly stipends were also paid to several persons who had become chargeable on the funds.

The library report, which was also read by Mr. Lucas, thanked Mr. Burnell for his exertions in

its behalf, and stated that the principal cause which had contributed to the improvement of the library had been by the removal of the Institution from the Bay-tree tavern to the inn at Lyon's-inn, where much more convenience was afforded for placing the bookshelves within the reach of members on all meeting-nights; the result of which had been greatly to increase the number of readers, and also the demand for new books,—a demand which the committee had complied with by purchasing some of the most valuable books recently published.

Mr. Webster returned thanks in suitable language for the manner in which the chairman had connected his name with the toast. He had long taken a lively interest in the welfare of the institution, and he assured the architects, engineers, and master builders of the kingdom that there was no benevolent institution in the country which had greater claims upon their consideration. He was glad to say that the attendance of the members at the library was gradually increasing since their removal to Lyon's-inn, and that the members continue to take the greatest interest in the works provided for their instruction and amusement.

Mr. Samuel Trickett next proposed the health of the "Governor and Trustees of the Institution."

The Chairman said he was the only trustee present, but that he would take care to convey to their Governor (Mr. Henry Lee), the kind manner in which the toast had been responded to.

Mr. Joseph Kay proposed the health of "The Chairman," which was acknowledged in fitting terms by that gentleman.

The Chairman proposed the health of the visitors and friends, coupling with the toast the name of Mr. Matthews.

Mr. Matthews responded to the compliment, and expressed his hope that the society would each year continue to find many friends—not merely friends in name, but friends who would not hesitate to show, by an appeal to their purses, that their friendship was of a practical and benevolent character.

After some other toasts, including "Absent Friends," and the "Stewards and Officers of the Institution," the company separated at a late hour.

#### STAINED GLASS OF GLASGOW CATHEDRAL.

Sir,—In your able journal, vol. 18, No. 597, page 210, you have inserted a paragraph in reference to the stained glass of Glasgow Cathedral, alluding also to the rejection of a window by Mr. Ballantyne of Edinburgh. Not having seen the works already erected in that cathedral, I can have no critical objection in writing this, nor, from being in practice myself, would it become me to do so even if I were not an amateur. In answer, however, to the question here of the same class as the glass at Peter House, Cambridge; Mr. Hope's Church, in Kent; and elsewhere: indeed, I have a letter from a gentleman in Glasgow, who is a minister there, containing a sketch of one of the windows already inserted in the cathedral, which confirms it; and I must say that it is not calculated to make an impression of very high notions of its appropriateness or despatch.

The same authority states that 3l. per foot super. is paid for the figure and canopy work of Early English windows, and for Geometric windows, however, are not confined to the Munich school alone, as my informant says: there are two from Brussels, and one from Dresden. Such being the case, it must have been wrongly put to the Board of Works, to have elicited such a reply as you quote; and how the "original agreement to have only Munich windows" can be reconciled to the facts to the contrary, I cannot understand.

I freely admit that art cannot be held to be of any particular nationality; and, if Continental art is clearly superior to native, in my opinion it should be preferred, both for the sake of example and progression, but on no account otherwise; and unless this can be clearly shown, and the superiority made manifest, it is a just and discouraging to native talent. It is the more especially so when the artist is employed on national funds, which are derived from artists themselves, in common with the rest of the community: nor is it less so, when the works are under national cognizance, as they thus become national honours, which native artists have a natural right to share in. Reciprocity is a most desirable feeling, provided the sentiment be mutual, but how stands the present case? Were English art profoundly pre-eminent over Continental, and yet during its forty years' progress, much inferior and trashy work has been brought from time to time from the Continent. John Bull has a great notion of the excellence and cheapness of things from abroad; often fancying he has met with great bargains, when, in fact, he has too frequently found a mare's nest, and is really paying dearly for things he could have obtained better at home. It may occur to some that, our Scotch neighbours have the reputation of being cheap in parting with the siller, the cheapness of foreign art may have had some influence in this matter; but, as I have shown, much larger prices are paid for foreign art than British artists usually demand.

Individually, this matter is of no importance to me; and it is only from a sense of justice that I address you, feeling as I do, without any prejudice towards foreigners, that no works that I have seen, in Belgium, Germany, or France, give them any claim, even to equality, with the average works in this country by native artists. Couleuvre and the other artists are almost all of them invariably at war about; nor can this be wondered at: they have not the successive varieties of architecture that we have here, hence their inegritty of design; but when called on to do a design for the condescend to borrow from us, as I shall presently show.

Mr. Currie and his son called upon me expressly to state that in passing through Munich they had visited the royal manufactory of stained glass; and seeing that they appeared to treat everything as pictures, without reference to style, they were curious to learn how they would deal with the Norman period: they therefore asked for a design for a Norman triplet. After much searching of portfolios, a lithographic coloured print of a Norman triplet was produced, as the very best thing they could recommend, stating that it was faithful from the original, and that they could not do better than adopt it. The question of where could it be seen? proved a very puzzling question; so Mr. Currie said: "I will tell you: the windows are in the Church of Bromley St. Leonard's, and Bow Lane; and were executed by Mr. Warrington, for me, as memorials to my father, who was many years incumbent of that parish, which you will discover by the inscription."

It is also said that the photograph from Glasgow was sent to me chiefly to show that the border of that window was a literary copy of mine in the Bromley St. Leonard's window. I do not by any means complain of this, as the contrary is a constituent one of the illustrative plates of my "History of Stained Glass," it is public property; but when great people bring great artists (?) from abroad, to place them in ludicrous positions of inferiority or exclusion of ours, we do not expect to be plagiarized by them.

WILLIAM WARRINGTON.

#### ROYAL ACADEMY.

Sir.—In your excellent paper on the Royal Academy, of the 17th inst., I read the following passage in the speech of Sir Charles Eastlake, when proposing the health of her Majesty's Ministers, in reference to the position of the Academy:—

"The exertions of the artists have been great, and it is only to be regretted that all the meritorious works included in this year's display could not be placed in the situation they deserved. Indeed, some of us have been repeatedly compelled to do so for no other reason than that *fit places could not be found for them!*"

Is not this a most melancholy fact to proclaim in a society like ours, where science and art are so much developed, and which ranks herself at the head of progress?

Could not the Royal Academy adopt the system found of giving great satisfaction on the Continent, when space is insufficient for pictures *once accepted*, viz.—that of dividing them into two "categories," one half or more, if possible, to be hung during one month or six weeks, and the other half by those remaining. This operation would be of small trouble to the Academy, and would give great satisfaction. During the three days only, last year at Paris, it was closed for three days only, to change the position of nearly all the pictures admitted, so as to give a fair chance to each artist.

Certainly our wealthy Academy might afford the loss of *three days*.

At the exhibition of Brussels, which takes place every three years, the Government puts at the disposal of the commission of artists, their magnificent building, the "Musée" (National Gallery).

The artists' pictures being boarded in by 1-inch planks, covered with green baize, the pictures admitted being hung upon them. Occasionally also, as in 1851 and 1857, a special temporary pavilion was erected, and thus few artists, whose works had real merit, were disappointed.

G. B.

#### THE PATHS IN HYDE-PARK.

You remark, on the walks in Hyde-park, that the turf banks are protected, and the gravelled ways defined, and you add that in the Regent's-park these walks are kept. The reason of the difference appears to me to be this: in one case the walk is composed of a fine level material pleasant to walk upon; in the other the gravel is coarse and pebbly, most unpleasant to the feet. I cross these parks frequently, and at times a layer of broken shells is put on, and the turf then escapes injury; but, as if the public were required to do penance, this agreeable material is superseded by a coarse, ruddy, loose gravel, which drives pedestrians aside, and you may see the made path deserted, and extempore tracks struck out at each side. If this were noticed and attended to, all parties would be better served, the public would have a proper path, and the managers would not see their work spoilt.

C. H. H.

#### ARCHITECTS' ACTIONS.

COPIED BY B. BUNCOMBE.

Is this cause, tried in the Exchequer Court, Mr. Montague Chambers being plaintiff, and Messrs. Currie and his son defendants, and Mr. Griffiths for the defendant. It was an action to recover the sum of 70l. 8s. for work done as an architect and surveyor.

The defendant was formerly an attorney at Taunton, but took to the employment of farming, and employed the plaintiff to put a new roof on to the farmhouse, as well as to make other alterations. When the plans and specifications were complete, and the work commenced, the plaintiff discovered that, owing to the state of the walls, all attempts to repair were hopeless, and suggested to the defendant that he had better build a new house. Fresh plans, elevations, and drawings were accordingly made, and the house completed, the plaintiff charging, for both sets of plans, &c., 2 per cent. on the outlay. The defendant paid him altogether 48l. 11s. 4d.,

and the question in dispute was whether the plaintiff was entitled to recover 21l. 16s. 8d. more.

Some architects were called, who swore that the plans, &c., were sufficient for all practical purposes, although not so elaborately finished as they themselves would have turned them out, nor perhaps quite so perfect in detail; but still they were sufficient for the guidance of the carpenters and bricklayers employed upon the work.

For the defence it was urged that, after making the plans and drawings, having previously closely inspected the house, the plaintiff said that he must make the alterations required, and that he must prepare fresh plans for a new house; but, instead of preparing original plans, they were, with the slightest alterations, mere copies of the original ones; that the plaintiff had made journeys when they were quite unnecessary, charging three guineas for each of them; that the working plans were so defective that the workpeople were unable to work by them, and made complaints to that effect; that the staircase was ill-fitted to the house; two of the ceilings cracked across, and the floors were uneven; and that the sum the plaintiff had already received was a sufficient remuneration for his services.

His lordship left the whole matter to the jury, who found for the plaintiff for the balance he sought to recover.

#### CHURCH-BUILDING NEWS.

**Colchester.**—An addition has been made to the Roman Catholic church in Prior-street, to meet, in some measure, the demand for increased accommodation, caused by the establishment of the camp in this town. The walls of the sacristy have been carried up as high as the parapet of the church, so as to form a transept opening into the church by a semicircular arch in the same style as the main building (Anglo-Norman). The exterior is of white brick, relieved by a string course of red brick and a cross in the same material. The architect is Mr. Walter Scargill, the contractor Mr. John Hun; both of Colchester.

**Oxford.**—The preparations for the erection of the new church of St. Philip and St. James, in the parish of St. Giles, have been so far advanced as to admit of laying the foundation stone, which has been done by the bishop of Oxford. The proposed edifice is in the Medieval style of architecture, and will be capable of containing about 600 sittings. The design is by Mr. Street, and the edifice, which will be built by Mr. Joseph Castle, is to be constructed of Bath stone from the Coombe-down quarries. The entire cost of erection will be between 7,000, and 8,000.

**Sandy ( Beds ).**—St. Swithin's Church, Sandy, previous to its restoration by the architect, Mr. W. G. Habershon, of London, was one of the most dilapidated in the county. It has now been thoroughly renovated and enlarged. To its chancel, built in the Decorated period, 45 feet in length, has been added aisles, with two moulded arches on each side dividing the same from the chancel, and which spring from clustered columns with carved capitals. A new chancel arch has also been added. Carved oak stalls have been placed in the chancel. The chancel is paved with Minton's encaustic tiles; and in the nave and elsewhere being simply black and red, in diagonal pattern. The ancient sedilia and piscina have been scraped and left entire. The organ, which formerly stood in an unsightly gallery at the west end, blocking up the tower, but now removed, has been placed in the new north chancel aisle. The pulpit is executed in Caen stone; the prayer-desk is of oak, with Decorated tracery. The seating in the nave is of pitch pine, merely varnished, and similar in design to the old seating. The additional accommodation gained by the recent alterations is 268 sittings—the total being 642. New stained deal roofs have been added throughout, with the exception of the chancel, which has been boarded and panelled internally. Old windows have been restored with their tracery, where possible, and new windows inserted elsewhere, with tracery. The east window being a four-light, it is hoped before long stained glass will be inserted. A wooden south porch has also been added. The tower, which was in a very decayed state, and which during the repairs required careful watching on the part of the clerk of the works (Mr. Jackson), forms an interesting feature. The total cost of the works will amount to upwards of 3,000l. Mr. Wing, of Bedford, was the contractor. The sub-contractors were Messrs. Small & Freshwater, of Bedford, and Mr. Haines, of Girtford.

**Staugham (Sussex).**—The church here is to be completely repaired. The building has long been in a bad state of repair. The roof will be removed, and extensive alterations made both in the interior and exterior. The portion of the church known as "De Covert Chapel," in which is a carved sandstone monument of that family, is to be thrown into the body of the church. The present pews will be taken away, and open seats substituted. Mr. Joseph Clarke is the architect, and the works will be carried out by Mr. Parker Ayers, the builder of the lunatic asylum at Hayward's Heath, Offham church, the Cuckfield Union church, &c.

**Birkenhead.**—St. Paul's Presbyterian Church, Jackson-street, Birkenhead, has been opened. The style is Middle-pointed Gothic, and the edifice consists of nave and aisles of four bays, with engaged tower and spire at the north-west angle. The tower is divided into three stages, and terminated with plain spire, surrounded with four plain pinnacles, and four lucerne lights, the whole height amounting to 120 feet. Stoutest stone has been used for the front and returns of the building, and the rest of it is built of red brick, with such stone dressings as were indispensable. Provision is made for constructing a gallery on the two sides and the end over the vestibule. High two-light windows, with lancet heads, light each side of the church, and in the recess behind the pulpit is a large marigold window, to be filled in with stained glass. The cost of the building, when finished, will be about 2,500l. The ground-floor will seat 500 persons, and the galleries, when erected, some 280 more. Mr. John Pooley is the sole contractor for the work, and Messrs. Hay are the architects.

**Manchester.**—The foundation stone has been laid here of a new Greek church. The site is at Higher Broughton. The building will be of the Corinthian order externally. The front will have a portico of four columns in the centre, and two pilasters on each side; the sides will have a series of pilasters, with windows in the compartments between them. The doors and windows will have ornamental dressings. Internally, the building will be divided into nave and aisles. The aisles will have flat parallel ceilings, and the nave a circular ceiling intersected by circular windows, to form a clerestory which will not be visible externally. The clerestory walls will be supported on columns which, with the pilasters attached to the aisle walls and all the inside cornices, will be of the Ionic order. A screen, the panels of which will be filled with paintings, will extend across the whole width of the church to divide it from the sanctuary or chancel. The sittings for ladies will be 28 inches wide, and those for gentlemen will be 24 inches wide, instead of 20 inches. The ladies' seats will have doors, and the remainder will be open. Each sitting will be divided from the adjoining by an ornamental elbow. The following will be the inside dimensions of the church: length, 94 feet; width, 46 feet 9 inches; length of apse, 12 feet 6 inches; width, 20 feet 9 inches; height of aisles, 21 feet; height of nave, 32 feet. The church will be divided in length by pilasters on each side and columns in the nave into eight compartments or bays, each, both in the aisles and clerestory, will contain a window. All the front of the building and the principal portion of the sides will be faced with Hollington stone, and the remainder of the sides with white bricks and cement. The design was selected in a private competition, and is furnished by Messrs. Clegg and Knowles, of Manchester, architects, under whose direction the works are to be carried out. The cost will be about 5,500l. The following contractors undertake the several works: J. Griffiths, excavating and brickwork; Ellis and Hinchliffe, masonry; Bowden and Co., joiners' work; V. Kitchen, ironfounders' work; R. Heywood, plumbing and glazing; G. and J. Kirkley, slating; W. Ward and Co., plastering and painting.

**Bradford.**—The foundation stone of St. Stephen's Church, Bowling Old-lane, Bradford, was laid on Saturday, July 2nd, 1859, and the consecration of it has just taken place. It is the second of the ten new churches to be built within five years. The site was given by Mr. E. B. W. Balme. The style of architecture is Decorated. It consists of nave with aisles, and chancel of the form of a hexagonal apse. The tower forms the north-west corner of the north aisle. The following are the general dimensions:—Nave, 75 feet by 50 feet 4 inches; aisles, 75 feet by 13 feet; chancel, 25 feet by 21 feet; vestry, 13 feet by 14 feet; tower, 9 feet by 2 feet. The west end is lighted with a five-light window of considerable dimensions, without any geometric or interlacing tracery, the lights following the rake of the window arch, and foliated in their heads. The aisles have windows of three lights, foliated, and are in pairs, separated by buttresses. The windows at the ends of the aisles are of two lights, foliated, as is the case with the vestry window, which is at the east end of the south aisle. The windows of the chancel are longer than those in the nave, and placed higher in the wall. They are four in number. The tower is of three stories, and gabled on its four sides, and has its slated roof rising from the points of the gables. The slating is vari-coloured. The nave and chancel roofs form one continuous line of equal height. The interior of the church is divided by aisles into four bays on the north side and six

bays on the south side. The piers are circular, the soffits of the arches moulded. The nave receives a large addition of light from the introduction of dormer lights into its roof. These dormers are four in number on either side of the nave roof. They are of two lights, similar to those in the east and west ends of the nave. The roof of the apse naturally assumes a somewhat different form, and runs down the wall, resting upon stone brackets. The various contractors for the work were the following:—Masons, Messrs. Birkby & Holdsworth; joiner, Mr. Jas. Neill; plasterers, Messrs. Brayshaw & Muff; plumber, Mr. J. Scholefield; slater, Mr. John Hill. The architects were Messrs. Mallinson & Henley, of Bradford. There are (including 134 sittings for children) 611 sittings, of which 461 are free. The entire cost is something like 2,500l.

### Books Received.

*Report of a Committee of the Working Classes of Edinburgh, on the present overcrowded and uncomfortable State of their Dwelling-houses: with an Introduction and Notes.* By ALEXANDER MACPHERSON, Secretary to the Committee. London: Hamilton, Adams, & Co. 1860.

THE Edinburgh working men are taking into their own hands the question how to improve their homes,—a question which presses at least as heavily upon the working-class denizens of Edinburgh as upon those of London. As regards a remedy, however, the difficulty will probably not be so great in Edinburgh, where suburban ground may be readily got at what a Londoner would conceive to be an easy and convenient distance from the central parts of the town.

Dissatisfaction with their want of healthful and convenient homes having induced the Edinburgh workmen to hold a public meeting (on 15th July, 1858) on the subject, that meeting appointed a committee to investigate and report on the whole question. This committee solicited Mr. Macpherson's aid as secretary; and the report under notice is the result. The view finally adopted, after much deliberation, was simply to recommend their constituents to offer themselves as tenants for a certain description and locality of property, which they conceived, or had discovered, was most suited to their wants and convenience, trusting that some Joint Stock Association will result to supply the expressed demand. Model dwellings for the working-classes do exist to a very limited extent in Edinburgh; but the reporters are by no means satisfied with them even as a model, and it is stated by Mr. Macpherson in his Introduction, while alluding to the financial failure of the model buildings in St. Pancras and Gray's-inn-lane, that the Edinburgh schemes are too much like these in financial respects. Besides, the charitable element does not seem to be approved of in Edinburgh any more than in London, and the "ominous resemblance to a charity workhouse" in the interior of one at least of the Edinburgh model houses, called the "Ashley-buildings," has had a repellent influence, just as the like resemblance had at St. Pancras, we remember, on the workmen of London.

The description of property conceived to be most eligible is given in detail in a sub-committee's report on the plans. It is based on the flat system, which appears to be deliberately chosen by the Edinburgh workmen, generally, as well as by their committee, in preference to the London or so-called self-contained system. On the subject of the plans, the sub-committee's report says:—

"The property should consist of tenements about 55 feet by 38 feet, and may either be of three or four stories in height, according to circumstances. Each flat should consist of two houses, containing room and kitchen and two bed recesses, with a pantry, a water-closet, and sink with soil pipe; the height of the ceilings not less than 9 feet; the size of the kitchen, exclusive of the bed recess, 10 feet by 11 feet 6 inches, and of the room 12 feet by 9 feet. The water-closets should be placed in the passage behind the outer door, with a borrowed light into the staircase. The staircase should be thoroughly ventilated, both by openings made from the front wall through the joisting to the stair passages, and by the roof; it should also be well lighted, by means of glazing, between the rafters, the whole part of the roof which covers the staircase. The passage and stair should be 31 feet wide. The whole property should be finished in a neat but plain and substantial manner. The walls of rubble, 22 or 24 inches thick; the partitions of brick from top to bottom. There should be no lead on in every house, and brackets fixed both in the room and kitchen. It would be a saving to the property were the fire grates, also fixed. Lastly, in accordance with several suggestions which the committee have received, we recommend that Arno's valve should be built into every kitchen chimney."

The cost of the sixteen houses thus provided, is

estimated at 1,350l., or about 81l. 8s. each, and the rent to be received for each is put down at 7l. 10s.; giving a return of 7 per cent. after allowing for ground-rent, repairs, and taxes.

The sleeping accommodation provided is manifestly insufficient.

*A Course of Six Lectures on the various Forces of Matter, and their Relations to each other.* By MICHAEL FARADAY, D.C.L., F.R.S. Edited by WILLIAM CROOKES, F.C.S. With numerous illustrations. London and Glasgow: R. Griffin & Co. 1860.

THE discourses and speculations of Dr. Faraday have been for many years a delight to young and old, and, although the present course was designed specially for the young, it will not the less be read with pleasure and profit by all who take any interest in science and philosophy. The chief purpose of these lectures was to point attention to, and to prove, by experimental illustration, the close connections which exist between the various forces of nature, or rather the protuberant aspects which force in the abstract seems to assume. Thus heat enables us to eliminate, or it assumes the forms of light, electricity, magnetism, and chemical action; chemical action those of light, electricity, and heat; all the forces of nature thus tending to form a mutually dependent series of systems. Into the theoretical causes of this correlation we do not mean here to enter, but we may refer to an article in the *Builder* of November 11th, 1854, by J. E. Dove, titled "Electricity and its alleged Connection with Disease: What is Electricity?" in which some light of rather a peculiar description appears to be shed upon the subject of forces in general and their special connection with the molecular and other forms of matter in the organic economy of nature. We prefer, in the present instance, to offer our readers a passage from Dr. Faraday's last lecture of the series before us,—namely, on "Lighthouse Illumination: the Electric Light," as an example of the style of the little book under notice:—

"By means of a magnet, and of motion, we can get the same kind of electricity as I have here from the battery; and, under the authority of the Trinity House, Professor Holmes has been occupied in introducing the magneto-electric light in the lighthouse at the South Foreland; for the voltaic battery has been tried in every conceivable circumstance, and I take the liberty of saying it has hitherto proved a decided failure. Here, however, is an instrument wrought only by mechanical motion. The moment we give motion to this coil from in front of the magnet, we get a spark. It is true in this apparatus it is very small, but it is sufficient for you to judge of its character. It is the magneto-electric light; and an instrument has been constructed as there shown, which reports a number of magnets placed radially upon a wheel—three wheels of magnets and two sets of helices. When the machine, which is worked by a two-horse power engine, is properly set in motion, and the different currents are all brought together, and thrown by Professor Holmes up into the lantern, we have a light equal to the one we have been using this evening. For the last six months the South Foreland has been shining by means of this electric light—beyond all comparison better than its former light. It has done in France, and has been seen there and taken notice of by the authorities, who work with beautiful exactness with us in all these matters. Never for once during six months has it failed in doing its duty—never once, more than was expected by the inventor. It has shown forth with its own peculiar character, and this even with the old apparatus,—for as yet no attempt has been made to construct special reflectors or refractors for it, because it is not yet established. I will not tell you that the problem of employing the magneto-electric spark for lighthouse illumination is quite solved yet, although I desire it should be established most earnestly (for) repairs this magnetic spark as one of my own offspring. The thing is not yet delicately accomplished, and what the considerations of expense and other matters may be, I cannot tell. I am only here to tell you, as a philosopher, how far the results have been carried, but I do hope that the authorities will find it a proper thing to carry out in full. If it cannot be introduced at all the lighthouses, if it can only be used at one, why really it will be an honour to the nation which can originate such an improvement as this,—one which must of necessity be followed by other nations."

*Barclay's Designs for Marking Silver-plate.* London: 22, Gerard-street, Soho.

WE have here a series of designs of a new kind, together with a few prefatory remarks, the whole written, designed, engraved, and published, by Mr. George Barclay, the well-known heraldic art designer and engraver. In pursuance of this new idea of Mr. Barclay's, it is contemplated to omit totally the system of producing effect by shading, composed of innumerable fine and close lines, and to substitute, instead, expression in outline by a bold and vigorous drawing:—

"Immediately preceding our rapid acquisition of wealth, which led to the still increasing use of silver-plate," remarks the author, "the style which had intruded in the history of art exercised a material and most unhappy influence over, and a still perpetuated upon, most silver articles. Some really glorious productions of the present day, and the facilities to an extended variety of form which electro-silvering contributes, promise an emancipation of the manufacture from the narrowing influence and hitherto slavish adherence to French ornament."

And the fifty-one designs for spoon and other handles now given are intended to show how endless is the variety and how graceful are the outlines which may be traced in this way, even on so homely and restricted a heraldic "field."

### Miscellanea.

**BENIHAM'S BARRACK AND HOSPITAL COOKING STOVE.**—Reference having been made to this apparatus in the House of Commons and the daily papers, our readers may like to have some particulars of it:—The apparatus consists of an oven, built of brick or stone, and heated by a fire, the flame from which passes into the oven and out at a flue. There is also a flue round the outside of the oven, in which a number of boilers or saucapans are fixed for cooking meat, soup, vegetables, &c. The same furnace heats the oven and the boilers. Above this furnace there is a hot-water boiler, which also supplies steam for steaming potatoes, puddings, &c. &c., which are placed on trays or in perforated boxes in the steam-chest. By this arrangement all the processes of roasting, baking, holding, and steaming, may be carried on simultaneously, and it is said with a very remarkable economy of fuel; or bread may be baked in large quantities if required. It is intended especially for the use of the army, and has already been adopted by the War Department for the barracks at Woolwich, Edinburgh, and Gibraltar. It appears, however, to be suited for workhouses, and other large establishments. The evidence in its favour in the shape of official reports is certainly very strong.

**THE SANITARY WORKS OF WALLASEY.**—Sir: In the very able report on "Sanitary Progress," at p. 275, I perceive my name is mentioned as having devised and executed the sanitary works of this district. I beg to say that I cannot lay claim to so much honour, as the drainage scheme executed under my supervision here was a premeditated design of Mr. Charles Macpherson's, the then surveyor to the Wallasey Board, and the present borough engineer of Edinburgh. I therefore deem it due to that gentleman to beg your insertion of this letter.—JAMES T. LEA.

**THE EXITS AT ST. MARTIN'S HALL.**—Sir: A recent letter to you on the subject of the exits from Exeter Hall, in case of fire, or commotion, reminds me of the same sad deficiency at St. Martin's Hall. On an oratorical night this is most disagreeably felt, and should there happen a panic some evening, I fear serious accidents and loss of life would occur. Perhaps you may be able to bring this subject before the proper parties, and thus prevent so direful a calamity.—J. E.

**OUR REVIEW OF THE ACADEMY EXHIBITION.**—In connection with our review, last week, of the architectural drawings exhibited at the Royal Academy, we are asked to mention that the architect for (No. 634) East Tyrley Parsonage, Hants (erected at the expense of Sir F. H. Goldsmid, Bart), was Mr. Charles Smith, of Reading.

**SOME FREE EXHIBITIONS.**—The Bridgewater Gallery of Pictures and Sculpture at Bridgewater House, Cleveland-square, St. James's-street, by the kindness of the Earl of Ellesmere, is open to the public by free tickets which admit parties of four persons. These cards may be had gratis of Mr. Smith, 137, New Bond-street.—Sir John Soane's Museum, Lincoln's-Inn-Fields, may be viewed every Tuesday, Thursday, and Friday, by tickets previously obtained by written application to the curator at the Museum.—The paintings at Dulwich may be seen without the trouble of obtaining tickets as formerly.—The Exhibition of New Inventions at the Society of Arts is open every day, and on Wednesday evenings from seven till ten.—The Elizabethan Mansion, Knowledge-park, closely adjoining the town of Seven Oaks, is shown to visitors for a small consideration each person every day. The house contains a collection of art treasures and curiosities.

**ST. LEONARD'S, BRIDGENDORTH.**—Sir: As one of the committee for the restoration of the parish church of St. Leonard's, Bridgendorth, permit me to correct your report of the proceedings at our last meeting. The question was simply whether or no a London architect should be employed in preference to Mr. Griffiths, the local architect. Mr. Scott was not proposed at all; and of the three London architects who were—W. Slater, C. Ainslie, and B. Ferrey—the first-named gentleman was elected, and has since completed his survey of the church, the restoration of which will be commenced at once.

WILLIAM PETERON, Curate.

**THE DRINKING-FOUNTAIN MOVEMENT.**—A drinking-fountain is in course of erection in the Zoological Gardens, Regent's-park, from a design representing a water-lily surrounded by foliage, executed in white marble, by Mr. John Bell, sculptor. Preparations are also being made to place in the gardens now forming the centre of Battersea-park two fountains, sculptured from a classical design by an eminent artist.—The drinking-fountain which is erected at the Royal Exchange, is in the form of a young girl, emblematical of Temperance, pouring the refreshing beverage from the water-bottle into a cup placed for the use of drinkers. This work is the gift of Mr. Samuel Gurney.—A fountain has been opened in the centre of Wandsworth. The design, which is the work of a gentleman in the parish, consists of a column, surmounted by a globe-shaped lamp, the gift of a lady, with suitable cups, and a trough for cattle.—A drinking-fountain has been erected at Great Horton.—A fountain has been inserted in the wall of St. Andrew's Church-yard, Newcastle-upon-Tyne, adjoining the Gallowgate Baths and Washhouses.—A fountain in marble has just been erected in the western portion of the Stirling Cemetery Grounds. The design was executed by Messrs. Barclay & Reid, of Stirling.

**STRIKES.**—At Malvern, the larger number of the building-trades' workmen, about 100, have struck for a ten-hours' day's work and short Saturdays.—The joiners and carpenters at Bury have struck for an advance of wages from 1*l.* 6*s.* to 1*l.* 8*s.* a week.—A ten-hours' movement is being agitated at Middlesbrough among the bricklayers, joiners, and others, and a strike is threatened.—At Leeds, some bricklayers' labourers struck for an advance of 1*s.* a day; but the advance has been agreed to.—At Glasgow, the Council of Trades' Delegates have passed a resolution to the effect that from the conflicting statements made by the different parties in the painters' strike, they are not in a position to give any other advice than that the matter can be easily settled by mutual arbitrators; and, until the masters agree to arbitrate they will consider the operatives in the right, and entitled to the support of all the associated trades of Glasgow.

**MOVEMENTS.**—For the Andrews' Memorial at Southampton three designs were submitted by Mr. Brannon, one by Mr. Pedley, one by Mr. Guillaume, jun. (representing a statue upon a pedestal), and one by Mr. C. Turner, and also a wax model by Mr. Fryer. Mr. Brannon's designs each exhibited a statue standing upon ornamented Gothic and Romanesque compositions, with iron railings, &c. Mr. Pedley's design consisted of a statue standing upon a square pedestal, upon the sides of which are figures illustrating the leading incidents of Mr. Andrews' life. Mr. Turner's represented a statue standing on a plain pedestal. The committee selected two designs, that of Mr. Pedley, and one of Mr. Brannon's, and referred them to a sub-committee to report upon, and to bring up specifications and estimates.

**THE PROPOSED PUBLIC OFFICES FOR LIVERPOOL.**—A report by the special committee on the plans for new public offices in Dale-street was read at the last meeting of the town council. The report recommended,—1st. That the area of land to be occupied by the offices should not exceed the quantity which would have been available for that purpose had the proposed arrangements for the erection of a new post-office been carried out. This quantity would have been about 4,750 square yards, upon which, in the opinion of your committee, a building may be erected affording all the required accommodation for municipal purposes, including a council-chamber. 2nd. That the cost of the building, exclusive of land, should not exceed 60,000*l.*, a sum which your committee believe would be fully adequate for the erection of a suitable character. Should the council approve of these views, your committee will direct plans and estimates to be prepared in accordance therewith for the consideration of the council." A motion was put that the proceedings be confirmed, but an amendment, postponing the consideration of the report till the next monthly meeting of the council, after a good deal of discussion, was carried by a majority of 25 to 19.

**EXHIBITION BUILDING FOR MONTREAL.**—The Montreal council has resolved that power be asked from the Legislature to contribute an amount, not to exceed 5,000*l.*, towards securing to Montreal a permanent site and building for exhibitions of the industrial products, and for a museum and gallery of the fine and industrial arts, and for that purpose to issue bonds redeemable in six years, and bearing interest at 6 per cent. It is proposed to have the building completed before the visit of the Prince of Wales.

**THE FOREIGN-OFFICE.**—In answer to a question put by Sir John Shelley, Mr. Cowper, the Chief Commissioner of Works, stated last week, in the Commons, that some temporary accommodation must be found for the Foreign-office, while the present building was being pulled down, and the new offices erected. A plan had been under consideration by which the house of the clerk of the parliament would be used for that purpose. Before spending any money on the new building, a plan would be submitted to the House for its consideration as promised.

**THE EXTERNAL STONERWORK OF THE HOUSES OF PARLIAMENT.**—Sir F. Kelly asked the Chief Commissioner of Works whether he had received the report of Sir Roderick Murchison and Professor Faraday on the processes for preserving the external stonework of the Houses of Parliament, and whether he had any objection to lay the same before the House, together with copies of the instructions or minutes of reference to those gentlemen? Mr. Cowper said he had received the reports alluded to; but inasmuch as they were given more for his own private guidance than for any public use, he did not feel justified in producing them. But at the same time he was ready to take upon himself the responsibility of any course which he might take in consequence of these documents.

**STAINED GLASS AT ST. GILES'S, CAMBERWELL.**—The committee report to the subscribers and parishioners generally the progress made with the chancel windows, four of which have already been fixed by the artists, Messrs. Lavers & Barraud. The committee hope that the parishioners will enable them by their contributions to complete the whole of the six windows at once, under designs by the same artists. The following are the windows already fixed. Eastern window, north side;—"St. Peter entering the House of Cornelius;" "St. Peter healing the Cripple at the Beautiful Gate of the Temple;" "St. Andrew following our Lord;" "St. Andrew's Martyrdom." Eastern window, south side;—"St. James the Great called at the Sea of Galilee;" "St. James the Great's Martyrdom;" "St. John leaning on the Lord's Breast at Supper;" "St. John at the Foot of the Cross." Centre window, north side;—"St. Philip bringing Nathaniel to our Lord;" "St. Philip's Secret Prayer, 'Lord, show us the Father.'" "St. Bartholomew's Secret Prayer under the Fig-tree;" "St. Bartholomew coming to our Lord." Centre window, south side;—"St. Thomas expressing his Unbelief;" "St. Thomas confessing his Faith;" "St. Matthew called from the Receipt of Custom;" "St. Matthew's Feast in his House."

**BIRMINGHAM ARCHITECTURAL SOCIETY.**—The annual general meeting of this society was held last week, when the report of the council was read, and the officers elected for the ensuing year. Mr. J. G. Bland was elected president, Mr. W. Harris vice-president, and Professor Chamberlain honorary secretary. Mr. Empson exhibited two views of the Exchange at Monte Video. Mr. J. H. Chamberlain exhibited drawings for the alterations at Umberslade Hall, and specimens of wood carving by Mr. Barfield. Mr. J. G. Bland exhibited the prize plan for the Stroud Church competition.

**CAMBRIDGE ARCHITECTURAL CONGRESS.**—During Whitson week, it is proposed to hold in Cambridge a congress of various architectural societies, under the presidency of A. J. B. Beresford Hope, Esq. Professor Willis will attend, and give a lecture on "The Architectural History of the University," on Monday, the 25th inst. On Tuesday, an expedition will be formed to Ely; and on Wednesday, Mr. Hope will give a lecture on "The English Cathedral of the Nineteenth Century." On Thursday, an expedition will be made to Bury St. Edmund's.

**VOTING AT THE INSTITUTE.**—Sir: Some changes being proposed to be inaugurated at the Institute, I think the mode of election urgently requires revision. The greatest difficulty is found in getting people to vote; so that it may happen that one adverse vote, counting four, may override the assent of the entire meeting. Such a surprise could in some measure be obviated by taking the numbers again. For my own part, I would rather have open voting, than that the Institute should be made the instrument of private malice.—MEMO.

**PUBLIC CARRIAGE-WAY ACROSS HYDE-PARK.**—A petition from many of the residents north and south of Hyde-park has been presented to Parliament, praying for some more direct communication than they yet have had between these districts. Lord Ebury supported the prayer of the petition, and also Lord Llanover and Lord Powis.

**WATERWORKS.**—The total cost of the Pentrich Waterworks extension is estimated at 1,758*l.*—At Kirkaldy, a scheme is being agitated for obtaining an abundant supply of water to the town and district from Lochgelly Loch. Mr. John Sang, C.E., calculates that the loch will afford storage-room for 25,000,000 of cubic feet, and afford a supply of 625 gallons per minute. The pipe-track will be five miles in length. The cost of the whole undertaking he estimates at from 13,000*l.* to 14,000*l.* The burgh trustees have remitted the matter to a committee.

**THE POLYTECHNIC INSTITUTION.**—A public meeting was held on Monday last, in the Lecture-hall of this Institution, Regent-street, under the re-organized management of the Institution, to lay before the shareholders and the public the steps that had been taken towards its re-opening, as well as to commend it to the public for that amount of support necessary to the accomplishment of such intention. The Earl of Shaftesbury occupied the chair. The formation of the present company virtually commenced in August last, and at a subsequent meeting it was resolved that a company be formed, with a capital of 20,000*l.*, in 2,000 shares of 10*l.* each. At a general meeting of shareholders the directors were authorized to purchase the building for a sum not exceeding 4,000*l.*, and accordingly agreed to pay to the official managers appointed by the Court of Chancery to wind up the affairs of the late Institution the sum of 4,000*l.* for the leases, furniture, and apparatus. It is estimated that a further sum of 4,000*l.* will be required for repairs, thus making a total expenditure of 8,000*l.* Up to the time of meeting 900 shares had been subscribed. The committee, however, have only called up 7*l.* per share, rendering a sum of 6,300*l.* available from shareholders. They have received 600*l.* in donations, and have power to raise a guaranteed loan for 650*l.*, making a total sum of 7,550*l.*, which leaves a deficiency of 450*l.* on the price of purchase and estimated repairs. It is greatly to be desired that the few additional shareholders required should be forthcoming. So valuable a piece of instructive amusement should not be lost.

**THE SEWAGE QUESTION.**—A Wellington correspondent, Mr. B. Shaw, builder, sends us a plan and sections of an apparatus (for which he is taking out a patent) for filtering the sewage of London (or other towns), and which, he says, if carried out, will produce a vast amount of valuable manure, and effect the purification of the river Thames. After describing the diagrams, which relate mainly to subsiding apparatus, he says,—“By the above arrangement, the whole body of mud and water would be reduced to a stagnant pool, allowing the solid particles to subside or settle in the pans, while the filtered water would pass off in a thin sheet, freed from its impurities. The whole apparatus will be so arranged as not to be an obstruction during heavy rain or thunderstorms. The method which I propose for working the apparatus is by mechanical means entirely, viz., an engine traversing the whole space occupied, at an elevation sufficient to empty the pans into railway waggons, to be conveyed to the most eligible place, where I leave it to agricultural chemists.” In explaining a diagram representing a stench-trap, he says,—“It is for places where the drain is on a level with the floor in which the trap is fixed, such as cellars (or in a channel passing through a number of partition walls), in which case each occupier would be obliged to collect his own portion of rubbish, and could not force it on his neighbour.” One trap “was a handle to lift it out by, when full of mud, to be cleaned, filled with cleau water, and put in its place again.”

**INSTITUTION OF CIVIL ENGINEERS.**—The annual conversation given by the president of the Institution of Civil Engineers, will this year take place on Tuesday, the 5th of June, instead of the 29th inst., as at one time intended. Mr. G. P. Bidder occupies the office of president.

**HARDENING SAWS AND STEEL PLATES.**—Mr. Seth Ward, Pimlico, proposes to place two metallic discs, or plates, furnished with ribs, or other projections, sharpened to a feather edge, on two iron pins, so that when the faces of the ribs or projections are brought together by means of a screw and nut they will retain in its proper position, and straighten, any saw or other plate of steel which has been heated and placed between them, and prevent the same from warping or bending when the whole apparatus is immersed in the hardening liquid, which, however, is not prevented from having free access to every part of the saw or steel.

**THE MERTHYR WATERWORKS.**—A report upon the state of progress of these works has just been sent to the Local Board of Health. By this scheme it is intended to take the waters of Taff Vachen, at Pont Stiecell, and 1,050 feet above sea-level, by a main pipe, down the valley, nearly six miles; the diameter of the main pipe being 14 inches. At Poubry the pipe terminates in a succession of filter beds, and a pure water-tank for the immediate supply of the district. In respect to the most important contract, the report says:—"The land for the large reservoir has been enclosed, and the new road is nearly ready. The puddle trench is in progress; but is prepared for fifty navigators, and about ninety-six are now at work. . . . It was, in the first place, necessary that the foundations of the embankment should be very completely examined, and the ground probed, by the sinking of trial shafts through the clay, silt, and gravel, down to the solid rock. Some difficulty was experienced in finding a competent contractor to sink these shafts; and, as it was necessary to provide against water, it was found economical to purchase a small pumping-engine, which has been transferred to the contractor. The results of the trials were very favourable, so that we are assured that the embankment or dam will be firm and substantial." The report speaks of November for the completion of the whole of the works.

**SINGULAR DESTRUCTION OF A RAILWAY BRIDGE.** The bridge of the Newcastle and Carlisle Railway across the Tyne at Scotswood has been destroyed by fire. The Board of Trade had sent Colonel Yolland down to inspect it. A number of engines were run backward and forward on the bridge, sometimes keeping one standing on it for nearly an hour at a time. It is supposed that the hot ashes from the engine fires had got in between the crevices of the wood planking, where it had smouldered for some time and then ignited. A meeting of the Newcastle Town-council was convened for the day of the fire, for the special purpose of adopting measures to oppose the amalgamation of the Newcastle and Carlisle with the North-Eastern Railway unless this identical structure was removed, as it was a great hindrance to navigation and river improvement. But while they were assembled a telegraphic message arrived that the Bill was thrown out in committee, and they had not been long dispersed when intelligence arrived in the town that the bridge itself was in a blaze.

**SCULPTURE.**—There may now be seen in the studio of Mr. Goodwillie, sculptor, South-street, says the *Elgin Courier*, a group of very strange-looking figures, representing monks, knights, templars, and Augustine canons, all cut out of our Morayshire sandstone. The figures are to be placed over the windows of Callen House, one of the residences of Lord Seafield, who in this, as in many other respects, is an encourager of the fine arts.

**COPPER DEPOSIT IN LOWER CANADA.**—The richest and most extraordinary copper mine in the world, it is said, is now opening at Acton. The great Burra Burra of Australia is said to sink into insignificance, and the richest mines of Europe to be pigmies, beside this mineral giant. Here presents itself a great bed of ore, says the *Montreal Commercial Advertiser*, so vast, so pure, and so wonderful, that it is almost as much past belief as it is beyond all previous experience. Where the deposit has been opened up there is exhibited a mass of ore from 30 to 40 per cent. pure, 60 feet long, by 30 feet wide, and of an unknown depth. A single blast put into the mass threw out 7 tons of ore, worth 1,050 dollars. The expenditure of 300l. has already sent to market at Boston 90 tons of ore, which realized 150 dollars per ton, or 3,125l.

**"THE CHAP THAT ROW'D THE PLATES."**—Standing the other day at that part of the Polytechnic where Messrs. Lockwood's large model of the iron troopship is placed, we felt ourselves pulled gently by the arm, and, on looking round, perceived a little sandy-whiskered man in an attitude of inquiry:—"Aw say, mister," said he, with an unmistakable *bur*, "will you read us this card?" We read the card, which described the proportions, hulls' name, &c., of the vessel aforesaid. "Is there owt about the chap that row'd the plates?" inquired he anxiously. "No," responded we, rather smilingly. "Why, aw's the chap that row'd the plates, and they hanout put my name of the card, if aw ony could write mesel aw'd put it doon." Exit the Northumbrian in disgust. Well, thought we, here at least is something which needs correcting. We commend it to the notice of the Polytechnic committee.—*Stockton Gazette.*

**HOW WE DISFIGURE.**—Sir: Since I have become a reader of your interesting and philanthropic journal, and an observer of the beautiful illustrations you give every week, I have taken notice of the buildings of London and elsewhere, both ancient and modern, public and private, and have even passed an opinion to myself as to the effect, convenience, or propriety of decoration of any building which came under my observation. I was surprised to see, the other day, disfiguring what to me appeared to be a noble staircase at St. Martin's Hall; large advertisements advising the people to reform their tailors' bills, and informing the public that footmen's liveries could be purchased for 3l. 3s. Now, sir, it seems to me very inconsistent of the proprietors of this hall, after going to a great expense to decorate the staircase with coloured medallion portraits of the greatest musical composers the world has produced, to hang a parcel of signboards in close proximity to these portraits, thus marring the art of the architect and the painter. Such proceedings must confirm foreigners in the opinion that we are a nation of shopkeepers.—**A WORKING MAN.**

**PUTTING ON THE SCREW.**—The *Chicago Press and Tribune* describes the raising, by means of screws, of a solid front of first-class business blocks, 320 feet in length. The block comprises thirteen first-class stores, and a large double-marble structure—the Marine Bank buildings—all presenting an unbroken front, and filled with occupants! The block had been raised 4 feet 8 inches in five days, and the masons were busy putting in permanent supports. The entire weight raised was about 35,000 tons, and so carefully had this been done that not a pane of glass was broken, and the interior of the block had remained undisturbed, 6,000 sewers and about 600 men had been employed in the process. The paper adds that the work as it then stood was worth a walk of miles to see, and had been the marvel and wonder of the inhabitants since it had commenced. This is the way to raise architecture out of the dirt.

**HOW TO STRENGTHEN THE ENGLISHMAN.**—The Rev. Baptist Noel has lately published a letter to the noblemen and gentlemen who encouraged the late prize fight. After urging the evils likely to result from the encouragement of the prize-ring, the writer continues:—"You say that you wish to make the people manly, when they work all day in ill-ventilated workshops until they are exhausted, and then poison themselves with drink? If you wish them to be manly, improve the ventilation of their workshops and cottages, raise their wages by encouraging emigration, teach them self respect by a good education; then, with good food, temperance, and a sense of duty, you may make them the bravest and manliest nation in the world."

**TENDERS**

For erecting new warehouses, at No. 22, London-wall. Mr. E. Woodthorpe, architect:—

Myers	£4,339 0 0
Lucas, Brothers	4,319 0 0
Jeffery	4,299 0 0
Piper & Son	4,219 0 0
Ashby & Son	4,111 0 0
Brown	4,035 0 0
Turner & Sons	3,989 0 0
Wilson	3,981 0 0
Brown & Robinson	3,933 0 0

For erecting new warehouses, at Nos. 23, 24, and 25, London-wall. Mr. E. Woodthorpe, architect:—

Myers	£4,439 0 0
Lucas, Brothers	4,222 0 0
Jeffery	4,229 0 0
Piper & Son	4,130 0 0
Ashby & Son	3,960 0 0
Brass	3,893 0 0
Turner & Sons	3,819 0 0
Brown & Robinson	3,775 0 0
Wilson	3,769 0 0

For Mr. Norman's new house and premises, in the Drapery, Northampton. Mr. E. F. Law, architect, Northampton:—

Young, Lincoln	£3,868 0 0
James Watkin, Northampton	3,798 0 0
Dunley, Ilsworth	3,729 12 4
Costford, Northampton	3,720 0 0
Clifton, Leicester	3,735 0 0
Pooley, Liverpool	3,430 0 0
John Watkin, Northampton	3,399 0 0
(accepted)	3,390 0 0

For malthouses, at Lincoln, for Mr. R. G. Hunt. Mr. Charles Bully, architect, Newark. Quantities supplied by Mr. Charles Poind:—

Ashton, Retford	£2,379 0 0
Pretwell & Henderson, Newark	2,350 0 0
Ward, Lincoln (accepted)	2,298 0 0

For erecting two houses, in the English-lod, Islington. Mr. F. G. Widdows, architect:—

Wood	£1,650 0 0
Smith	1,000 0 0
When	997 0 0

For the drainage of the ground, and also for the erection of chapel, lodge, tool-house, and boundary-wall, for the Battersea Burial Board:—

	Drainage.			Barrel Drain.			Total.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Ilare	223	0	0	87	1	0	310	7	0
Amies	734	19	8	69	10	6	803	1	2
Pound	644	18	8	118	11	4	763	10	0
Neal	699	18	0	82	6	6	782	4	6
Morris	659	0	0	100	0	0	759	0	0
Harvey	630	16	0	85	0	0	715	0	0
King & How	395	0	0	129	0	0	524	0	0
Harland & Bleusfield	584	0	0	96	10	4	680	10	4
Sharrow	518	0	0	119	0	0	637	0	0
Lacey	560	0	0	84	10	0	644	10	0
Blackmore	500	18	0	87	15	0	614	13	0
Adams & Sons	573	0	0	41	0	0	614	0	0
Hayward	.....	.....	.....	.....	.....	.....	503	5	7
Stacey	.....	.....	.....	.....	.....	.....	330	0	0

Chapels, Lodge, Tool-house, and Boundary fence:—

Hemming	£2,359 0 0
Harvey	2,202 0 0
Baker	2,152 0 0
M'Lennan & Bird	2,070 0 0
Bevis	2,59 0 0
Adams & Sons	2,000 0 0

For alterations and additions to Breadale Priory, near Dorby, for Mr. Francis Morley. Mr. Robert Scrivener, architect, Hanley. Quantities supplied:—

	Bricklayer and Mason.		Carpenter and Joiner.		Plumber and Glazier.	
	£.	s. d.	£.	s. d.	£.	s. d.
Crump	.....	.....	.....	.....	295	0 0
Morley	.....	.....	1,150	0 0	.....	.....
Clews	1,329	0 0	.....	.....	.....	.....
Thompson (accepted)	1,342	0 0	918	0 0	212	0 0
Cooper	1,518	10 0	1,974	10 0	178	13 6

For Painting, Plastering, and Decorating:— Messrs. Ward & Co. (accepted). £235 0 0

For pair of houses, to be erected for Mr. Richard Howard, in the Calverley-road, Taurbridge Wells. Mr. Henry H. Crouk, architect. Quantities supplied:—

Barrett	£1,675 0 0
Walker	1,689 0 0
Pink	1,830 0 0
Noakes	1,789 13 0

For erecting a dwelling house, at Upper Norwood. Mr. B. A. C. Herring, architect:—

**One House.**

Turner & Son	£1,445 0 0
Marsland & Son	1,350 0 0
Brown & Robinson	1,335 0 0
Coleman	1,349 0 0

**Two Houses built at same time.**

Turner & Sons	2,819 0 0
Marsland & Son	2,710 0 0
Coleman	2,698 0 0
Brown & Robinson	2,670 0 0

For St. Job's Catholic Schools, Birmingham. Mr. E. Welby Pugin, architect:—

Hardwick & Sims	£1,608 10 0
Brayson & Gwyther	1,575 0 0
Gascoyne	1,575 0 0
Wilson	1,539 0 0
Briggs	1,461 10 0

For additions and repairs to two villas, at Leigham Court Avenue, Streatham. Mr. R. Drew, Architect. Quantities not supplied:—

Warburton	£1,280 0 0
G. Todd, Junr.	1,210 0 0
Downs	1,160 0 0

For constructing two pairs of small villas, at Tottenham, for Mr. Thomas Keadley. Mr. T. H. Bawley, architect:—

Rivett, Stratford	£1,163 0 0
Umphery, Tottenham	1,135 0 0
Bank, Tottenham	1,062 0 0
Gosden, Tottenham	1,039 0 0
Chapman, Tottenham	1,045 10 0
Cushing, Tottenham	938 0 0

For the new congregational chapel, schools, enclosure-walls, &c., Little Hampton, Sussex. Mr. James G. Stapleton, junr, architect:—

Blaker	£1,110 0 0
Snewin	1,075 0 0
Ellis	1,048 0 0
Bushby	947 0 0
Canon (too late)	850 0 0

For house, at Tooling. Mr. James G. Stapleton, junr, architect:—

Fulton	£1,039 0 0
Ridgway	890 0 0
Ridkin	879 0 0
M'Lennan & Bird	876 0 0
Sweeting	864 0 0
Newman & Mann	770 0 0
Canon	770 0 0
Scott	760 0 0
Brazier	750 0 0
Harding	732 0 0
Gates	670 0 0

For repairing two houses, Nos. 115 and 117, Pentonville-road, including taking down and rebuilding part of back front of one house. Mr. J. B. Watson, architect:—

Morley	£110 0 0
Barnes	83 14 0
Blanch	85 0 0
Wright	68 0 0
Helm	42 10 0

# The Builder.

VOL. XVIII.—No. 903.

Funeral of Sir Charles Barry.



ON Tuesday last the remains of Sir Charles Barry were removed from his late residence, on Clapham-common, and buried on the north side of the nave of Westminster Abbey, nearly opposite to the fifth column from the west, and in close neighbourhood with the resting-place of Robert Stephenson. Mourning-coaches, scarfs, and hat-bands were provided at the Institute of Architects, the Institution of Civil Engineers, the Royal Academy, and elsewhere, for the members of council of the various bodies who had accepted the invitation to attend; and these, together with the private carriages of friends, assembled at the foot of Vauxhall-bridge, and ultimately there fell into procession with the hearse. In Westminster the houses were mostly closed. On the Victoria Tower, the crowning work of the architect, the Union Jack was hoisted half-mast high; and at each angle of the tower was suspended a black flag. Opposite the tower—and this was the most striking and touching feature of the event—stood 500 of the workmen who have been engaged on the building, volunteers from places far and near, and who, as the hearse passed them, reverently took off their hats. They who saw the movement will not soon forget it. The tears come into our eyes involuntarily as we recall it in writing. They were as fine a body of men as were ever seen, mostly in mourning, and represented with credit the working men of England. Of course they afterwards went into the nave.

At a few minutes past one o'clock the cortege arrived at the Abbey, and a procession was formed at the cloister door, through which the body was to be brought. It consisted of the High Bailiff of Westminster, who led the way; the bedesmen of the Abbey, the Rev. S. F. Jones, M.A., incumbent of St. Matthew's, Spring-gardens, and Minor Canon of Westminster; the Rev. C. M. Arnold, M.A., Minor Canon; the Rev. J. C. Haden, the Precentor; the Rev. J. Lupton, M.A., rector of Quenchith, and Minor Canon of Westminster; the Venerable Archdeacon Pentkirk; the Rev. Lord John Thynne, sub-dean; the Rev. Canon Jennings; and the Very Rev. the Dean. Then followed the coffin. Sir Charles Eastlake, P.R.A.; Mr. G. P. Bidder, P.I.C.E.; Mr. A. J. Beresford Hope (Architectural Museum); Mr. C. R. Cockerell, R.A., President of the Royal Institute of British Architects; Right Hon. W. Cowper, M.P., her Majesty's Chief Commissioner of Works; Lieut.-Gen. the Hon. Sir Edward Cust, the Very Rev. the Dean of St. Paul's, and Mr. Tite, M.P., F.R.S., were the pall-bearers. The family of the deceased, consisting of Mr. Charles Barry, Mr. Edward M. Barry, and three other of his sons less known to our readers, were the chief mourners.

Of the House of Commons there were the Right Hon. Lord John Manners, Mr. J. Green, Mr. R. S. Gard, Sir Joseph Paxton, Sir Morton Peto, Sir Alexander Hood, Mr. W. F. Hume. The following societies were also represented:—Of the council and members of the Royal Academy, there were Messrs. Thomas Creswick, A. Elmore, J. H. Foley, D. Maclise, H. W. Pickersgill, David Roberts, Sydney Smirke, Richard Partridge, P. F. Poole, G. G. Scott, J. T. Willmore, S. A. Hart, J. R. Herbert, G. Jones, P. Macdowell, F. R. Pickersgill, R.

Redgrave, R. Westmacott, T. S. Cooper, E. W. Cook, H. O'Neil, J. P. Knight, Sir Edwin Landseer, Charles Landseer, W. C. Marshall, J. Philip, C. Stanfield, W. E. Frost, F. Goodall, and R. J. Lane. Of the council and members of the Royal Society:—Rev. J. Barlow, Sir Roderick I. Marchison, Mr. Gassiot, Mr. C. R. Weld, and Rev. W. Walton. Of the Council of the Institution of Civil Engineers:—Sir John Kennie, F.R.S.; Messrs. H. Gregory, T. Hawksley, James Sturpison, T. H. Wyatt, J. Cubitt, Joseph Locke, Charles Manby, F.R.S.; J. Hawkshaw, F.R.S.; J. E. Ellington, J. Murray, J. Forrest, J. R. Maclean, T. E. Harrison, and T. W. Hemans. Of the Council of the Architectural Museum:—Messrs. Joseph Clarke, R. Brandon, E. Christian, Rev. T. Scott, G. Scharf, R. D. Chautrill, W. Slater, J. Gibson, M. J. Lomax, and G. E. Street. Some members of the Architectural Association, whose names have not reached us. Of the members, Council, and Vice-presidents of the Royal Institute of British Architects:—Sir W. R. Farquharson, Bart.; Messrs. T. L. Donaldson, Digby Wyatt, and George Godwin, F.R.S., Vice-Presidents; J. H. Stevens, J. Norton, C. Fowler, J. B. Bunning, H. E. Kendall, T. M. Lewis, James Bell, G. Morgan, G. Vulliamy, S. Angell, H. Ashton, D. Burton, F.R.S.; D. Mocatta, F. C. Penrose, F. J. Francis, R. L. Roumieu, B. Ferrey, J. J. Scoles, T. Bellamy, Owen Jones, A. Salvin, and J. Pennothorne.

The Duchess of Sutherland and Lord Carlisle had seats in the choir, together with Archdeacon Hale, the Dean of Chichester, Mr. A. Anstun and Mr. H. Hunt (from the Board of Works), Mr. Franks from the Society of Antiquaries, and the representatives already mentioned. Mr. Thomas Grissell (by whom the Houses were for the most part erected), his brother, Col. Grissell, Mr. John Thomas, Mr. Quarm (who has acted as clerk of the works), Mr. C. H. Smith, and others connected with the deceased in his great work, were also there.

The following members of the Institute, named as we recall them, no one being before or after the other, undertook, under the direction of Professor Donaldson, to conduct the various bodies to their seats:—Messrs. John Papworth, Robert Kerr, Wyatt Papworth, F. P. Cockerell, C. F. Hayward, Good, J. S. Donaldson, W. M. Teulon, Matthew Wyatt, A. J. Baker, W. J. Green, S. Salter, Bright Smith, Octavius Hansard, James Edmeston, J. J. Cole, H. A. Darbishire, H. H. Burnell, A. Cates, Chas. Fowler, jun., T. E. Kneightley, W. Lightly, &c., so that everything went smoothly.

In addition to those already named, there was a numerous attendance of members of the Institute, the Association, the Architectural Museum, and others, including Messrs. Edward Hall, E. H. Roberts, E. Salomons, G. M. Hills, J. M. Lockyer, G. Mair, Whichcord, James Noble, G. Myers, J. Billing, T. Bury, Hakewill, Kendall, jun., Tarring, Woodthorpe, W. G. Rogers, Garling, C. Mayhew, Leicester, T. Bury, G. Truefit, Oliver, E. Nash, Wigginton, E. B. Lamh, Cobbett, Knowles, Freeman, Jennings, W. Burges, R. R. Rowe, Clutton, Pocock, P'Anson, Tress, Boulnois, Allason, T. Roger Smith, Penfold, Harger, Currey, E. Falkener, Hon. Arthur Gordon, the Rev. K. Burgess, John Jay, Jeakes, Bond, Hardman, G. Plucknett, Jabez James, &c.

As the procession passed through the nave to the choir the minor canons and choristers sang "I am the Resurrection and the Life," adding greatly to the solemnity of the scene. As soon as the coffin had been deposited under the choir screen, the anthem, "When the ear heard," was sung, and the appointed lesson from the 15th chapter of the 1st Epistle to the Corinthians was read by Lord John Thynne. The procession was then re-formed, and moved back to the grave in the nave. Here the coffin was uncovered. It was of oak, with a raised cross, further defined by nail-heads, above the plate, and an orb below it. The plate was inscribed "Charles Barry, Knight, R.A., F.R.I.B.A., F.R.S. Died 12 May, 1860, aged 64 years."

If he had lived until Wednesday last, he would have been 65.

When the coffin had been lowered into the comparatively shallow grave prepared for it (it did not seem more than 6 feet in depth), "Man that is born of a woman" was sung, and the Dean (French) proceeded with the burial service, which he read with impressive earnestness, the anthem—"I heard a voice from Heaven," being sung in its appointed place. At the close of this portion of the service, the choir sang—"His body is hurried in peace, but his soul liveth evermore."

It was an impressive scene. The crowd, large as it was, gathered beneath the vault of the grey old Abbey (itself beautiful, exceedingly), was an assemblage of friends, not of vacant spectators: all, with very few exceptions, were in mourning, and the general feeling was one of sorrowful regard. Sir Charles Barry has gone to his rest, universally regretted and esteemed, and from this time forward will find few detractors. "Death hath this also," says Bacon, "that it openeth the gate of Fame, and extinguisheth envy."

The arrangements were made by a committee of the Institute, Mr. J. G. Crace materially assisting. The moving spirit, however, was the estimable Professor of Architecture at the London University. All honour and love to Thomas Leverton Donaldson, the head and hand in every generous and kindly movement connected with the profession!

The following acknowledgment has been addressed by Lady Barry to the workmen who, as we have already mentioned, took part in the funeral ceremony:—

"The widow and family of the late Sir Charles Barry return their hearty thanks to those workmen who, having laboured under his direction during his lifetime, have this day attended him to the grave. They recognize in that attendance, not only a kind and cordial sympathy with their own sorrow, but also a proof of the respect with which his memory is regarded, and of the pride and interest felt in having aided to accomplish what his genius had conceived.

Amidst all the consoling memories of this day, there is none on which they will dwell with greater pleasure; and their thanks are given, not so much for themselves as for him, who, as he felt a cordial interest in all his fellow-labourers, so would have been deeply touched by such a proof of their respect and sympathy with him.

Clapham Common, 22nd May, 1860."

## A SKETCH: MAY 22, 1860.

(Founded on the suggestion that the very day first used for his funeral was one on which the great architect of our age might have hoped to crown, with the Royal Standard, the superb Tower of Westminster, just finished; the dearest wish of his later years having been the desire to live to see it complete.)

ON the proud summit of Victoria's Tower,

At last—at last—

See Victory's flag spring grandly to the peak!

Hurrah!

The gilded crest is on,—

Crown of the princely task;

Let fly Old England's ensign, and hurrah!

Hush! Boaster, hush!

Mark that dim speck up on the giddy height,—

He gazes down

Upon his DREAM;

Bear with him if in awe;

For he was young when that fair dream was new,

And he has dreamt until his hair is grey,—

Grey with the dreaming of illustrious age.

Hush! hush! it is not he.

Oh, yes, it was his fondest hope,—

His hand alone must let the flag fly free

On the crown'd summit of his mighty Tower.

See how it trembles on the pole,—

Sweeps gently through the lazy morning air,

And flutters as in play.

The wind is waiting for the signal stroke,

When all the bells shall ring out merrily;

Then England's flag of victory

Shall gleam across the sky!

Oh, hush! there are no merry bells to-day;

There is no flag of victory

To gleam in the blue sky.

It trembles on the pole,—

It flutters as in play,—

And the breeze waits:—until a mighty heart  
Gives God glad thanks for victory!  
The fairy dream  
Of half a life of intellectual toil  
(Alas!—he muses—but, as yesterday,  
This was a vision of the hope—  
A castle in the air)  
Clings round his brain,—his eye may well be dim,—  
Kind summer wind,  
Blow softly through his thin grey hair,—  
Light up his smile,—  
And fan the gleam of his clear eye.  
Why do the bells delay?  
Why keep the flag of England's pride  
Thus fluttering at the pole?

Hush, hush! the flag of England's pride  
Hangs—half-mast high!  
The long-awaited day has come,—  
The long-awaited crown is set  
Upon Victoria's Tower,—  
The Fairy DREAM is dream no more,—  
The princely task is done.  
But the summer wind on that royal height—  
Oh! it lifts not his thin grey hair;  
It fans no gleam in his gleamless eye,—  
Lights up no smile, and waits no prayer,—  
And the flag of a thousand shouts of joy  
Droops drearily in woe.

DEATH, with the silent footfall of a king,  
Came with the midnight hell,—  
Thy work is done;  
Thy fame complete:  
What favour more hast thou to win?  
What more applause to meet?

What! not—*one—hour—of warning?*  
Nay, why an hour's delay?  
When work is done,  
And battle won,—  
When dream is dream no more,—  
Why stay to dally with inglorious ease?  
“One day,” he whispered, “one short day,—  
One day from midnight now to noon,—  
That from the crown of great Victoria's tower,  
I may but lose the flag!”

The old King took him by the hand and smiled.—  
“It shall be better, and yet better done:  
The flag shall fly!  
The flag shall fly in victory!  
I, Victor of all victors 'neath the sun,  
For thee, and for thy victory,  
Myself will loose the flag!  
Victor, in Victory's hour—  
Thus I release thee from thy work well done;  
Thus I admit thee to the hero-land;  
Thus—*at thy post*—I claim thee for thy fame,—  
Death's honour to the greatest!”

But, oh! the flag hangs trembling on the pole;  
It flutters sadly in the summer's heat,  
Droops wearily upon the golden crest  
That crowns that Fairy Dream!

#### ON THE ARCHITECTURAL CAREER OF THE LATE SIR CHARLES BARRY.\*

No one can be more sensible than I am of the extreme difficulty attendant on the satisfactory discharge of the duty which has been imposed upon me this evening by our sincerely respected president; a difficulty enhanced in no slight degree by three circumstances—the shortness of the time in which the following remarks have had to be prepared; the ability and manly feeling with which the *Builder* has already put you in possession of many facts, some of which must be recapitulated in any memoir of our distinguished and lamented friend; and last, not least, my own inadequacy to so great and so touching an occasion. Who, gentlemen, could dare, but in a spirit of almost paralysing reverence, to pronounce a funeral oration upon the architect of St. Paul's? And who amongst us will feel inclined to deny that the architect of the New Palace at Westminster is worthy of an equal tribute of respect and regard at the hands of these who, having known and admired him living, have now only to mourn and venerate him dead? Praying your indulgence, therefore, for any involuntary shortcomings, I shall proceed to address myself, after a few preliminary observations, to the story, and, as far as I may be able, to the moral, of the architectural career of the late Sir Charles Barry.

Of such men it is occasionally said, that they cannot be rightly appreciated in their own generation, and that it is not until intervening time

may have, as it were, permitted “the mind's eye” to recede sufficiently to be enabled to embrace generalities, and blend them according to proper pictorial conditions, that the relations of such men to the circumstances by which they may have been surrounded can be justly estimated. Of the philosopher, legislator, politician, and of the hero who dominates in the feverish turmoil of class against class, or nation against nation, this observation may frequently hold good, but of the great artist, comparatively rarely. His creations are of an essentially monumental character, and it has scarcely ever occurred that the author of works commonly known at the date of their execution, and ultimately accepted by the universal verdict of posterity, has failed to be recognised by his own generation, and certainly by contemporaries in his own profession, at his approximate value. There is in fact no more distinctive and vital characteristic of true art than its universality. Really creative power is neither for this time nor for that class, but for all time and for all classes,—for the present as for the future, and for the future as for the present. The poet, the painter, the sculptor, the musician, the architect, appeal in their highest efforts to sympathies, aggregate as well as individual. From this inherent condition of universality in all great works of art emanate three especial bonds of union and affection:—Firstly, between genius and the world at large; secondly, between genius and all who, however devoid of it, may be endeavouring to achieve success in the same department of art; and, thirdly, between genius and kindred spirits of all ages, who, in pursuits of the most widely differing natures, have reared their heads aloft above the average of mortality, and won admission to that noble brotherhood whose very names have become landmarks in the history of civilization. In the death of every great artist these bonds receive a sudden shock, which, however it may jar and strain, can never break them. There can be no higher tribute to the ascendancy of genius than this impotence of death itself to finally sever bonds of union between mind and mind which it can only slatter, and it is the very measure of this impotence which affords the best scale for ascertaining the nature, force, and amount of the loftiest order of human creative power.

Let us for a moment apply it to the case of the friend we have lost, and try his memory by the three bonds described as at once the essential tests, concomitants, and rewards, of genius, contradistinguished from mere talent, industry, and experience.

In the first place, then, can the world at large cease to esteem the designer of the Houses of Parliament, the Reform and Travellers' Clubs, Bridge-water House, Clifden, or Trentham? Surely to this the only answer can be,—Yes, when they have forgotten Sir Christopher Wren and Inigo Jones, Bramante, Claude Perrault, and Palladio; and not till then. In the second place, can we, as architects, or can they who may succeed us when we shall rest from our labours, as our friend now rests from his, cease to regard with interest and admiration the models for study bequeathed to our art in monuments such as those, on the production and perfection of which his most strenuous efforts were concentrated? Surely never so long as architecture remains a fine art, based on any recognized laws of symmetry, eurythmia, fitness, and proportion, can we fail to appreciate works in which (whether under a more or less classical or medieval garb) the true importance and, indeed, indispensability of a rigid but at the same time free subordination to those laws, are more fully vindicated than (according to my belief) in the works of any other architect who has lived for at least two centuries?

Can, in the third place, Sir Charles Barry be refused admission to that fraternity figured in the immortal school of Athens by the immortal Raffaello? Most assuredly not. There, as in the sanctuary of the illustrious dead in which his remains will be deposited to-morrow, a place may be clearly retained for him; and whenever Wren, and Jones, Vignola, Peruzzi, Palladio, Sansovino, San Michele, and others whose title is undisputed, join that group in which Bramante and Archimedes are all conspicuous, Barry and Visconti, Schinkel, and Von Klenze (when he shall be taken from us), may find their places as no unworthy representatives of the architectural genius of the nineteenth century.

Tried by such tests, by the minutest study of his works, their number, excellence, importance, novelty, fitness, and promise of stability for ages, and by the influence exerted through his example upon the current practice of his art, Sir Charles Barry may be no hyperbolic straining be classed with Wren and Jones, with Wykeham and with

Waynflete. Let us now trace, far too briefly, the steps of conscientious labour by which this glorious and enduring pre-eminence was attained.

Charles Barry was born on the 23rd of May, 1795, of parents in a comfortable position in life, and resident in Bridge-street, Westminster. From mere boyhood he displayed and indulged a marked talent for drawing; and I have been told that it was his habit to sketch all over the walls of the bedroom in which he slept. When no more space was left he would paste lining-paper over the surface he had covered with scribbles of his fancies, and start afresh upon a new series. The first part of his education Barry received at Mr. Wright's academy, now Mr. Beaufoy's,—Carron House, South Lambeth, where he was at school as early as 1804; the latter part he gained at Christ's Hospital. At the age of sixteen he was articled to Messrs. Middleton & Bailey, respectable surveyors to the parish of Lambeth, with whom he appears to have remained about five years. One of these gentlemen at least must have been able to give his pupil artistic instruction, for I observe the name of Mr. Bailey, of Lambeth, appended to several designs in the exhibition of an ambitious character, such as “For a National Museum and Cemetery,” &c., during the term for which his apprentice had been bound to him.

Barry must have been a tolerable draughtsman at the time of his entry into his master's office, for so early as 1812, before he was seventeen years old, he was admitted as an exhibitor at the Royal Academy; and, singularly enough, his first exhibited drawing was “A View of the Interior of Westminster Hall,” the very building which, as it were, served as the key-note to his greatest work in art's years. It appears in the catalogue of 1812 as the production of “C. Barry, at Messrs. Middleton & Bailey's, Lambeth.” It was on his way from his father's house to the office in which he worked that the young student met every day another young lad *en route* from Kennington, where he resided, to the chambers of Mr. Joseph Gwill, to whom he was articled. That young lad was the Mr. Wolfe whose friendship and intimate sympathy proved in after-life a permanent source of pleasure and comfort in all the most trying epochs of Sir Charles's career. The two youths soon made acquaintance, and mutually aided one another in the studies, on their proficiency in which they supposed that their future advancement would depend. Mr. Wolfe, it is well known, was induced to abandon the pursuit of his profession for more immediately lucrative occupation; but the divergence of their paths in life never chilled the mutual regard of these two enthusiastic young students. In 1813, “C. Barry” made his *début* at the Royal Academy with an original design, “for a church.” In the following year his contribution is of a still more ambitious nature, being for no less a monument than “A Museum and Library, with an Observatory.” In 1815 he re-appears, still giving his address “At Messrs. Bailey & Middleton's, Lambeth,” with a more practical effort in the shape of “A Design for a Group of Buildings for a Nobleman's Park; comprising a Picture gallery, Library, Music-room, Conservatory, and Billiard-room.” In the following year, to the best of my belief, several events happened, which suffice to account for his absence from the Exhibition of 1816. His articles expired, he fell in love with the lady whom he subsequently married, and his father died. All of these circumstances, coupled with the fact of his coming into the immediate possession of a few hundred pounds, caused him to resolve upon, and to carry out, against all the advice of his family, a bold step, on the indispensability of which to the attainment of that excellence upon the acquisition of which he had firmly set his heart, he had fully made up his mind.

In April, 1817, he accordingly quitted England, in the company of a Mr. Conduitt, with whom he travelled for some time; his friend Wolfe subsequently joined him, and for some months they worked hard in Northern Italy, drawing and measuring, at Florence and elsewhere, with the utmost zeal and perseverance. At Rome he met Eastlake, and other artist friends, whom he always highly esteemed. With Mr. Eastlake, Mr. Kinnaird (the editor of “Stuart's Athens”), and Mr. Johnson—subsequently Professor Johnson, of Haileybury College—he visited Greece in 1818, and made many beautiful drawings. One of these, “A View of the West Front of the Parthenon, taken on the spot,” he sent to Somerset House in 1821. Another, “A View of the Temple of Theseus, at Athens, drawn and tinted on the spot in the year 1818,” appeared in the exhibition

\* Read by Mr. M. Digby Wyatt, as elsewhere mentioned.

of 1823. He returned to Rome with his portfolios full, but with his pockets so empty, that despite his earnest desire to go further a-field, he was on the very point of starting homewards, when he happily made the acquaintance of a gentleman of fortune, a Mr. Baillie, who was so pleased with his sketches, that he made him an offer of an engagement as travelling artist. With that gentleman, in 1818 and 1819, young Barry went up the Nile several times, and visited the Holy Land, making beautiful sketches of the principal localities, from some of which engravings were subsequently executed for Finden's landscape illustrations of the Bible. "A View of a Street in Grand Cairo, from a sketch taken on the spot in the year 1818," exhibited in 1824, was one of the fruits of these happy wanderings. At Sinai he met Mr. William Bankes (son of the well-known Mr. Bankes, of Corfe Castle), in whom he found an accomplished acquaintance and a liberal patron. A memorial of this association may be traced in the exhibition catalogue of 1822, when Barry contributed a drawing of "the Scene of a Roman Theatre at D'Jerab (great part of which actually exists), restored principally from documents collected on the spot, by William Henry Bankes, Esq." He remained with Mr. Baillie for about a year and a half, and returned to England in July 1820. During the whole of his wanderings he kept an admirable journal, which, it is to be hoped, may be some day given to the world. In that same year, 1820, he established himself in business at 39, Ely-place, and I believe married Miss Rowell, to whom he had engaged himself before leaving England. In the catalogue of the exhibition of 1821—to which he forwarded a picture of "Ruins of the Great Temple of Egyptian Thebes, the view taken on the spot in the year 1819,"—his address is given at the recently occupied abode. I am unable to trace his first architectural employment, and can identify nothing earlier than the Manchester Church, which he appears to have been employed to design in 1822. A drawing of it, described as "now building," was in the exhibition of 1823, together "with the west elevation of a design for a Church to be built at Oldham." About the same period he built another church in the same district at Stand. In 1823 he competed for, in public competition, and obtained employment as architect to the new church, St. Peter's, at Brighton. Two views of it as "now building" were sent to Somerset House in 1821. In many respects this church was superior to any contemporary ecclesiastical work, and its popularity greatly enhanced that of its designer. It certainly led to his first aristocratic connection, for it induced Lord Egremont to employ him to sketch a steeple to the parish church at Petworth, a sketch of which was exhibited in 1827; and to make several designs for alterations, &c. to his seat at Petworth. A drawing of a spire it was proposed to add to the Brighton Church was exhibited in 1826, together with a front view of the "Royal Institution for the Fine Arts now building at Manchester." About this time, Barry appears to have been a good deal employed at Brighton, in laying out the Queen's Park, building a house for a Mr. Attree; and another (Clarence Mansions, since much altered, but not by him) of a good Italian character, looking over the sea, has been pointed out to me on the spot as one of his early works. Many of my hearers will doubtless remember a brilliant lithograph, by our fellow, Mr. T. Allom, showing Barry's original intentions with respect to the Queen's Park, Brighton. He also built the Sussex County Hospital. The Manchester Royal Institution, and a house which he erected about the same time for Mr. afterwards Sir Thomas Potter, at Buile Hill, near that city, were in that Anglo-Grecian style which Sir Robert Smirke had mainly popularised; but from which, despite fashion, Barry took the earliest possible opportunity of emancipating himself. His success (for such it assuredly was at the date of its execution) with the Brighton church led to his engagement to design a group of churches proposed to be executed by the Church Commissioners, under a strong stimulus from the late Daniel Wilson, in the parish of Islington. The three carried out by Barry were respectively, St. John's, Holloway, perpendicular, with a tower, to hold 1,782 persons, at a cost of 11,809*l.*; St. Paul's, a very similar building, to hold 1,793 persons, at a cost of 10,947*l.*; and Trinity Church, Cloudestey-square, a larger but corresponding structure, to hold 2,009 persons, at a cost of 11,535*l.* Of this last a curious little aqua-tint engraving, an early work of the afterwards well-known architectural draughtsman, is extant, published by G. Hawkins, near the Grove, Hackney, on the 1st May, 1826," at which

date the church would appear to have been recently completed. At a subsequent date, Barry built another church in the Islington district, the funds for which were provided by the Commissioners of Queen Anne's Bounty, that of St. Peter's, River-lane, Islington. This building, which cost only 3,407*l.* 2*s.* 7*d.*, in the days of the cheapest and worst churches, was consecrated on the 14th of July, 1835. In order to complete here the summary of Barry's ecclesiastical works, I may engaged during his career upon three other churches,—the parish church of Stoke Newington, which he almost entirely rebuilt and refitted; one at Hurstpierpoint, in Sussex; and another, St. Andrew's, on Saffron-hill, Holborn, with a turret and vaults, to contain 1,783 persons, at a cost of 9,004*l.* All of these, with the exception of Hurstpierpoint, which is Middle-pointed, were, I believe, in the Perpendicular style, and were rather above than below the average work of the best men of the day who were beginning to make Gothic a somewhat special and exclusive study. His Unitarian chapel at Manchester, the design for which he exhibited in 1840, at which date it was, I believe, completed, was his only attempt in the first Pointed style, and attracted considerable notice at the date of its execution.

Soon after his establishment in business, Barry obtained the appointment of architect to Dulwich College, and was soon employed to erect a new wing to that building; he also became in some way connected, I believe about the same time, with the construction of a new wing to St. Thomas's Hospital.

In 1827, Barry's increasing business and connection justified his removal westwards, and he accordingly found him leaving 39, Ely, for 27, Foley-place. Among the most important of the studies made in that year was a design, which was approved of by Lord Gwydir, for the rebuilding of Drmmmond Castle, Perthshire, two views of which were exhibited in 1828. In 1829 he designed but did not carry out, various additions to the Pitt Press at Cambridge; and struck at last upon the golden vein which ultimately made him a prosperous man. In the designs for the Travellers' Club, which were submitted in limited competition, Barry first revealed his resources in planning, and that refined perception of just proportion, both in detail and general distribution, in which he has scarcely ever been rivalled. The garden front is, so far as my knowledge extends, an absolutely original conception; and as such may, I consider, take its place in the history of art. The Pall Mall front has been frequently characterized by superficial observers as a copy, or reproduction, with slight modifications, from Raffaello's Pandolfini Palace at Florence. One moment's comparison of the two elevations will suffice to entirely dispel the idea. The Pandolfini Palace has only, in common with the Travellers' Club-house, the accidents of being two-storied, having rusticated angles, and a doorway at the extreme right-hand side of the ground-floor. In every other respect, the dissimilarities are most striking; the proportions of the windows are about one-third narrower in the Travellers' than they are in the Pandolfini; in the former, they are Ionic on the first floor, and Doric on the ground; while in the latter, they are Corinthian on the first-floor, and have simply returned architraves and no order on the ground-floor. The four windows of the first-floor of the Florentine facade are surmounted with alternately angular and segmental pediments, and united by panels in the interspaces and horizontal members, while the five of the Pall-mall building are precisely uniform, and the running through of any of the members forming or decorating the fenestration above the sill level. One of the leading features of the Pandolfini is its deep plain frieze, adorned only with a very simple classic-looking inscription; while in the entablature of the Travellers' Club the frieze is reduced to so small a proportion and is so highly carved, as in fact to do duty rather as an enriched member of the cornice than as a distinctive frieze at all. As a corroboration of the remarks I have ventured to make in respect to the universality of genius, and the immediate effect upon the public of any salient manifestation of it in the shape of a work of art, it may be noted, that from the date of its completion, in the year 1832, to the present time, no architectural Zeilus has ever raised his puny voice to the disparagement of this real gem. The contract was taken early in 1830, by Messrs. Lees, at 19,000*l.*; and the total cost was 23,160*l.* On the completion of this beautiful structure, its architect was elected a life member of the club: a compli-

ment, considering the very exclusive nature of its constitution, of no slight social and professional importance to a rising artist.

Pall-mall also possesses two ordinary house facades of great cleverness, executed by Barry; and the Imperial Insurance Offices, opposite to his great club-houses, and of about the same date as the Travellers'. While the last-named was in progress, he was subjected to three disappointments, one of which annoyed him a good deal. He became an unsuccessful competitor for the Westminster Hospital, carried out by Inwood; for the Law Institution, carried out by Vulliamy; and for the Birmingham Town-hall, entrusted, as is well known, to Messrs. Hansom & Welsh, under very peculiar circumstances. In response to the advertisement issued at the close of 1830, calling for designs for the last-named building, Barry forwarded a noble scheme for a Doric temple of grandeur, and at the same time of so much simplicity, that his friends confidently averred that it might be well carried out for the 18,000*l.*, which formed the limit fixed for the committee. Barry's plan was so long placed in the ascendant, that he confidently reckoned on being employed to execute it. From first, however, it somehow sank down to third, and a design was at last adopted, which, after utterly ruining the contractors, cost the Corporation nearly double the amount to which they at first limited the outlay. Barry exhibited his design, which was much admired, in 1832. From that year his occupation appears to have been so incessant as to preclude his contributing to the Royal Academy, and it is not until 1840, that he re-appears in the architectural world. Nothing daunted by his bad luck with the town-hall, Barry sent in designs (for the preparation of which two months only had been allowed) on the 1st November, 1832, for the Free Grammar School, commonly known as King Edward's, at Birmingham, which he won easily. This popular building, with its seven regular bays, and bay windows breaking through two stories at each end, was most carefully carried out in every detail, and in a good collegiate style in that most beautiful building stone, Darley Dale, and gave great satisfaction. It was completed in 1837, at a cost of 39,263*l.* The study bestowed by Barry upon the working out of this building, and consequently upon the Tudor style generally, he found of the greatest possible service to him when subsequently called upon for the Houses of Parliament competition. It was about the period of the completion of the Birmingham schools that Barry became acquainted with Welby Pugin, whose talents he always greatly admired. Pugin was selected and employed to work out the drawings from Barry's sketches for some of the ornamental details, and for the furniture of that building, and thus the foundation of their mutual regard and respect for one another's powers was laid.

1834 was a eventful year for our profession, and especially for that member of it whose career I am now endeavouring to trace, since on the 16th of October in it took place that memorable fire which rendered the reconstruction of our national assembly a positive necessity. That event occurred at a time when Barry was closely occupied upon several works of importance, in addition to those already mentioned, such as various constructions at Bowdoin, for Lord Lansdowne; the Campanile Lodge and Golden Gates, being in progress so late as 1838; the portico and enlargement of the College of Surgeons, which was sufficiently advanced to show the general character of its design in February, 1835, and was finished in 1837; Lord Tankerville's beautiful Italian villa at Walton-on-Thames; and various alterations at Woburn for the Duke of Bedford. He had also been called in by the Marquis and Marchioness of Stafford, who had been first impressed with his talent for picturesque gardening, by the terraces and other features which they had remarked at a *filie* given in the Queen's Park, Brighton. The architect was introduced to these leaders of taste at the time by Mr. Attree, for whom he had laid out the grounds in which the *filie* was given, and was subsequently employed at first in trifles such as vases if weeps, and ornamental details; but, ultimately in vast works at Trentham, Stafford House, and Clifden so late as 1853; as well as in great designs for Dunrobin Castle.

In 1833, the extensive designs for the conversion of Trentham, an ugly house in a flat and uncongenial soil, into what that princely seat now is, were made. No one could be a better judge than the late Mr. Loudon of the local difficulties presenting themselves to the architect and landscape gardener, and I prefer, therefore, quoting

him to making any comments of my own. He thus (writing in May, 1833) records his impression of the daring and talent evinced by the artist architect:—

"Trentham Hall, the residence of the Duke of Sutherland, is about to undergo extensive improvements. When we first heard of this, and that Mr. Barry was employed, we could not help doubting whether even Mr. Barry could make anything of this great, dull, flat place, with its immense mansion, as tame and spiritless as the ground on which it stands. We have seen the plans, however, for the additions to and alterations of the house, and we must confess that we were delighted and astonished with them beyond measure. Let no one henceforth ever despair of a dead flat. We shall not attempt to describe the additions made to the house at present; but we may observe that the modifications of the ground, and the large lake of water and its islands, which are proposed by Mr. Barry, prove him to have as just a taste in landscape-gardening as he has a refined and correct one in architecture. The architectural flower-garden, which will contain several acres, will be the largest and the best of the kind in England. On one of the islands a villa with terraces, in the manner of the Isola Bella, will be erected, as a feature to be seen from the house over the architectural garden; and a column now erecting on a distant hill will form another feature. The fountains of the garden, which will throw their waters as high as those at Chatsworth, Versailles, or Nymphenburg, will be supplied by a steam-engine, or by a water-wheel on a distant stream; and no garden beauty will have a more striking effect in Staffordshire than this feature."

Barry's employment in realizing the greater part of this vast programme extended over about ten years. By way of current business in 1835, he had also in hand the Manchester Athenæum, a well-worked-out but simple Italian building, costing about 15,000*l.* We now approach the great event in Barry's life—the competition for the New Houses of Parliament.

On October the 16th, 1834, as I have already stated, the conflagration took place, and shortly afterwards Sir Robert Smirke was employed by the Department of Works to make plans, &c. for the re-building. Sir Robert Peel, always a kind patron to Sir Robert Smirke, appointed a committee to examine his designs. The committee publicly acknowledged themselves unable to form a sufficiently accurate judgement upon the merits of any plan, but recommended open competition and the appointment of a Royal Commission, which was accordingly applied for.

To this course, so far as the appointment of a commission of five is concerned, they were no doubt mainly instigated by Sir Edward Cust's celebrated letter to Sir Robert Peel, dated January 31st, 1835. Sir Edward was, however,averse to the principle of competition in the matter, he would have intrusted the selection of the architect to the commission he suggested. The style of the proposed building was determined by Parliament should be either Gothic or Elizabethan.

On the 17th of July, 1835, the country obtained from the King the issue of a royal commission, to fix the site, and obtain designs for new Houses of Parliament. The terms of the royal commission provided for a selection of not less than three, nor more than five designs, all of which were to be reported to Parliament, and one of the three or five to be definitively recommended for adoption. The acting commissioners were the late Mr. Haubray Tracy, afterwards Lord Sudeley, Sir Edward Cust, Thos. Liddell, esq., and George Vivian, esq., Lord Duncannon being at the time First Commissioner of her Majesty's Woods and Works. Ninety-seven designs, comprising upwards of 1,000 drawings, were contributed in competition for three or five premiums, of 500*l.* each, and after a private view for the members of both Houses, &c., and the confirmation by a Parliamentary committee of the report of the royal commissioners, were publicly exhibited from the 28th of April. The royal commissioners state in that document, approved by his Majesty, and presented to both Houses of Parliament, on the 20th of February, 1836, that "although a difference of opinion may exist between us with respect to the ground-plans separately considered, we are all unanimous in our opinion that the one delivered to us, marked 61, with the emblem of a porcellus, bears throughout such evident marks of genius and superiority of talent, as fully to entitle it to the preference we have given it in our classification; and we have no hesitation in giving it as our opinion, that the elevations are of an order so superior, and display so much taste and know-

ledge of Gothic architecture, as to leave no doubt whatever in our minds of the author's ability to carry into effect your Majesty's commands, should you be pleased to honour him with your commands." The design thus recommended proved to be the one drawn, to a great extent, by the very hands of the late Sir Charles. It is not generally known, but it is, nevertheless, the case, that Barry entertained a predilection in favour of an Italian style for the Houses of Parliament, and went so far, in despite of the formal prescription, as to prepare sketches and studies, some of which are still in existence. The second premium was awarded to Mr. Buckler, the third to Mr. Hamilton, and a fourth to Mr. Railton. It was not from these rivals, however, that the most strenuous efforts subsequently made to wrest away the precious prize from the victor emanated. The battle of the styles appears to have been opened by the late Mr. W. R. Hamilton's first letter to the Earl of Elgin (July, 1836), recommending Greek, and its disciples, Sir Robert Smirke and Mr. Wilkins. Mr. Hamilton's letter was followed by a second in the same year, in February, 1837, and an article on Barry's designs in the "London and Westminster Review." These were replied to ably by Colonel J. R. Jackson, who supported Gothic on the plea mainly of nationality. Mr. Hamilton's views were endorsed by Mr. Wilkins, (under the pseudonym "Phil-Archimedes"), Mr. Grellier, and Mr. A. W. Hake-well; and Colonel Jackson's were anticipated by Welby Pugin and Benjamin Ferrey, who, with T. L. Donaldson, stood up honourably in favour of the execution in its integrity of the selected design, with none of the petty jealousies displayed by Savage, Hopper, Cottingham, Wilkins, and others. Acrimonious pamphlets, in the shape of "observations, apologies, strictures," &c. were freely handed about. Accusations of favouritism were made against Sir Edward Cust on the plea of his having been concerned in assisting in the production, a year or two previous to the competition, of a curious little etching by Barry, now very rare, showing the defects of the lowness of Wilkins's designs for the National Gallery and the effects of a loftier structure. That somewhat satirical performance had offended Wilkins, who had previously come off victorious in a competition for the works at King's College, for which Barry had sent in; and its execution may account for the sharp stings of Wilkins's very pointed pen.

It is curious, in looking over these old controversial wranglings between Goth and Greek, to note how little we have changed. The battle, unfortunately, still wages amongst us at the present moment, and we are obliged to confess that the spitefulness of yesterday, and of many a yesterday, is but a version, with scarcely a variation, of the spitefulness of to-day.

All these hot agitations and hearth-ruminations, coupled with the proverbially feeble administration of the Department of Works, and the slow and desultory action of Parliamentary committees, retarded, more even than the physical difficulties to be overcome, the commencement of the works. Contemporary protests against all this *friction* were by no means wanting, and the following, from the pen of Mr. Bartholomew, is among the most animated, and evinces a just appreciation of the powers of the architect, and the difficulties which lay in his path:—"The nation may take this pleasing assurance," he observes, "that, confided to Mr. Barry, a senate-house worthy of the empire will be produced, with every detail correct, not only in the principal parts of the pile, but also in the most retired parts of it. This excellent architect is rarely found straying from his subject; he studied it like a Freeman of the olden times: the nation should, therefore, second liberally his generous efforts; it would afterwards be very proud of them: it should allow him to build indeed substantially with granite, with Portland stone, and with oak; it should deny him no proper ornaments; they cost comparatively little, and if denied now, regret will be felt hereafter."

In the interval which elapsed between the acceptance of his plan and the laying of the first stone, which took place on the 27th of April, 1810, Barry was, as we shall now see, by no means idle. In addition to the preparation of the vast quantity of designs and working drawings necessary for entering into contracts for the Houses of Parliament, and for carrying on the works he had in hand before the competition, he proceeded, in 1837, to enter actively into the limited competition for the Reform Club, to which Messrs. Boscawell, Blore, Smirke, Burton, Cockerell, and he himself, had been invited. On Wednesday, the 13th of December, in that year, the committee proceeded almost unanimously to fix upon his design, which

was ultimately carried out at a cost of about 80,000*l.* This noble building is so completely patent to every Londoner, and its merits are so universally acknowledged, that I shall offer remarks upon three points only in connection with it. First, then, let me remind you of the entire originality of converting the usual cortile of the Italian palace into an internal and most beautiful hall; secondly, let me call your attention to the perfection of the domestic arrangements, which teaches us that the most minute attention to comfort, and the satisfactory working of utilitarian necessities, are compatible with the exercise of the most delicate sense of refinement, and the hardness of hold and towering genius; thirdly, I would beg to vindicate the memory of Sir Charles Barry from a charge of plagiarism, to the full as absurd as that which has been grounded upon the fancied resemblance of the Pall-mall front of the Travellers' to the Strada Pandolfini front of Raffaello's Florentine Palace. It has been alleged that the Reform Club in some degree finds its prototype in the Palazzo Farnese. Setting aside the utter non-conformity of any two features in their respective plans, let us for an instant compare their elevations: the one contains thirteen bays in width, the other nine. Both are three-story buildings, with large crowning cornices, and there the resemblance ends. Every detail is absolutely different, and let me add that I do not think that Sir Charles Barry ever did or ever could copy: his whole system of working was opposed to anything of the kind. Should you ever have the opportunity of tracing out the progress of his thoughts, as I have frequently, and as no doubt all his pupils have, through any series of his studies for any particular building, you will find that the work is always, as it were, growing evenly under his hand from the slightest generalization in the first small scale sketch to the large scale detail; then back again into another general elevation, to see how far that particular detail will work well in combination, then altered according to the result of that test, and roughed out again to a large scale, to make sure of the effect of the parts when near the eye; and so on frequently until his fastidious judgment would get almost bewildered under the multiplying and conflicting impressions produced by the various studies. The man who works in that way perseveringly may at least make sure of two things,—that his work will be good; and that it will be his own and nobody else's.\*

#### SUGGESTIONS ON ARCHITECTURAL COMPOSITION.†

ALL honour to the memory of Sir Charles Barry! To-day we have paid a last tribute of respect to his remains. The gathering was one of universal feeling, showing that the world had lost a great man; and all those present who understood and appreciated his genius must have blended a feeling of pride with their sorrow—pride, that his merit had received these last honours so justly due to him—and sorrow, that so bright a career was so early and suddenly terminated. The proud pageantry has passed, but his name needs no association with the great and august in the venerable Abbey—no engraving on the cold marble of empty eulogy: it will be ever associated with our art and engraved on our memories. All honour to the memory of Sir Charles Barry.

In presenting to you this evening some suggestions on architectural composition, I am actuated by no wish to press my opinions before those of established authority; nor have I any desire to dogmatize upon our art; but as one sincerely zealous in the promotion and elevation of architecture to its proper position among the other fine arts, I trust you will accept my crude notions in the spirit, rather than the letter, in which I am desirous of rendering them.

To within a few years, architecture, although acknowledged as a member of the sisterhood, has scarcely held the position of a fine art by the mode of treatment she has received. Too much has been given to rules, and too little to principles, by which compositions have been regulated; and although the former should govern the latter, it is too painfully evident that rules have mostly swayed the art.

In the study of architecture every known work extant should be carefully examined, its objects

\* To be continued.

† Read by Mr. E. B. Lamb, at the Architectural Exhibition on Tuesday evening, in Mr. Edgar Hall in the chair. The addresses of the holders of season-tickets not being known, the committee were unable to alter the arrangement for the lecture of Tuesday, as circumstances of the day would have dictated.

and intentions investigated, its position scanned, the cause of its excellence inquired into,—why its locality was determined upon,—and why the composition assumed a character and expression, which drew our attention to it. Yet should we be careful in this investigation not to misapply our knowledge of the past, but to use it in comparing and ascertaining if we have advanced in the same ratio as was evidently the case in preceding periods;—if we have composed our works upon the principles which governed the compositions of our forefathers,—if we have introduced any new features which the alterations of the requirements of society have demanded,—if we have produced any new works that will live in the estimation of posterity.

Composition in all fine art may be defined as the combination and arrangement of several parts to form a harmonious whole; but frequently the architect is cramped in his composition by circumstances and things over which he has no control. Not so the painter, who may take his flight in any direction: the wide expanse of nature is ever open to him to select and arrange to the utmost extent of his imagination: he knows no bounds but the limit of his canvas. Although the compositions of the architect are frequently fettered by the limit of his means, the difficulties of the arrangement of plan, and the materials for his use, he has still to bear in mind that, like the painter, the same principles of harmony should pervade his whole work. Then, indeed, he may give latitude to his imagination either in simple or ornate detail, according to the exigencies of the subject, which would result in a good work irrespective of style.

Composition in architecture may comprise the appropriate adaptation of known or ancient forms to particular purposes, or the reproduction of the characteristic features of a past style of architecture; but, where those features are reproduced without regard to the changes of customs in modern times, many incongruities will necessarily arise. Then it becomes necessary to resort to inconvenient and expensive expedients to carry out the reproduction, such expedients showing clear testimony that the composition has been misapplied, and ill adapted to its purpose. Architecture is a progressive art, and there is no instance on record in former ages of a retrogression in art, or a reproduction of the works of former times. Even now we should think little of the genius of a painter or sculptor who could only produce copies of the eminent distinction of a poet. Yet, in the present time, architecture is rarely commended unless it bears indelible marks of some ancient authority from which it is taken; nay, the efforts at original thought, and where a disposition is evinced to shake off the trammels of precedent, meet with doubt, distrust, and ridicule, however well the works may show the evidences of the deep study of principles, and however suited they may be to the wants and requirements of the present time, or the circumstances by which they have been governed. It may be said, "Why is this?" Why is architecture to be levelled from its elevated position among the fine arts, and reduced to the degraded position of mere precedent? What does this arise from? One thing, probably, it may be. At present we have hardly ventured out of the leading-strings of the mechanical diets of former training: few have dared to traverse the paths of original thought: few have dared to shake off the fetters and enter the broad field of invention. Constantly we hear works spoken of as "founded upon some ancient temple or church, and the nearer the approach to the original type the more laudatory the criticism; the comparison gives a handle to remarks, although the reproduction may be replete with incongruous expedients, which render all pleasurable applications of the ancient art a botch and a bungle.

The works of former ages were frequently beautiful, because they were consistent. The artists of those times blended the forms of beauty and harmony in art with the conveniences which had resulted from long and successive improvements in the requirements of society. The occupants of the houses of the middle ages required protection, warmth, and security: they cared little for extensive views from the windows: in fact, views were denied them, from the necessity of enclosing their houses with high walls: glass, too, was of inferior quality, and only procurable in small panes, and at great cost. We cannot, however, close our eyes to the stubborn fact, that as men began to fear their neighbours less, they threw down by degrees the barriers which shut them from the beauties of the landscape: then,

too, a desire sprung up for a more convenient and agreeable arrangement of the window: the natural, although not the most tasteful, method ensued for this object: the mullions were knocked out of the windows, and the sash was introduced. This practice was quickly carried out to a very great extent, not only in this country, but on the continent, and which was no doubt strengthened by the general introduction of Italian Architecture: this added to the ruthless destruction: in some instances the mullions became more attenuated before their entire demise, but at last so reduced that they fell away altogether; and the vulgar sash usurped their place. And so, following on the same broad principle, in the ordinary course of events, almost all towns underwent great alterations: the houses were rebuilt or considerably modified, but no mullions were used in the windows, and the high-pointed arches were reduced to flat-headed openings. Casements, which were then, and still are, but clumsy contrivances, soon gave way to the much more convenient sash. It may thus be fairly said, that the attack upon the art at the time of the introduction of the sash was a fatal blow, for it took from Gothic architecture one of its most vital elements.

In more recent times, the desire to revive the architecture of the middle ages has brought with it the difficulties and inconveniences which caused the fearful havoc I have just spoken of among the mansions of the olden times. The mullion is still a difficulty, and the sash is its antagonist. This, coupled with the now almost universal use of plate-glass in large sheets, must result in its disuse once more—perhaps not in the same unceremonious way in which our ancestors solved the difficulty, but in some way that may allow us to use Gothic architecture in a modified and progressive state, without entirely divesting it of its most leading and characteristic feature.

Almost every practical architect has felt that his hands were tied when compelled to use Gothic architecture in its antiquarian and not its artistic form. How many of us have introduced a double mullioned window—that is, a stone one outside, to satisfy authority, and a wood one inside, fitted with sashes for the convenience and comfort of the inmates. This mode, when money is plentiful, may be well enough, and who but the owner should complain of the cost? not so, however, when the greatest effect is to be obtained for the smallest means. Such lavish expenditure could not, then, be tolerated. Then comes our trouble, the mullion and the iron casement, for at present there has been no substitute to take its place, at about the same amount of cost. But suppose we get over this difficulty, we have other objectors, who love the works of the old masters, and wish to emulate them; but they object to mullions. This is no exaggeration: it is what I have experienced, and I have no doubt others have been in the same position. Some years ago I erected a Gothic building in the country, but, before its entire completion, circumstances occurred which rendered it necessary that the property should be sold. It changed hands; and, when my Gothic building required to be completed, every obstacle was removed to render that completion as reasonable in cost and convenient in its appliances as possible: the mullions were knocked out, and the convenient sash fixed in their place. As may be supposed, my astonishment was great, when, a few years afterwards I passed by my Gothic building, which had then assumed something of the appearance of those of the mansions so industriously mutilated a century ago.

In the present day the same cry is raised against mullions, in many instances, perhaps, with little reason, and the difficulty has, in some measure, been met by the application of an earlier or foreign style of Mediæval art. There can be no doubt that the style of the thirteenth century would admit of an easier mode of arrangement of windows, because shafts, and not mullions, were then used, which would allow of the sash being behind the shaft, and unconnected with it, and wide openings would be admissible in that style without shafts; yet it would be a double window, and that would hardly be in the spirit of the old style, or consistent with reasonable practice, and could surely not be mistaken for a resuscitation of the art in its fullest integrity. Would it not appear very little better than the mere Act of Parliament gaps? Would it not rather harmonize with the modified and now generally accepted Italian style rather than the Gothic? Would it not be an Italian skeleton in Gothic habiliments? It could hardly be considered a healthy state of art, but would be, after all, a mere sham, and that sort of transparent sham that would leave no doubt upon our physical or mental

vision. I should be bold indeed were I to say that all styles have been "used up," or that I had little respect for the art of past ages. This, however, is not the case. I venerate the relics of those times: I have the deepest feeling of respect for the men whose minds have produced such marvellous works; but my respect and veneration give me a desire to emulate them—to dive into the thoughts that spangled the world with such gems: I would study their art, that I might think in their art: I would sit at the board with them: I would not be their outside lackey.

I cannot help thinking that a time is not far distant—may, I almost see it springing up already—when architecture will be studied with more attention to artistic principles and less to precedent. Then will be generated a style of art in which the thoughts of the old minds may be fairly united with young ideas.

The greatest stumbling-block to the reproduction of Gothic architecture is the mullion. It is the monster ever before us. How, then, shall we overpower him? Not, I fear, by a mere imitation of any known style of art. It must be by a progressive development of art out of the wants which knowledge and refinement are constantly creating. Then let us fearlessly grapple with the subject: let us unite, in our transitional state, the past with the present, only compounding out of the good material ideas which might have arisen if similar circumstances required them in the olden time; but let those ideas be free, unshackled, unprejudiced, and only restricted to the laws of harmony, of form, colour, material, and construction. I would borrow ideas from all ages, but I would not take a whole building: I would endeavour to use those ideas so as to produce the same amount of artistic effect as I found in its prototype, whether the style be Gothic or Classic. Few would inquire where the knowledge was obtained if the effect produced were likely to be satisfactory and permanent.

That all art declined about the sixteenth and seventeenth centuries is generally admitted, and that it is now in a state of transition. Within the last twenty years, much has been done to bring into use more artistic principles in composition, than had taken place in the years immediately preceding; and I think there can be little doubt that, in any new amalgamation of style that may arise, the principles will be founded upon Gothic architecture, as the most plastic art, and the most suitable for the application of the native materials; but, although the style may be Gothic in principle, I can scarcely think it will be Gothic as now applied, but one that will date its revival from probably the point where it may be said architecture as well as the other arts stopped. About the seventeenth century, or the Renaissance of France, the style of that period may be considered a transition from the Gothic style, out of which the perfect style is yet to be developed. It is pliable, admits of great variety of form and pictorial effect, frequently elegant in detail—although sometimes coarse—suited to the material of any district of this country; truthful in construction, and capable of receiving an amount of coloured decoration that would satisfy the most vivid imagination. It is a style fitted with its sire, and one that might be moulded into beauty, breadth, and dignity, as well as pictorial effect.

It is not my intention to advocate the style of architecture of the sixteenth century, but merely to show that that was the point where art may be said to have declined, and where progression should recommence. I would not advocate any style in particular, as all style must depend upon the natural or rational application of the materials of a country, which necessarily constitute a national architecture. In all countries this fact is evidently and fully developed, and any reproduction of a style of art not indigenous would render the application of the native material difficult, dangerous, and inconsistent: comforts and conveniences would be outraged: artistic effects would be false and unconnected; and the whole of the natural laws of the beautiful and the picturesque, viz., harmony, and unity of science and material, would be destroyed.

We cannot dwell too much upon these truths: at the present time, the unsettled state of the question of "style" has been the cause of the introduction of designs, in architecture, of such a variety of nations and periods, that we not only regret the want of pictorial effect in our streets, but we are absolutely offended at the violent contrasts exhibited.

The artist leads the public by his knowledge, taste, and skill: it is incumbent upon him, therefore, to produce such works as will impress them with a certain conviction that what he does is not

only useful in every respect, but is also in good taste; and, if a universal tone of feeling could pervade the professors of art, there would be universal harmony in our edifices—the various compositions would blend in one pleasing group, yet each individual might be stamped with genius and originality incidental to the requirements of the subject. That this feeling was the case in former times, the researches of the antiquary, and the illustrations they have presented to the world, amply testify.

The different modes of treating *one style* by our forefathers form inexhaustible subjects for study, both for the architect and the painter; but, in our time, the diversity of feeling and opinion on this matter, I fear, only tends to the fact that there is too much desire to produce variety by the introduction of new styles, and too little knowledge of the proper and artistic mode of using them.

It would be inconsistent in an artist if he confined his attention to one model or to one subject, instead of gathering his ideas from the various forms and incidents constantly presented to him: his work would not only become mannered, but monotonous and wearisome in the extreme. He would be like a bibliologist who could see no beauties in books that were not printed in black letter. Equally inconsistent would be the architect whose mind was only stored with the architecture of one country or one period: it would be unfair for him to adjudicate on other works, or attempt to set up a standard of aesthetics: he could have no enlarged views of artistic beauty, and he closes his mind to an extensive field of operation, the study of which would enhance the value of his labours.

The battle of the styles, as the present controversy has not inaptly been called, can scarcely be termed a battle to obtain a victory favourable to art: it is rather a conflict of prejudices between antiquarianism and militarism; it is a fight between things as they are, and which common consent and convenience have made them—and things as they were, which require so much cutting and contriving to render fit for our purpose. It is not so much the contest between the two great divisions of style, as the rational development of a new style, or a consistent and characteristic decoration of the vernacular style, which the everyday requirements of the present time have rendered useful, and are still rendering more useful, although not in all instances beautiful.

In all controversy upon the vexed question of style, I know of no artistic champion who has entered the lists on either side. I know of no statement why one style is preferable to the other as a work of fine art. It is true that the term "most beautiful" has been largely applied to each, but upon what grounds, has not to my knowledge been stated: such terms are too frequently misapplied, and become dogmatical, and are too apt to mislead the great bulk of the public, who are unacquainted with architecture as a fine art, and scarcely think for themselves, but are content to let those who appear to know more think for them.

Let us, however, endeavour to treat style as it ought to be treated. When in reference to the preservation and restoration of works of past ages, which have been acknowledged by all to be worthy of preservation, let us fully enter into all the details, so that they may be still preserved for future ages, to show how our forefathers *did* think at a particular time, and for a specific purpose; and to show also when that purpose was answered, and other circumstances required new thought—how they abandoned the old habits for new,—not suddenly, or by total obliteration, but by an engraving of new ideas upon the old stock, and thus yielding new shoots. It was not abrupt and discordant: it insinuated itself, as it were, into a fraternization, and became part of the old family: more vigorous, perhaps, more refined—it was an advance upon the past. Why, then, should not the art at the present time insinuate itself into the good forms of all past periods, and become part of that great family, but vigorous and healthy in its development, instead of the rickety apparition and crippled representative of the venerable Paternosters? Why should he not clear away the mere shadows of antiquarianism, and try to direct our thoughts to the same principles which then governed art? Each particular age bore its characteristic distinction: it was one art—one great thought; although, as we know by our researches, we may call it a dream of one feeling, but of infinite complexity—tangled, yet distinct.

The laws of the beautiful are equally applicable to all art at all times, but styles in art were

created by various circumstances at different periods, the result of the advanced condition of society, and its union with mechanical science and manufactured products, and although art in its progress will necessarily be tinted with preceding styles, yet it may contain much original conception. It would be as inconsistent to condemn one style as another, when perhaps the modification of either or both might form a suitable basis for a transition style to meet all our wants. A mere repetition of past art can only be called antiquarian architecture; but a blending of all the ideas we can obtain in our harmonious composition, so as to suit the exigencies of the present time, would do much more towards a legitimate revival of fine art than all the quackery of authority, which shows so little inventive power or artistic skill.

Out of the natural or rational application of the materials of a district or country, an individual style of architecture might again arise: the evidence of past times attest this truth; but any reproduction of a style of art not indigenous would render the use of the native material difficult, dangerous, inconsistent, and costly: art and science would give way to expeditious comforts and conveniences would be shackled, artistic effects false and unconnected, and the whole natural laws of the beautiful and picturesque would be annihilated.

The habit of observing and admiring antiquities—the associations they engender—their pictorial effects—their harmonious grouping and blending of colour, too often fill the mind with crude and false notions of what such works would be if reproduced for our modern institutions and domestic edifices: such reproduction would frequently want the charm and picturesque effect the old types have acquired, by mouldering decay, roughness, and discolouration.

There is a generation attached to ancient art which frequently gives it a value beyond its artistic merit. As historical records, all works of the past have intense interest, and well repay the antiquary's pursuit: they possess, too, for him, a feeling unknown to ordinary observers; for he can fathom, in the overturned fragments and mutilated sculpture, the thoughts of a generation long since perished, perhaps only recorded in those remains. But, if he does see beauty in a grinning gargoyle, or a royal statue with an arrangement of bones and muscles nature never authorized, and if we cannot agree with those opinions, at least we must admire his zeal in a cause which prepares the way for other reflections; for architects should examine, pursue, sketch, and store, yet dispute the agglomeration—forget the historical interest, and only use those ideas where excellence and beauty abound, and which would bear the strictest test of architectural criticism. The ancient art should be collected as tools of thought, by which may be wrought the noblest works. "Instead of copying the touches of old masters," says Sir Joshua, "copy their conceptions." Yes: enter into the spirit of their imaginations, and not into the letter of their remains: think with them. "The real trouble of all professions," says Barnett, "is the trouble of thinking."

There are two great and main systems of architecture: one which has a decided tendency to horizontal lines, and the other that partakes of a greater inclination to vertical lines; yet at particular intervals they merge into each other. The one great division is generally known as Classic art, or the trahested system; the other Gothic, or Pointed.

The Early Classic type may be fairly considered as a system of strong contrasts. It consisted of a series of blocks, at various intervals, set upon each other or forming massive walling; and in regular positions spacious voids were arranged for windows and doors.

Classic architecture, as it is now understood, comprises an extensive period of art of an early character, as well as a more modern application of the style; and although in this range the character is greatly varied, the principal features and leading forms are the same. The column and entablature are used through all the periods, and the general deviations are in the forms of openings, in the use of the dome, and the building a series of stories, one above another, each containing a single order.

Yet in various degrees of beauty, through the whole development of the Classic art, the compositions were generally harmonious; and those who can see beauty in all fine works will look with enthusiastic pleasure upon the early Classic architecture, nor will they allow one deduction from the merited commendations that system has received. Yet Classic art is difficult of application in this country without considerable modifica-

tion; and when such modification has been made by men of genius, we lose the ancient type, except as a progression in art, and obtain much originality of feeling, uniting with convenience of arrangement and general unity in the composition. The works of Wren, Hawksmoor, Vanbrugh, Inigo Jones, and others, show to what extent the Classic art could be modified in such hands. Yet still they were trammelled, and followed to a great extent the laws laid down by the Italian architects. They rarely ventured to deviate from the five orders, and scarcely attempted to overcome the difficulties of construction when carrying out the entablature in its full authority. We still see the combination of stones with vertical joints stretching from column to column: in some cases the joints of the stones radiate from a common centre, but still the soffits of the architrave is horizontal, the effect of which is to give the appearance of a deflection, if not an actual one in the architrave. The materials of this country will rarely admit of large stones being applied, as in the original type of the Classic art; hence arose some modifications, but these did not go far enough.

It must be admitted that the introduction of Grecian architecture in more recent times rather retarded than advanced the legitimate use of materials; showing that however much the temples of Greece deserve our study, they are unfitted for English houses. The Greek temple style, however, had a short reign: it was sought by us with avidity: its details were used in every conceivable position and utensil: it remained with us long enough to show its utter unfitness for our purposes in its perfect state: it left us as suddenly as it came, and is now almost entirely disused: still this style contains the elements of beauty in design, and harmony of form which no unprejudiced artist can deny. And it would be well if we were to study its adjuncts, its decorative perfection, and its basso-relievo: these mark their perfect union with the architecture, more by a similarity of breadth and simplicity in their composition, which is in harmony with it, than an immediate connection by an absolute union with its parts. The sculpture also possesses the great merit of simplicity of drapery, and correctness of development of the human form. It would be well if this union of the sculpture and architecture in a building were more carefully studied by our artists, so that that vexed question, "Is Gothic architecture in union with the highest class of painting and sculpture?" might be at once settled. The sculptor and architect of the Greek temples seemed to work with one mind; not so, however, the architect and sculptor of the present time, for the sculpture is either so antiquarian that it would be difficult to define the outline of the human form from the multitudinous folds of its ample drapery; or it is designed on such high-art principles that its position would be quite as unsuitable in one place as another. Let it not be thought that I intend to disparage the works of the sculptors of our time. I ask only for a unity of thought between them and the architects, and for them to descend from their high school of art to our humble sphere, so that their labours should merge into the ever-growing and progressive changes of architecture. May I, without offence, say that sculpture is a decoration of architecture and should be in harmony with, but subordinate to it; and that architecture is not a mere frame for the exhibition of sculpture. In the spirit of unity, the two arts should go hand in hand.

The later division, but before the Grecian mania, of classic art, or rather the skeleton of the art, was a style again used up to a very recent period, and, by its almost universal application, is evidently suitable to our wants. It had before been the cause of the fading away of the Gothic art, and little remained unaltered, except in Ecclesiastical architecture; for it was less necessary and more difficult to alter these buildings to the same extent as those of a domestic character.

It is easy to talk of the ugliness of our "hole-in-the-wall" street architecture, but for a large town built under similar circumstances, as most of our towns are, could Gothic architecture be admitted? No doubt we could build our gabled or embattled elevations—our oriel windows, our buttressed walls; but I fear this, too, would soon become a pattern for lachal property; and, if not too expensive, we might see infinite rows of Gothic houses in place of our present dingy structures; but we have limited space and means as well as the fear of the Building Act before our eyes.

The custom of knocking out the mullions of the Medieval windows caused the vernacular art to assume more of Classic character than Gothic;

and as the great majority of town houses partake of the former type, any attempt at change would, I fear, only result in establishing the unsuitableness for its purpose.

Inquiries of this nature are necessary to show to what extent any known style would be applicable to modern uses: hitherto, however, all reproduction of any style of architecture in its unaltered state, has been utterly futile when found to unite with our customs and appliances. Sir Joshua again expresses my own feeling where he says, "That which is most worthy of esteem in its allotted sphere becomes an object, not of respect, but of derision, when it is forced into another to which it is not suited."<sup>78</sup>

#### THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary meeting of members was held last Monday evening at the house in Conduit-street, Hanover-square.

The attendance of members was large, attracted by the desire of seizing an additional opportunity to pay a tribute of respect to the memory of one who had so recently been removed from the profession, and the features of whose life were, as had been previously announced, to be brought before the Institute by Mr. Digby Wyatt.

Mr. C. R. Cockerell, R.A., president, took the chair.

Mr. T. H. Lewis (hon. sec.) announced, amongst other donations, a work of the president's, containing drawings of the temples of Jupiter Panhellenion at Egina, and of Apollo Epicurius at Bassa, near Phigaleia, in Arcadia, the gift of the author.

Professor Donaldson, in proposing a vote of thanks to the donors, who were thereby improving the already valuable collection of the Institute, referred to this work, which he said was the result of the labours of thirty years. The President had been one of the noble band who first brought to light the hitherto undiscovered architectural treasures of Greece, and throughout his life had been intent in carrying out the principles which were contained in the letterpress now presented. There was an imperfection in the work which he would take the liberty of pointing out, but which the President could remedy—the absence of the author's autograph.

Mr. Penrose, in seconding the vote of thanks, felt himself privileged to testify his admiration for the President's labours. He (Mr. Penrose) was an humble follower in the same field, and revered the Parthenon, and those who had investigated its mysteries.

The President said,—"I am extremely flattered by the kind reception which you have generously accorded to my donation. The work ought to have appeared many years ago, but you, who follow our fastidious art, must know the difficulties which exist in bringing out such illustrations. I thought before I went hence that I should leave some memento of the scenes of many pleasant days of labour, which would interest you, and which some of my younger brethren might investigate more fully. I have now the pleasure of calling upon Mr. Digby Wyatt to read the notes which he has collected on the life and labours of Sir Charles Barry."

Mr. Wyatt then read the paper, the commencement of which, *in extenso*, we have given elsewhere.

The deep feeling under the influence of which Mr. Wyatt concluded his remarks pervaded the meeting for some time. The silence was broken by

Mr. Beresford Hope, who, in proposing a vote of thanks to Mr. Wyatt for his interesting lecture, said that the meeting owed him a debt of gratitude for that labour of love which he had discharged with so much dignity, such deep solemnity, and that playful fancy which best suited the sacred occasion. Those who knew Sir Charles Barry personally—and he believed that many of those present had enjoyed the privilege—as well as those who knew him only through his works, would cordially follow Mr. Wyatt throughout the notes which he had read. They would, with him (Mr. Hope) see in them the foundation for a large memoir of one who ought not to be allowed to go down to posterity known only by the inference which his works would afford. The history of the competitive struggle in which Sir Charles's claim to rebuild the Houses of Parliament was finally settled contained the Battle of the Styles—a battle which at the present time was raging no less warmly than then, for some (said Mr. Hope) are Greeks, and some are Gaths. It was well, in the dispensations of Providence, to be called upon at times to forget these differences, and to feel that

\* To be continued.

in one common feeling we could gather round the bier where departed worth was laid. He was sure that this united feeling would be uppermost in every one's mind to-morrow; and that in meeting together to follow to the tomb one who belonged to his country, not one thought would arise to jar upon the solemnity of the sad occasion.

The President, putting the vote to the meeting, said, it is impossible for those who have traced the course of our deceased friend not to admire the care with which Mr. Wyatt has followed out the progress of his life. It was to be regretted that there had not been time to enlarge upon those qualities of mind which endeared Sir Charles to all who knew him. His well-known integrity, in carrying out the great contracts with which the nation entrusted him, his consideration for all about him, united with an authority which betokened the great mind that all felt it their duty to obey, were points in his character familiar to those intimate with them. I have had the privilege of knowing Sir Charles for a long time. I remember when he returned from his travels, and have seen him entering upon or carrying out the most of his works since. I do hope that the paper of this evening will be the commencement of a memoir which will furnish the reading public with an historical account of our departed friend.

A gentleman in the body of the meeting here announced that a Life of Sir Charles would be drawn up by his sons,—the Rev. Alfred Barry, of Leeds, and Mr. Edward Barry; and by Mr. Wolfe, whose early association with Sir Charles would enable him to supply many interesting particulars hitherto unknown.

Mr. Talbot Bury said that, as reference had been made to the familiar friendship which had sprung up between Sir Charles and Pugin, he, as the friend of the latter worthy, might allude to the intimacy which had existed between the two. He believed that it had commenced at the time when Barry was occupied with the erection of King Edward's School, Birmingham. Pugin was engaged in the details, and ever expressed his pride that he could lend any aid to Barry, whose mastermind he was not slow in observing. It was a conversation between these two (Barry and Pugin) which led to the design for the Houses of Parliament being changed in style from Elizabethan to Gothic. In a conversation which he (Mr. Bury) had once with Pugin he recollected the feelings which his friend exhibited on seeing Barry's design for the new Houses: he said at once that he must yield to higher merit, for that Barry's plans were complete. The friendship which had existed between them continued until Pugin's death: at his funeral Sir Charles attended as a chief mourner, and none was more sincere in his grief. That great man laid his greatness by, and put on the humility of sorrow at the loss of his friend, and he was sure that at to-morrow's mournful rite a like humbling sadness would pervade those who had attended to see the last of one whom they had admired whilst amongst them.

Mr. Digby Wyatt, in calling the attention of the meeting to the series of designs which had been made by Sir Charles for the new Foreign Offices, and which, though they were exhibited in Westminster Hall at the time, might have escaped the particular attention of some present, owing to their being surrounded by numbers of similar sketches, expressed his conviction that these would be cared for and preserved, and that in time to come they would be regarded with the same feelings as the present age looked upon the plan of Sir Christopher Wren for the rebuilding of the City.

Mr. Edwin Nash remarked that Sir Charles had not been engaged in the addition to St. Thomas's Hospital, as had been stated in the lecture, and in the *Builder* of last week.\*

Mr. Edward Hall observed that an impression certainly existed that Sir Charles Barry had in some way been connected with St. Thomas's Hospital at the time of its erection.†

\* Mr. Nash writes to us thus:—"In the excellent memoir of the late Sir Charles Barry given in the *Builder*, you enumerate amongst his works 'a new wing and other works to St. Thomas's Hospital.' If this be intended for the hospital in Southwark, it is an error. The wing was part of a general plan for a new hospital designed by Mr. Samuel Robinson and his partner, Mr. James Field, the then surveyors to the charity; and the plan and constructive details of the design were designed and carried out by them, but their elevation having, at the wish of the hospital governors, been submitted to Sir Robert Smirke, he made drawings modifying the exterior only, and it was built according to Sir Robert Smirke's external design."

† After a second inquiry, we have no doubt that Barry was at least consulted respecting the design for part of St. Thomas's Hospital. The drawings were at his office, and our informant well recollects work being done at them. After the explanation of Mr. Nash, however, it would be erroneous to include the wing of the hospital, or any portion of it, amongst Barry's works.—Ed.

Mr. Scott was called upon by the President, but declined, under the saddening influences of the present time, to make any remarks upon one whom he felt himself unequal to speak of in proportion to his high deserts.

After some further observations,

The Hon. Secretary announced that the paper "On the Origin and Development of the Use of Crypts in Christian Churches, from the Earliest Period," which Mr. Arthur Aschitel, Fellow, was to have read this evening, but which was postponed in consequence of the desire that some notice should be taken at so fitting a time of the life and labours of Sir Charles Barry, would be brought before the Institute at the next meeting, on June 4.

The following gentlemen were, on ballot, elected Fellows of the Institute:—Mr. William Burges, of Buckingham-street, Strand; and Mr. Edward Roberts, of Holles-street, Cavendish-square. Mr. Hartley Burgess, of Walbrook, City; Mr. Frederick R. Kempson, of Gordon-square; and Mr. Martin Underwood, of Denhigh, North Wales, were elected Associates.

#### THE ARCHITECTURAL DRAWINGS AT THE ROYAL ACADEMY.\*

The notice of the drawings at the exhibition in Trafalgar-square, in our last number but one, left undescribed several important designs for works of ecclesiastical architecture and subjects of a different class. Mr. Aschitel's "Design for the Restoration of St. Margaret's, Westminster" (650), is for a building, professedly in the spirit of the style of the church as it was rebuilt a short period before the erection of Henry VII.'s Chapel, and as it remained till "about 1700 years ago," when "the present Batty Langley casing" was substituted for the previous work. That there are sufficient data for "restoration" is doubtful; and assuming that argument is drawn from the interior in favour of giving a particular character to the new exterior, we hardly think Mr. Aschitel has produced a design that should be adopted, at least in the details. Not only could equal or greater effect have been obtained with less work—which some would call defect of the style; but the whole details in the design have something of the character that is condemned in work of the period of 120 years ago. The open canopies of the windows, with the parapet of the aisles; the clerestory parapet, and the open-work spire, could certainly be improved; whilst the spire, as in too many other works, is set on the tower rather than grouped and connected with it.—Messrs. Hadfield and Goldie contribute (656) an "Interior View of the Chancel of the new Roman Catholic Church, Lanark," a building for which "Studies" by Mr. Goldie, in the Exhibition in Conduit-street, have been already noticed by us. The drawing at the Academy is not altogether favourable to appreciation of the work; and some parts of the design cannot be approved of. The sculpture of the reredos is too archaic, judged from any other point of view than such as the sculpture of the Saviour on the Cross with what might be called an excess of ornament; and the scroll ornament to the wagon-headed vault is slightly too much in resemblance of door-hinges, as those of buildings of the same geometric "Decorated" class. These, however, are only deductions from general merit of the work. There is a good geometric-traceried circular window under pointed arch mouldings, over the reredos. The "South-cast Prospect of St. Peter's Church, Pfishboro, Dublin" (697), however, we must regard as a poor representation of a building which, at least, wants greater union than is apparent in the eastern end here shown. We cannot but think there is some need to draw the attention of many of our architects of churches, to a similar defect in grouping of the several parts of plan where a design includes aisles and other adjuncts to the chancel.†

\* See page 299, ante.

† We may take this opportunity of saying to correspondents who have addressed us on the subject of our remarks on Messrs. Hadfield & Goldie's drawings in the Architectural Exhibition, that we have neither used the words nor expressed the opinions stated as ours. In one case we gave a favourable opinion of certain features of the design, and a different opinion of others; and far from speaking of the whole design as a *masterly and finished production*, we expressed no opinion except to the extent now stated. In the case of the design for the Cork church, which we called "preliterate," quoting from the catalogue, we pursued a similar course as to the exterior; and we limited greater or more general approval of the interior, of course to the interior only. Our opinions may be freely canvassed, but, whilst we have lost no opportunity of indicating the necessity for taking into consideration all features and attributes of a design before

The view of "St. Augustine's Church, Dublin" (657), exhibited by Mr. E. W. Pugin, represents a design by Messrs. Pugin and Ashlin. The building is, we suppose, the lately erected; but by one of those omissions which we have frequently mentioned, the catalogue does not inform us on the point. The whole western end of the church for the space of one bay of the aisles, rises to the height of the clerestory, so as to form a transept on the western extremity of the plan; whilst the tower rises still higher, and is oblong on plan—being carried upon one bay of the nave. The roofs of the transepts are bipped at the ends, and the tower is crowned by a high-pitched roof, on a similar plan. There are three doorways, and windows over them, the centre being made prominent by a lofty arch, the window under it circular. The whole west end, as shown, has considerable novelty and merit.—Mr. W. Smith's "New Church at Norwich" (665), now being erected from his designs, has a polygonal apse, and at the east of the nave a low tower, which is effectively treated,—the square form, with pinnacles, being gathered into an octagon, and terminated by a pyramidal caping.

"A design for the completion of the interior of St. Paul's" (670), is exhibited by Mr. F. C. Penrose. It will attract the attention which the subject, and indeed the design, deserves. The drawing, however, being rather sketchily made, and being a section, and therefore particularly inadequate to the representation of a future effect of such a lofty interior seen from the floor level, is under many disadvantages, exhibited any where but in the building itself. The intention of the design is to carry out the proposal of Wren, as mentioned in the "Parentalia." Wren's intention, as there stated, was "instead of painting in the manner now performed, to have beautified the inside of the enpola with the more durable ornament of mosaic work, as is nobly executed in the cupola of St. Peter's, at Rome;" but the quotation continues, "as this art was a great novelty in England, and not generally apprehended, it did not receive the encouragement it deserved." We have here no information on the question of appropriate character, or that irrespective of vehicle, which is the most important question. It is plain, however, that if Wren had had advantages which are part of our progression, he would have refrained from any implied approval of the work of Sir James Thornhill, which is based upon a principle that, however fortified by the name of Michelangelo and the example of the ceiling of the Sistine Chapel, is wrong in principle so far as it seeks to destroy the effect of the structural form and surface, rather than to bring the pictorial into harmony with the structural, and misconceives the office or limitation of each art, by making the pictorial representative of framework, or making that which professes to be structural merely an imitation. The general question, however, and the special one of the decoration of the dome of St. Paul's, have received so much attention from us that we need say little more than that Mr. Penrose's design starts from the correct basis of principle, and is in the main worthy the object. Whether the design meets the requirements of taste, so as to entirely harmonize with the work of Wren, we can hardly say at present. The dome generally is correctly treated; but there are some differences of scale in the figure subjects, and some results produced by the pictorial part of the decoration upon the scale of the building, which should be further considered. It may be supposed that besides what is due to Mr. Penrose, we see here some results of the counsel of others, as that of the architect lately lost to us; under any circumstances therefore, we prefer to direct attention to the drawing rather than to criticize the design at length. We may say, however, that if the drawing be correct in showing gliding used on portions or edges of the leaves, instead of for the whole leaf or background, such use of gold is one of the mistakes that we hoped had been corrected. We rather think also, there is in minor parts, some indication of pictorial imitation of framework, notwithstanding the general absence of that. The dome is divided into panels by thin lines of blue, with red. At the base of the dome, somewhat in the position of an attic to the tambour, there is a circle of half length figures, on blue backgrounds, under arched framework. Panels with subjects on blue or gold backgrounds, red or green

deciding on its entire merits, and equally have felt the claim to appreciation of merits which may exist along with defects, we suggest that our friends in future should read what we have written ere they deem it necessary to quote to us what may prove to be, as in this instance, entire fabrication or the result of misconception.

backgrounds to the sculpture, and pictorial compositions on the domical soffits at angles of the rotunda, are the other elements of the design—which however altogether, should be examined rather than taken from any description that can be given in words.

No. 692 shows an exterior view, and No. 696 an interior, of the church of St. Paul ("Decorated" Gothic), now being erected at Maidstone, Messrs. Peck & Stephens, architects; and No. 693 is an "Interior View of a new Church in Tottenham-park, for the Marquis of Aylesbury," in a similar style, by Mr. T. H. Wyatt. Talent is displayed by Mr. F. T. Gompertz in his design (651) "for a Cathedral of the Thirteenth Century." Spires are shown at the transepts, as well as in the usual positions in the plan. Mr. W. G. Habershon's restorations and new roofs of Sandy Church, Beds, shown by an interior view and a plan (686), appear to have been conceived with judgment. Messrs. Walton and Robson should be commended for an endeavour to work in a path of their own. This is manifested in their "Shops recently erected at Folkstone" (653) for Mr. W. Garstang, as also in their works represented in the Conduit-street Exhibition; but their window-dressings and cornices have much of that heaviness which is found in many designs that attempt decorative brick-work.—"The National Schools, on the Boundary of the Park, Dynevor Castle, Carmarthenshire" (655), erected for the town of Llandilo by Lord Dynevor, are picturesque Gothic, of blue-coloured stone, with white stone dressings, and red and white voussoirs or arch-stones, and have a two-storied half-timbered porch, and a conical capped bell-turret.—Of the "Buildings for the 2nd Regiment of the Cheshire Militia, erected at Macclesfield" by Mr. F. H. Pownall, we can ascertain little from the drawing (658) in its elevated position, except that they are Gothic, and are of stone, and that there are circular turrets to a building which probably contains the officers' quarters.—The "New Business Premises," near Smithfield (Cart's Charity Estate), "leased to the London Printing and Publishing Company, in course of completion," by Mr. G. S. Clarke, we are better acquainted with, having had the opportunity of glancing at the building itself. It is a building of seven principal stories, with high-pitched and cornice-stepped-gabled roof, three of the stories of windows being grouped under one tier of arches. The materials are red and black bricks and stone. Though the design is not devoid of merit, it is certainly as much characterized by that mere whimsicality in form and excess in colour which are so prominent in the architecture of the day.—A similar disadvantage of position prevents our doing justice to the next drawing (660), one of the most interesting in the room just now, from subject, "The Grosvenor Hotel, now in course of erection at the Victoria Station, Piccadilly," by Mr. J. T. Knowles. Indeed, the absurdity of the Academy provision for architecture is this year very noticeable. Oil paintings in the principal gallery are no longer hung close to the ceiling; but architectural drawings, which require the closest inspection, are placed without any reference to the requirement. The arrangement even at the Conduit-street galleries goes to the very limits of deviation from "the line," if not beyond them. We can just make out that the hotel will be a five-storied building of Italian character; that the ends are treated as pavilions, having high curved roofs; that a continuous balcony to the first-floor windows, and balconies to the windows above, and bold *cornicioni*, are amongst the features; and that there is considerable variation and good grouping in all these. The result, however, will not be so satisfactory as might possibly be anticipated from the drawing, should the work happen to be executed in cement. That material is, as we have often said, unfavourable to effect, not only where it is imitative of stonework, but from the absence of that variation which there is in the tint of stone, even as stone is in towns, or seen under the most disadvantageous circumstances. The inherent drawbacks to the use of the material for superficial work are only increased on painting it. Artificial stone has not so much these particular defects. The contrast between stone and cement of the best kind, after exposure to smoky atmosphere, may be tested just now by their appearance in the portico of the Opera House, Covent-garden, where the columns and architecture are of the stone, and the cement has become much more and evenly dirty. We predicted that result in the Opera House, and have at other times questioned the judgment of the surveyor to London estates, whose course really is doing harm rather than good by the manner in which they enjoin that alterations shall be carried into effect, or by

the use of cement. The architect of the new Opera House, Mr. E. M. Barry, acted under this sort of compulsion. He has a view of the new Floral Hall, with the House, in the present exhibition (690). A different view of the Finchley Hall School to that in the Conduit-street exhibition, is exhibited by the architect, Mr. E. Roberts (661); and a drawing of the "Henham and Wangford National Schools, Suffolk" (662), by Mr. E. L. Blackburne. The design in the latter, so far as we can see it, is Gothic, of a prevailing character, in which hands of colour, red-tiled roof coverings, and a *louvre* or *stèche*, play important parts. Mr. E. W. Mantell's "Schools" (663) erecting, one at Lydiard Tregoy, Wiltshire, and the other at Purton, in the same county, are good plain designs. In one of them, the upper part of the gable of each dormer, is retrenched, and hipped roof covering is substituted in a common manner, but one that here aids the result desired.

We have still to mention some of the drawings; and, indeed, some of the best.

#### STOCKTON CHURCH, SALOP.

This edifice, with the exception of a great part of the tower, has been restored, under the direction of Mr. T. C. Whitmore, of Apley-park, adjacent. In addition to a massive tower at the west end, it consists of nave, north and south transepts, and chancel, with vestry on the north side. As parts only of the ancient church existed, the rest being of a Debased character, scope was presented for extensive improvements. The whole of the chancel has been refaced with stone, inside as well as outside, and the antiquities brought to light appropriately enriched with ornament. This portion is originally of the early part of the twelfth century, but had insertions, some of the Decorated period, and some Debased; in its treatment, except where Norman work was called for, the Decorated style has been chiefly adopted. The ceiling, being a handsome one, of the latter end of the fifteenth century, has been retained. In contriving for it, it was found necessary to project the wall-plates within the inner sides of the walls, and to support them partly by brackets, which with their pendants assume a very ornamental appearance, whilst heaviness is avoided in the wall-plates by carving the interstices into cornices, leaving blocks at intervals, which serve as super-capitals to the sculptured stone capitals on which they rest. Each pendant on the north side is terminated with a Knight Temple in a devotional attitude, and on the south with an angel. The east window is a triplet of lancets with tracery, and in its stained glass presents the birth, life, and crucifixion of Christ; the minor compartments having suitable accompanying devices: the sills are deep, and fronted with alabaster carved as a reledo. The chancel side-windows have paintings of the four Evangelists. The nave and transepts have been restored in the Perpendicular style. The principal entrance is through the tower, where a Jacobean porch and a short inferior window above it have been exchanged for a doorway and window in a style transitional between Decorated and Perpendicular, in accordance with the age of the lower part of the tower. The large west window and those of the nave have cathedral glass; the transept windows stained glass. The encaustic tiles of the flooring increase in richness at the usual gradations eastward. The woodwork of the nave has been improved and retained. The vestry, which was an ugly lean-to, now has the resemblance of a small chapel in the Tudor style.

#### COMPETITIONS.

**Raddiffe, near Manchester.**—The designs of Mr. W. Walker have been accepted in competition for the new church of St. Thomas, at Raddiffe, near Manchester.

**Worcester Training College.**—The committee of the Worcester Diocesan Training College, at Suttley, near Birmingham, are about making considerable additions to the instruction department of the college. Competition plans were invited from architects of the diocese, and ultimately those of Mr. G. T. Robinson, of Leamington, were accepted.

**Hertford Cottage-building Company.**—A number of designs have been sent in for the cottages about to be erected for this company. From these has been selected, as the most appropriate, one by Mr. F. Dyball, of London.

**Exeter Branch Bank.**—The author of the design marked "Use," to which the "second" premium was awarded, is Mr. Walter Damant, architect, late of Plymouth.

## INDIAN RAILWAYS.

## INSTITUTION OF CIVIL ENGINEERS.

At a meeting on the 8th, the paper read was "On Indian Railways; with a Description of the Great Indian Peninsula Railway," by Mr. Jas. J. Berkeley.

It was remarked, that the reason why the commerce of India had continued so incommensurate with the resources of the country might be chiefly assigned to the want of proper communications. Indian railways would not, as in England, be the substitution of a perfect system of conveyance for other convenient means; but in many districts they would be the first introduction of any communication whatever adapted for the requirements of the country.

Since the year 1849, when the Government took the first decided step towards the establishment of a system of railways in India, the formation of 4,521 miles had been sanctioned; 636 miles had been opened for traffic; 765 miles were expected to be opened in the current year, and 864 miles in 1861. The estimated capital was nearly 52,500,000*l.*; of which sum the expenditure upwards of 34,000,000*l.* had been sanctioned, and more than 27,000,000*l.* had been subscribed. The arrangements under which Indian railways were being carried out consisted of a Government guarantee as the means of raising the requisite capital; the agency of incorporated companies to design, execute, and manage them; and Government supervision to define the projects and control the proceedings and expenditure. The terms of the contract between the Government and the companies were then briefly stated; and it was remarked that, as far as they had been brought into operation, they might be pronounced to have been successful, although attended with some disadvantages, which were pointed out, the principal one being delay, owing to the necessity for reference to many widely-scattered tribunals.

Certain standard dimensions had been adopted for all the lines and the rolling stock, including a uniform gauge of 5 feet 6 inches, and a minimum clear width between the tracks of 6 feet.

The principal lines of the Great Indian Peninsula Railway, which it was the more immediate object of the paper to describe, were proposed to extend from the port and city of Bombay to join the East-Indian line at Jubbulpore on the north-east, with a long branch to Nagpore, and to meet the Madras line at or about the river Krishna on the south-east.

The first section undertaken was from Bombay to Callian, a distance of 33 miles, with a branch to Mahim  $\frac{1}{2}$  mile. It was called the experimental line; was commenced in February, 1851; and the portion from Bombay to Tannah, being a length of 20 miles, was opened for public traffic on the 16th April, 1852.

From Callian diverged the south-eastern extension to Poonah and Sholapore, and by the proposed extension to the river Krishna and the Madras Railway to Madras; and the north-eastern extension to Nasick and Jubbulpore, to join the East-Indian Railway from Calcutta, by which also a communication would be effected to the north-west provinces of India.

The first section of the south-eastern extension from Callian to Camponlee, a distance of 37 $\frac{3}{4}$  miles, contained no work of a special character, but was remarkable for the extraordinary floods and rapid torrents to which it was exposed on both sides. It had been made for a double line, but only one road had been laid. The average cost, exclusive of rolling stock, was only 4,500*l.* per mile.

The Bhoze Ghaut incline, which was expected to be finished about three years hence, was 15 miles 68 chains in length, with a total rise of 1,831 feet. The steepest gradients were 1 in 37 and 1 in 40; short lengths of level and of 1 in 380 being introduced, to facilitate the working of the engine in the ascent. It comprised twenty-five tunnels, eight viaducts, a large quantity of retaining walls, upwards of one million and a quarter cubic yards of cutting, chiefly rock, and nearly two million cubic yards of embankments. The estimated cost of this incline was 750,000*l.*

The next section of the south-eastern extension, from Lanowlee, the summit of the Bhoze Ghaut incline, to Poonah and Sholapore, was 205 $\frac{1}{2}$  miles in length, of which 185 miles were already completed, with a ruling gradient of 1 in 132.

The general style of design for these trunk lines was derived from the model of the late Robert Stephenson's English railways. The character of the works was plain, substantial, and durable; such as would provide for the regular and expeditious conveyance of a heavy and increasing traffic in goods, and the accommodation of numerous passengers, at a moderate working cost, and at a

reasonable expenditure in maintenance. Native labour by which these works had been executed was cheap, but very inferior to that of England. Nearly 100,000 men had been employed upon the Great Indian Peninsula Railway lines at one time, and as many as 20,000 on the Bhoze Ghaut incline alone. The wages of the several classes per day were now:—Native maistries, or foremen of masonry, brickwork, or carpentry, 2s. 6d.; masons, 1s. 9d.; bricklayers, 1s. 3d.; carpenters, 1s. 6d.; smitbs, 2s.; miners (a very large class), 9d.; excavators, 7d.; and labourers, 6d. The following table was given of the relative cost of each kind of labour in England and in the Bombay Presidency; it being understood to refer to simple labour only, and not to the cost of finished work:—

Class of Labour.	Proportion of Work done by each.		Relative cost of Labour in each Country.	
	England	Bombay	England	Bombay
Masons .....	24	1	1 $\frac{1}{2}$	1
Bricklayers .....	4	1	1	1
Carpenters .....	3	1	1 $\frac{1}{2}$	1
Miners .....	3	1	2	1
Excavators .....	3	1	1 $\frac{1}{2}$	1
Labourers .....	34	1	1 $\frac{1}{2}$	1

The whole of the Great Indian Peninsula Railway had been executed by contract, and this, it was believed, had led to remarkable economy in the construction of the various lines. The average cost of the opened portions had been about 8,000*l.* per mile. The introduction of the contract system into India, on a large scale, was an important effect of railway enterprise, and it was thought that its advantage could not be long confined to railway construction.

On May 15th the paper was discussed.

In commencing the discussion, it was remarked, that the East-Indian Railway, extending from Calcutta to Delhi, with three branches, and a line from Allahabad to Jubbulpore, was 1,338 miles in length, of which 295 miles were now open for traffic. There was only one tunnel, which was 300 yards in length; but there were viaducts of considerable magnitude, particularly those over the rivers Soane and Jumna, in which cases carriage roads were constructed under the railway, as well as over the Adjai, Moree, Keel, and Tonsa. Coal had been found on this line, which was used as fuel for the locomotive engines, and in which there was already a large traffic along the line. The estimated cost of this railway was 14,480*l.* per mile; but the finished portions had been executed for 12,900*l.* per mile. It had been calculated, that the cost of the works would be increased by the mutiny, to the extent of three millions sterling.

In reference to the Great Indian Peninsula Railway it was stated, that the estimated cost was about 10,000*l.* a mile, but the opened portions had only cost 8,713*l.* a mile.

The Madras Railway, extending from Madras, on the eastern side of the Peninsula, to Beypore, on the western coast, with a line to meet the Great Indian Peninsula at the river Krishna, was 845 miles in length, of which 96 miles had been opened. The peculiar features of this line were, the crossings of some of the principal rivers, and its construction without the intervention of contractors. It would be interesting to know the reasons that had induced this departure from the system pursued in England, where the judicious subdivision of labour introduced by the contract system had been found to result in economy and efficiency. The execution of the works on the Bombay and Baroda, and also on the Great Southern of India, was likewise undertaken by the engineers. The advantages of the introduction of contractors of capital and of experience into the Bombay presidency had been clearly stated in the paper.

The Scinde Railway extended from Kurrachee to Kotree on the Indus, for a length of 114 miles; and the Panjnah Railway from Moulton to Lahore and Umritsir, a distance of 250 miles. A line was also under survey from Lahore to Delhi. The difficulties to be surmounted in the navigation of the Indus, and the class of steamers and other vessels proposed to be employed were well worthy of consideration.

The other lines were—the Bombay, Baroda, and Central India, extending from Bombay through Surat, Broach, and Baroda to Ahmedabad, for a distance of 309 $\frac{1}{2}$  miles, on which the bridges were composed entirely of iron; the Eastern Bengal, from Calcutta to Koosbree on the Ganges, 108 miles in length; the Great Southern of India, of which 80 miles, from Negapatam to Trichinopoly, were under considera-

tion, and which it was proposed to extend to the Madras Railway, near Erode, on the north, and to the coast, at Tuticorin, on the south; and the Calcutta and South-Eastern, between Calcutta and the river Mutla, a length of 28 $\frac{1}{2}$  miles.

The construction of railways in India had awakened a spirit of enterprise; had caused the country to be examined for its more valuable products, of which iron and coal had been found; had induced designs for docks, and for the improvement of navigation and of irrigation; had given employment, on an average, to 100,000 labourers; had led to an expenditure of fourteen millions of money, within a few years, chiefly among the native population; and had involved the delivery into the country of 700,000 tons of material, irrespective of contractors' plant, &c., costing about ten millions and a half of money.

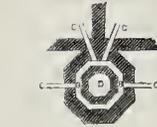
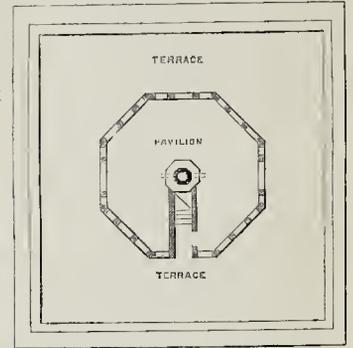
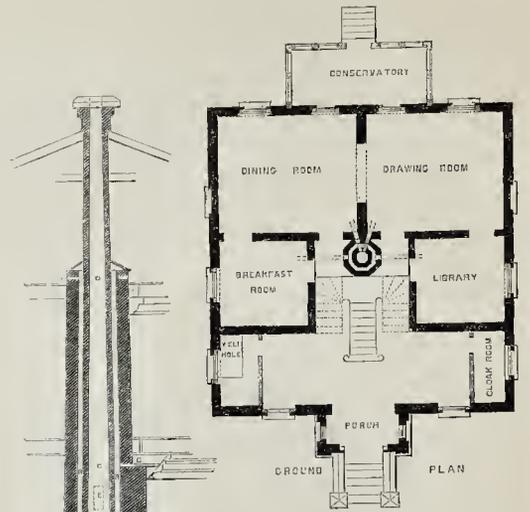
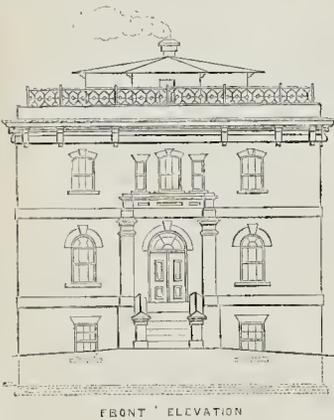
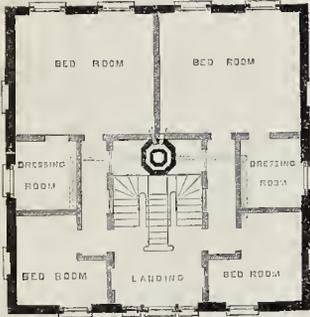
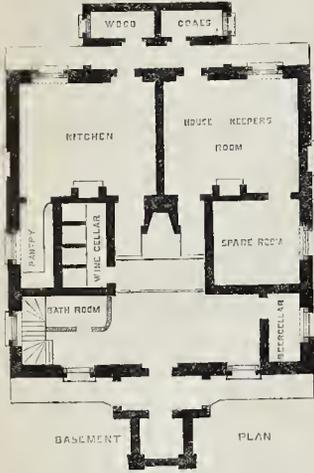
The number of men employed on the opened portions of the Indian railways, in 1859, was 590 English and 7,855 natives, giving an average of sixteen men per mile. At this rate the lines now being constructed would give permanent employment to 77,000 persons. The fares in the Bombay presidency in 1859 were, 1st class, 2*d.*; 2nd class, 1*d.*; and 3rd class, 3*d.* per mile. The speed of the trains, including stoppages, was from sixteen to twenty miles an hour. The total number of passengers carried was 1,161,501, and the number conveyed over one mile, per mile of railway open, was 192,974; the average distance travelled by each passenger being 32*4* miles. The total number of passengers, on all the lines, in 1859, was 2,822,382, of which nearly ninety-three per cent. were third class. The average receipts in the Bombay presidency, for the year ending June, 1859, had been for passengers 453*l.*, and for goods 46*l.* per mile. It was evident that the goods' traffic had not yet been fully developed, as the lines were not continuous, nor had they reached the principal producing districts. The cost of working, to June, 1859, which had been since increased, was only 4*1* per cent. of the gross receipts, notwithstanding that the cost of fuel was three guineas per ton. The dividend on the expended capital was about 5*14* per cent. The East Indian had realized even a larger dividend.

## FAIR OAK HOUSE, ISLE OF WIGHT.

THE peculiarities of this house consist in the mode adopted to warm all the rooms by means of one central shaft. The mode of application is as follows:—A large open stove is fixed at the bottom of the shaft in the basement story, the smoke of which passes up through the inner flue, and escapes in the ordinary way at the top. The *outer* or *air flue* is separated from the *inner* or *smoke flue*, by a thin ring of brickwork in cement; into this the cool air of the house flows through the slotted holes in the exterior surface, and is warmed by coming into contact with the heated surface of the smoke flue, and is admitted into the several rooms through perforated cornices, the supply to the apartments being regulated by a simple valve opening by means of a rack and pulley. By this means enough warm air is generated for the use of the whole house by only keeping one moderate fire and by warming the *air previously* to its entrance into the rooms, and the architect firmly believes that a fire in the hall of any house would be found the most economical arrangement, as well as the most conducive to health, inasmuch as it would tend to reduce the draughts that continually occur through the cold air rushing in to the rooms that are warmed in the ordinary way by the open fireplaces.

The architect would have preferred the warmed air entering the rooms through *perforated skirting*, rather than through *perforated cornices*, but obstacles presented themselves which rendered it necessary to adopt the latter plan. The original idea to warm this building in the manner described was first entertained by Dr. Urquhart, B.N. (the proprietor of Fair Oak House), and was carried out by Mr. F. Warburton Stent, and although there were many things that he, as architect, would have preferred modifying, we are informed that the arrangements have been a decided success.

There is nothing to comment on further than that, for the purposes of cooking, two fireplaces are constructed in the basement, the flues from which enter the smoke flue of the central shaft. There is an asphalted terrace on the top of the house, from which a fine view may be had of the surrounding beautiful scenery. As there may appear an absence of some sanitary and necessary arrangements in the plans, it is only requisite to state that the deficiency is rectified by means of apparatus which it is not requisite to describe.

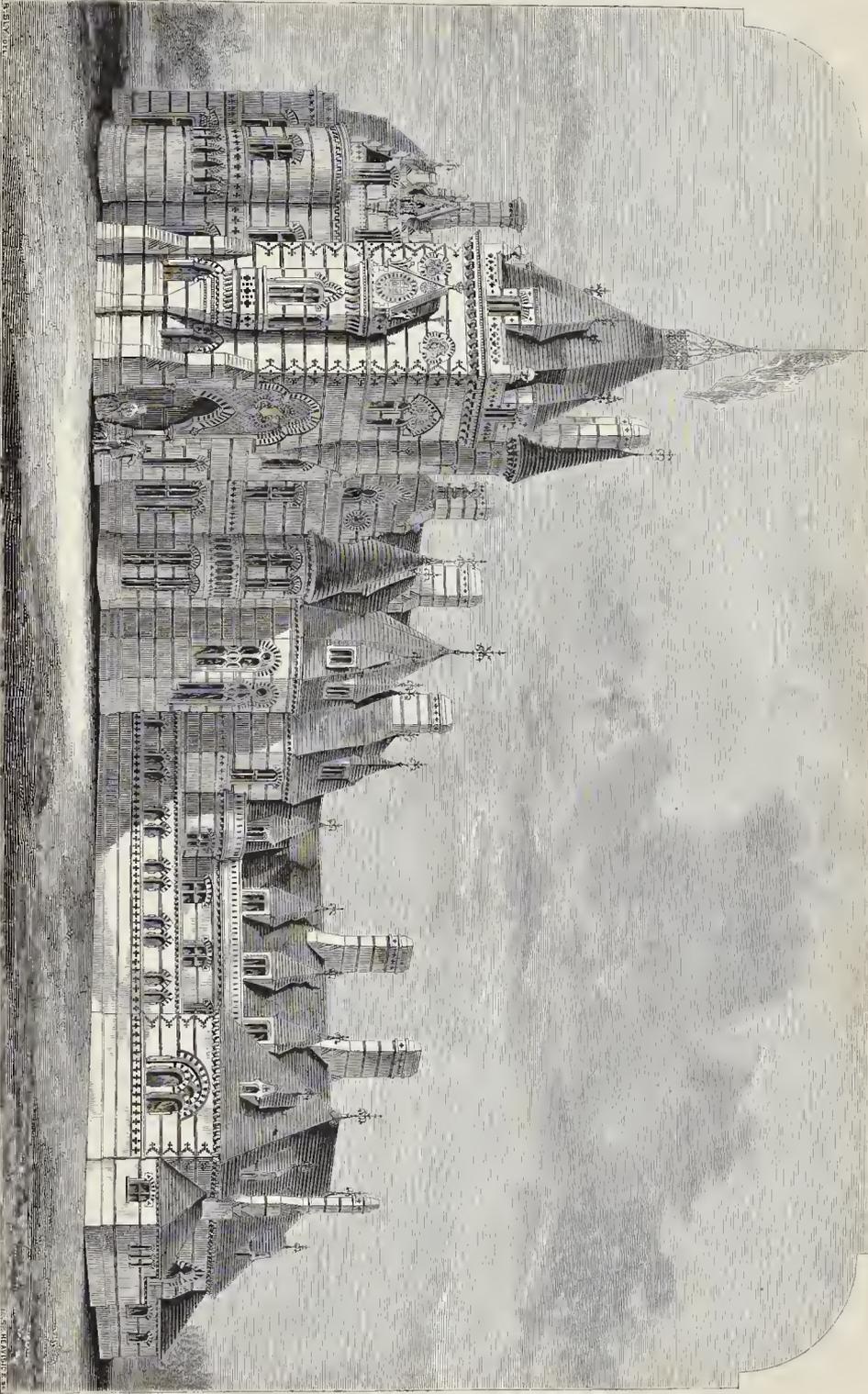


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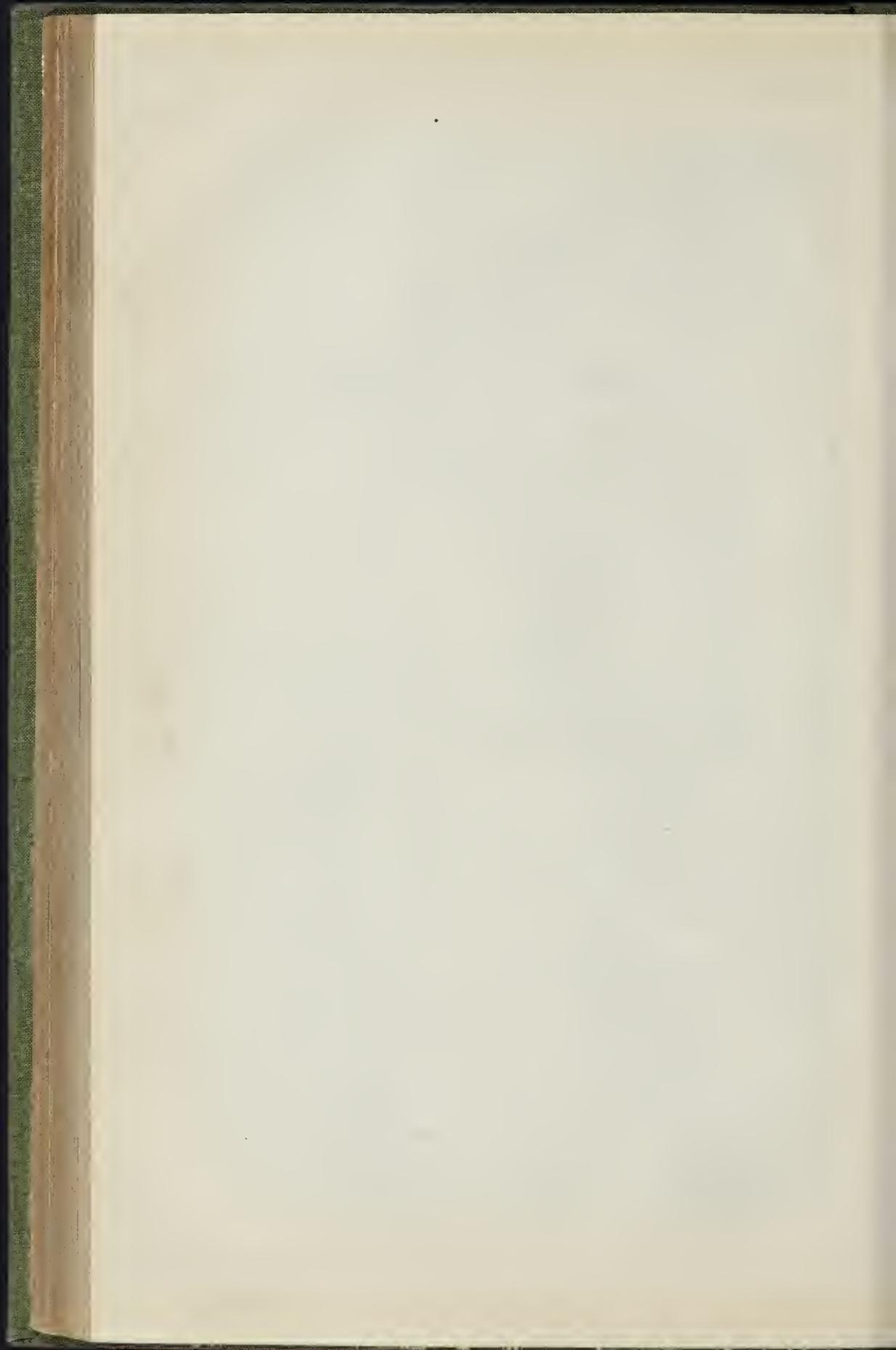
- A. Concrete.
- B. Outer, or air-flue.
- C. Opening into room.
- D. Inner, or smoke-flue.
- E. Manhole.

ARRANGEMENTS FOR WARMING: FAIR OAK HOUSE, ISLE OF WIGHT.

MR. F. W. STENT, ARCHITECT.



EYESHAM HALL, NEAR HARFORD-BRIDGE, HANTS.—MR. S. S. TRELON, ARCHT.



## ELVETHAM HALL, HANTS.

ELVETHAM HALL, which is about 1½ mile from Hartford-bridge, Hants, has been distinguished in history by the honour of receiving a visit from Queen Elizabeth to Edward Seymour, Earl of Hartford, eldest surviving son of the unfortunate Protector, Duke of Somerset, by his second wife, Anne, daughter of Sir Edward Stanhope, knight. The history of Hampshire gives a most elaborate account of the extraordinary entertainment, with sham fight on the lake, which was given on this occasion. The property now belongs to Lord Calthorpe. The ancient house was pulled down many years ago, and a very plain house built out of the old materials. This is now being recast and added to very considerably. Indeed, the whole of the principal apartments, with the hall, staircase, and corridors, are all new, and the whole is being erected in brick, with a very small admixture of stone. There is a great deal of elaborate iron-work by Skidmore. Mr. S. S. Teulon is the architect.

## THE ARCHITECTURAL MUSEUM.

On Friday, May 18, a special meeting of the committee of the Architectural Museum was held at the residence of the President, Mr. Beresford Hope, for the purpose of expressing their sense of the severe loss which art has sustained in the demise of Sir Charles Barry, and also to record their own personal loss in him, as one of their trustees and a cordial supporter of the museum. A resolution was passed expressive of the sincere sympathy and condolence with the family of the late Sir Charles Barry, which was requested to convey, and arrangements were made for the attendance of the Council of the Architectural Museum at the funeral in Westminster Abbey.

## THOROUGHFARES.

Of the many plans projected by the *Builder* from year to year, there is but one which is now in progress—that which leads from Cranbourne-street to Grove-garden. This is a casement gained by the demolition of a few ruinous houses; and the increased value of the ground-rents will tend to lessen the cost of the clearance.

There is but one other of our suggestions which is in part accomplished—the opening out of the Spring-garden strait to St. James's; and here the New Commissioners of Improvements have made only a slight enlargement to afford a peep into the Mall; suffering the small 19 feet house facing Spring-garden to stint the passage, and to affront and darken the new hall of their consulate!

When they once get into action, we may expect great things from the importance of the building on which so much has been already expended,—that another illustrious opening may be driven direct from the Mall to the Strand, thus revealing to Charing-cross, the *core of London*, an illimitable prospect of open park.

Hitherto, the Corporation was the only public body that caused any improvement in these respects; but now an institution of the collegiate, if not monastic, order, has begun with spirit a *reformation* which is likely to stimulate to the imitation of such a move. *Christ's Hospital* has actually pulled down an extensive stack of houses, Bull's-head-court, in Newgate-street; and having systematically, for some years, withdrawn the old street line some 8 feet, adding it to the causeway, they are now about to enlarge the width of King Edward-street, and to make it a respectable approach to their college, their chapel, and their grounds. This alteration, if extended as it ought to be, to Little Britain, would give free access to Smithfield and the *Charter House*, and would confer immense value upon both estates.

Considering the vast rise in property, and the stint of room in the General Post-office, no site could be more apposite for that establishment; and it is certain that there is no other spot in the City which might be attained with less violence to private interests. A little sympathy of feeling, and combined action between the council of the two great educational foundations, might now lead to what we have often advised—the profitable disposal of both of these City colleges, and their removal to suitable positions in the home counties.

On that subject we have before dilated upon the point; but for the great body of the public there is not one in twenty who would not vote for their removal to the country; the more particularly as the value of the urban sites would not only pro-

duce funds to purchase parks, and raise *universities*, but also to yield splendid endowments for their perpetuation.

Much as openings for free intercourse have been needed, it has been left to private speculation to effect any great reform in this particular; and now, as if by a system of combined energies, it appears, the old modes of exit and entrance are to be wholly changed. Railway stations at Victoria-hall, at Hungerford, at Blackfriars, at Victoria-street, and Tokenhouse-yard, are to be the media of distribution for all arrivals and departures.

What effect this may have in alleviating the pressure upon great leading thoroughfares remains to be seen; but if, as in all other cases of facilitated intercommunication, we shall have increased crowds in motion, and accumulated merchandise *in transitu*, there will be, nevertheless, occasion for widened, straightened, and improved main streets.

According to the present map of London, there is a great want of direct linear routes: from the north we may enumerate six,—Edgware-road, Regent-street, Tottenham-court-road, Gray's Inn-lane, Goswell-road, Shoreditch, on the south, three,—Old Kent, Cauerwell, and Kennington roads; on the east, two,—Whitechapel and Commercial roads; and on the west, three,—Brompton, Kensington, and Bayswater. These are the main arteries leading through a compacted mass, extending nine miles from east to west, and seven miles from north to south; and it will be seen at a glance that all these are devious, winding, and irregular in width, and that they are the result of accident, which has from time to time added suburb after suburb to the now heterogeneous mass of the metropolis.

In making for any point distant but a couple of miles from the centre, how many turns must be made—pretty much as in sailing against a head-wind: you must tack now to the right, then to the left, in steering for the desired haven; and often, in long distances, when driving, the most prudent plan is, after the new mode of circuit-sailing, to strike off from the main routes, and make a detour of a mile or two, in order to escape the stops and dead locks, as a mariner would seek the outer ring of a cyclone.

At present the omnibus carries nearly all men of business from the City, or centre, to their suburban retreats: very few, comparatively, drive their own vehicles; and as soon as the access by central railways shall be consummated, the probability is, that both city and town will be still more deserted as residential, and that the multitudes will seek homes further placed, but arrived at with much greater certitude and celerity.

With such a change of habits as these transformational will occasion, there must be, in the first instance, a considerable alleviation of pressure on the main thoroughfares; but improved systems of locomotion will, as in all parallel cases, create a greater circulation of people, and enlarged plans of trade and commerce: the growing population, and with it the growing wealth of the nation, will require enlarged ducts of intercommunication; and even the cross streets, now so little regarded, will claim some attention, not only to their width, but their *alignment*.

A great portion of the City proper consists of lanes, crooked, and barely admitting the passage of one team; and the expensive character of the houses forbids any change in their width. On this account alone the wider and more direct lines of intercommunication ought to be enlarged, and made straight where possible. Finch-lane, St. Switbin's-lane, Bucklersbury, and numerous others, are fair examples: these must be reconnoitred before any carriage can attempt the passage—the steersman must look out that there are no breakers-a-head.

It is in the principal routes, where there are straits and narrows, that any immediate improvement is practicable—such as Fleet-street or Holborn, or at the corner of Chancery-lane. In the busy hours, rows of four, and even five or six carriages keep up a continuous stream, to and fro, in the wide portions; but at the straits of the Bars there is only room for two: this of necessity stops the traffic, pretty much in the same way as the gate of issue from a theatre will become choked by a rush for escape: two single files pressing on with regularity would pass double the number, without a crowd or a rush; but as in a conduit of water, say of a 20-inch bore, if at only one point it be reduced to 10 inches, then the supply will also be lowered to one-fourth the quantity, so it is as to the current of traffic through Temple Bar.

The Thames embankment question will now have consideration. The select committee appointed consists of Sir Joseph Paxton, Lord John

Manners, Mr. Cowper, Sir John Pakington, Mr. Alderman Cubitt, Sir John Shelley, Mr. Stirling, Mr. Tite, Lord Robert Montagu, Mr. Waiter, Sir Morton Peto, Mr. Phillips, Mr. Roupell, Mr. Yorke, and Mr. Beamish.

We shall look anxiously for the evidence that will be given.

With the exception of coal, which is brought from ships in the Pool and elsewhere, here to the wharfs, the quantity of goods landed along the line in question is not considerable, and it may be, that the plan of loading the coal into lighters, unloading them at these wharfs, and then putting the coals into waggons of tremendous weight and strength, which, when loaded, are dragged with great difficulty up steep inclines, is an unwise one.

During the last twenty or thirty years, the progress of steam-power has made material changes in the management of several trades: not long ago "the jolly young watermen" formed well-known features along this portion of the river: their occupation is now nearly gone; the steamers have taken up their trade, and daily carry thousands of persons at a cheap rate, with great safety and expedition.

When the coal-wharfs were established at Hungerford and elsewhere, we had no great docks in which ships could be unloaded, and "sea coal" taken by railway to depôts in the northern parts of London; but soon by a system of railways ramifying throughout the metropolis we shall have both sea and land-coal warehoused in convenient situations, where, by means of machinery, the waggons could be lifted and their contents emptied, and by an easy process the coals could be weighed and placed in the vans for delivery: see, for instance, how this is managed at the Great Northern Railway Station, in the Caledonian-road, and some other stations along the North-London line of railway.

Once upon a time the chief part of the coals shipped in the Tyne was brought from stations belonging to the several collieries in keels;\* the time lost in loading them was great; and it required hours for those lumbering vessels to navigate the river and get laid alongside the ships; then by hand labour the coals were slowly passed into the ship, the valuable material being broken and wasted by the process. In order to prevent this, several of the coal owners projected staiths, on which were tramways, to such a distance into the river that ships could come alongside: the coal-wagon, loaded as it was at the pit mouth, could be lowered by a simple machinery to the hatches of the hold; then, by the easiest means, the bottom of the wagon could be opened, and the coal dropped into the hold. Great was the opposition offered to this plan: the keelmen proceeded to strikes and rioting; all, however, failed to prevent such an evident advantage. These staiths, like the coal-barges and their mooring-places in the Thames, did damage to the Tyne.

They have, notwithstanding, led the way to great improvement, for now two docks of immense size have been constructed, to which enormous quantities of coal are brought by railways, and the ships are loaded in the manner mentioned, without at all interfering with the current of the river. By this means a ship of 1,000 tons burden can be loaded in a day: if this be a steam collier, it could clear the port of Tyne, and be moored in the Victoria Docks, unloaded by steam apparatus, and in a time which twenty years ago would have seemed fabulous, be in the London market convenient for sale. These facilities, notwithstanding the great additional supply required, have caused the cheapening of coal; and we have mentioned these circumstances as showing changes which have been made which render the coal-wharfs along the City margin of the Thames less necessary than formerly, and that there might be wisdom on the part of those engaged in this business in meeting the circumstances of the times; for it is evident that it will be impossible for the wharfs thus situated to compete with the more modern arrangements. Be this as it may, however, it would be easy to accommodate the wharf owners in making the embankment.

We earnestly hope that no time will be lost in bringing this important matter to a decision. The coal dues will shortly cease: it might be worth while for a time to continue their imposition, and strictly apply the proceeds towards the payment of the cost of the embankment. In consideration of the fact that the well-being of the

\* These vessels were shallow, and so wide in form that they were almost semicircular: large sweeps or oars were used, also a great square-sail. Antiquaries say that the keels were of the same model as the ships of the Danes, which so often ravaged this coast.

Thames is an affair of national importance, it would be but an act of justice to grant a certain amount from the Imperial treasury: many districts of the metropolis could ill bear more taxation, but if the coal dues be appropriated, and a further sum be guaranteed by the Government, by the extending of the payment over a longer period, a great improvement might be carried out without any oppressive taxation: moreover, land would be redeemed from the river which would be very valuable. In a sanitary and aesthetic point of view, the desirability of forming a noble quay is obvious.

#### GAS LEAKAGE AND ITS EFFECTS.\*

An able report, recently made by Mr. Spencer, the analytical chemist, and the acknowledged discoverer of electro-type, has a peculiar bearing upon the question of the purification of the Thames, and its summer stench, and is likely, we should think, to excite attention and discussion on this ground, much more than on the subject which the report was directly intended to elucidate.

Special attention has frequently been drawn in the *Builder* to the black mud of the Thames. Now this mud, Mr. Spencer maintains, after investigations for several years past, is not only the legitimate offspring of the stinking black earth of the London street-subsoil, but also the special source of the summer stench of the river in the metropolitan bounds. That stench, Mr. Spencer says, he has experimentally extracted from the black mud by means of artificial summer heat, and analyzed into that abominable compound sulphuretted carbon, essentially, though combined with other less obnoxious ingredients. It lies hidden, as it were, in the mud, at all temperatures below a certain pretty strong summer heat, but at that heat it escapes from the black oxide of iron to which it is attached; and it is thus and then, Mr. Spencer conceives, that it contaminates the atmosphere along the course of the river.

The origin of this stinking black mud, as we have hinted, Mr. Spencer traces, not to the sewage of London, but to the abundant percolations of the black earth of the street subsoil into the sewers, and this black earth he traces back without difficulty to its well-known source in gas leakage. But he does not attribute this abomination merely to impurities in the gas so leaking, but to the gas itself, however pure or impure; and of this gas the quantity which leaks from London gas-pipes is something enormous,—no less than 9 per cent., or between six and seven million cubic feet per annum. No such leakage occurs in other populous towns, such as Liverpool or Manchester, where the joints of the pipes are bored and turned, and so fitted to each other like glass bottles to their ground stoppers, whereas the London gas-pipes are jointed with tow and lead, so that, after a little endurance of changes of temperature in summer and winter, and consequent expansion and contraction, the lead parts from the more expansive iron in summer, and is compressed by the more contractile iron in winter, in such a way as to destroy the joint entirely as a tight fit especially for gas.

The gas so allowed to leak in enormous and perpetual quantities has been found by Mr. Spencer to react upon the gypsum or sulphate of lime in the London subsoil, and thus to liberate the sulphur from its harmless combination with the lime, and promote its union with the carbon of the gas, forming a vile sulphuretted carbon, which corrodes not only the gas-pipes but the water-mains also, and converts them almost entirely into a sort of plumbago in ten years, although in pure London subsoil they will last for a century. The corroded matter crumbles, and is converted into black, foul earth, and, according to Mr. Spencer's investigations, percolates, with moisture, into the sewers, chiefly from above, and not only subsides into the heavy black "slime" of the Thames banks, but is actually choking up the sewers themselves. And, indeed, the accumulation of even half a century of a heavy, unfloating, thick, tenacious, slimy deposit, from so fertile and never-ceasing an origin, may well choke up both sewers and river, if this be the way in which the work proceeds.

As for mere sulphuretted hydrogen, Mr. Spencer, like others, has failed to obtain any really serious, or noxious, or even simply obnoxious, quantity from the Thames water, or even from the London

sewage; and he is quite convinced that the summer stench does not arise from mere sulphuretted hydrogen, but mainly from sulphuretted carbon: other chemists differ.

The importance of Mr. Spencer's conclusions, if correct, is obvious, and so is their novelty. If he be right in these conclusions, a new way opens up for the sweetening of the river. The immediate removal of the black mud would be but the initiative: gas companies would require to be compelled, by legislative enactment, to rejoin their pipes, or otherwise abate their nuisance; and not only Mr. Spencer, but gas engineers whom he has consulted, can see no difficulty, such as may be alleged to be peculiar to London streets, in the matter: the thing has already been done in other populous and busy towns: why should it not be done in London? The saving of gas would repay the cost. Only think of 6,000,000 cubic feet of gas added, every year, with sulphate of lime *ad libitum*, to the accumulative nuisance of the ill-smelling black earth of the street subsoil beneath our feet, even though its connection with the egestate black mud of the Thames banks could be disproved.

However feasible the result of Mr. Spencer's interesting and important investigations may appear, there is one apparent objection to the idea that it is the black mud alone whence the summer stench issues which we must here reiterate. If it were so, why is it that the stench subsides as the black mud becomes exposed to the sun at low water, and increases as this mud becomes covered by the rising tide? We do not mean to say that an ingenious and skilful chemist like Mr. Spencer may not be able easily to explain away such an objection; but, at all events, it requires explanation ere his final result can be fully admitted, even although he has extracted the stench (or at least the abominable sulphuretted carbon) from this very mud by an artificial summer's heat, and has even simulated the whole process, *ab initio*, in his laboratory.

#### BUILDING OPERATIVES AND THEIR EMPLOYEES.

It will have been seen with deep regret that the Unionists are striving to throw out of work their fellow-workmen engaged under the "Declaration," and as the masters are bound by every feeling of justice and honour to support the latter, a serious collision, we fear, must be anticipated. An "Architect" writes thus:—

"The subjoined notice has been served on a respectable builder (Mr. Anley, of Whitecross-street), who is carrying on some extensive works under me at Messrs. Cope-take, Moore, and Co.'s, Whitecross-street. It happened the notice was served while I was at Mr. Anley's office, and I witnessed the whole transaction. Mr. Anley quietly remonstrated with the deputation who delivered the notice, and asked four specific questions, viz. whether the men had any fault to find with himself, his foremen, his clerks, or the rate of wages? To each of these plain questions a distinct negative reply was given. After a lengthened remonstrance, Mr. Anley stated that he would give the men half an hour to reconsider their course. They left the office, and returned shortly after, stating that they had determined to strike unless the obnoxious men (two in number) were discharged.

"This is a plain statement of facts, and hardly needs any comment. I thought I was living in a free city: it appears that I am not, if such acts are to be tolerated. I am glad to add that Messrs. Cope-take & Co. will not press Mr. Anley to fulfil his contract, although the delay is very inconvenient to them at this moment.—I am, Sir, yours, &c., W. BARNES, Architect."

The following is a copy of the notice referred to:—

"At a meeting of joiners in the employ of Mr. Anley, Tuesday evening, May 15th, 1860, it was resolved that Mr. Anley be given to understand that the men who are working under the declaration in his shop be discharged, and unless we have a definite answer by dinner-time tomorrow to that effect, we cease work immediately."

(Signed by thirty joiners.)

At the Westminster Police Court, last week, two society men were brought up for intimidating a fellow-workman, and warrants were ultimately issued against them on the charge of conspiring to induce his employer to dismiss him. Other society men have been brought up for threatening a man working under the "Declaration" at Mr. George Smith's, Pimlico.

There is nothing to prevent men from uniting and agreeing with one another to work only on certain conditions, such as they may think, either wisely or not, calculated to advance their interests; but they have no right whatever to seek to coerce others into the same views, and to interfere with the rights of their fellow-workmen: society at large would feel itself bound to protect the latter, and to prevent the growth of any system of terrorism, as tending to the destruction of the whole body politic.

A partial strike of Mr. Myers's men, at work at

Mr. Rothschild's, in Piccadilly, took place a few days ago, but the men ultimately came back.

Organizations of the most extensive kind are being formed, and what will be the result it is impossible to say. We have before us "The Rules of the Amalgamated Society of Carpenters and Joiners," but have not yet had time to give them consideration. The address issued by the delegates who have been seeking to effect this amalgamation says:—

"The first and most important consideration that influenced their deliberations was the *command of the surplus labour of our trade*. To the present time that surplus labour has been wielded against us by the employer, to our great injury; because, when trade is depressed, the artisan, having no dependence on which to rely for the necessities of life for himself, his wife, and little ones, no alternative is left but to take work on the employer's terms (as a temporary relief), to his certain and final injury, and the injury of his fellow-men. The above council of delegates believe that the most effective and speedy means of wresting from the grasp of the employer this *command of surplus labour*, is to provide substantial aid for our unemployed fellow-men, which provision is set forth in the 15th rule."

This rule commences:—

"Should any free member be thrown out of employment more than one week, under circumstances satisfactory to the branch to which he belongs, and not dismissed in accordance with Rule 13, from the commencement of the second week he shall be entitled to the sum of 10s. per week for twelve weeks, and a further sum of 6s. for twelve weeks, making a total of 12s. in one year. If a free or non-free member be withdrawn from his employment by a branch or executive council, his claim to the above donation shall date from the time of his withdrawal. Or any member withdrawn from his employment (to maintain the existing privileges of the trade), shall be entitled to half the wages he is then receiving."

No explanation is given of the grounds on which members are to be "withdrawn from their employment."

#### THE STOPPAGE OF THE ROADWAYS.

GREAT complaints, which are certainly not without reason, have for some time past been made, of the carelessness which has been shown by the contractors who are engaged in carrying out the works of the City underground railway. In the York-road, one side of the foot-path has for a considerable time been completely stopped up, and the other in parts also covered over; so that the generally considerable traffic of the thoroughfare has been turned into other directions, greatly to the loss and inconvenience of the tradespeople.

By a very little care this might have been prevented, either by banking up the soil or by carrying away at a proper time a sufficient quantity of the soil which has been excavated. Similar want of regard of the public comfort is shown at other parts of this work. The great mounds of earth are allowed to remain much in danger than is necessary, and are managed in such a slovenly manner that needless distractions are made. The other day a little boy slipped from one of these clay hills and fell under the wheels of an omnibus, which killed him almost immediately. At the inquest the jury expressed in strong terms their disapproval of the little care which had been shown for the general convenience.

Unless a change be made in these arrangements, and measures taken which would involve little, if any, additional cost, and would show a heter spirit of accommodation, it is to be feared that a very unpleasant feeling will be raised during the progress of this important work.

#### BUILDERS' BENEVOLENT INSTITUTION.

YESTERDAY (Thursday) a numerous meeting of subscribers to the above charitable institution was held at the London Tavern, Bishopsgate-street, for the purpose of celebrating their fifteenth election of pensioners. Mr. Joseph Bird, in the absence of Mr. George Smith (president), occupied the chair.

The Report set forth that the subscriptions and donations for the past twelve months amount to 1,035*l.* 0*s.* 6*d.*; and that the trustees have purchased 583*l.* 7*s.* 2*d.* Stock Three-per-Cent. Consols; 457*l.* 1*s.* 1*d.* for the Relief Fund; and 125*l.* 8*s.* 3*d.* for the Building Fund. The total sum invested is 7,111*l.* 7*s.* 9*d.*, with a balance at the bankers' of 218*l.* 1*s.* 6*d.*

The Chairman, after an expression of regret at the absence of their president, said they had met for the purpose of carrying out their fifteenth election since the foundation of their institution. He had much pleasure in stating that the funds of the institution were progressing, for gentlemen of note who witnessed their procedure had now come forth to aid them in their cause. They had some difficulty at starting, but having attained a good position and safe foundation, their more

\* Report to the New River Company on the Corrosion of Iron Mains, and the effects of Gas Leakage on the Metropolitan Street Earth. By Thomas Spencer, F.C.S. &c. Printed by J. Heddewick & Son, printers to her Majesty. 1860.

opulent hretbren now came forward. They bad at present met to elect three pensioners—two males and one female—out of sixteen candidates. They bad now 7,000*l.* in the Funds, and be considered that very good indeed; and they were paying for pensions between 800*l.* and 900*l.* annually. He was in hope that they would have been enabled to elect six instead of three, but probably there would be another election in November next. As an inducement to the unsuccessful candidates, he urged them to be vigilant, and during the next five or six months to get as many votes as possible.

At the close of the poll the names of the successful candidates were announced as follows:—James Oliver, of Devon; William Goodfellow, of Kensington; and Catherine Edmunds, of Bermondsey.

The Chairman remarked, that in declaring the names of the fortunate candidates, he could only say that he wished it was in their power to elect all; but that at present was impossible. They however had a great accession of subscribers, which he hoped would continue. He could not help thinking that there had been much dilatoriness on the part of many of the candidates, as there were 2,000 votes unrecorded, through the subscribers not having been called upon, among which there were some very heavy votes belonging to large firms. They were in hopes, however, that their funds would allow them to have another election in November of this year, when he trusted that the candidates would be active, so that every vote might tell.

After an expression of gratitude from the elected,—

The usual votes of thanks concluded the proceedings, the candidates retiring to a good dinner, provided for them by the institution.

#### HOW TO REDUCE THE PRICE OF BRICKS.

I HAVE several houses about to be erected in the neighbourhood of London, which cannot be commenced now on account of the enormous expense of bricks, both good and bad. I, therefore, am inserting a clause in my specifications that the works are not to be commenced till good stocks can be delivered at 35*s.* per thousand; and it strikes me that, if architects generally would adopt this rule, the agents and others who are speculating in bricks, after Stock Exchange fashion, would soon find themselves forced to let builders have them at a fair price. AN ARCHITECT.

#### GLASS IN PAVEMENTS.

In my walks through the City and other parts of London, I have noticed that several of the thick glass area lights are very much cracked, and in some instances dangerously so. I do not think that this has arisen from any overweight, but from the circumstance of the glass fitting too tightly in the iron frames. I am of opinion, that the cause of the mischief is the different degree of expansion and contraction of the two materials.

The introduction of an elastic medium between the edge of the glass and the frame would, I believe, obviate the evil, and prevent much expense and risk.

Similar fractures take place from too tightly fitting the plate-glass in shop-fronts, so that, upon the slightest settlement in the house or building occurring, the large and expensive plates are immediately shattered, as usual, from some "inevitable cause." FRED. BRAITHWAITE.

#### PROVINCIAL NEWS.

**Lincoln.**—The new post-office, in Guildhall-street, has been opened for business. It is 30 feet by 22 feet. The fittings are painted, and oak-grained. The upper part of the house is the master's residence. The elevation is Italian Gothic. Mr. H. Goddard was the architect, and Mr. H. Jackson the builder. The entire cost of the office, according to the *Lincoln Chronicle*, is about 1,100*l.*, which has been granted by the post-office authorities.

**Sutton Coldfield.**—Considerable additions to the Free Grammar School of Sutton Coldfield, are about to be made according to plans prepared by the trustees' architect, Mr. G. F. Robinson.

**Hartlepool.**—The new workhouse for this place will shortly be built, the plan submitted by Mr. Thompson, of Newcastle, having been accepted. At a late meeting of the board the architect was in attendance, and undertook to have the plans carried out for the sum named in the specifications—3,300*l.*

#### ARCHITECTS' ESTIMATES IN COMPETITION.

OFTEN we hear of the injustice of committees to whose selection designs are submitted in competition, and almost every week some one of your correspondents deplors the want of faith, or I was most going to say the dishonest proceedings, of committees. There is a rule in the courts of equity, that "they who seek equity should do equity." Now I think no one who has ever entered in competition for a moment doubt that a great majority of architects frame their design regardless of the amount placed at their disposal, while at the same time they estimate their work at the sum wished to be expended, all the while knowing that it is utterly impossible to carry out their design at the proposed cost.

I do not wish it to be understood that I think because wrong is committed on one side therefore unfair dealing may be permitted on the other, but that a great injury is done to the profession by this false mode of estimating, so much so that the fallacy of an architect's estimate is well nigh become a proverb.

Some committees, with a laudable wish to do what is right, and at the same time secure themselves against the probability of selecting a design which will cost double they wish to expend, have appointed a professional referee, or referees, for the moment about the profession itself in the person of the referee.

The essence of competition is that all should start from one point, and that that be the amount of money to be expended; therefore it becomes the duty of the referee to at once exclude *in toto* all designs that in his judgment would exceed by twenty per cent. the amount placed by the committee at the disposal of the competing architects. Were it known that such would be the proceedings of the referee, architects would see the necessity of framing their designs, both by arrangement and ornament, not to exceed the amount wished to be expended. Honesty would take the place of dishonesty, a healthy tone would be given to competition, and we should, as a profession, have a right to demand fairness and honesty in competition from the general public; but as long as we proceed in this false mode of estimating we cannot expect other treatment than that we now experience.

I have named a margin of twenty per cent. as ample to cover any difference of opinion as to the cost between the competitor and the referee.

#### THE CONDITION OF CARDIFF.

Sir,—In the *Builder* of the 21st April last you print a paper read before the Liverpool Architectural Society, by Mr. Robert Rawlinson, C. E., in which he makes statements respecting this town calculated to convey some practical information "contrary to the facts of the case."

—Extensive dock works are in progress near Cardiff; public sewers were commenced, but have not been completed. The sewers are large, and have comparatively flat invert: several manholes constantly employed within them to remove sediment and refuse, &c. &c.

With respect to the dock works in progress, presuming that the Penarth Dock at the mouth of the river Ely is allowed to have no other outlet to the sea than the pier, the better for the civil district, especially where freighters are the principal shareholders, though the town of Cardiff will hardly be benefited by the establishment of a rival port.

On the remark which follows, that public sewers were commenced but have not been completed, I beg to observe that public sewers have been constructed in every street of the town into which all house and surface drainage is connected, and by which all sewage matter is discharged into the sea at the extremity of the district, and at the furthest available point from the town. The length of sewer constructed by this Board is upwards of 45 miles, in addition to which a number of sewers, made by the late Marquis of Bute and his trustees, vest in the Board, making the total length under their control upwards of 17 miles. Sewers are already laid in streets forward, but not yet built on, in anticipation of future requirements, and there is not a court, alley, or lane in the town remaining undrained. More than 160,000 drainage pipes have been used by private individuals, chiefly from the manufactories of Messrs. Dulton, Messrs. Gibbs & Canbidge, and the North Devon Potteries.

Very much doubt whether any other compact town of 34,000 inhabitants has so large a provision of sewers. That the sewers are large is correct, the general size of street sewers being 3 feet by 2 feet. That they are not too large is evidenced by the fact that a heavy rainfall at high tide very nearly fills the out-fall sewers, and it is now under the consideration of the Board, on the repeated recommendation of Mr. Hawshaw (by whom the first and principal portion of the system was designed) whether they shall not increase the available area by constructing a small reservoir for reception of storm waters during spring tides.

That the sewers have comparatively flat inverts is especially incorrect, the inverts of five-sixths of the whole being constructed to a radius of 7 inches, which is, of course, equal to the surface given by the lower half of a 14 inch pipe, the fact being that the sewers are considerably steeper than is usually adopted in brick sewers.

That several men are constantly employed in the sewers to remove sediment and refuse is not, and never has been, the case. Since the works have been respectively handed over to the Board by the contractors, two men have been employed in alternate weeks to fix the doors by which the flushing water (and on every other day in summer) is directed down any particular line of streets, and at the same time to remove any large substances or deposit of gravel after heavy rains from street paving and macadamized roads: at no period has more than one man been employed at one time for these or any other purposes in the seventeen miles of sewer. That our sewers—have, as a rule, comparatively little fall is an unfortunate fact arising from natural causes. That the town is intersected by canals, docks, and dock-basins, which must in no way be interfered with, rendering drainage of any kind more than usually difficult, and that a considerable portion of the town lies under the level of spring tides, are circumstances which the Local Board can hardly be expected to control, and which "even the blindest brawler for local self-government," or for central official supervision, would acknowledge to be so. Every thing in connection with the sewers has been done under the sanction of the late General Board of Health (one of the best institutions of the country) and of the Home Secretary, acting through the Local Government-Act Office, the same name and the same name, and a new name, and I am

not aware that the General Board, or the Home Secretary, or their official advisers, have been supposed to go through their duties in a negligent or inefficient manner: as far as my slight intercourse with them enables me to judge, no professional man could exercise a more painstaking supervision, or conduct their inquiries in a more practical or courteous spirit.

Although I have not been in connection with the Cardiff Local Board of Health since its formation, I cannot but feel that the members of the Board have used the best means attainable in the most liberal spirit to place the town and district in a high sanitary condition.

Independent of sewerage, the amount expended in permanent street works and paving channelling and footpaths during one year and eleven months, ending 31st August last, was 10,500*l.* beyond the regular annual expenditure for maintenance and highway repairs. Of the result of such works and of general sanitary supervision I think the death-rate a very fair index, although other causes, especially a good supply of food, may materially effect it. In our Officer of Health's report you will find a comparison of two cycles of five years, as we may state it, "before taking sanitary measures," and "after taking sanitary measures," and the result stands thus:—Five years, ending 1854, average annual deaths per thousand, 34.37; five years, ending 1859, average annual deaths per thousand, 21.62. Surely in questions of sanitary progress some attention should be paid to these circumstances, and when practical information on any individual town is volunteered, some effort ought to be made to obtain it.

Surveyor to the Cardiff Local Board of Health.

#### CHURCH-BUILDING NEWS.

**Louth (Lincolnshire).**—The parish church of St. Mary, Ludborough, has been reopened for divine service. The fabric is very ancient, and has suffered considerably from the ravages of time. About two years ago, the nave was roofed by a storm, and it was then found that the building was in a very defective state, and steps were at once taken to get the whole thoroughly repaired. The north aisle of the north arcade of the nave was in a very dilapidated state, and the south clerestory wall and the chancel arch had also to be taken down. In rebuilding the clerestory wall, one of the old windows was discovered, and adopted as a model: they are simple roundhead, light, and widely splayed within. On the side of the western window of the north side of the chancel, on the removal of the old plastering, a scroll painting was discovered, which has been preserved. The whole of the roofs are new, and are of framed timber, stained and varnished, and covered with red tiles, those in the chancel being in striae of white and red. The walls are built of the white chalk stone of the district, in random courses, the dressing being of Ancaster stone. The greater part of the area of the nave and aisles has been seated with open wooden benches, the stalls of the chancel being of a more elaborate character. The floors throughout, except under the seats, are paved with tiles. The windows are glazed with yellow-tinted cathedral glass. The triforium in the gable of the chancel is filled with stained glass, having the sacred monogram in a medallion. The whole of the works have been completed under the superintendence, and from the designs, of Mr. James Fowler, architect, Louth; and Mr. Maxcy, of the same place, has carried out the architect's intentions.

**Ipswich.**—The foundation stone has been laid of the new Roman Catholic Church of St. Peter's, at Ipswich. The limited nature of the site has obliged the architect to adapt the plan to its irregular form. Adopting the material of the country, red brick is to be mainly employed, with a moderate use of stone, and the introduction of black bricks where they may serve to define and accentuate architectural features. A porch will give access to a spacious nave, flanked by aisles and terminated by an apsidal chancel, which will be marked interiorly by the different forms of its arches and piers, and externally by a spirelet of wood and metal. A baptistry at the western end, and a vestry, &c., at the east, form subsidiary portions of the plan. The style selected is a modification of that employed in this country at the close of the thirteenth century, the simple geometric character of the window tracery being its most marked and distinctive features. The church wall, in its greatest internal length and breadth, measure 87 feet by 57 feet, its estimated cost being nearly 4,000*l.* It is to seat 600 persons, and will be capable of holding 1,000. The architects are Messrs. Hadfield & Goldie, of Westminster, and Mr. Simpson, of London, is the builder. The funds for the erection of the building are given almost entirely by the incumbent of the mission, the Rev. C. J. Kemp.

**Hemel Hempstead.**—A vestry meeting has been held on the subject of the proposed alterations in the parish church. The vicar said that the building committee received two tenders for the work during last autumn, but in consequence of the strike among the builders, the architect recommended that the execution of the work should be

deferred. They had since received five fresh tenders, which he would read. For deal sittings—The London Building Company, 1,472*l.*; Cox & Son, 1,498*l.*; Elliott, 1,550*l.*; Sear, 1,717*l.* (Mr. Groom did not contract for the work in deal, or in partly deal). For deal sittings, with oak top rails and hook boards—Cox & Son, 1,512*l.*; London Building Company, 1,578*l.*; Sear, 1,717*l.*; Elliott, 1,730*l.*; Sear, 1,821*l.*; London Building Company, 2,117*l.*; Elliott, 2,130*l.*; Groom, 2,150*l.* If all the subscriptions were paid in they should have 1,700*l.* They had about 1,500*l.* in hand. The chairman read a letter he had received from Mr. Godwin, offering to give an additional 50*l.* if oak was used for the seats, or if they were of stained pine with oak top rails and hook boards. No resolution was passed accepting any of the contracts, but it was understood, says the *Herts Mercury*, that Messrs. Cox & Son's tender would be chosen.

**Birmingham.**—A memorial tower is about being added to the parish church of Hockley-on-the-Heath, near Birmingham, by Mr. Thomas Burman, to the memory of his parents, and from the designs of Mr. G. T. Robinson, Leamington.

**Bradford.**—The works at the borough cemetery at Scholemore, says the *Bradford Observer*, are hastening towards completion. The cemetery is situated just beyond Lidget-green, upon the borders of Clayton, and lying upon a slope overlooking the Thornton valley. The grounds already laid out consist of 20 acres. An estate of more than 30 acres was purchased in 1857, at a cost of 4,750*l.*, and more than 10 acres are reserved for future appropriation. The works have been executed under the direction of Mr. Gott, the borough surveyor. A residence for the registrar stands near the entrance, looking down Neopropolis-road. Two sides of the ground are enclosed by high stone walls. Near the centre is erected a chapel for the use of the Established Church, and one for the Nonconformists. The registrar's house and the chapels were erected from the designs of Mr. E. Milnes, architect.

**Newcastle-upon-Tyne.**—The John Knox Presbyterian church in this town, after having been closed for some time for the erection of galleries, has been re-opened for public worship. The improvements have cost 350*l.*, of which 200*l.* was subscribed by the congregation. The entire cost of the galleries is about 350*l.* They give about 200 additional sittings, and have had the effect of preventing vibration of sound. The design is by Mr. John Dobson, the architect of the church; and the execution by Mr. Wm. Dobson, builder, of this town.

**Hexham.**—The restoration, or rather re-building, of the east gable and window of Hexham Abbey-church has since the return of favourable weather, made rapid progress towards completion.

### Books Received.

*The Simplicity of the Creation; or, the Astronomical Movement of the Blessed Virgin. A New Theory of the Solar System, Thunderstorms, Waterspouts, Auroras Boreales, &c., and the Tides.* Dedicated to her. By WILLIAM ADOLPH. London: Catholic Publishing and Bookselling Company (Limited), Paternoster-row, 1859.

It is a pity the author of this treatise should have quite unnecessarily mixed up his original and suggestive electrical and astronomical speculations with any special form of religion; but, if determined so to do, why not have "dedicated" it a work on the worlds to the Creator of the worlds, more especially since it is Mr. Adolph's opinion that "He alone is the self-acting force Himself" by which the worlds He has created are for ever actuated; the Author of all having "created matter," but "created no forces?"

The material points of his new theory the author specifies to be "the existence and operation of positive electricity exterior to the solid part of the heavenly bodies, and of negative electricity confined within them." Many of our readers may recollect of Mr. Adolph's ingenious speculations on electricity, thunder, sound, the tides, &c., in the *Builder* of 1851 and 1852, and to which he now alludes, as the origin of this new and more extended theory.

### VARIORUM.

In a pamphlet, titled "Industrial Labour: Where and How to Get it" (Manchester: D. Kelly, 53, Market-street), Mr. Isaac Gregory, F.R.G.S., suggests the formation of industrial labour com-

mittees and inquiry offices in the various towns where industrial labour is likely to be either forthcoming or required; the object being to promote an organized system of migration, whereby the supply of labour may readily meet the sitting or fluctuating demand. "The idea is an important one, and merits attention. 'There are emigration offices,' says Mr. Gregory: 'why are there no migration offices? We have cheap trips and cheap pleasure trains: can we have no industrial labour trains once a week, at low rates? Many municipal corporations have a water committee, sewerage committee, paving committee: why no industrial labour committee,—and why no industrial labour office, where would-be employers and employed, buyers and sellers of labour, may register their wants, and have the weekly aggregate of their wants communicated to the industrial labour office or offices in any part of England?'"—An article in the *New Quarterly Review*, on "The Lace Trade and the Factory Act," in which the legislative application of the Factory Act to the lace trade is urged, as very much required, has been reprinted in a revised and enlarged form (Hardwicke, 192, Piccadilly). The object, a most desirable one, is to do away with the night-work of women and children in the lace factories, by the application to these of an Act of Parliament which is now uniformly esteemed in the manufacturing districts as "the best Act Parliament ever passed."

### Miscellaneous.

**PRESENTATION OF TESTIMONIALS TO ARCHITECTS.**—The gratuitous services of Messrs. Hirst & Underwood, as architects of the Fine Arts Academy at Bristol, have been recognized by a testimonial to each of these gentlemen. The testimonial to Mr. Hirst consists of an antique clock, in ornolu and blue Sèvres china. The clock is surmounted by figures of Diana and Minerva, and it bears the following inscription:—"Presented, with the accompanying vases, to J. H. Hirst, esq., M.I.B.A., architect, by the trustees, treasurer, and artists of the Bristol Academy of Fine Arts, in grateful acknowledgment of his gratuitous services in designing the tasteful exterior and various embellishments of that edifice.—May, 1860." The vases referred to are in chased ornolu and purple Sèvres china. The timepiece presented to Mr. Underwood is of black and verdantique marble, with a figure of Music in bronze. It is inscribed—"Presented, with the accompanying figures, to C. Underwood, esq., architect, by the trustees, treasurer, and artists of the Bristol Fine Arts Academy, in grateful acknowledgment of his gratuitous services in arranging, conjointly with J. H. Hirst, esq., the interior disposition of that edifice, and in ably superintending its erection.—May, 1860." The figures are rather large-sized statuettes, in bronze, of dancers with cymbals. The testimonials were got up in a short time, the subscriptions having been confined to the trustees and artists, and Mr. Hirst and Mr. Underwood were taken quite by surprise in the matter.

**BRITISH MUSEUM.**—The annual account of the British Museum has been presented to Parliament, with the usual statement of the mode in which the proposed estimate for the current year, 100,850*l.*, is to be expended. The salaries amount to 89,084*l.* and 25,228*l.* are appropriated to purchases, chiefly of books, antiquities, and minerals, with nearly as much for repairs, furniture, and fittings, the latter principally for the library and department of antiquities. Bookbinding costs 7,500*l.* a year. The additions to the library are greatly beyond the number of books directed by law to be supplied by the publishers. Above two-thirds of the books placed in the library last year were purchased. The number of readers was 122,424, which would give an average of 418 a day.

**THE ARCADES IN THE HORTICULTURAL GARDENS.**—Sir: You will regret to hear that the terraces in the new gardens of the Horticultural Society, of which you gave last week so capital a plan, have had a very bad commencement. It is said, and I believe with truth, that they are being constructed without the superintendence of the architect. The slender piers to the arcades of the grand entrance, both front and back, being constructed in mortar, showed such evident signs of failure, that, to prevent accident, they have been taken down and reconstructed in cement; the front of the building being carefully covered with tarpaulins during the operation.

AN ARCHITECT.

**THE WOOLWICH NEW DRINKING-FOUNTAIN.**—The fountain presented to the town of Woolwich by Dr. Conquest has been formally opened by Mr. S. Gurney. This fountain is the first erected in Woolwich. It was cast by the Coalbrook Dale Iron Company, from a design submitted by the Drinking-Fountain Association, and is composed principally of iron, being fixed in the wall of the station, the water flowing from a shell fixed in a niche, two metal cups being placed as drinking utensils. The fountain is surmounted by the inscription "Drink and be thankful." At the foot of the fountain is a basin fixed in a recess, into which the waste water flows from the fountain, and surrounding this are the words, "Love me, love my dog." The water is supplied from the spring and reservoir at Mount Pleasant, from which nearly the whole of Woolwich was a short time since supplied, but which has recently been disused. A perpetual supply is thus insured. The work of erection was done by Mr. Johnson, plumber. During the ceremonial of the opening Mr. Gurney remarked (according to Orr's *Kentish Journal*) that there were nearly thirty such drinking-fountains now opened in the metropolis, and he hoped that in a few years this number would be more than doubled.

**A HINT TO THE ENTERPRISING.**—We would direct the attention of capitalists to the peculiar opportunities which the howling wildernesses in the vicinage of St. Sepulchre present for successful enterprise. A small plot of land in Fleet-street has recently realized a fabulous sum, while whole acres within a stone's-throw are as unproductive and desolate as though they were integral parts of Salisbury Plain! What are the English people about? We are sure that a very little time will expire before a change will come over the spirit of their dream, and that which is now a disgrace to this proud city will become as profitable, as bustling, and as cheerful as the neighbourhood of the Great Western Railway. It is not for us to indicate the precise line it is expedient to follow in order to compass the ends all seek in the employment of capital. We would merely say that so soon as one or two railways shall be in operation, pouring thousands of people into the city from the suburbs, and from the far north and west—so soon as this result shall be accomplished, the whole face of the neighbourhood will become changed, and the property which has been for years the least in value of any in the city will at once be converted into a mine of wealth.—*City Press.*

**THE ECONOMIC MUSEUM.**—This useful and valuable museum, which was commenced by Mr. Twining, at the Society of Arts, in 1856, and subsequently exhibited in a state of progress at the South Kensington Museum and the Polytechnic Institution, is now located, for more complete development, in a building erected on the grounds of Perryn House, near the railway station, at Twickenham. On and after the 1st of July, 1860, orders for admission to the museum, on Wednesdays, between two and five p.m., may be obtained from the secretary of the Society of Arts. Additional facilities will be afforded as soon as the arrangements of the museum, in its new premises, shall be sufficiently advanced. Visitors will be received by the curator, Mr. W. Freeman, who will supply further particulars. All admission will be gratuitous. Communications should be addressed to T. Twining, esq., Perryn House, Twickenham, S.W.

**IRON TRAMWAYS IN THE CITY.**—Workmen are now employed in Fenchurch-street and Leadhall-street, laying down 500 feet of new iron pavement, Mr. J. B. Redman's patent, to form a tramway in 6-feet blocks, with grooves to prevent the slipping of horses. An iron roadway was commenced two years since in the same locality, but was soon afterwards taken up, the experiment having failed to answer the expectations of the projectors.

**THE ELLISON WATER COLOUR COLLECTION OF PAINTINGS.**—This interesting gift has now been deposited in the South Kensington Museum, and will be first exhibited to the public on Saturday next.

**THE CARVERS AT ALNWICK.**—The *Alnwick Journal* says,—"At Newcastle, in Elswick-lane, on the 7th instant, aged 34, died Mr. Thomas Albert Bohm, carver at Alnwick Castle. The regular staff of carvers at the castle is about twenty-six, and this is the fifth death that has occurred among them. There must be something detrimental to health, either in the occupation itself or in the sanitary arrangements of their workshops." This bears out an observation made in our journal not long ago, and should be inquired into.

**THE TOWN SEWAGE PROBLEM; PORTABLE SEWAGE MANURE.**—Mr. Manning, the patentee of a process for the treatment of the sewage of towns, and its conversion into a dry and portable manure, read a letter from Baron Liebig lately at a meeting of the Haddington Agricultural Club. After stating that the sample of sewage manure forwarded to him from the works at the South Back of the Canongate by Mr. Manning contained a large quantity of sulphate of lime, magnesia, potash, &c., with ammonia and a small percentage of phosphoric acid, Baron Liebig, according to the *Scottishman*, observes:—"In my opinion, which is, however, not yet confirmed by exact figures, the action of this manure, if used by itself, would be limited, the most active matters being contained in too small proportions relatively to its volume; but I believe, that a mixture of your manure with guano, or phosphate of lime (bone dust), would confer the most solid advantages upon agriculture. Your manure would add those useful elements which are neither contained in guano nor bones, and would increase their action and efficacy, so that, at the very moderate price at which you sell it, this mixture would prove also a source of great economy to the farmer. I was astonished to find in your manure so large a quantity of ammonia and potash, and I am convinced that your (patent) process is perfectly applicable to the treatment of the sewage of towns, and the manufacture of a sewage manure."

**NEW LIGHTHOUSE IN THE BAHAMAS.**—The tower is 157 feet 6 inches high, and formed of cast-iron plates, 8 feet by 7 feet, bolted together. The plates of the lowest tier weigh about 1½ ton each, but decrease gradually to the summit. The cast-iron shell of the tower stands on a ridging of oak piles, driven 20 feet through the sand and coral rock. At a height of 135 feet there is a projecting gallery, surmounted by a railing. A cast-iron pipe, 18 inches in diameter, is placed in the centre of the tower, extending from the foundation to the lantern. This serves as a central support to the floors, and carries the weight of the lens and lighting apparatus. A cast-iron spiral staircase ascends round the centre column to a height of 24 feet, and thence round the internal walls of the tower. The whole of the tower is lined with brick and concrete, decreasing from 8 feet in thickness at the ground to a single slab ring at the lantern floor. The dwellings of the keepers are of brick, with slated roof, and are arranged round the base of the tower in the form of a ten-sided polygon, while division-walls act as buttresses to the structure. Under the dwellings are ten cast-iron tanks, each capable of holding 1,000 gallons of water, and supplied by gutters connected with the roof. The work was designed by Mr. A. Gordon, C.E. and carried out by Mr. C. W. Scott, resident engineer. The working party landed on 1st April, 1858, and the light was exhibited exactly two years afterwards. No accident occurred during the erection.

**CONSERVATORY, KEW GARDENS.**—The tender of Messrs. Cubitt & Co., of Dinlicio, for the erection of the great conservatory in the pleasure grounds and arboretum adjoining the Botanic Gardens at Kew, has been accepted, and the work commenced. It will be a trifle short of 700 feet in length. It will occupy an extensive area on the right hand side of the grand lawn avenue, leading from the Palm House to the Pagoda.

TENDERS

For the Great Malvern Hotel; Mr. E. W. Elmslie, architect. First contract:—

Davis	£29,950 0 0
McCann & Everal	27,750 0 0
Essie	21,750 0 0
Wood	20,950 0 0
Farrell	20,800 0 0
Myers	20,760 0 0
Broadbent	18,990 0 0
Perkins (accepted)	17,800 0 0

For the erection of dwelling house, Earley-park, Berks, for Mr. Thomas Porter; Mr. A. Waterhouse, Manchester, architect. Quantities supplied:—

Carter	£6,600 0 0
Hooper	6,413 0 0
Patman & Fotheringham	6,408 0 0
Smith	6,115 0 0
Wheeler & Son	5,795 0 0

For restoration of St. Matthew's Church, Bethnal-green, recently destroyed by fire; Mr. T. E. Knightley, architect:—

Little	£5,908 0 0
Clark	5,875 0 0
Wood	5,835 0 0
Perry	5,741 0 0
Pritchard	5,589 0 0
Foster	5,579 0 0

For two houses in Hackney-downs; Mr. R. Roberts, architect:—

Jack-on & Shaw	£4,290 0 0
Callow	3,957 0 0
Brown & Robinson	3,949 0 0
Coleman & Co.	3,817 0 0
Corder	3,829 0 0
Galsworthy	3,745 0 0
Ashby & Sons	3,727 0 0
Perry	3,724 0 0

For works of restoration at Worcester Cathedral:—

Thompson	£4,346 0 0
Less if windows to lady chapel be not done	156 0 0
Total	£4,190 0 0
Messrs. Burnell & Son	4,316 10 0
Less if windows to lady chapel be not done	168 0 0
Total	£4,148 10 0

For two semi-detached villas, at Great Malvern, for Major Dandley; Mr. E. W. Elmslie, architect:—

Davis	£3,400 0 0
Perkins	3,195 0 0
Smart (accepted)	3,175 0 0

For seven new houses in Kettering, Northamptonshire; Mr. E. F. Law, architect:—

King	£3,323 13 8
Hawthorn	3,028 19 8
Pooley	2,828 0 0
Bayes & Brown	2,795 17 8
Cosford	2,739 0 0
Simpson & Glover	2,706 16 0
Henson	2,698 13 9
Bodington (accepted)	2,609 0 0

For a pair of semi-detached villas, to be built at Bishop's Deyn, Tonbridge Wells, for Mr. John Colbran; Mr. W. Bond, architect. Quantities supplied:—

Edwards	£3,142 13 0
Mercer & Campfield	3,012 10 0
Headment	2,988 0 0
Walker	2,921 16 7
Perigo & Vigor	2,810 0 0
Plink	2,792 0 0

For new schools, &c., for the parish of St. Giles, Northampton; Mr. E. F. Law, architect:—

Clifton	£2,843 0 0
Parker	2,750 0 0
Whitby	2,075 0 0
Headment	2,000 0 0
Ireson	2,443 0 0
Cosford (accepted)	2,300 0 0

For erecting three villas upon the Western Elms Estate at Reading; Messrs. Cooper & Goulding, Reading, architects. Quantities supplied:—

Woodroffe	£2,069 0 0
Orton & Child	2,096 0 0
Shepherd	1,998 0 0
Wells	1,953 0 0

For building a detached and a pair of semi-detached villas on the Western Elms Estate, Reading, for Mr. J. Wilson; Messrs. Cooper & Goulding, architects:—

Woodroffe	£2,069 0 0
Orton & Child	2,025 0 0
Shepherd	1,998 0 0
Wells	1,953 0 0

For High Wyck Church and Schools; Mr. G. E. Pritchett, architect:—

Burton	£3,792 0 0
Glassecock	3,000 0 0
Beil	2,925 0 0
Dickinson (accepted)	2,777 3 0

Add if Oak Seats are provided, instead of Deal.

Burton	£2,237 10 0
Glassecock	20 0 0
Beil	134 0 0
Dickinson (accepted)	93 0 0

For alterations to shop and premises, No. 115, Oxford-street; Mr. H. Field, architect. Quantities supplied:—

Edser	£1,057 0 0
Mansfield	1,050 0 0
Patman & Co.	1,015 0 0
Todd, jun.	961 0 0
Saunders	849 0 0

For vaults and other works, Barge-yard, Bucklersbury, for Mr. F. G. Debenham; Mr. William Nunn, architect:—

Glenn	£613 13 0
Sewell	655 0 0
Deansley	614 0 0
Brass	630 0 0
Turner	620 0 0
Day (accepted)	597 0 0

For alterations to Sidmouth House, Gray's Inn-road, and building new shop in forecourt, for Mr. Waller:—

Patridge & Crutch	£667 0 0
Hugo & Winter	598 0 0
Williams	591 0 0
Sands	562 0 0
Mitler (accepted)	523 0 0

For constructing about 620 feet of sewer, and forming Redcliffe-road, at West Brompton, Middlesex:—

Morris	£470 0 0
Bilton	459 0 0
Davis	448 0 0
Mutter	428 1 8
Walton	420 12 0
Ayers	325 7 6
Raymond	355 11 0
Guttridge	355 0 0

\* By post immediately after others had been opened.

For works to be done in alterations, &c., at St. A. bridge Church, London-wall; Messrs. Tillett & Chamberlain, architects:—

Knight	£920 0 0
Mason & Son	828 0 0
Brown & Robinson	698 0 0
Pritchard & Son	697 0 0
Wills	650 0 0

For works to be done in repairs, &c., to premises, Thornley-wharf, Regent's-park Basin, for Messrs. Finley, Seal, & Co.; Messrs. Tillett & Chamberlain, architects:—

Holland	£340 0 0
Cannon	270 0 0
Pritchard & Son	256 0 0
Wills	225 0 0

[Harp-lane.—Sir: With reference to the tender for works to be erected in Harp-lane, City, under Messrs. Young & Son, inserted in your journal of the 6th inst., I beg to inform you that my tender was the one finally accepted, Mr. Knight having declined.—H. HARR.]

TO CORRESPONDENTS.

Z.—Quotter (should have sent his name).—J. P. C. W. F.—Messrs. P.—G. F.—Mark Lane (each reply in our "Notices" appears to the initials before it only).—J. O. R.—W. H. (various notices of "killed" smoked bricks have been given at different times in our journal).—O. and C.—D. S.—W. B. R.—W. A. C.—A. C. G. S.—Old Subscriber (we cannot give address).—Scrie.—A. W. I. (will appear).

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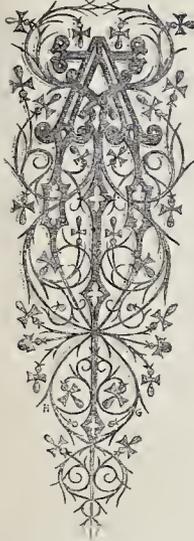
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# The Builder.

VOL. XVIII.—No. 904.

*Ecclesiastical Buildings in the Northern Counties.*



N excellent example, fraught with prospective good, has just now been set by the Venerable R. C. Coxe, Archdeacon of Lindisfarne. The archdeaconry having been lately divided into six rural deaneries, at the direction of the Bishop of Durham, now Archbishop of Canterbury, the archdeacon required the rural deans to furnish him with compendious reports of the state of the ecclesiastical buildings in the districts assigned to each. This has accordingly been done; and we have the result before us in the substance of an able charge delivered by the

Venerable Archdeacon, at the visitation held at Morpeth on the 22nd ult.

From this and our own knowledge we can say that the general condition of the churches is satisfactory. There are several cases of ruinous neglect and consequent insecurity; but by far the greater proportion of the churches are in good repair,—dry, warm, and ventilated. We must here premise that the churches of the latter class are, for the most part, those that have been built, or rebuilt, at the beginning of the present century, and are consequently without any of the ecclesiastical fitness more modern taste demands. A square room, penetrated with common sash windows, appears to have been the model from which too many of them have been built. They are nearly always destitute of chancels, and frequently deficient of towers; nevertheless, being in sound condition, a skilful hand could convert them, at but small expense, into more fitting temples of worship. On the other hand, the churches that are marked dangerous, by their bulging walls and cracked towers, are all ancient. The list would have been much larger, but for the restorations that have been effected in the instances we shall presently enumerate. A fourth class consists of new edifices. The glebe houses are generally in sound repair; although, as of course there would be anywhere over so large a district, there are a few cases calling for redress. Several of the buildings are fortified towers, strong and massive, suited, as they were intended, for a secure retreat for the vicar and his valuables on the approach of foes. In a list of Northumbrian fortresses, taken during the minority of Henry VIII., there were seven embattled towers mentioned as the residences of the clergymen of the respective districts. The church towers also present evidences of having been completely fortified. A good idea of the general insecurity of Border property in the good old times, and of the alteration in prices, may be gleaned from the fact that land which let for 5*l.* per annum in the latter part of the seventeenth century, now realizes 3,000*l.* annually.

We have already called attention to the profusion of abandoned buildings, better recognized under the name of ruins, in Northumber-

land, and to the vigorous manner in which some of the most important of them are being restored. Of these we take no account here, but proceed to place on record the existing condition of the churches now in use in the archdeaconry of Lindisfarne, in this year of grace 1860.

Beginning with the northernmost deanery, the ancient churches of Norham and Ford have been carefully restored. At Etall a mortuary chapel has recently been erected by Lady Frederick Fitzclarence. So far all is well; and we may believe that this district, so intertwined with the romance and remembrance of the fatal battle of Flodden, is in good hands.

Braxton Church is the first we shall mention of the ancient edifices that have been injudiciously tampered with. Unhappily, this little Norman church, on the borders of the battle-field, was taken down about thirty years ago, with the exception of the chancel-arch, and rebuilt. The west wall has since shrunk, and the south-west corner is in a dangerous condition.

Ancroft is another ancient church of which parts have been preserved. The tower and doorway are as the Normans left them: the rest of the edifice has suffered at the hands of the unformed. Cornhill and Carham are specimens of comparatively modern churches in the worst taste. Lowick was another of the same school; but here an attempt has been made, by the insertion of ecclesiastical windows, to improve matters slightly.

Coming coastwards, into the deanery of East Norham, we find a new church and parish, dedicated to St. Mary, at Berwick; and the mother church enlarged and re-arranged. At Kylee, the incumbent is exerting himself to procure the means of converting his unpromising church into a more beautiful form. Repairs are in progress at Holy Island church. At Scremerston all is comparatively modern.

Of the churches in the Bamborough deanery that of Bamborough stands foremost in point of architectural beauty. It has a crypt that has only recently been discovered, having been completely buried in the sand, large quantities of which are still swept into it by particular winds. The north transept is the only portion requiring remedial interference. Beadnel, Lucker, North Sunderland, Ilderton, and Wooler churches are all in good repair, but of condemnable taste. Belford, Chatton, Chillingham, and Doddington are ancient buildings restored by the present or last incumbents some years ago, not in unexceptionable taste, but so far deserving of praise, inasmuch as the builders have retained some of the ancient features instead of pulling all ruthlessly down. At Ellingham and Kirk Newton the churches are pronounced positively unsafe. There is a large crack in the north wall of the former: the tower is tottering, and the ceiling of the chancel broken and unsafe. At Kirk Newton the interesting old Norman church, built at the foot of Yeavinger Bell, one of the most lofty hills in the Cheviot range, and which has seen the roughest service in the dark ages, showing traces of fire and defence in its sapped foundations and mouldering arches, and enriched with curious sculpture so defaced as to be enigmatical to the most erudite of antiquaries, is to be restored forthwith. This rural deanery is fortunate in possessing the district in which the late Lord Crewe's charities are dispensed. At Bamborough Castle, part of the property devised by the bishop to suffering humanity, apartments are fitted up for shipwrecked sailors, in which bedding is provided for as many as thirty. A patrol is always on guard, and the utmost vigilance observed along the shore throughout the length of the manor. The extremely dangerous nature of this coast is now in great measure mitigated by the erection of the Varnie lighthouse, the scene of Grace Darling's heroic adventure: when accidents do occur, the promptest assistance is given, and coffins are provided, and funeral expenses paid for any unfortunates who may be cast ashore. The charity also embraces the gratuitous education of the children of the poor, besides an infirmary, and a market, at which meal and groceries are sold to the necessitous at a great reduction of price. The first person

bringing news of a vessel in distress to the castle is rewarded with a present proportioned to the distance he has come, and the darkness of the night. Thus this old rural residence of the Saxon kings of Northumbria is still a light unto the nations.

Chillingham also possesses features of unusual interest in its fine castle and park, and is even more remarkable for the breed of wild white cattle preserved there by Earl Tankerville.

The Alnwick rural deanery is in very good odour. The parish church of Alnwick is a Perpendicular building, repaired when the castle was renovated, in the Georgian Gothic of the last century. A new church was built by the late Duke of Northumberland, and dedicated to St. Paul, in the late Decorated style: it is now enriched by the Munich stained-glass window to his Grace's memory. At Lesbury and Rock, two ancient edifices have been restored recently; as has been the case at Embleton, with the exception of the chancel. At Rennington an old Norman church was taken down at the commencement of the century, and an abomination in the shape of a "neat structure" erected on its site. Howick Church has been recently and beautifully restored by Earl Grey. The ancient churches of Edlingham and Shilbottle call aloud for aid; else, say their shivering walls and shattered roofs, we perish. The chancel of Bolton Chapel, where Surrey and the English knights held a rendezvous on the eve before the battle of Flodden, and swore to conquer or die, is in a very dangerous state. At Alnmouth, a disused granary has been converted into a chapel by the Duke of Northumberland, for the temporary convenience of the inhabitants, whose Norman cruciform church was obliterated and washed away by the sea at the beginning of the present century.

Coming next to the rural deanery of Morpeth, and glancing at the care bestowed upon the old parish church and the handsome new one, we turn to Bolam Church, which is considered to be the oldest ecclesiastical edifice in the county. It is in sad want of a thorough and conscientious restoration. Bothal Church, recolent of departed chivalry, is also in want of immediate attention. The ancient church of Widdrington is in the same stage of decay; but is not without good hope of help. On the contrary, the churches of Hebron, Long Horsley, and Netherwitton, built in the most miserable taste, are all in sound repair.

The church of Alnham, in the deanery of Rothbury, like that of Ingram, is in a very dilapidated state. The situation of these crumbling is very retired, among the remotest of the border hills; and they appear to be as much out of mind, as they are out of the beaten track of travellers. The former is so exposed to the elements, that the incumbent is fain to hold service in his own house in mid-winter, in preference to having no congregation: for, rough country people as they are, and used to Cheviot weather, they are not willing to run the risks of catching colds and rheumatism in the damp, cold, windy church. In bright contrast to this deplorable state of things, are the buildings of Alwinton and Holystone, where both churches and schools are in good taste and condition. Whittingham Church, described by Rickman, and illustrated in Parker's edition for the sake of its fine old Saxon tower, has been taken down and re-built by the present incumbent; and thus this rare specimen is lost. The chancel roof and window already need repair. The new tower has been fitted with pigeons' nests, for the accommodation of those birds which reside there in great numbers. Rothbury Church has also been nearly rebuilt quite recently, but, although under the superintendence of a London architect, in a very inefficient manner: unless, indeed, proper means are taken to keep out the rain, the state of the building will soon be as bad as it was before it was restored. The plaster is falling from the open roof: the wet enters at nearly every window, as well as at the junction between chancel and nave, and at the tower. At Elsdon, the old church has been more carefully restored. At Otterbourne, where the gallant Hotspur avenged the loss of his pennon on "dowghtye Dowghlasse," one

"Lamassycde," some centuries gone, there is a new church just erected by individual munificence. At Edlingham, the state of the sacred structure calls for some expenditure.

The district we have glanced over so rapidly, although minutely, bound in by Cheviots, the Tweed, and the sea, on three sides.—the scene of constant petty warfare and several pitched battles,—is not devoid of association with men of letters. The celebrated Duns Scotius, "the most subtle doctor," professor and regent of the University of Paris in 1304, and afterwards professor of theology at Cologne, was born in a village adjoining Embleton. Bernard Gilpin, known as the Apostle of the North, who was only saved from being burnt as a heretic by Queen Mary by the accidental breaking of his leg on his road to London, and her cruel Majesty's death pending his recovery, was rector of Rothbury. Dr. Brown, the friend of Warburton and Pope, whose tragedies,—*"Barbarossa"* and *"Athelstan,"*—became stock pieces under the management of Garrick, was a native of Rothbury. Percival Stockdale, supposed to be the original of the eccentric Belfield in Miss Burney's novel of *"Cecilia,"* was born at Brunton, and was for many years vicar of Lesbury. In this quiet village, on the banks of the pleasant trout stream, the Ahe, he must have written the numerous works which procured him the friendship of Lord Lansdowne, Miss Porter, and other eminent persons. His acquaintances were not always his admirers, for it is related that Sheridan, when on a visit to Lord Grey, was observed to glance hastily over a volume of poems presented him by Stockdale, and to write something on a blank leaf. Instead of a complimentary tribute, however, the mortified author read the following lines:—

"It's tag, rag, and bobtail;  
The mad works of Stockdale."

The semi-civilized inhabitants of Elsdon were once convinced to the spiritual guidance of a Frenchman, the Rev. Louis Dutens, the author of several antiquarian works, and historiographer to his Majesty George III. The manner in which he overcame their fierce dislike to a foreign minister is too good not to be told, characteristic as it is of the men, the time, and the place. His parishioners, principally sheep-farmers and their herds, declared they could not understand one word he spoke, and were clamorous for his removal. The living being worth 2,000*l.* a year, deserved an effort to retain it. So the ingenious Frenchman pretended to be unconscious of all that was passing, mixed freely with the people, and in the most affable manner, and personally invited as many of the principal parishioners as his table would accommodate to dinner. When they arrived he expressed himself very much surprised to see them, as he thought they could not understand him. "Oh! oh! very good!" cried he; "when I preach you from my pulpit you not understand my speak, but when I invite you to my good dine you very well understand!" This good-humoured joke was followed by a capital dinner in the old rectory tower, and appears to have realized the desired effect.

The arts and sciences have had votaries in this remote locality. Conghan and Wilkin, the youthful mathematicians, whose problems were the puzzles of Sylvanus Urban, in the *Gentleman's Magazine*, were born here. Capability Brown, the landscape gardener, was also a native of this district. Those pioneer-masterpieces of art, the block engravings of Bewick, are preserved in his native county by a chemist in Alnwick. We mention these few instances, out of a great many, as a set-off against the general unsettled and unlearned character of the inhabitants. They are the more remarkable when we consider that it was the custom of their neighbours, respectable farmers, to meet at public houses and pin up a bank note to the wall and drink till it was expended; and in these drinking bouts to gamble for scores of sheep, or geese, or other farm stock; and, when the game went against them, and every thing was staked and lost, to go out upon the hills and moors and steal the first stock they came to, to pay their debts of honour. With the snow 20 feet deep for miles

around, we must not be too severe in our blame; but the snow is lying 30 feet deep in drifts on Cheviot at this present moment, and there is nothing of the sort going on. So much for the good new times, and the teachings of the printing press, and from the churches of Lindisfarne.

#### ON THE ARCHITECTURAL CAREER OF THE LATE SIR CHARLES BARRY.\*

AMONG the practical questions connected with the new Houses of Parliament, one of the most urgent was the selection of the stone; and as the mooted of that question led to the important survey by a commission in the year 1838, I may perhaps mention the immediate connection of Sir Charles with that movement. It appears from information with which I have been supplied by our kind friend Mr. C. H. Smith, the only surviving member of the commission, that, soon after the fire, Mr. Joubert, of Chen, sent specimens of Caen stone to about twenty different members of Parliament, and among others to Mr. Joseph Hume. Mr. Hume referred to Mr. Smith for a report, which was forwarded to the Department of Works, and by them to Mr. Barry, who at once wrote an admirable note to Mr. Hume, stating his views and his intention of making a tour throughout Great Britain to collect information. It was then arranged that scientific and practical men of eminence should go on the same errand with him, and the result was that, during fifty days in the autumn of 1838, the information was collected which has been embodied in the valuable report of the commissioners.

In 1840 Barry made fine designs, which were well carried out, for converting Highclere, a seat of Lord Camarvon's, into an irregular version of Italian. About the same time he completed additions to University College, Oxford, and I believe made comprehensive designs for buildings at Worcester College, in the same city. In the year following the laying of the first stone of the Houses, Barry began to reap the honours he had so fairly won—being elected Associate in that spring; Associate elect in 1842, and Royal Academician in Wilkie's place in 1844. His first recognition from abroad dates from Rome, Dec. 29th, 1842, conveying his affiliation to the Academy of St. Luke's; his second from St. Petersburg, Dec. 31, 1845. His election into the Russian Royal Academy, which was accompanied by the presentation of a diamond snuff-box from the Czar, was ultimately followed by his nomination to those of Belgium, 9th Jan. 1847; Prussia, 28th April, 1849; Sweden, 25th May, 1850; Denmark, Antwerp, and the American Institute. In 1855 he received the gold medal of honour for architecture, given at the Exposition Universelle of Paris, at which he acted as juror.

In 1841 Barry produced his noble design for Bridgewater House, for Lord Ellesmere, which was very different from that which he commenced as late as July 1817. Probably no building he ever executed was more elaborately studied, and the result is shown in much of the beautiful detail which decorates the princely structure.

The first stone of the superstructure of the Houses of Parliament, the angle of the plinth of the Speaker's house nearest the bridge, was laid (as has been already stated on the 27th of April, 1840) by the architect's wife, without any public ceremony, and in the presence of a few personal friends only. The first stone of the Victoria Tower was also laid in the same unpretentious way by Lady then Mrs. Barry, on her own birthday, the 22nd of December, 1843.

From 1840 to 1843, the works at Westminster, to which neighbourhood (32, Great George-street) Barry had removed in 1841, proceeded at a splendid pace; but shortly after that date difficulties arose against which even his strength, industry, energy, and unrivalled dexterity in managing recalcitrant employers, failed to make successful head. The only wonder is he was not killed by incessant worries and annoyances. To these cares his son Edward alluded in the following terms, in the paper he read here on the 1st February, 1858, on his father's great work:—

"In the session of 1844, a committee of the House of Lords, which was appointed to inquire into the progress made with the works, in consequence of a natural desire on the part of their lordships to enter their new house, and a still more natural inclination to blame an architect for anything inconvenient, commenced its labours, and reported that several alterations had been introduced into the design by the architect, without

any authority from the Government; an accusation he explicitly denied by stating that he had received authority, express or implied, for all he had had done. The alterations alluded to were a rearrangement of a portion of the plan between the Victoria Tower and the House of Lords.

Great objections were made by some members of the Lords committee to these modifications, and many inconveniences foretold, both to her Majesty and their lordships, but I am not aware that practice has justified these predictions, or reversed the opinion of the committee of the House of Commons, which sat soon afterwards, and resolved that 'no blame was to be attached to Mr. Barry for the cause he had taken, and that they had every reason to believe that all the alterations hitherto made had conduced to the convenience and general effect of the building.'

It was at this time that many complaints began to be made in Parliament about the so-called delay in completing the building, and the anxieties consequent on the various committees and other inquiries, in addition to the unavoidable responsibilities of the architect, caused him a serious illness, and thus made a reality of that delay which, up to this time, had been imaginary, as far as he was concerned.

Indeed, had it not been for the hearty and generous support of Lord Lincoln (now Duke of Newcastle), who was then First Commissioner of Woods, I do not think the works could have been carried to a completion by my father.

His lordship took special pains to make himself personally acquainted with the nature and bearing of the various complaints, and having satisfied himself that they were not based on justice, threw the whole of his official weight into the scale, and gave the architect no half-hearted or silted support in carrying out his views, until the close of his official connection with him."

All honour to the duke for this manly, kind, and persistent support of a great man, worried almost to death; and equal shame to those who hounded on the senseless fear from which this official shield in part protected him. I need scarcely remind this assembly of the feelings with which Barry was regarded by our late esteemed president, the Earl de Grey. On the occasion of the presentation to Barry of the Queen's gold medal in these rooms, on the evening of June 3, 1850, Lord de Grey touched on the peculiar trials to which the architect of the New Palace at Westminster, as it then began to be called, had been exposed, with his usual light but most skillful hand, in the following terms:—

" \* \* \* May you live to see the magnificent work now in your hands completed. St. Paul's was thirty-four years in its erection: you have not occupied half that time as yet, and have made a progress which, if it had depended on yourself, would have brought the Houses of Parliament nearly to completion, but the means of working have not been at your disposal. Sir Christopher Wren was entrusted with a large and striking work, destined for a single purpose. It was to be a great and glorious temple, dedicated to the worship of the Most High; but your work is to be devoted to I know not how many purposes. Sir Christopher Wren had to deal with men who knew what they wanted. Sir C. Wren, no doubt, received his instructions from men who knew the purpose to which the building was to be dedicated, and (to a certain extent) "what was required to carry it out; but I am sorry to say that that is not always the case with respect to the buildings entrusted to you. Sir C. Wren's masters" (however tyrannical and annoying) "were few: yours are legion. I am sorry to say that august assembly which has most to do with the erection of this magnificent structure has in it a vast number of men who ask questions, make suggestions, and offer criticisms, while at the same time they do not know what is wanted, or, indeed, what they want themselves. It is not wonderful, then, that the architect should be impeded, and that fault should be found without any good or substantial ground; and yet, with all these hindrances and drawbacks, you have made a progress in the stupendous work which you have undertaken which is perfectly surprising."

Of the true nature of the labours by which alone the difficulties of his task and position could be overcome, or even coped with, Sir Charles Barry has given the simplest, the most manly, and, I verily believe, the truest possible picture, in the following words, extracted from an official letter, and protest of his, which must for ever live as a judicious stigma upon those for whom the architect's noblest work was done.—"I may here add, as a ground for the increase rather than reduction of the customary remuneration in respect of public works, that, owing to the troubles, delays, and perplexities attendant

\* By Mr. M. Digby Wyatt. See p. 392, ante.

upon official communications and requirements, the architect's labours and anxieties are much greater than those which he has to incur in private practice; and if this be true of public buildings of an ordinary character, it may be easily conceived that those labours and anxieties have been incomparably greater in carrying into effect such a work as the new Palace at Westminster, in which not only the Government, but committees in Parliament, and even the public, have unceasingly assumed the right of criticism and control. As one proof among many others that might be adduced of the enormous amount of labour that has already devolved upon me in conducting this national work to its present state, it will not be irrelevant to mention that no less than between 8,000 and 9,000 original drawings and models have been prepared for it, a large portion of which have emanated from my own hand, and the whole of the remainder have been made under my own immediate direction and supervision.

I consider that I am entitled to a further remuneration for special services not connected with my professional duties in respect of the works of the building. These services consist of attendances upon the Fine Arts Commission, reports, and numerous drawings prepared in compliance with the orders of that commission, frequent communications with its secretary, and the artists appointed for the decoration of the interior of the new palace; attendances upon committees of Parliament in every session from the year 1841 to the present time, preparing data required by those committees; giving and correcting evidences, making up voluminous returns, in compliance with the orders of the House of Commons, one of which occupied myself and clerks for nearly four months; attendances to give evidence upon two Commissions of Inquiry with reference to Dr. Reid's system of warming and ventilating, preparing plans and other documents for the use of those commissioners; conferences and communications with the law officers of the Crown with reference to contracts, disputed claims, and threatened legal proceedings; numerous reports and estimates required from time to time by the Office of Woods, negotiations and arrangements consequent upon establishments of Government workshops at Thames-bank, and the superintendence of the collection of above 3,000 casts of the best specimens of Medieval art to be found in this as well as in foreign countries for the use of the wood-carvers; preparing plans, estimates, &c. for providing accommodation for the whole of the public records of the Kingdom, and other miscellaneous services."

Before such a crushing list of altogether unrequited exertions, how sadly the official sophisms of "my Lords" betray the thinness of the stately mantle through which peep out what closely resembles costly penury and meanness. Against their behaviour, and conclusions in respect to the remuneration of Sir Charles (a subject upon which I scarcely dare trust myself to speak), it must ever be a satisfaction to the members of this body to recollect that its council protested respectfully, but with firmness, and with a full appreciation of the special pleading of the representative for the time being of her Majesty's Treasury, in the following terms:—"Resolved," "That 5 per cent. upon outlay has been, and is, the only rate of charge recognized by the profession, as fairly remunerative in the average practice of architects. That it is to be deeply regretted that it should be proposed to depart from the above rate in the instance of the New Palace at Westminster; a building involving in its design and execution the exercise of the highest professional attainments. That the example which would be set by her Majesty's Government, should the course proposed be carried into execution (a legal appeal against their decision being practically impossible), is to be regarded as disastrous to the future prospects of architecture in this country, as calculated to lower the character of public monuments in England, and unworthy the Government of a great nation, whose obvious duty it is adequately to foster and protect the genius of its artists."

Under such complicated annoyances, Barry's health must inevitably have broken down altogether, if it had not been for the support, comfort, and affection he received in the bosom of his own family and the circle of his own friends. Happily for him in his domestic relations no man could be more auspiciously situated, and he has in moments of confidence expressed to me his sincere and almost solemn thankfulness for the manner in which all about him repaid the love he lavished unostentatiously upon them.

In the year 1840, his eldest son Charles entered

his father's office, therein to acquire that professional knowledge which such a school could so well give, and became the friend and associate of Mr. Banks, his present partner, then the chief confidential assistant of Sir Charles. Together they were actively concerned in all those varied works which for the next eight years were engrossing Sir Charles's attention, including the commencement of the New Palace at Westminster, and its prosecution, till the year 1848, in which, with the advice and sanction of Sir Charles, they entered into that professional connection founded on intimate friendship which still continues. Sir Charles's kind and valuable advice (at all times freely given to any young members of the profession) was especially afforded to Messrs. Banks & Barry, and greatly prized by them. From this time for the next two or three years, the partners occasionally assisted, and at times represented Sir Charles professionally, until their own practice increased so much as to require their whole attention; and the younger son, Edward Middleton (so named after Sir Charles's old master), who had been articled by his father to Messrs. Wyatt & Brandon, and who, on the dissolution of partnership between my brother and Mr. Brandon, about a year after Mr. Edward Barry had entered their office, served the remainder of his term with the former, had become able to assume that place of confidential assistant and representative which he held till the day of the decease of Sir Charles, who has bequeathed the drawings, papers, and books relative to the New Palace at Westminster, to the younger son, as having then for many years past been specially connected with his father in carrying out that great work.

Further of the Houses of Parliament it is scarcely necessary to speak: you know their merits: you, as architects, familiar with all that is greatest and most impressive in our art, know, as well as I know, that they will live to speak for themselves for centuries after the memory of such unmanly detractors as Mr. Dawson shall have passed away, and that as long as they endure they will tell but one tale.

No public building in Europe possesses a more ingenious and effective plan, a more perfect homogeneity of parts and style, a more graceful outline under every point of view, and greater technical excellencies and beauty. Let the most critical observer wander into every nook and corner of that enormous structure, and endeavour to detect a neglected point where the failing attention or ability of the architect have allowed a degeneration into meanness of finish, dissymmetry of axes or leading features, faulty proportion of line or detail, or anything like what is commonly called a bungle; and he finds one it will certainly be more than I, with very close attention, have ever been able to do. Supposing, however, that he may succeed, where I and many others have failed, let him, full of the notes he may have found in his brother's eye, take his stand either on Waterloo or Hungerford bridge, or on the river side near Lambeth Palace, and from one of those points, on a fine afternoon, watch till the sun goes down; and if he does not lose the impression of the "notes" in the enjoyment of one of the most exquisite pictures ever architect provided to feast a painter's eye, he "hath no music in his soul."

As practical architects, we are especially bound to recognize the extraordinary technical resources called into play in the structure and fitting up of the Houses of Parliament. At Barry's call, and under the vivifying influence of his daring and intelligence, a new race of workmen seemed to spring into existence. Trained by Pugin, and led on by John Thomas, workmen grew into artists; and who shall say for how much of the admirable masonry and carving which are now so rife throughout our land we are not indebted to the judicious establishment of the school, and prototype of our present Architectural Museum, at Thames Bank, by, and under the auspices of, Sir Charles Barry? Ever appreciative of the technical skill of others, he enlisted all the energies of those manufacturers and masters who first woke up in this country to the real capabilities of industrial art. For him, Hardman, Crace, and Minton exerted all their energies; giving him at once novelty, beauty, and excellence. Products and decorations which are now common enough were, when Barry and Pugin first employed them, rarities attainable only after repeated experiments, and with extreme difficulty. Mechanical arrangements for saving labour, the capacious mind of the former at once appreciated and applied, and, but for his great power in that respect, the Houses of Parliament could never have been completed, as they have approximately been, up to the present hour. It was given to him

at once to know how and when to use men as tools, and tools as men,—never confounding their legitimate functions, but deriving every possible aid from each and all. We cannot forget the ingenuity of all those contrivances for scaffolding and hoisting which were so ably described to us by Sir Charles's eldest son, on the 15th of June, 1857; neither can we overlook the debt we owe to one who, in all these matters, has so clearly shown us what may be done by intelligence and energy in overcoming every possible variety of mechanical and material obstruction an architect is likely to meet with in the course of the most diversified practice.

Nothing tended more to retard a general appreciation of the architectural merits of the Houses of Parliament than the necessarily slow and protracted realisation of its chief vertical features and skyline. The grand horizontal continuity of the river front, admirably calculated to contrast with and enhance the aspiring loftiness of the clock and Victoria Towers appeared comparatively unreasonable and monotonous until those features were brought to proximate completion. But a few years will, I sincerely believe, witness an entire revulsion of feeling with respect to the popular estimation of this building; and those who will then have grown accustomed to it in its entirety, and who may have learned to apprehend the skill with which its plan has been adapted to correspond effectively with the most complicated and, apparently, antagonistic exigencies, will wonder at the growls and grumbles which have continually proceeded from those who have persisted in pronouncing sentence on their own prognostics, rather than on the real schemes and designs of their truly accomplished architect, which they would not trouble themselves to apprehend.

In addition to the works I have already alluded to many more might be enumerated, several of which, in a less note-worthy career, would be regarded as of very great importance. Such, for instance, are the Privy Council Office and Trafalgar-square alterations; the terraces and additions at Shrublands (1849-54), for Sir William Middleton, done about 1849; Gawthorpe, a Gothic mansion, in Lancashire (1850-52), for Sir Kaye Shuttleworth; Kiddington, Conford Manor, Dorsetshire (1854-5), for Sir Josiah Guest; Schools, &c. at Dowlais (1855), for the same client; additions to the residence of Sir Isaac Lyon Goldsmid in the Regent's park; Harewood (1854-5), a large addition in a sort of Roman style, to his seat near Leeds, for Lord Harewood; Duncombe Park, for Lord Feversham; a Tudor house for Mr. Currie, near Leatherhead; Ensham Hall, for Lord Maclesfield; Cobham, for Sir John Cam Hobhouse; and King's-oak Lacey, for Mr. Banks. The last-named an early work, the rest, with scarcely an exception, since 1840. Among his designs, either not strictly, or not at all carried out, may be mentioned his projects for New Westminster-bridge, for Law Courts on the site of Lincoln's-inn-fields (made in 1838), and on a site abutting on the Strand by St. Clement's (made in 1852), for the reconstruction to a great extent of Northumberland House; of Drumlanrig Castle, for the Duke of Buccleugh; and of Buchanan House, for the Duke of Montrose; and for the completion of the Horse Guards, towards the Parade.

In 1849 Barry was appointed a Royal Commissioner for the Exhibition of Industry of 1851, and as a member of the Building Committee, on which he sat with Robert Stephenson, Brunel, the Duke of Buccleugh, Lord Ellesmere, Sir William Cubitt, our President, and Professor Donaldson, he took a most active part in the early settlement of all matters relating to the building. The section of the columns, with its ingenious provisions for attachment of girders, and superposition of other columns, the general proportions and arrangement of many of the leading parts, and the form of the transept roof, which I saw him sketch on the suggestion of Brunel, that rather than cut down or exclude the large trees it would be better to roof them in, were all his, and but for his having been beaten on the score of time and expense on the view he took of the desirability of covering the nave also with a semi-cylindrical roof, as has been done at the Sydenham Crystal Palace, he would no doubt have continued to render greater practical assistance than he did till the opening of the Exhibition.

As a Royal Commissioner he dissented from the South Kensington Museum and National Gallery schemes, and forwarded to his Royal Highness, the President, for submission to his colleagues, a comprehensive and most able scheme for an extension of the British Museum upon the site of some of the streets and squares now imme-

diately adjoining it. In how magnificent a manner he would have dealt with the National Gallery in its present commanding position, is well though slightly shown in several of his existing sketches, which, it is to be hoped, may be published in facsimile.

Mr. Barry became Sir Charles in 1852, having been knighted on the occasion of her Majesty's making, for the first time, in February of that year, her state entrance through the lower story of the Victoria Tower, and shortly afterwards he began to gradually withdraw from active practice. In 1855 he removed to Clapham. Among his last and finest designs were three series of great additions and alterations to Clumber, for the Duke of Newcastle, in 1857; plans and sketches for the construction of a building for the Royal Academy of Arts, on the site of Burlington House; drawings for the Halifax Town-hall; and that design, or rather collection of designs, for the improvement of the western portion of London, which he contributed as a sort of rider to the designs of his son Edward for the Government Offices. This last I venture to consider one of the most important designs he ever made. I look upon it as a legacy to his country of almost corresponding grandeur of treatment with that bequeathed to us by Sir Christopher Wren, and prepared after the Fire of London. Could but the scheme conceived by the architect who has shown us in the towers of Westminster and in the general composition of the Houses of Parliament what he could supply materially for the embellishment of the metropolis be realized, there can be no doubt that London would be the most beautiful and majestic looking city the world has ever seen.

In conversations I have at different times had on the subject of architecture with Sir Charles, he has always insisted on the indispensability of symmetrical arrangement, on sustained tranquillity of effect obtained through the reduplication of similar parts, on study and refinement in detail, and especially upon care in the grouping of masses and the treatment of the sky line in connection with landscape effects. It was his general practice, he has told me, to get out his roof plan as one of the earliest drawings in working out any design. The architects for whose works he generally professed the greatest respect were San Michele, Michelangelo, Vignola, Peruzzi, Soufflot, Perrault, Vanvitelli, Gibbs, Chambers, Jones, and Wren. For the latter his admiration was unbounded, and it was one of the latest acts in his life to give what assistance he could to the embellishment of Sir Christopher's great masterpiece.

In the summer of 1858, at the suggestion of Mr. Cockerell, Sir Charles Barry was invited to become a member of the committee for administering the St. Paul's Cathedral Fund, raised for the purpose of assisting the dean and chapter in providing, firstly, for the special evening services, and afterwards for the decoration of the cathedral. He entered heartily into the proceedings of this committee, and scarcely missed a single meeting. The surveyor to the fabric is anxious to bear witness with gratitude both to the value of his councils and the uniform kindness of his manner.

As it was sometimes necessary in the alterations that have been decided on, and already partially carried out, to take steps regarding which there could be no positive indications of Sir Christopher's mind (although, fortunately, in the main, there are such indications), it was of the greatest value to have an adviser who was so capable of deciding what Sir Christopher Wren would have been likely to have done under the new circumstances, and one who was independent of a superstitious veneration for the original arrangements when their change became desirable in consequence of the alteration of other parts. One of the last letters written by Sir Charles Barry was on the subject of the works in the Cathedral, to the Dean of St. Paul's, by whom his premature loss is deeply regretted, as it is by all others connected with the cathedral or the committee.

On all possible occasions Sir Charles Barry urged the necessity for a system of more complete and profound architectural study than has yet been organized amongst us. Quietly, though I have reason to know most strenuously, his views on this head were pressed upon the attention of his colleagues in the Royal Academy, and it was his earnest desire that the professorship of that body should be elevated into real practical efficiency.

In the formation of the Architectural Publication Society, Barry gave valuable and willing aid, but from compliance with the request of the com-

mittee for assistance towards the illustrations, he always excused himself, on the ground that his sketches were too slight to be placed before the public. When, however, the article "Baalbek," compiled for the "Dictionary of Architecture," issued by that society, was submitted to him, he acceded most readily to the wishes of the committee, and prepared the description (afterwards printed) of the ruins at that place, from his own memoranda and sketches. This assistance was the more remarkable and gratifying, as it is probable that, with the exception of a short, but often referred to, contribution to Gwilt's edition, in 1825, of Sir William Chambers's Treatise on Architecture, this account is the only literary production from his pen; in fact, he had quite sufficient employment for it in the many and able reports and descriptions he was daily called upon to make. His interest in the Architectural Publication Society he kept up to the last, having replied within a month before his decease to an inquiry made by the secretary as to the penitentiary of sound in a certain room in one of the buildings erected from his designs. It is also reported that he was engaged upon an account of the Architecture of the Holy Land for the same work, at the date of his untimely demise.

In his comparative leisure and retirement from active life at Clapham, his friends earnestly hoped that Sir Charles would find opportunities of regaining that strength and health which had been seriously impaired by a life of such intense and incessant exertion and anxiety. Their wishes, which seemed to be rapidly in process of realisation, it has pleased God to suddenly and awfully frustrate: how, after the exquisitely simple narrative given you by Professor Donaldson, it is unnecessary for me now to detail. It may suffice to record with thankfulness, that dreadfully unexpected as was the summons, it fell upon a Christian man, who had long looked upon death as a Christian man should, and whose piety was not less unobtrusive and genuine than were his faith, hope, and charity.

I might of course have urged many other points upon your attention in respect to the powers of Sir Charles Barry, as testified in each of the various works to which allusion has been made; but there are limits both to my powers and to your patience. The earnestness of the few remarks with which this memoir, in spite of its length, obviously too much abridged by stress of time, must necessarily be terminated, will be of little consequence, as no doubt many an abler pen than mine will be enlisted in drawing the most profitable instruction from so great an example, not only of what is excellent in art, but of what is most admirable in private life. Let us hope that whenever that extended memoir which may, I believe, be looked for from the great and united talents of his sons Alfred, Edward, and perhaps Charles, shall appear, it will prove to supply all lacunæ existing at the date of its publication, and that it will illustrate, copiously, both by pencil and pen, the life—artistic, personal, and historical—of Sir Charles Barry. It is satisfactory to think that he has not passed away without leaving materials for the picture of him which should obviously be placed in the National Portrait Gallery, or for the statue which should find its appropriate niche in one of the halls of the New Palace at Westminster. His portrait, by Harland, has been engraved; that by Hayter, in the possession of the family; one by Pickersgill exists. His bust has been modelled by Belmas; and last, not least, an excellent daguerotype of him, still in good condition, was taken by Claudet for his son Charles, immediately previous to his visit to Italy in 1847; and another, not less satisfactory, was executed of him by Killburn, in the present year. An engraving from this last may, I hope, accompany any extended memoir or biography.

I know not how any moral that the ablest rhetorician in the world could draw from Sir Charles Barry's professional career could be made to speak more strongly, or to admonish us more stringently, than the facts of his life, and the monuments he has left behind him, do for us unerringly, if we will but open our hearts to apprehend and study them aright. His incessant labours, first to learn and then to practise, again to learn and again to practise, and again, and again, and again to learn and practise, so long as his physical energies could support the activity of his intellect, should convey to us all a lesson of profound humility, and a stimulus to exertion of the most active kind.

If he, with all his natural genius and aptitude for art could achieve success, in the measure in which he did achieve it, only by never ending, ever re-beginning toil and study, how can we

emulate, even an approximation to his excellence in our art, without an exercise of both increased in the ratio of the disparity between our own natural powers and his? His life is only another practical illustration of that which lives of all the greatest artists who have ever lived,—of Titian, of Michelangelo, of Raffaele, of Leonardo da Vinci, of Albert Durer—already bear witness to,—that study and practice must in art ever go on hand-in-hand. Study without practice will but make the pedant; practice without study can but multiply busy worthlessness. He who would ever be in our art what Sir Charles Barry was, must don the same armour, and fight for every step in the upward struggle, with the same weapons, and with equal courage and pertinacity.

#### THE ARCHITECTURAL DRAWINGS AT THE ROYAL ACADEMY.\*

Of Hemsted House, in Kent, erecting for Mr. Guthorne Hardy, M.P., there are two good views by the architect, Mr. D. Braudon,—No. 671, the entrance front; and 683, the garden front. A Jacobean manner is here the basis; but a considerable amount of art is introduced, especially in the front last mentioned, where the terrace-garden is effectively arranged, and the loggia to the ground story, the balcony over balcony carried by columns, and other parts, are well managed. The materials are red brick and stone. The whole entrance front is marked by a feature of detail in one of the bay windows; namely, raking lines across the mullions—intended, we suppose, to indicate the position of the staircase. No one will accuse us of leaning towards the falsification of structure; we should favour the external exhibition of internal arrangements rather than the reverse; but there are other considerations to be also kept in view by the artist-architect; and these are not so held, in many of the prevalent attempts to mark the positions of staircases. Such attempts are a misreading of the lesson of Nature, who, it has been said, never lays bare the skeleton and whole system of structure upon which the beauty of a form is disposed. "Taverham Hall, in the county of Norfolk, erecting for the Rev. J. N. Micklethwaite" (677), by the same architect, is in the same character, Jacobean or Elizabethan; and perhaps the design should be regarded as more meritorious than the other, if not indeed highly effective.—We do not desire to see any revival of the distinctive French Gothic, especially with roofs of excessively high pitch, and exaggerated finials, as in Mr. Massey's "Design for a Baronial Residence" (674). The French models, as well as others, should be studied, and indeed made use of; but copyism is not justifiable in their case or any other.

Besides the drawing already mentioned, Mr. T. H. Wyatt exhibits a considerable number of works. The nature of his "Alterations and Additions in progress at Latham House, Lancashire," for Lord Skehversdale, is not explained by the view (681). The drawing, however, shows a good group—a central block, and outbuildings advanced,—an arrangement not to be adopted where it would shut out prospect; and a dwarf wall and gates inclose the area or quadrangle. The original details appear to have been of the seventeenth century Italian style. Though plain in character, even to the extent of what might be called commonplace, the Italian square-built mansions are often better in general mass and proportions than more enriched works of the present day. Mr. Wyatt's alterations and additions at Arley Hall, Cheshire, for Mr. R. E. Egerton Warburton, are of late Tudor or Elizabethan character, as shown in the view (704); and the mansion erecting at Carlett-park, in the same county, for Mr. John Torr, is of similar character, as in No. 710. The mansion erecting at Horsmonden, Kent, for Mr. Francis Austen (708), however, is Italian Gothic, and inferior to the other works of the same architect.—Every year goes to prove the reasonableness of the ground taken by us, when long ago we urged that there should be, if only for the sake of public appreciation of the art, but one current style; and this is being admitted by those who differ most on other points. The whole future now turns upon the education of the public;—so that there may be united expression of a demand for art, which is not imitation,—art-architectural, which exists the more, the more it is part and parcel with the provision of convenience. Let opinion of the art in the Elizabethan and Jacobean styles be what it may amongst educated architects, still will allow that the combination in those cases shows that some combination not devoid of art,

\* See pp. 290, 327, ante.

might be made, of the systems that are now in vogue, and without the defects which too much appear in designs, shown in the exhibitions, of a prominently Medieval or a foreign impress. This latter character is, in our opinion, quite enough to condemn the design (682), by Mr. E. George, "for a metropolitan hotel, with glass-covered court, the ground-floor appropriated to shops," further represented in the exhibition in Conduit-street. Were direct reproduction ever justifiable, surely the Italian-Gothic, valuable rightly used, is the very last style of which the details of the general character should be copied. Mr. T. Porter's design (700) for a building of the same class—"proposed International Hotel, Strand, London," is too distinctively Jacobean, and therefore falling short of our demand; but, at least, it is English as well as nearer to that customary street-architecture, the art-capabilities of which have been proved. It is also founded on a style which the late Sir Charles Barry, as we happen to know, thought could be further worked, and upon which, indeed, he based the design of one of his principal works mentioned in our notice of his life.

The amicable "battle of the styles" fought in Conduit-street is resumed by Mr. Tite in a drawing (698) at the Academy, "worked out by J. Green, and entitled "Contrasts and Comparisons, in Illustration of the Horizontal and Vertical Principles of Architectural Composition." Though useful, if properly looked at, and particularly so as showing what is to be done by the addition of art to bridge-building, as well as useful in reminding us of several excellent Continental classical works of the present century; we are obliged to demur both to the manner of representation and to the selection of the examples. The object of comparison requires at least that the whole of the examples should be exceedingly well drawn; whereas here the Gothic works are sadly mauled, and the dome of St. Paul's has its usual fate from draughtsmen, who, except one or two, seem never able to depict it, or to get at the fact that it is stuck from two centres—a peculiarity which makes its beauty and that of one or two other domes of the same family.

There is plenty of design, as usual in Mr. S. S. Teulon's works, in his "tower entrance (685), Elvetham Hall, now in progress of erection," for Lord Colthorpe; but the details, including the colour, are grotesque rather than architectonic. A general view of the building was given in our pages last week.—Mr. T. R. Smith has at the Academy a view of his "Stratton Audley Park, now in course of erection, near Bicester" (699), of which there are drawings at the other exhibition.—Mr. Owen Jones's large "View of Messrs. Osler's Gallery, 45, Oxford-street" (691), like his drawings in general, is prominent in the exhibition by its size and its very skilful execution. The character and the merits of the work in Oxford-street are well known to our readers; but it has been suggested as worthy of consideration, whether the effect from stained glass is favourable to correct opinions of the quantities desired in articles of white glass such as are here on sale at Messrs. Osler's.

We have left two of the most important works to the end of this notice. Mr. Sydney Spink, R.A., in the drawing No. 687, shows a portion of the "Arcades about to be erected at South Kensington, to inclose the gardens of the Horticultural Society" (the plan of which we gave recently), as well as "a Pavilion for Her Majesty's use." The arcades, of Italian character, are remarkable for a much more prominent use of coloured materials than has lately been shown in architecture of the same style. Though too obviously a reproduction, the whole promises a satisfactory result, and one that may be productive of an intimate relation between gardening and architecture which we have long desired to see, for the effect of each; but which has scarcely been thought of except in some country seats, and hardly at all where it is also required to some extent, or so far as space allows, in towns.—Mr. T. Page's "Design for the Bridge over the Golden Horn, Constantinople, arranged to admit of the Turkish men-of-war passing under the arch of the central towers" (689), not devoid of merit decoratively, must be a work deserving very long notice for its structural features. Besides having in his mind settled, as the drawing shows, any question remaining about the combination of the trussed girder and suspension principles for large spans, or that combination which he made in his Chelsea bridge, the author of the design has, we understand, fully considered the extraordinary difficulties which he would have to overcome in constructing the foundations of the central tower, or "towers," in the great depth, which is that of the water of the Golden Horn. The difficulty,

we believe it is thought, might be overcome by sinking a caisson; but the details of execution would deserve better description than we can here give.

Amongst the best drawings of old buildings in this room are two by Mr. T. Scandrett (679 and 680) of interiors at Ronen, and one entitled "Art in Devotion," of great excellence, representing the monks at work in the cloisters of the Certosa at Pavia (694), by Mr. F. P. Cockerell.

#### THE STORY OF A GREAT AND GOOD MAN.—WILLIAM OF WYKEHAM. THE ARCHITECTURAL EXHIBITION.\*

IN undertaking a lecture upon the character and acts of a person who has long since been dead, I will employ the apology of Bacon with reference to Henry VII. in a similar case,—“I took him to life as well as I could, sitting so far off, and having no better light.” I owe it also to this audience, to assure them that since I published a volume on the subject in 1852, I have been able to peruse the various sources of information of which I then availed myself, and have been also so fortunate as to make some additions, which, for the first time, I shall have the honour to submit to you. Still it is a subject of painful regret, that owing to the neglect of their opportunities of collecting facts by Wykeham's earlier biographers, we have lost "many things of worthy memory which now shall die in oblivion, and we return, unexperienced, to our graves."

In the same year, 1324, two of the most memorable men of a remarkable age, first saw the light—John Wycliffe the Reformer, and William of Wykeham, by far the greater and better man of the two. If there was ever a noteworthy instance of self-help in a religious spirit, it is that of this illustrious character. It has been asserted that he was connected with the family of Wickham, of Swallcliffe, in Oxfordshire. Whenever a man raises himself to rank, position, or wealth, there are always hundreds ready to claim kinship, and prefer a right to such distinction. It is quite certain that none of the name gave a helping hand to the young boy when he needed it. His father was known as John Longe; his mother's name was Sybilla, daughter of William and Alice Bowad; and quaint old Fuller, makes a very complimentary pun on his father's name. When he rose to eminence, he never adopted the arms of the Swallcliffe family, but took the device of a chevron, or carpenter's couple, in allusion to that science to which he owed his fortunes, or else as significant that he had been the architect of his own success. Those who are curious in the colours of heraldry read in the black perpetuity; and in the roses which he adopted, the ensigns of brotherly love.

The village of Wykeham, from which he took his name, lies four miles south of Waltham, on the west bank of the river Arle, in a very pretty and picturesque country. His mother was connected with the lords of Stratton, and she gave her child the Christian name of her father. Possibly to this alliance we may refer the patronage of Sir Nicholas Uvedale, lord of the manor of Wykeham, lieutenant of Southampton, and governor or constable of Winchester Castle. He was sent to the cathedral school, which stood near the King's Gate, just outside the walls of the Close, and occupied the site of a still earlier seminary, in which several sons of the Saxon kings, including Alfred himself, had received their education. He is said thence to have proceeded to Oxford, where he attended the mathematical lectures of Lewis Carleton, afterwards Bishop of Hereford; and the lectures in civil law of W. Dorch, during six years. French, geometry, logic, and arithmetic, he studied at Winchester. On the spot where his chantry now stands was an altar of St. Mary, where the morning mass was sung; and to it the boy constantly repaired for his devotions. Perhaps to these frequent visits we may attribute that love of architecture and inclination for the service of the Church which so eminently distinguished him in after-life. Of his Oxford career we learn only that he studied logic, mathematics, civil law, and arithmetic, and became the friend of W. Courtenay, afterwards primate, and John Buckingham, sometime Bishop of Lincoln. It is worthy of remark, that in all the patents previous to his reception of holy orders, he is styled clericus, which the great Oxford antiquary, A. Wood, informs us was the title of academical students. His early knowledge of arithmetic, mathematics, and geometry, tended

to his acquisition of the science of architecture. After six years spent at Oxford, Wykeham entered the service of his generous patron, to whom he recommended himself by his skill in overseeing repairs and alterations in Winchester Castle, and by his ability as a secretary in writing letters to the king and nobles. After three years Sir Richard Uvedale introduced him to Edyngden, the bishop of the diocese and Lord Treasurer of England, and he was received into his family, an expression referring to the household and young men of promise whom bishops at that period were in the habit of training for active employment in the church and state. The intimacy thus formed lasted through life. On December 10, 1353, Wykeham acted as his attorney in taking possession of certain lands, and in 1352 Henry Sturmy, of Elvetham, who had recently served the office of High Sheriff of the county, constituted him his attorney to deliver seisin of some estates to the bishop. We may, therefore, presume that his knowledge of law was by no means inconsiderable. The only letter of Wykeham extant is in French.

It is of more peculiar interest here to remember that the church of the native place of Edyngden contains the earliest appearance of the Perpendicular style, and must have been built during the residence of Wykeham in the bishop's house. Another noteworthy circumstance is, that Edyngden's chantry in the cathedral of Winchester is the first that was built as a distinct chapel between the piers of an arcade, and was the model of Wykeham's chantry, and of those of Bishop Gardiner and Cardinal Beaufort,—an arrangement peculiar to this cathedral,—and, we can hardly hesitate to infer, the design of Wykeham. The notice of Edyngden led to still more important results. In 1347 King Edward III., on his return from the siege of Calais, spent several days at Winchester. The constable and Edyngden presented their secretary to the king, who was then in need of engineers and architects, and Wykeham was "another Euclid in geometry." His excellent address, fine person, and great abilities installed him in the king's favour at the early age of three-and-twenty.

"His years but young, but his experience old;  
His head unmelow'd, but his judgment ripe."

The king plied him with pointed questions on subjects of finance, conditions and treaties of peace, declaration of war, and other political matters, and he answered with equal modesty and talent. The king found an easy method of supporting him; he made him a lay rector. An objection has been adduced against Wykeham for accepting the revenues of a parish without discharging its duties. Other men, equally honourable and conscientious, have held ecclesiastical preferment as laymen; for instance, Sir H. Wotten was Provost of Eton, and Camden had a stall at Salisbury; while at the present day the lay rector is still a name not unknown. Until we amend our own affairs in the nineteenth century, I think we need not be too curious in detecting faults in earlier periods of our history. Besides, at this particular time, it was well that an Englishman enjoyed even pluralities, so numerous were Italian and non-resident foreign clergy in the country; and the evil rose to such a height that, in 1374, King Edward III. required a return of their numbers. Indeed, in one instance, we find that Wykeham was a merely nominal rector, the pope having instituted proceedings against him for holding the living of Pulham. More than this, the confusion of the times, the scarcity and ignorance of the clergy necessitated the bestowal of pluralities on the few men capable of adorning high station and administering important offices. It is impossible to determine for what length of time, when exchanges were common and frequent, Wykeham held his benefices together, after he had taken holy orders. In 1365, Pope Urban directed a bull against pluralities; and in the return which was made, it was shown that he had voluntarily resigned those preferments with cure which necessitated residence: that he held only sinecures and stalls; while, as Archbishop of Lincoln, he no doubt was as vigilant and active as he afterwards proved when he became a bishop. However, there can be no question on the point, for in a bull of the pope, dated at the very close of that year, the Pontiff writes to Wykeham, assuring him that he had received from very many quarters of the highest credit, testimonies of praise for his great learning, his excellent life and character, his forethought in spiritual matters, and his prudence in things temporal. It is to us of interest here to know that he was Prebendary of Totenhall, in St. Paul's Cathedral, a canon of St. Stephen's Chapel, West-

\* Read by the Rev. Mackenzie Walcott, on Tuesday, May 29th.

minster, the crypt of which still remains, and has recently been restored; and also Dean of St. Martin's-le-Grand, which occupied the site of the General Post-office. In the chapel of Winchester House, Southwark, which adjoined the present priory church of St. Mary Overy, he was admitted priest and sub-deacon. In this church he married Gower, the poet, to Alice Goundolph. It was at St. Martin's that Wykeham first exhibited his bounty. We find his successor, W. de Mulsho, and the chapter, in 1367, declaring that, out of his own private means and at heavy charges, Sir W. de Wykeham, with works in wood and stone, restored their free chapel and the cloister in the midst thereof, in a new form of wonderful beauty (you will observe this expression, which certainly points to his invention of the Perpendicular style), built it and adorned it with ceilings of stone, and undertook to build the chapter-house from its foundations, which were dug to a great depth in the ground: he resolved to complete it in an admirable manner with stone ceiling and enrich it artistically, at an enormous expense—works which, without his hand and aid, beyond a doubt would never have been completed." The church was destroyed in 1547; but, on clearing the site in 1818, the crypt, part of Wykeham's building, was laid open to view. The value of this testimony is considerable. W. de Mulsho, canon of Windsor, was appointed surveyor of works at Windsor, 1358, and clerk of the works in 1361. On October, 1356, Wykeham became surveyor of works at Windsor, and chief warden and surveyor of the Castle July 10, 1359. In the latter year, according to a MS. chronicle of the period preserved at Christ Church College, Cambridge, Wykeham is said to have instigated the king to rebuild large portions of the castle, probably of the upper, now the middle ward. In 1356-7 the king, according to an old tradition, was urged by his royal prisoners, John and David, to extend the castle, and replied, "Yes, he would, with the help of their ransoms." W. de Mulsho, as Wykeham's successor and assistant, could correctly estimate his knowledge and science, and he offers this splendid testimony to his ability. In 1363 he was made canon of St. Stephen's Chapel, which was in course of building from 1330 to 1392: the same hand which designed the restoration of St. Martin's in 1360-63, was doubtless employed in the construction of the beautiful Chapel of Westminster at the very same period.

There is one office held by Wykeham, that of the provostship in Wells Cathedral, which shows that he was no mean proficient in music. He was president of the College of Minor Canons, and had equal powers with a sub-dean or sub-chancellor at York: he acted as the preacher's vicar, and in choir was superior to any canon. The office still exists at Milan.

Wykeham on his introduction to court proved eminently useful to the king. In the preamble to a licence of mortmain granted to his colleges, King Richard II. declares that he was induced to make the grant on consideration of his high merits, his strict honour, and the many advantageous services rendered, in various ways, by Wykeham, from early youth, to his royal grandfather, his father, and himself after his accession to the crown; in the laborious government of the realm and the administration of its affairs, by his advice, his opportune aid, his readiness, his loyalty, his steadfastness, his endurance of the toil and share in the expense." Surely this is a noble testimony to a young man set in the dangers and trials of a court, one the principal portion of whose active life was cast in the brilliant and eventful reign of Edward III., distinguished by French and Scottish conquest, by the improvement of home commerce and manufactures through the league with Jacques D'Arteveldt and the men of Ghent; by the encouragement of the native tongue of England, and the softening of its literature by those Provençal minstrels who accompanied the conqueror of Cressy and Poitiers from Guinne. He might have proved a soldier-bishop, like Courtenay; a courtier-priest, like Walsey; a mere creature of intrigue, like too many of those who have filled a similar position of trial; but that earnest piety which characterized the boy was the safeguard of the man.

The word architect, the chief workman, appears to have lapsed until modern times, since its use "were-master," the master of the work, or "law-meister," the master of the building, accurately conveys the same meaning, and is synonymous with the medieval title of the master of the fabric, an office established in every conventual house, and the ordinary phrase, surveyor of the works. There was another important post known as Clerk of the

works, which, however, was clearly inferior to that of surveyor, for in May 10 Edward III. appoints Wykeham "his faithful and prudent clerk," clerk of the works at Henley and Yeshampstead; and on Oct. 30 nominates his beloved W. de Wykeham, surveyor of all the works at Windsor Castle and park, and in his manors of Henley and Yeshampstead. The wording here is explicit. As clerk of the works he attended to the payment of wages of masons, carpenters, and workmen, and the purchase of stone and other materials, audited or witnessed by the controller of the works. As surveyor of the works, he not only exercised the oversight of the wages, the ordering of repairs, and the purchase of materials, but had the power of impressing workmen, arresting them, and committing them to prison. In 1360 workmen were forbidden to leave without Wykeham's license. On July 10, 1356, he was appointed Keeper and Surveyor of the Castles of Windsor, Dover, Ledes, and Haddleigh, and the parks and manors of Windsor, Eton, Guildford, Shene, Eltham, and others. His pay was 1s. a day at Windsor, 2s. in every other place, and 3s. a week for his clerk. In the following year, on Nov. 13, he received an additional 1s. a day. In 1353, he was acting as Grand Forester and Ranger of Windsor, and from June 1361 to 1368, as co-Warden of a name of the forest upon this side the Trent. In 1363 he was justiciary of the royal forest, with a salary of 20s. a day. Edward III. designed to make Windsor Castle the monument of his victories, where at one time he held the kings of Scotland and France his prisoners. The expenditure on these important works amounted to about 50,000l. of our present money. It would appear that the beasts of chase were sold and the trees felled to supply this vast sum. The Round Table, so called probably in allusion to the knights of King Arthur, with a subtle reference to the new order of the Garter, was completed by Wykeham as a keep, and another tower still bears the name of the Wykeham or Winchester Tower. There is a tradition extant that the evasive courtiers delated Wykeham asserting that he had engraved on an inner wall the inscription, "This made Wykeham," thus robbing the king of the honour of his works. The architect, however, silenced his enemies by the following witty explanation:—"What I intended to convey was, that these works, which have obtained for me the king's favour, may be very malicious or very ignorant of grammar." There was a very ingenious fraud practised by the architect of the Pharos: he inscribed his own name in the stone which he covered with lime and mortar, and on this again carved the king's name: the trick was not discovered in time to cause him to be exposed to punishment; but the cement gradually peeled off, and discovered in large letters the name of Sostratus of Cnidus. His repairs and alterations on the city walls of Oxford, where they partly belt in his college, betray the hand of one familiar with military engineering.

The cloister of St. George's Chapel was also the work of Wykeham at Windsor. But his services as an engineer were not limited to the inland castles of Windsor and Haddleigh. Dover and Ledes, we know positively, were under his charge; and in all probability those of Winchester, Walsey, and Porchester were indebted to him for repairs and enlargement. In the spring of 1361, being still surveyor of the works, he commenced the building of Queenborough Castle, on a swampy site in the Isle of Sheppey, and employed piers as a foundation for his walls, a method of construction which he afterwards followed in his college at Winchester. It would have been well, for the honour of England, if these fortifications had been preserved, when De Ruyter sailed up the Medway without opposition to burn the men-of-war at Chatham. This fort was completed in 1367.

Wykeham had for some time been training up in the school of statesmen: he accompanied his early patron Bishop Elyngden to Calais, and there, as one of "six masters, noble men," witnessed to the treaty of Hedigny. In 1362, Elyngden ordained him sub-deacon and priest; but he was still retained near the king, as his name appears signed to various instruments of state, as truces, ransoms, and royal marriages. In 1362 Wykeham resigned his office of surveyor of Windsor Castle; but his attachment to that early home lasted to the close of life, for we find him, on May 29, 1402, founding a chantry and chaplain in the collegiate chapel. His position was now secure and advancement rapidly followed. "There was a priest," says Froissart, "about the King of England, called Sir W. Wykeham, who was so great with the king that all things were

done by him, and without him nothing done." The sour Wylliffe sneered at his elevation: "Lords will not present a clerk able of cunning of God's law, but a kitchen clerk, or a penny clerk, or mine in building castles, or wise in worldly doing, though he could not read well his Psalter." Like most other people who are malicious and envious of others, Wylliffe sacrificed truth to a point to his sarcasm. In 1365 Wykeham was keeper of the Privy Seal, and the king allowed him 20s. a day out of the exchequer; and gave him the manor of Henley, in 1365, adding that he "was engaged in various offices touching his royal affairs, laid especially upon his conduct, and had borne excessive toil and expense in their furtherance and execution," and that this pay should last during his tenure of office, although he was "immediately attached to the royal household." On April 26, 1366, the Archbishop of Canterbury, Simon Islip, and on October 8 Elyngden, Bishop of Winchester, both died. The latter had refused the primate's rank, averring that, though Canterbury had the highest rank, Winchester had the deepest manger. Wykeham was appointed to the vacant see of Winchester. The Pope on four occasions had written letters of recommendation to Wykeham, and expressed himself in the highest terms in approval of his character and abilities. On October 13 the king issued a *congé d'élire* to the chapter, and eleven days after confirmed their election of Wykeham. On December 11 the Pope nominated him Administrator of the Spiritualities. The papal power now came into collision with the royal authority. Urban determined to appoint Wykeham by way of preservation and provision; Edward, like an English king, refused to grant the temporalities without Wykeham's renunciation of any title to them by right of a bull. Pope and king both desired Wykeham's consecration, but neither would bate his claim. The Duke de Bourbon, a hostage of the King of France, was, therefore, written to by Edward III.: he was promised that his ransom should be lessened provided that he procured the consent of the pope, then residing at Avignon, to Wykeham's immediate consecration. The duke's mission was successful. On Feb. 22, 1367, the primate admitted Wykeham administrator of spiritualities, and on July 14 the pope gave permission for his consecration.

It seems that the king, uncertain how the matter would end, took security against loss of money: from December 1, 1366, he granted the temporalities on consideration of "a great sum of money, which Wykeham paid down in hand in the king's chamber and in the royal presence, for the furtherance of weighty business." Here then is a distinct and public entry of the transaction in the Patent rolls; it denounces the infamous libel of Dr. Landon, that Wykeham owed his mire to the influence of Alice Piers whom he had married; Landon the most worthless of men, the coarse and brutal visitor of convents, the hunter of the early reformers, the instrument of the cruel Bishop Gardiner; the persecutor, the plotter against innocent persons, who was at length degraded and pilloried for perjury, and died in the Fleet Prison. Alice Piers, we shall soon find, was Wykeham's open and avowed enemy. The tale is on a par of veracity with another of the same date, that Wykeham fell under the king's displeasure because he asked the church of East Meon, of which it was said that the incumbent would succeed to the See of Winchester. In 1573 a zealous Wykehamist had to deny this silly story. On Oct. 10, 1367, Simon de Langham, the primate; Simon Sudbury, the bishop of London; and Robert Wyllyve, of Salisbury, consecrated Wykeham in St. Paul's Cathedral. On July 9, 1365, Wykeham, in the presence of the abbots of Hyde and Chertsey, knights, and divers men of gentle blood, unshod himself in the church of St. Laurence at Winchester, and walked to the cathedral. There in the porch, having offered his devotions, he put off cope, hood, birret, and gloves, which, with his boots and short cope, the archdeacon's servant promptly laid hands on, as his perquisite. Then, arrayed in pontificals, the archdeacon conducted him to the throne and said, "By the authority of Christ's Church, I induct and enthroned thee in possession of this church, with all its rights and appurtenances, elect, confirmed, and consecrated." Wykeham, like a prudent man, obtained from the king an assurance that, in all the offices which he now withdrew, he had borne an unimpeachable character. To this the king assented, and on May 22, 1368, gave him a full acquittance of all money and jewels received or delivered by him previous to his consecration, "of his own (the king's) certain and special knowledge, in consideration of his

long services, which had been both acceptable and advantageous, and of that high place, which he had held in his affairs in various capacities, and still retained, bearing much toil and expense in their discharge."

**PORTRAITS OF NATIONAL BENEFACTORS: THEIR USEFUL TEACHING TO THE MULTITUDE.**

In the National Gallery of Portraits, which is slowly increasing, it is most desirable that we should have the best delineations that can be had of those men who have been the means of introducing or establishing branches of our national industry, or of forming systems and establishments which have led to the improvement of the people. All those self-made men who have risen from the ranks to confer honour upon themselves and benefit on the community should be found there, and it is important in such an exhibition that on each painting there should be placed a brief but clear account of the circumstances of each worthy; for instance, we should have,—

William Hutton, the historian of Birmingham and author of several other important works, was born September 30th, 1723. By care and industry he acquired a considerable fortune, and became a magistrate of the above-named town. He was the son of a poor stocking-weaver, who had a large family. At seven years of age he was put to work at a silk manufactory, and was then so small that it was necessary for him to stand on a pair of wooden pattens in order to reach his work. He afterwards was apprenticed to a stocking-weaver, but, finding that trade insufficient, he taught himself book-binding, and, after various trials which gave evidence of his abstemiousness, honesty, and perseverance, succeeded in establishing himself in Birmingham, and from a small beginning formed a considerable business. He died May 2nd, 1800.

[Here the visitor might be referred to obtainable works which would afford additional particulars.]

Again: we should see,—

Peter Nicholson, who was the author of an architectural dictionary and many scientific works, which have been of great use, not only to architects, but to the practical stonemason, carpenter, and other workmen. He simplified the rules of science, and made them available for every-day use to persons of ordinary education and ability.

We should in like manner have notes of the founders of Sunday schools, mechanics' institutes, and of that humble but important benefactor who originated ragged schools.

We should have portraits of the class of men who, like Crotchet in 1702, established a silk-mill in Derby. Although unsuccessful as a speculator, this man is worthy a place in a national Walkhalla; so is John Lombe, a man of spirit, a good draughtsman, and an excellent mechanic, who travelled into Italy, and, with infinite danger and difficulty, succeeded in learning the secret of the method of silk-spinning practised in that country. He fixed upon Derby for the establishment of works in 1717. Here, on a swampy island, he erected a manufactory, which contained 468 windows, at a cost of 30,000*l.*, on huge piles of ash from 16 to 20 feet long, driven close together, and over a solid foundation of stone a building, which was then considered a marvel, was raised and fitted with machinery. With great success the works were carried forward, and they were a chief means of enabling this branch of industry to compete with the foreigner.

John Lombe did not live long to enjoy the results of his labour and ability, but died at the age of twenty-nine, it is said in consequence of poison, administered by a vindictive Italian lady, whose family had felt themselves aggrieved by the damage done to their trade. For long after, however, 300 hands were employed by Sir Thomas Lombe, a cousin of the deceased. A few years since there were sixteen silk-throwing mills in Derby, which in round numbers employed 3,000 men, women, and children, and about 3,000 more in weaving and preparing the materials.

We should also have portraits of such workers as Richard Grainger, the son of a poor widow, who was born in the most humble condition in Newcastle-upon-Tyne, who was indebted to a parish school for his education, but who lived to change the appearance and add to the beauty of his native town, to rear great markets and public institutions, and to build vast lines of streets, with palace-like structures.

There should also be a place in such a gallery for the portraits of either men or women, of

whatever station, who have performed meritorious deeds.

Such a collection, if rightly used, would be a means of affording instruction and amusement. Then, besides the labelling referred to, there should be popular lectures on the personages whose countenances are figured.

One great aim of all our national collections ought to be the instruction and advancement of the masses of the people; and we hope that the day is not far off when men of the greatest eminence in their various departments will use our treasures of art and natural history for the illustration of lectures addressed to the thousands. Soon a building will be opened, for the use of a popular preacher, which will contain a congregation of 10,000 persons. Is the day far off when in public institutions the voice of men like Faraday and Owen may be heard by audiences as numerous? Public buildings devoted to art and science should be erected with a view to such arrangements.

**THE FUNERAL OF SIR CHARLES BARRY.**

OUR list of those who were present on this occasion was necessarily imperfect, although it cost us some pains. We are able to add a few names:—Messrs. C. C. Nelson, T. Hayter Lewis, Thomson, Harris, Horace Jones, Gutch, Belcher, Gilbert, Butcher, Colling, H. Roberts, Davies, W. White, R. Bell, Moseley, David Broadbent, G. Williams, Hopkins, Frazer, James Wylde, Pearson, Atkins, Morant, Porter, Edwards, Jas. Lockyer, senior; Stride, Beck, Pyne, L. Sibley, Leekman, J. Young, St. Aubyn, F. A. Britton, Nicholls, D. E. Scott, A. Alom, Sang, Warren, Banks, Joshua Butterworth, H. H. Collins, Martineau, J. Christopher, T. C. Clarke, Pope, J. Murray, Lucas, Cnshaw, J. A. Pictou, &c.

With reference to the funeral it is stated that not fewer than eighty persons connected with the Abbey claimed and received hat-bands, &c.,—costly items in the undertaker's bill. The whole system of conducting funerals requires revision and alteration.

**FOREIGN COMPETITION.—BATHS AT SPA.**

THE Town Council of Spa desire to erect baths in the centre of the town, opposite the *Place Royale*, and invite architects, native and foreign, to submit designs by August 15th, 1860. They also desire designs for monumental buildings, to be erected at the source of the mineral spring *du Pashon*. For the best designs for baths four premiums are offered—160*l.*, 40*l.*, and two of 20*l.*; and for the buildings at the spring head, the same sum divided in the same manner. The style of architecture is left open. The cost of the baths is restricted to 20,000*l.*; for the other buildings the sum stipulated is 12,000*l.* The rewarded plans are all to become the property of the Council, who reserve to themselves the right to use such parts of any of them as they may think fit. Full conditions and information have been published, including a schedule of prices. From this we learn that the wages of stone-setters and carpenters are 2s. 3d. a day, English; stone-cutters and plumbers, 2s. 6d.; labourers, 1s. 4d.

**THE ROYAL HIBERNIAN ACADEMY.**

THE Academy's annual exhibition is now open and many works of much excellence are to be found therein, though in number not so important as on previous occasions. In the ante-room, and immediately opposite the doorway, is the "First Council" (the property of her Majesty), by the late Sir David Wilkie, and, no doubt, familiarly known to our readers; and in this apartment are numerous water-colour pictures, generally meritorious. Eugene De Block's "First Lesson," and "A Prayer at the Grave," are noteworthy, as also are Burton's "Peasants of France," Kendrick's sea pieces, and Murenuin's miniatures on ivory. In the large room, Camille Vanneman's "Laitières dans la Prairie," Jules Wagner's "Musique, Femme, et Vin," and "La Chateleine;" Otto de Thoren's "Mauving" and "The Steeple Chase;" Eugene de Block's "French taught here;" Willis's "Group of Cattle and Horses;" Friston's "Toyman;" Rothwell's "Rome, from the Esquiline-hill;" Fisher's "Weary Pilgrim;" P. V. Duffy's landscapes, and Catterson Smith's portraits, are amongst the chief attractions. Though necessarily circumscribed, we must not conclude this notice without making honourable mention of Messrs. C. Grey's, Hayes, Marquis', Craig's, Faulkner's, Bridgford's, &c., contributions. Turning to the Sculpture Gallery, where

Architecture is also supposed to hold her court, we experience much disappointment in both departments, but in the latter especially, which mainly consists of one drawing, by Mr. McCarthy, of a group of church and conventual buildings erected in Tralee. There are a couple of others intended as designs and drawings, but their pretensions are considerably below mediocrity. There would appear to be no sympathy between the architectural profession and the academy, otherwise it would surely be more creditably represented.

**IRISH NEWS.**

A MEETING was called, by requisition, of the inhabitants of St. Paul's parish, Dublin, to suppress the system of intramural interment prevalent, but had to be dissolved, being illegal. One of the parishioners said that two coffins had to be dug up to make room for a new one; that bodies were only 18 inches from the surface, and that human bones out of this churchyard had been sold in the honeycombs of Dublin. Despite this testimony, the civil was countenanced by others, that the perquisites of the rector should not be interfered with!

A new Caen stone pulpit has been recently erected in the Castle Chapel, Dublin, by Messrs. Harduan and Co.

The Galway Harbour Bill has passed the House of Commons.

A builder's action (Hugh Kelly v. Representatives of the late Sir Philip Crampton) for 662*l.*, for extra work and labour done in the construction of a house at Violet-hill, co. Fermanagh, has occupied some time in hearing at Dublin. The chief defence was, that no written orders were given, and which were necessary. The jury found for the plaintiff for 500*l.* over and above the 100*l.* lodged in court.

The tower and spire of Holy Cross, Tramore, is to be completed, Mr. J. J. McCarthy, architect.

Tenders for the plastering and stucco work of St. Mary's Church, Athlone, are being received. We believe Mr. John Bourke is the architect.

The rapid progress of Kingstown, near Dublin, is evidenced by the facts that during the last three years 370 houses had been built, and 80 more are in progress; the valuation of the electoral division has increased by 10,000*l.* since 1857; there are seven churches, yet another is wanting; one bank, and another spoken of; house rents have doubled within the last seven years, yet the building-leases are but for forty-one years.

A new Protestant cemetery is to be provided near Waterford: the Lord Bishop of Cashel has agreed to give 100*l.* subscription for purchase of a suitable plot.

A new convent, dedicated to "Our Lady of Mercy," is to be erected at Newry according to plans, &c., by Mr. John Bourke, architect.

The Armagh District Lunatic Asylum is to be improved, under the directions of Mr. J. Boyd, of Belfast, Architect.

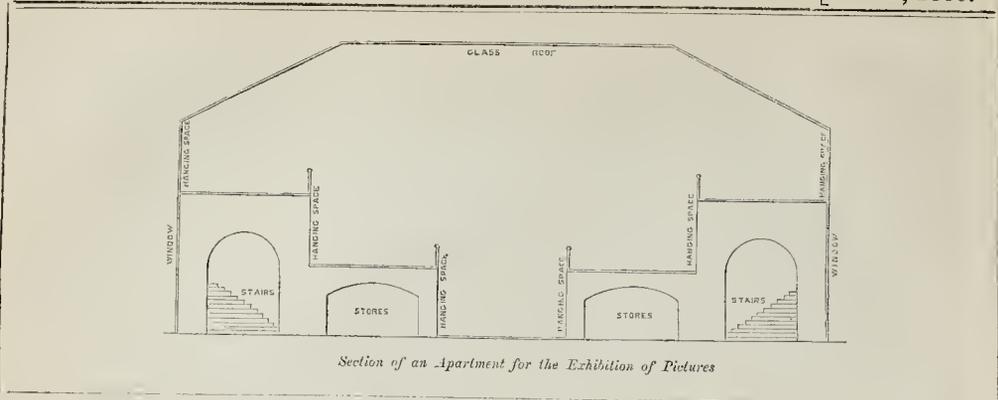
The time for receiving tenders for the erection of a beacon on the Alderman Cocks, and a Light-house on the Calf rock, co. Cork, for the Ballast Board, is extended respectively to the 30th of May and the 6th of June.

Twenty cottages are to be built at Knockmalon by the Mining Company of Ireland.

A church is to be erected at Crosspatrick, in the county of Wicklow.

The new Roman Catholic Church of the Holy Trinity at Cookstown, after being nearly five years building, is nearly completed, and comprises a nave, tower at west-end, north and south aisles, chancel, chapels of Blessed Sacrament and Blessed Virgin at ends of north and south aisles respectively, and spacious sacristy at north side of chancel. Five arches on either side of nave separate it from the aisles, and rest on slender columns, with moulded caps and bases: the arches also are moulded and have carved terminations. Above these are introduced two light traierced clerestory windows. The roof of the nave is of open timber work, and the principal corbels are carved into heads of the twelve apostles. A lofty arch separates the nave from chancel, and the corbels represent the Old and New Law. The High Altar is an elaborate work. The great window is in five compartments, filled in with stained glass by Messrs. Harduan and Co., Birmingham; the chancel railing being by Messrs. Riddell and Co., of Belfast. Material throughout fine white sandstone. Mr. McCarthy, architect.

METROPOLIS LOCAL MANAGEMENT ACT AMENDMENT BILL.—This bill has been read a second time in the Commons, and ordered to be referred to a select committee.



#### A SUGGESTION FOR A PICTURE GALLERY.

THE above sketch of a design for a picture gallery has been for some time in my desk, having been made when the idea occurred to me a few months ago, and, as the attention of the public is at the present time directed to the question of the best means of providing suitable hanging-room in our public exhibitions, I shall be obliged if you will insert this diagram in your excellent paper, as it may suggest improvements to those more competent than myself to carry them out.

HORACE DOBELL, M.D.

\*.\* The idea is not entirely novel, but may now be usefully mooted.

#### LONDON PICTURES.

IT is within the district of the metropolis that the majority of the pictures which line the walls of the Royal Academy, and other picture exhibitions, are painted, wherein the results of study in the woods, fields, and elsewhere, are put into permanent and established form. Considering the vast number of painters who live in London, and who are called, to a greater or less extent, to roam amongst the immense varieties of this dense population, it has often struck us as remarkable that so little use has been made of the decidedly picturesque and striking scenes which are presented in metropolitan every day life.

As an instance of what may be done in this line of art, it is worth while to glance at some of the finest pictures by Hogarth, which are scenes, treated in an artistic and truthful way, of matters which came, during his observant life, under his notice. In these works the painter has not deviated from the ordinary costume then in use, and the countenances and forms are such as would be met with every day.

They who examine the pictures, by Hogarth, of "Night and Morning," his remarkable views of "London Streets," that wondrous painting of "The Rake in Newgate," and the "Interior of the Mad-house," will note that the materials found in London by this famous painter are not deficient in supplying the necessary materials of a picture, so far as colour, light and shade, incident, and character, are concerned.

There is a belief that in matters which every day come before the eye there is a lack of that picturesque charm which seems to be connected with subjects having a certain degree of antiquity; consequently, many painters have, instead of attempting to delineate the remarkable incidents and peculiarities of the times in which they live, gone back to other periods for materials on which to exert their skill.

Certain pictures, which have been recently produced,—take, for instance, Mr. Frith's "Derby Day,"—and some works by other modern artists,—show that with the materials of the present time striking effects can be produced.

There is no want of gay and bright scenes in this vast city; and constantly there is going forward the display of human passions, while scenes most surprising meet the eye.

We have noted in the London streets grand effects: palaces blazing with light shining through midnight storm and rain are figures of curious contrast. In many aspects the lights and shadows of the bustling London streets are most striking—a skilful, thoughtful painter might make

a telling subject out of the West-end shops. The bustle and circumstance of a great fire have not been fairly tackled by genius. A marvellous picture could be made of such a scene, showing by the mind-light the marvellous characters which on such occasions are thrown together: in the courts and alleys, in the interiors of dwellings, even in the barracks of our soldiers, groups and incidents are to be found which not only present opportunities for great pictorial effect, but would also have great interest for the multitude, and, if rightly treated, would teach useful lessons.

Our modern English painters look at the materials of everyday life with their matter-of-fact eye: if, however, they would but glance at the peculiarities of the metropolis with artistic and philosophical feelings, many works would be produced from that source, which would amuse, instruct, and improve the present age, and have a very high value in times to come.

#### COLOGNE BRIDGE AND CATHEDRAL.

HAVING lately had occasion to visit Cologne, I have made a sketch of two bridges, one straight and the other skew, which carry the railroad over the streets that lead to the celebrated cathedral. There is good taste exhibited in the design, as well as care and neatness in the execution, without incurring any extraordinary expense: the bridges in question are of light-colored bricks, with copings, string-courses, and quoins of dressed stone.

The superstructure consists of four segmental ribs, made of wrought iron, a rib being placed exactly under the centre of each rail, of which there are also four for a double line of way. On these ribs, which are all of angle-iron, timber-joists are laid, projecting far beyond the ribs either way, so as to leave ample room for a foot-path on each side of the rail: longitudinal battens are then bolted to these, so as to form the roadway. I should state, that the ends of the joists are prettily moulded, which adds considerably to the beauty of the structure. An ornamental light iron railing is then put up on either side, so as to continue the protection afforded by the parapet walls which finish the viaducts that carry the railroad to the station on one hand, and to the Rhine-bridge on the other. Would that our engineers had erected something similar to carry the Metropolitan Railways over the streets of London, instead of darkening and destroying our suburbs in the manner I complained of when I last wrote to you.

The bridge over the Rhine, to connect Cologne with Deutz, is now nearly finished, and is open to the public.

I crossed over it, after paying the small toll of two pennings, or not quite a farthing; and, as I am writing, I send you a description of it from what I observed and learned on the spot.

There are, in fact, two bridges, side by side, built on the same piers, and only connected here and there with small stays of wrought-iron, to prevent lateral diversion. Both the bridges are on the lattice principle, but the one that carries the railway is strengthened by a double lattice-frame on each side, the distance between these frames being about two feet, while the bridge for ordinary traffic and foot-passengers has only a single frame on each side: there are in both bridges ties of angle-iron on the top to keep the frames in position, so that in reality they are girder-bridges

formed by a net-work of wrought-iron bars. The ordinary roadway is nearly 27 feet in the clear and the railway about 24 feet.

There are three piers in the water, formed by rectilinear cut-waters, both above and below, and there are four principal openings for the water-way of 333 Prussian feet, each measuring from centre to centre of each pier. As, however, the piers are each 20 feet wide, this reduces the actual water-way to 313 feet for the two central openings, while those at the side are further reduced by the quays, which project on the Cologne side 17 Prussian feet beyond the pier, making the opening on the end near the cathedral 296 Prussian feet in the clear, while that on the Deutz side is 301 Prussian feet. The height of the double bridge, above the quays, is about 27 Prussian feet, and 45 Prussian feet above the average water-level.

Each bridge consists, so to speak, of two compound girders, laid from the edge of the abutment on either side, resting on the intermediate pier, and extending to the edge of the central pier. The central pier itself forms the continuity of the roadway and railway, but the girders do not extend over it, each girder being only about 658 P. feet, while the whole extent of the girder bridge, from centre to centre of abutments, is about 1,320 P. feet.

I may mention that the beautiful cathedral here has made wonderful progress during the last ten years.

The lofty sanctuary, with its seven beautiful side chapels huddled and around the high altar, presents a surprising appearance of lightness and grandeur. The blended colours of the ever-varying forms, exquisitely represented in the stained glass, appear to assume all the combinations of a kaleidoscope; while the rich groining of the roof and the variety of the mouldings transport the beholder with delight.

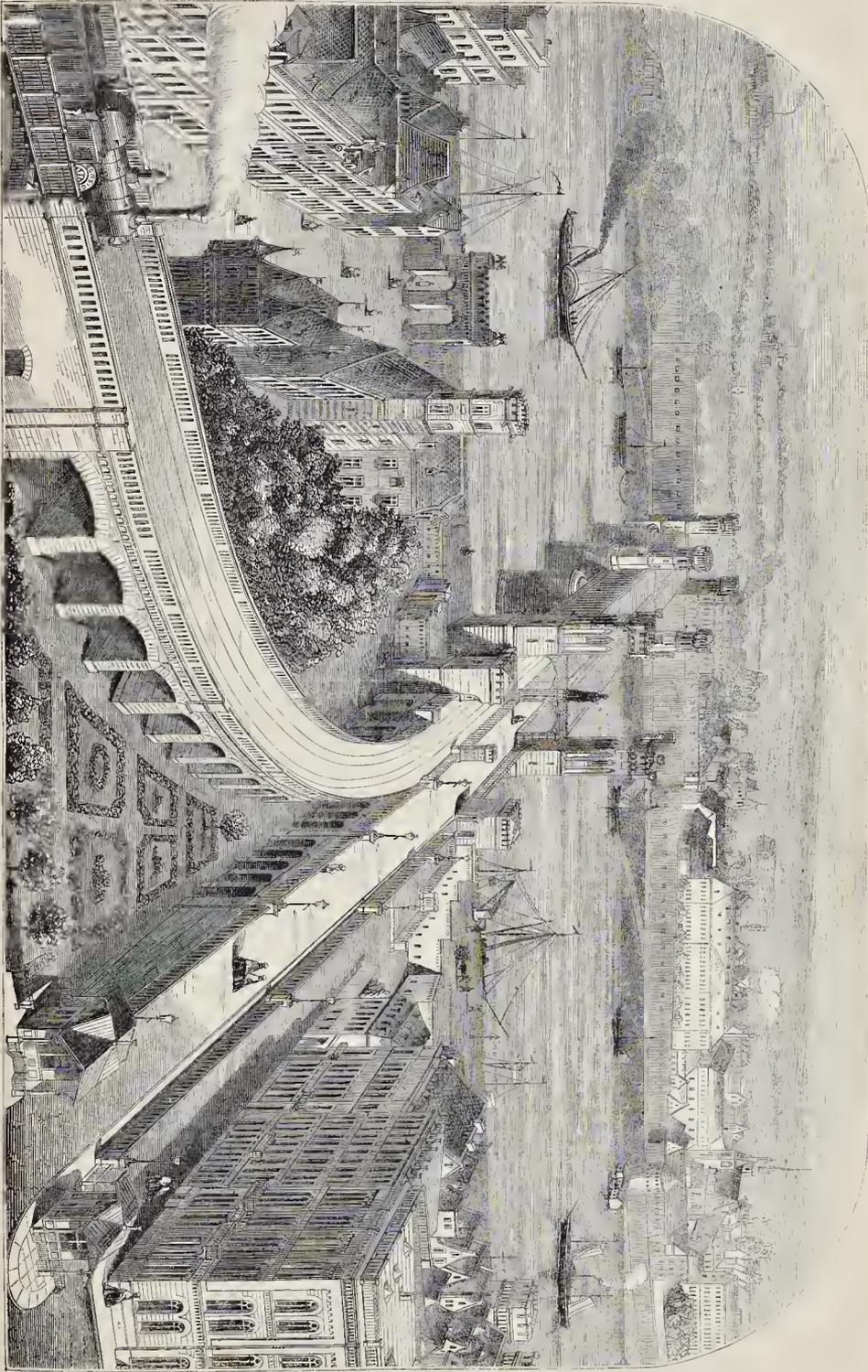
The nave and aisles are beautiful in their simplicity; and when the eye follows the clustered mouldings of the Gothic columns upwards (which have all the same general characteristics throughout the whole church, but are charmingly varied according to every changing position), a feeling of infinity pervades the mind, and gives the idea of their being prolonged indefinitely into the heaven of heavens.

However, I am sorry to see that the windows in the angles of the church are only half windows: heavy luttresses occupy the place where the remaining halves of the windows should have been. It was evidently intended to make the structure look more light inside, which no doubt it will do; but I cannot admire the arrangement, and look upon it as a blemish. The ancient part of the building has been considerably restored, but still remains in great part a splendid ruin, with the trees and wild herbs growing upon its unfinished summit; while its beautiful mouldings, carved in stone, are wasting away by the action of the elements.

The new part, which is being proceeded with actively, is carried out in strict accordance with the original, even to the statues of the saints, placed one after another among the mouldings of the doors, until they meet at the top of the Gothic arches.

Taken altogether, this cathedral will be a glorious work when it is finished, and a most masterly monument of man's manifold mental and manual munificence.

W. H. V. SANKEY.



THE BRIDGE OVER THE RHINE AT COLOGNE.



THE METROPOLITAN SQUARES.

JUST now the squares of the west end, and of some of the regions between that and the far east, present a pleasant aspect: the young buds, in all their tender shades of greenery, have suddenly burst forth, and not yet had time to be palliated with the London smoke.

In Russell-square, which, so far as the planting and arrangement of the trees and shrubs are concerned, is one of the most beautiful in its neighbourhood, the lilac and other blossoming plants make a great display; and the grass, just at the present time, looks as green as emerald; the early summer flowers give good promise. These spots are cheering to the sight of the way-farer, and a means of health to many. Although but a limited number have a right of admission into these places, they are, notwithstanding, so far as the pleasure of the general appearance is considered, and in the health-giving qualities of open and well-planted space, a kind of public property.

Many thousands of persons take a great interest in these grounds besides the dwellers around. The children of the poor, who often live in dingy places not far off, come to feast their eyes upon the fresh green foliage; and foot travellers, who pass to and from the City, look with critical comparison at the different squares. We have our flower-shows and other horticultural exhibitions; prizes are awarded to successful competitors in this department, and for the breeding of animals: societies are established for the promotion of various improvements; and it would be useful to found a society for the purpose of encouraging the improvement of the metropolitan square gardens, so that the gardeners might be tempted by suitable rewards, to be raised by general subscription, and awarded by a judicious committee, to increased exertions.

We would have a prize for the best blossom of hawthorn within a certain radius of the centre of the City, and the same for red and white roses blossoming there; others for the best keeping of the green sward, flowers, and general matters; and it is most desirable that the seasons of the year should be noticed, and the best conditions of these spaces in spring, summer, autumn, and winter considered, and the most successful in preserving their beauty at the various seasons properly rewarded.

The notice in such a way would lead to competition and great improvements, and, considering the difficulties with which the metropolitan gardeners have to contend, they are well worthy of encouragement. Besides the stimulus given to the gardeners, the publicity which would be the result of carrying out the above suggestion would cause persons to take increased interest in their own squares.

THE ARCHITECTURAL PUBLICATION SOCIETY.

THE annual general meeting of subscribers was held on Wednesday evening last, in the Gallery of the Architectural Exhibition, Conduit-street. Mr. P'Anson occupied the chair in the unavoidable absence of Mr. Whichcote.

The minutes of the last meeting having been read and confirmed, Mr. Arthur Cates (honorary secretary) read the report of the committee. It stated that the publications for the twelfth year ended the 31st December last, and received the careful attention of the committee. They comprised thirty-two pages of text, being the letter E, from Badgha to Eiland Edg, and six plates, illustrations to E F G and H; viz., Egyptian Font and Font Cover, Gable, Gargoyle, Gate House, and Half-timber House; these plates comprised twenty-seven subjects, and had been arranged and lithographed from sketches kindly contributed by Messrs. E. Ashworth, I. T. Christopher, G. R. Clarke, E. Falkener, C. Foster Hayward, E. H. Martineau, R. II. Shont, and J. J. Thomson. The remainder of the letter E was in type, and the letter F was in preparation. Six other plates of illustrations were now in the hands of the lithographer, illustrating Font and Font Cover, Gallery, Griffin, Lectern, Metal Work (knockers), and Metal Work, and comprise thirty-one subjects, which the committee had been permitted to select from the portfolios of Messrs. W. Burgess, F. P. Cockerell, G. Goldie, I. Hebb, C. H. Purdy, and G. G. Scott.

During the past year, the committee continued to receive from those gentlemen who had undertaken the duties of local honorary secretaries a continuance of that ready and zealous assistance, the rendering of which through so many years,

had placed the society under deep obligations to them. The only change which had taken place, had arisen from the resignation of Mr. W. Damant, consequent on his leaving Plymouth. The committee would be happy to fill up this vacancy by the appointment of any earnest friend of the society, who by his personal influence and exertions would feel disposed to increase the present very inadequate list of subscribers from that locality. The lamented decease of Sir Charles Barry, had deprived the committee of the assistance he had always so readily furnished, and whereby the Dictionary had been so much enriched.

The addition of the names of new subscribers to the list had been an object to which the attention of the committee had been constantly directed; but the publication of the Dictionary and the illustrations having now extended over nine years, the arrear subscriptions to be paid up by the new members had become so large that it deterred many from subscribing who would otherwise have readily done so; and it being evident that every year would increase the difficulty, the committee had arranged that, if so desired, new subscriptions might commence with the current year's publications, and that a new subscriber might pay up the subscriptions for past years at all periods, and in any manner convenient to him, receiving the publications in proportion to the amount he might pay.

An arrangement had also been made by which subscriptions would be received for the text only of the Dictionary, should any one desire to acquire it, without the illustrations, from which it was quite distinct, being in itself complete.

The committee announced with great pleasure that among the new subscribers enrolled last year have been, — the Royal Academy, the Commissioners of her Majesty's Works, the Athenæum Club, the Institute of France, &c.; and they hoped in future reports to have the satisfaction of recording the names of other institutions in whose libraries the "Dictionary of Architecture" would be an important standard work of reference.

In the report presented to the last annual general meeting, allusion was made to arrangements then pending with the Architectural Union Company, for renting from them a store-room, for the safe keeping of the stock belonging to the society. These have now been concluded, and the stock deposited in the store-room. Further arrangements have since been made, by which the Architectural Photographic Association had become joint occupiers of the room. Together with the occupancy of the store-room, the committee had been enabled to secure the use of a room for their ordinary meetings, and could thus avoid further trespassing on the hospitable kindness of the Royal Institute of British Architects, which had been for so long a period extended to them.

The final account for the eleventh year, ended April 30, 1859, showed a balance of 87. 18s. 11d. in the hands of the treasurer. The income due to the year had been 3157. and 887. 11s. 11d. had been brought forward from the previous year, making a total receipt of 4037. 11s. 11d.; while the production of the works issued for that year cost the sum of 3974. 12s. 2d.

The first account for the twelfth year ended December 31, 1859, showed receipt by subscriptions of 2427. 11s., and on account of arrears, &c., 927. 8s., which, added to the balance in hand, made together 3437. 17s. 11d.; while the expenditure already incurred for the production of the first part for the year amounted to 1914. 17s. 9d., leaving a balance of 1522. 0s. 2d. to be appropriated towards the expense of producing the second part for that year, which in the supplementary account was estimated to require 1957. The committee therefore requested all members in arrear to forward their subscriptions without further delay.

The Chairman, in moving that the report be received, printed, and circulated among the members, referred to the necessity of obtaining new subscriptions, in order that full effect might be given to the object which the society had in view.

The motion was seconded by Mr. Christopher, and carried unanimously.

On the motion of Mr. J. M. Laker, seconded by Mr. Bedells, the thanks of the meeting were given to the committee, the treasurer, and the local honorary secretaries, and they were requested to continue their services.

Mr. St. Ahyn moved, and Mr. Lockyer seconded, a vote of thanks to the honorary secretaries, Mr. Wyatt Papworth and Mr. Arthur Cates.

Mr. Wyatt Papworth moved, and Mr. Lightley seconded, a resolution awarding the thanks of the

meeting to Mr. H. R. Newton and Mr. Bright Smith, for their services as auditors, and requesting that Mr. Aitchison and Mr. J. H. Good would act as auditors for the ensuing year.

The thanks of the meeting were also voted to those gentlemen who had placed their collection of sketches at the disposal of the committee, and to Mr. Octavius Hansard for his services in the collection and arrangement of the illustrations.

Some formal business having been transacted, the usual compliment was paid to the chairman, and the proceedings terminated.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members was held on Friday evening (May 25), in the house, Conduit-street, Hanover-square; Mr. Penfold, president, in the chair.

The minutes of last meeting having been read and confirmed, the President said that the committee, in conformity with the resolution adopted at the last meeting of the Association, had drawn up a report in which they had embodied such suggestions as they considered likely to improve the working of the Society. He would call upon the secretary to read this report.

Mr. Capes, in the absence of the hon. secretary, read it.

The report set forth that the position of the Association was critical: that the interest shown by members had been gradually decreasing; that the committee, knowing that the Association had been of great advantage, and was still capable of effecting much good, were unwilling to recommend that it should be broken up until every means had been tried to restore its efficiency, and thus proceeded:—

"Most of the present members of the committee have repeatedly desired to be relieved of their duties, and nearly all of them feel that they are endeavouring to carry on this society, not so much for their own good as for that of others."

With the hope, then, of infusing new blood, and of creating a fresh interest in the society, as well as of testing the real feeling of those who should be its main support, the committee unanimously passed the following resolution:—"That it is desirable the office-bearers for the ensuing session should (with the exception of three) be selected from members who have never before held office."

Your committee, though they thought it undesirable to pass any other formal resolution, considered it would be beneficial to offer a few suggestions on the future policy of the Association. It was unanimously felt that free and unreserved discussion had been the life and soul of the meetings, and that a strong effort should be made to recover that social character which was a distinguishing feature of the early days of the Association, but which seems now in a great measure to be lost; and as one of the causes of this decline, it was suggested that the papers read at the ordinary meetings, excellent and talented as they have been, are, perhaps, too elaborate in character, and that practical and theoretical subjects, treated in a simpler and less studied manner, and more with the object of eliciting a discussion, would be better appreciated by the members. It has often been observed that the remarks or questions of the junior members, even though some of them may have seemed at the time almost absurd, have led to most interesting discussions. Your committee would, therefore, earnestly call upon your younger friends to take their proper share in the proceedings. It is feared, however, that the practice of reporting the discussions in the professional periodicals has deterred many from so doing, and your committee therefore suggest it would be well if in another year the discussions, except under peculiar circumstances, should not be reported, and that the publication of the papers read should be under the control of the committee. Lastly, it seemed the general opinion that if, instead of issuing the usual programme at the commencement of the session, a system of fortnightly announcements to each member could be adopted, as was formerly the custom, it would bring the proceedings more constantly under the notice of members, and might have a beneficial effect on the attendances.

Your committee, in conclusion, earnestly hope that the measures which the general meeting may see fit to adopt will result in advantage to this Association: they will as private members gladly contribute to its success by any means in their power, and they commend the subject very seriously to your consideration, as one which they deem to be of great importance to almost all the younger members of the profession in the metropolis."

Mr. A. Alton moved the adoption of the report, and, in doing so, said that the effort of this movement would be to stimulate the members to prevent the Association from being dissolved. He recollected a former occasion, when a similar course was undertaken with success.

Mr. W. Gritten, jun., seconded the adoption of the report.

A discussion ensued with reference to that part of the report which proposed to exclude the press from their debates, and an amendment to exclude that portion of the report was carried.

It was afterwards resolved, that a sub-committee of younger members be appointed to confer with others who are willing to serve upon the committee.

Messrs. New, Gritten, Pain, Ouph, and Keeves, were named as members of this sub-committee. They arranged to meet during the interval between the present and the ensuing meeting, which will be for the nomination of officers to serve next year.

## ECCLESIOLOGICAL SOCIETY.

A COMMITTEE meeting was held at Arklow House on Wednesday, May 2; Mr. Beresford Hope, the President, in the chair.

A discussion took place on the theory of the consecration of churches and churchyards enunciated in a speech by the Bishop of Oxford, in the House of Lords, on the Bishop of London's motion for destroying some of the City churches and selling their sites. Various architects met the committee, and submitted their designs.

A series of cartoons for stained glass, and some specimens, were forwarded for inspection by Messrs. Lavers & Barrard. Amongst them were a set of drawings by Mr. Westlake, under the supervision of Mr. Burgess, for Waltham Abbey; a five-light window for Modbury Church, Devonshire, of which the subjects were drawn by Mr. Westlake, under Mr. White's supervision; a window for Preston Church, Kent, designed by Mr. Barrard; the cartoons of a memorial window to the late Lord Lorton, for Ardean Church, Ireland, designed by Mr. Allen, and representing the four Evangelists; and the cartoons of some medallions lately placed in the chancel windows of St. Giles, Camberwell.

The committee examined a large photograph sent by one of their number, Mr. T. Gambier Parry, representing one-half of the Doom, as he is about to paint that subject, from his own designs, over the chancel-arch of his church at Highnam, Gloucestershire. The subject embraces a standing figure of Moses, six of the Apostles, seated in stalls, and an angel of the Judgment.

We understand that the annual meeting of the society is to be held this year in the gallery of the Architectural Exhibition, Conduit-street, on Monday, the 11th of June, at 8 p.m.; Mr. Beresford Hope, president, in the chair; and a debate will take place on the tendencies of pre-Raffaellism and its connection with the Gothic movement; and that persons desirous of being present will be admitted on sending in their cards to the president.

## BUILDING FOR THE SMITHFIELD CLUB CATTLE SHOW.

THE cattle show having outgrown Baker-street, a sub-committee was appointed on December 6, 1858, to inquire in what way the requirements of the club could best be supplied. A number of sites and plans of buildings have since then been offered for their approval, and the site which the committee has finally selected is that known as Dixon's Lairs, in the Liverpool-road, Islington. This piece of ground contains three acres. Under the patronage of the committee of the Smithfield Club is to be erected an agricultural hall on this site. A lease of the ground has been secured, and a large portion of the required capital of 30,000*l.* has been subscribed.

The Agricultural Hall Company will erect the necessary buildings, and pay the Smithfield Club 1,000*l.* per annum for a period of twenty-one years. The profits of the company will be derived from the admission fee to the various shows, which will probably comprise, in addition to cattle, roots, and implements, poultry, fruit, flowers, &c.

The Smithfield Cattle Show will be held in the new Agricultural Hall for the first time in December, 1862. The site is not on the right side of London for the purpose.

## COUNCILS OF CONCILIATION.

A BILL to establish equitable councils of conciliation to adjust differences between masters and operatives has just been brought into Parliament. The Bill commences by stating that it is expedient, the better to facilitate the settlement of disputes between masters and workmen, that they should be enabled to form equitable councils of conciliation or arbitration, and to amend and extend the provisions of an Act passed in the fifth year of the reign of George the Fourth, entitled "An Act to Consolidate and Amend the Laws relative to Arbitration of Disputes between Masters and Workmen." It then proceeds to provide that it shall be lawful for the masters and workmen engaged in any particular trade or trades, occupation, employment, or calling whatsoever, to form equitable councils of conciliation and arbitration, consisting of an equal number of masters and workmen, who shall have power to hear and determine all questions of disputes and differences between masters and workmen, and to have and exercise all the powers and authority granted to arbitrators, referees, justices, and others, by and under the various enactments and provision of

Acts before recited; and any award that the said equitable councils of conciliation and arbitration may make in case of dispute or difference submitted to them under the before-recited Act or Acts shall be final and conclusive between the parties to such arbitration, without being subject to review or challenge by any court or authority whatsoever. The said council further to determine any other case of dispute or difference submitted to them by the mutual consent of master and workman or masters and workmen. If any number of masters and workmen in any particular trade or trades, being inhabitant householders or part occupiers of any house, warehouse, counting-house, or other property, within any city, borough, town, or other place, at a meeting specially convened for that purpose, agree to form a council and jointly petition her Majesty to grant them a license to form such council, it shall be lawful for her Majesty, or her Majesty's principal Secretary of State for the Home Department, to grant such license, provided notice of such petition has been published one month before the granting of such license in the *London Gazette* and in one or more of the local newspapers of the place whence such petition emanates. The said council shall consist of not less than two masters and two workmen, nor more than ten masters and ten workmen, and a chairman; the number to constitute the said council to be inserted in the license; but a quorum of not less than three, including the chairman, may constitute a council for the hearing and adjudication of cases of dispute, and may make their award. For the purposes of this Act, the persons whose names, occupations, and abodes, are attached to the petition praying for a license, shall be authorized to proceed to the appointment of a council of conciliation and arbitration from among themselves within thirty days of such grant of such license; and the said council shall remain in office until the appointment of a new council in its stead.

## THE THREATENED STRIKE.

THE "Conference of the United Building Trades," through their secretary, have submitted a fresh application to the Central Association of Master Builders, dated May 25th, for a reduction of the hours of labour from ten to nine hours per day. Amongst the reasons which they give for asking this they place,—

"The determination on our part, as well as on the part of our fellow-workers throughout the country, not to cease the prosecution of our present undertaking until the boon of the 'nine hours' has been conceded. This last fact we submit to your attention, not in any boastful or defiant spirit, but lest you should be so far deceived as to imagine that the operative builders are to be diverted from the demand for the 'nine hours movement.' Rest assured that the determination to assure this amelioration of our condition is too deeply rooted in our hearts for any amount of resistance to turn us from our purpose, and that the chief object of any severities to which we may be exposed in consequence of this demand will be to deepen our attachment in the cause for which we have suffered, and strengthened our resolve to persevere in our agitation until success has crowned our endeavors."

The masters have not yet given any reply to the renewed request.

As an observer of what has been passing around us, permit me to add my mite to the much vexed question now agitating the building trades, which is simply this,—

That wages, and therefore the position of the working classes, have been improving in England for the last hundred years and more; that any attempt on the part of the men to force these things beyond their natural progress is an attempt to force nature, and must fail; but that if things had been let quietly alone the natural course of events would have given them the increased rate of wages (for the diminution of time is only a sham) they are now agitating for.

That any advance in the rate of wages must take place gradually, and not all at once, for society is always injured by sudden changes, and strikes being one of these unnatural attempts to force things beyond their natural limits, never have succeeded, and never will.

That any advance in the progress of the working classes must be with the sanction of, and not in direct opposition to, their employers, for the interests of both are the same, and if one is opposed to the other both must suffer.

That, on the other hand, it is as useless for employers to try to arrest the natural order of things as for the employed to force them; that wages have been gradually rising, are rising, and will rise, and nothing but a national calamity, such as war, can arrest their progress.

That the "document" was a failure, inasmuch as it split the working men into two classes, and

as no shop can be well filled with either, men are disputing for the merits of the "document" instead of doing their work. And, sir, how vexing it is to every lover of true progress to see the events that are passing around us, with the railway running like a fertilizing river through the land, and every village through which it passes springing into a new existence; hills, and crescents, and squares, arising where but a year or two ago were the quiet green fields; the village carpenter grown into a master builder, and the source from which the world of London was supplied with men, detaining them all at home, with increased comforts and increased pay. The easy means of emigration, waiving thousands to other shores to plant the germs of our race; with Australia, an infant Hercules; New Zealand close on its wake; India opened up; China about to be so; in Russia, a serfdom which has existed for ages abolished, and the nation arising like a giant long chained, to take its place among nations; a treaty concluded with France, which will do more to promote a good feeling towards, and prevent war between, us and our nearest neighbours, than all the guns or batteries that were ever made; London itself, the Englishman's pride, doubling and trebling itself, both in size, wealth, and population; and instead of the working men quietly abiding their time, and taking their share in the era of unexampled progress which lies before them, they are torn and distracted by internal wars, which always have impeded, and always will impede the very advancement they seek, and furnish an argument to their enemies, why they should not be intrusted with many privileges which were about to be conceded to them.

A LONDON BUILDER.

## SAINT ANDREW'S NEW CHURCH, DUBLIN.

THE amended design for this building, submitted in competition by Messrs Lanyon & Lynn, of Belfast, has been approved of by the committee, who are fortified by an estimate from a respectable Belfast builder for its execution within the stipulated amount. Amongst the other competitors were Messrs. Raffles Brown (*Templa quam delecta*); Deane & Woodward (*Dance Templa referre*); Thomas Turner, Belfast (*Excelsior*); Rawson Carroll (*In fide et in bello fortis*); J. McCurdy (*Duna spiro spero*); William Atkins (*Resurgam*); Drew (*Resurgam*); there were three of this motto); Slator (*Fides*); Bell (monogram T in a circle); Semple (*Delta*); Isaac & W. Farrell (*Finem respice*, &c.); and the first five in the order we have placed them in were, with Lanyon & Lynn's, reserved for consideration.

## PUBLIC BUILDINGS IN THE PROVINCES.

*Worcester.*—Great progress has been made, by the contractors, Messrs. Wood & Son, with the improvements and extensions at the county goal, in this city. Some time since the new east wing in the males' prison was completed, and two other wings which have been in a great measure rebuilt, says the local *Chronicle*, are now rapidly approaching completion. With the exception of some title of the chapel, the governor's old house (now partly used as the clerk's office), and a portion of the buildings near the front gates, nothing is left of the old goal. It is estimated that the prison, when completed, according to the present plans, will contain the following cells:—Male side, 13 reception and 246 ordinary; female side, 3 reception, and 62 ordinary; total, 324. In addition to these cells, the debtors' prison contains 26 for males and 2 for females. The enlargement and improvement of the goal are being carried out under the plans and superintendence of Mr. Rowe, the county surveyor. Mr. Sutton is clerk of the works.

*Wolverhampton.*—After the Town Council determined to put a roof upon the market-hall building, the contract was given to Mr. R. Stap, of London, who has now nearly completed the work, from designs furnished by Mr. Lloyd, of Bristol. By the plan adopted, the market will be divided into three compartments, averaging 100 feet in length, the central bay having a span of 33 feet, and the two sides 26 feet each. These bays are separated by four small avenues, which, like the bays themselves, run parallel with the Corn Exchange and Town Hall. The framework of the roof, which is formed of light iron spandrels, rests upon 46 iron columns, each 8 inches in diameter. The drainage from the roof will pass down these iron columns, which are hollow. The roof is composed of wood, covered externally with slates, and rests upon a framework running all round the

building and between the avenues, fitted with glass *louvre*s, composed of Hartley's patent glass. The avenues are roofed with corrugated iron.

**Birkenhead.**—A building has been erected by the county of Chester for lockups and court-house, &c. For want of funds the external part is unpretending. The cells, eight in number, are so planned as to allow of a division of the sexes. The gas is so managed as to light the whole of the interior of the cells, without any inside fixtures whatever. There are two day-rooms 29 feet 6 inches long by 9 feet 9 inches wide. The day-rooms and cells are heated by means of hot water pipes passing through them. Adjoining the lockups, and overlooking the same, is a residence for a constable. In the room built for the court, the windows are so placed, that upon opening the upper part a constant current of air is caused to pass over the ceiling; cold fresh air is admitted from below, and a hot water apparatus is introduced for warming the court in winter. The acoustic effect of the court is said to be good. The dimensions of the room are 43 feet 5 inches by 30 feet 3 inches, and 25 feet in height. The building further contains a staircase, magistrates' retiring-room, offices, &c.: there is also a stone staircase for the admission of the general public, and a separate staircase, also of stone, for the prisoners. The building was executed from the designs of Mr. William Cole, architect, Birkenhead, and carried out under his superintendence. The estimated cost for the completion of the whole, including the heating apparatus, gas, furniture, and fixtures, was about 1,800*l*.

**Hartlepool.**—The design of Mr. Matthew Thompson, of Newcastle, architect, for a new workhouse at Hartlepool, has been adopted, according to the *Gateshead Observer*.

CHURCH-BUILDING NEWS.

**Stamford.**—Tenders have been sent in for putting on a new roof and other restorations to the church of St. Mary, Stamford, and the following were the respective amounts: Bradshaw, 312*l*.; Richardson & Son, 310*l*.; Jeffs & Roberts, 300*l*.; the tender of Messrs. Richardson was accepted.

**Bacton (Staffolk).**—The chancel of Bacton Church has been reopened after restoration. The new chancel has been erected by the rector at a cost of something like 500*l*. At present it has no coloured glass. There is a five-light window at the east end. The benches are of stained oak, and the floor is chiefly composed of Minton tiles—the *reclodes* of encaustic tiles and Derbyshire alabaster, wrought up in geometrical spaces. The wooden roof is painted from designs found in other parts of the church. The painting has been executed by a village artist, under the direction of Mr. Butterfield, the architect of the new chancel.

**Lavenham (Staffolk).**—The church here has been examined by Mr. Penrose, and found to be in many points in a sad state of decay. The roof is said to be quite unsafe, as the ends of almost all the principals are decayed, and it now rests solely on the corbels. The mullions of all the windows, except ten which were restored some short time since, are said to be in a dreadful state of decay, literally falling to pieces from the action of iron bars, let into them, on the stone. The cost of the proposed repairs and restoration is estimated at 2,000*l*, of which 650*l*. are already subscribed.

**Leicester.**—The parishioners of St. Martin's have resolved to take down the very old Norman tower of the church, which is in a perilous state, and rebuild it, in the meantime without the spire. They have authorised the churchwardens to instruct Mr. R. Brandon to prepare plans for this and other requisite restorations.

**Sittingbourne.**—The foundation-stone of the new cemetery has been laid. The architect is Mr. John Wimble; builder, Mr. K. Spicer. The land on which the cemetery is being made is situated between the parishes of Sittingbourne and Tunstall. The ground is enclosed along the front boundary with a rag-stone wall with piers, and surmounted with an iron railing. Red bricks are introduced in bands. In the centre of the frontage is the entrance-lobby, which will be also of rag and Bath stone. The style of architecture is to be in keeping with the chapels. The chapels are placed in the centre of the land, and are connected by means of a covered carriage roadway; on each side of which will be a vestry and vestibule leading into the chapels. These will be in the middle style of Gothic architecture, with four-light windows in front and wheel windows at the back. Over the carriage entrance there will be a bell-turret. Inside the chapels it is intended to use coloured bricks. During the night the foundation-stone was removed, adds our authority

(the *South-Eastern Gazette*), the bottle containing the coins broken, and the coins stolen.

**Reigate.**—The opening and consecration of St. Mark's Church, Reigate, have just taken place. The foundation-stone to this building was laid on the 30th of July, 1859, by Earl Somers. Mr. W. Carrubers, of Reigate, builder, has carried out the contract. The architects were Messrs. Field & Hilton. The church is built with a local stone, and the parsonage is composed of the same material. The interior of the former affords 700 sittings; about 300 free. The estimated cost of the church and parsonage is nearly 6,000*l*, and about 4,000*l*. of that sum has already been collected.

ROMAN CATHOLIC CHURCHES AND CHAPELS.

**Brentwood.**—The first stone of a large new chapel has just been laid at Brentwood, on a site by the road-side, close to the old one, by Lord Petre. It will be more than double the size of the present edifice. Lord Petre gave the site and a liberal sum towards the work. The sum required amounts in the whole to 2,500*l*. The building was commenced some time since from the design and under the superintendence of Mr. Blount, architect, Messrs. Putman & Fotheringham, of London, being the builders, and the walls have already risen to a considerable height. The edifice is to be Gothic, of the second period of the pointed arch, with nave and chancel and two aisles, the material of the exterior being Kentish rag, with Bath stone dressings. The length is to be 90 feet 9 inches, breadth 39 feet 8 inches, height of nave to roof 33 feet, of chancel 36 feet; and at east end will be a tower and spire rising to the height of 110 feet.

**Abergavenny.**—The new church, dedicated to "Our Ladye and Saint Michael," has just been completed and consecrated. The edifice is of late Decorated Gothic, and consists of a nave, 75 feet by 24 feet; north and south aisles of the same length, and 9 feet wide, and chancel 25 feet by 18 feet. The nave is divided into six bays, supported by quarterfoil columns and high-pointed arches: it is lighted by six clerestory and six aisle windows on each side. The height to the summit is 55 feet, and it is spanned by an open timber roof with exposed rafters stained and varnished. The chancel is entered from the nave through a stone archway, 42 feet high. On the north side of the chancel are three two-light tracery-headed windows, and there is a similar window on the south side. The eastern window of six lights fills up the entire end of the chancel. The windows are glazed with cathedral glass, with the exception of the window at the eastern end of the north aisle, which is of stained glass, from the designs of Mr. Maycock, of Clifton. It is a memorial window to the late Mr. Simon Andrews, of Abergavenny. It contains the figures of "Our Ladye" and "St. Joseph." The stone employed for the building is wall stone of the immediate neighbourhood, in random courses, with Bath stone dressings. The covering is of Welsh slate, and the gables are surmounted with floriated crosses. The church is, we understand, the first public work of Mr. Benjamin Backnell, architect, Rooborough, near Stroud. The builder is Mr. Henry Williams, of Bristol.

**Wharfedale.**—A chapel has been commenced at Deepcar, a village near Wharfedale, on the line of the Manchester and Sheffield Railway. It will be built of stone, in the Early Pointed style, and attached to it will be a house for a sacristan. The architects are Messrs. Hatfield & Goldie, and the builders Messrs. Wade & Gomersall, all of Sheffield.

STAINED GLASS.

**Louth.**—The Roman Catholic chapel here has recently had its west end enriched by the addition of a stained-glass window, the cost of which has been raised entirely from penny contributions by poor Irish people, some of them in America. There are four lights in the window: in the two side ones are placed the figures of the patron saints of Ireland, St. Patrick and St. Bridget—and in the two centre ones is the representation of the widow dropping her mite into a box held by our Saviour. At the foot of the window is the following inscription:—"Given to this chapel by the poor Irish, 1860." The work has been executed by a Norwich artist.

**Southwater.**—On Ascension-day, a stained-glass window, by Messrs. Bell & Clayton, of London, was opened to view in the small church of Southwater. The window displays the character of

"*junocents*" in a fourfold view, viz.—1st. The Circumcision of Christ; 2nd. The killing of little children; 3rd. Our Saviour blessing little children; 4th. Christian baptism, above which Christ is placed as a King, sitting high over all.

"ASILE IMPERIALE DU VESINET," PARIS.

DURING a recent visit to Paris, I had the pleasure of visiting the new hospital of the government, *L'Asile Impérial du Vesinet*, which they consider one of their models for plan, economy in construction, and also on account of its sanitary regulations.

It is situated in the middle of the forest of the Vesinet, between Paris and St. Germain, on the western railroad, and designed by the government architect, Monsieur Laval.

The following diagram shows the general disposition of the building:—



It covers a superficies of about 3½ acres. The grounds surrounding it are very extensive, and well laid out for the convenience and enjoyment of the inmates.

This hospital only receives the convalescent female patients from the other Parisian hospitals, and contains accommodation for about 350 beds.

On the ground-floor are:—

In the central pavilions, two very extensive dining-rooms, both decorated with much taste. The floor is paved with a patent imitation of mosaic, which is very pretty.

The pavilions to the right contain dispensary, kitchen, *buanderie*, the directors' and house-surgeons' apartments.

The kitchen is rather small, in my opinion, for convenience; but, like most French kitchens, it is beautifully arranged, and contains every culinary improvement.

*La Buanderie*, or washhouse, has been carried out by Mous. Bouillon. Among other things in this department we find the application of centrifugal force for drying linen, and some new invention applied to the washing,—a sort of self-acting washing-machine.

Hot and cold water for baths, washing, &c., is carried over the whole hospital, on the plan of the same engineer.

The left pavilions contain wards, having in each eight beds; the average size of these wards being 26 x 18 x 12. They appeared to me rather low, and the cubical space very limited in comparison with some other hospitals; but this is sought to be counterbalanced by the system of ventilation adopted in this building, of which I will give a slight description below.

On the first floor, in the central pavilions, are two sitting-rooms, the same size as the dining-rooms. They are on Sunday utilized as a chapel, and this by a very simple arrangement. The centre of the pavilion, which is used as a chapel on week days, is surmounted by a dome, and so constructed that, by throwing open two large ornamented iron gates, which shut it out from the two rooms, a chapel is made capable of containing from 600 to 800 persons. This, erected at no additional cost, does great credit to the architectural talent of M. Laval.

The wards in the *Asile Impérial* contain, on an average, eight beds each; except in one of the right-hand pavilions, where there are two thirty-bed wards, and they have windows only on one side in all of them.

The warming and ventilation of this, as of all the hospitals lately constructed by the French Government, was confided to Dr. Van Hecke, of whose system an account has appeared in your pages.

It is carried out in the following manner. In the basement of the building, in one of the pavilions to the right, a 3½-horse power engine works a revolving fan, which draws the air from the exterior through a window, on the ground-floor, constructed for that purpose, and pumps it through long subterranean canals into four warming apparatuses. The air, after having been conveniently warmed, ascends into flues, which conduct it into all the wards through regulating air-gratings in the walls.

In each ward there are two or more escape-floes, which carry the vitiated air above the roofs. The ventilation seems to me very perfect.

OBSERVER.

LIVERPOOL DOCK MORTAR.

THE mortar used at the Liverpool Docks is made from limestone obtained from "Halkin Mountain," North Wales. One ton of this limestone is delivered on the Quay, Liverpool, at a cost of 7s. 6d. About 1½ ton of limestone makes one ton of lime as burned and drawn fresh from the kiln; which equals, by measure, 16 bushels, and, when slaked, 24 bushels.

Sea-sand is used to make mortar. By measure,—1 slaked lime; 1½ sand; ½ furnace ashes—ground during the space of half an hour.

Mortar-pans are 7 feet diameter; stones, 4 feet diameter; 14 inches on face; 5-horse power required to drive them at 2-revolutions per minute. About ½ cubic yard is ground at one time in each pan, ground half an-hour. Pans, 10 feet diameter; stones, 4 feet; 22 inches on face, and driven 16 revolutions per minute, have been used. Require 8-horse power to drive such pan and stones.

One cubic yard of mortar weighs about 30 cwt., and costs from 7s. 6d. to 10s. per cubic yard. 1 cubic yard of mortar executes 3 cubic yards of random rubble work, and about 4 cubic yards of brickwork. In grinding mortar the lime seems to be wholly lost in the sand. That is, 2 cubic yards of sand, and 1 cubic yard of slaked lime, with the necessary water: grind down to about 2 cubic yards of mortar. This mortar may be allowed to stand in heaps many days; but, before use, it must be re-ground: mere spade re-tempering is not sufficient.

Results of two experiments in preparing blue lias mortar, at Wigan Waterworks, 1857:—

First experiment, 17th December, damp and foggy evening.

Lime ground before being put into the mill, known as "Bag Lime":—

Measure.	Weight.
Lime..... 6 cubic feet ..	Cwt. qr. lbs. 2 3 18
Sand..... 12 do. ..	8 1 16
Water (21·6 gallons) .. 3·6 do. ..	1 3 20
Total bulk..... 21·6	13 0 20
Grinding occupied twenty minutes; filling, grinding, and emptying, forty-five minutes. The result was then as follows:—	

Measure.	Weight.
Mortar..... 12·5 cubic feet ..	Cwt. qr. lbs. 12 0 3
Loss in bulk 8·96 do. ..	3 0 0

Second experiment, 18th December, strong dry wind.

Measure.	Weight.
Water (25·2 gallons) .. 4·04 do. ..	Cwt. qr. lbs. 2 1 0
Lime..... 6 cubic feet ..	3 0 0
Sand..... 12 do. ..	8 1 14
Total bulk..... 22·04	13 2 14
Grinding occupied fifteen minutes; filling, grinding, and emptying, thirty minutes. The result then was as follows:—	

Measure.	Weight.
Mortar..... 12·75 cubic feet ..	Cwt. qr. lbs. 13 1 10
Loss in bulk 9·39 do. ..	0 1 4

Measure.	Weight.
First experiment.—Weight of a cubic yard of mortar.....	1 8 0 9
Second experiment.—Ditto.....	1 8 1 20

The mortar was soft enough for use when ground, but requires five or six gallons of water in an hour after grinding. R. R.

THE WAYS AND MEANS FOR METROPOLITAN IMPROVEMENTS.

EMBANKMENT OF THE THAMES.

The important question of raising the means of carrying into effect projected improvements in the capital requires the most careful consideration. From a recent report, it appears that at the present time the works actually ordered by the Metropolitan Board of Works are as under:—

The main drainage .....	£2,300,000
New street from High-street, Borough, to Stamford-street .....	429,424
New street from King-street, Covent-garden, to Cranbourne-street .....	41,820
And the Victoria-park approach .....	41,450
	£2,812,694

Other works which are described as being urgently necessary are estimated to cost 439,752l., besides Finsbury-park, which has been sanctioned by the Legislature and the Board, and will, when the money is forthcoming, cost 216,820l. There are thirty-nine improvements under notice, many of which have been already favourably reported

upon, the cost of which is estimated at 16,346,245l., and the present and prospective liability of the Board amounts to nearly 2,000,000l. These are startling figures; so much so that it is necessary to think carefully of the immense advantages which must result from so vast an outlay, provided it is expended in a right manner. Besides the above should be added the expenditure of local boards.

To meet this outlay there is an annual income of about 2,000,000l. raised by the taxation of the metropolitan district. This varies, and is very heavy in certain districts.

In raising this great sum the ratepayers of the present generation are, as we know, suffering in certain districts considerably; and it is clear that taxation in this way cannot be much increased, without causing great trouble and dissatisfaction. It is therefore most necessary to devise other means for carrying on these works, which will confer vast benefits on succeeding generations.

In a short time the coal duty, which has for long been levied for several purposes, will, unless fresh powers are granted, be discontinued. This tax, which is levied over the metropolitan district of twenty miles radius from the Post-office, does not press heavily on the poorer parts of the population.

There are three sections of this tax, viz., first, 8d. in the ton has met the cost of the London-bridge approaches, the Covent-garden approaches (now being carried out), and the new street from Coppice-row to the bottom of Ludgate-hill. The claims at present on this income will be liquidated in the course of next year. This duty yields 144,000l.

Secondly, the Id. duty yields 72,000l. This is claimed by the corporation as part of the City estates.

Thirdly, the Id. duty produces 17,000l. This fund, amongst other purposes, was applied to the re-building of the Royal Exchange.

It thus seems that the entire sum available from the sea-borne coal duties, which amount to 1s. 1d. per ton, is about 233,000l. per year.

Besides the coal duty there is a tax laid on the hackney carriages of the metropolis, which goes into the national exchequer. Considering that up to the present time the Parliament has refused to allow any grant from the national exchequer, either for the embankment of the Thames or for the vast improvements which are in progress in the capital, it is unjust that this should be applied to general purposes. The hackney-carriage tax raises a revenue of 80,368l.: not any of this tax is raised in the provinces; this, with the coal duties, would amount to 313,368l.: this, in ten years, would produce over three millions sterling; a sum sufficient to provide for the effectual embankment of the Thames throughout the metropolis. A. B.

THE PRICE OF BRICKS: SUPPLY AND DEMAND.

KNOWING your desire always to hear, and to present to your readers, both sides of a case, we take leave to offer a remark or two on the letter from "An Architect," in your last number respecting bricks. The writer complains of their present high price, and proposes that architects generally should insert a clause in their specifications, that their works are not to be proceeded with till bricks can be delivered at 35s. per thousand, and he gives it as his opinion that the present rate of prices proceeds from a spirit of speculation, analogous to that which is witnessed on the Stock Exchange.

Now, we have no quarrel with the price named, which is fair enough, but we venture to think that "An Architect," loses sight of the first principles of political economy, in trying to impose a fixed price upon brickmakers, and forgets that such matters are regulated entirely by the questions of supply and demand.

In the early part of the year 1859, when depressing influences were working to contract the demand, but when the supply was plentiful, stock bricks were sold at the unremunerative prices of 23s. and 24s. per thousand. What would "An Architect" have said to the brickmakers, if at that period they had all combined to sell no more bricks till they rose to 30s. or 35s. per thousand? We are sure he would have condemned it, and are equally sure the brickmakers would not have been so foolish as to attempt it.

At the present time, when the demand is large, and the supply is limited, bricks are dear, and so they will remain till the conditions which make them so are altered.

To attempt to impose artificial restrictions in

matters which are governed by fixed laws, which arrange themselves independently of pressure from without, savours rather of the fashion of the commissary of police at Naples, who went the other day on the Bourse, and, after commanding silence in a loud voice, and proclaiming that Garibaldi had cut his throat in consequence of the utter rout and dispersion of his followers, incontinently proceeded to fix the price of the funds at 112½. W. W. W.

SCHOOL-BUILDING NEWS.

Colchester.—A school for children of both sexes is in course of erection at Great Clacton, near Colchester. The building is of red brick with Caen dressings, in the style of the sixteenth century. It has a large four-light window at each end, and four three-light windows and a double porch at one side, with lateral entrances, surmounted by a bell-gable. The architect is Mr. H. W. Hayward, of Colchester; and the contractor, Mr. Hawkins, of Monks Eleigh, in Suffolk.

Thrapston.—On May 3rd, the new National School at Ratnuds was opened. It has been built by Mr. Parker, of Thrapston, from designs by Mr. G. E. Street. The building is in the Gothic style, and consists of a school-room, approached by a flight of stone steps in a porch, through which access is also had to a class-room. The sloping ground necessitated this arrangement. To the school building is attached a master's house.

Liverpool.—The foundation-stone of National Schools, to be erected in connection with Holy Trinity Church, Toxteth-park, has been laid. The schools will consist of three rooms, each about 45 feet by 18 feet, lighted on both sides, the lower one 15 feet, and the upper ones 14 feet high. A class-room communicates with each school, and all are approached by a fireproof stone staircase from the ground. The teachers' dwellings are attached. The architect is Mr. George Williams; contractors, J. and R. Duckworth, T. Williams, W. Goodall, Knowles, and Eriam. Cost of site, 1,700l.; cost of erection, 1,649l.—The roofs are put on the Friends' Free Schools and Literary Institute, at Islington. The architects of the new building are Messrs. W. and R. Duckworth, and the style is a modification of the Italian. The architects were rigidly restricted from any attempt at the ornamental. A design of a Gothic building first submitted by the architects was at once rejected. The building shows a frontage towards Islington of 66 feet, and runs back along King-street-lane, Soho, to a depth of about 70 feet. It is two stories in height, exclusive of the basement, and (speaking of the front) rests to a height of about 4 feet above the surface on red rock-work of roughly-quarried stone. The first story is of white stone, from Stourton; the upper story of red brickwork, stone-dressed, with the windows marked by a large anticlerical cornice and ornamental consoles. The doorway is placed in the centre of the front, and serves to divide the schools, on the left, from the various departments of the Institute, which are grouped on the other side. There are six windows on each story, filled with plate-glass. The schools are calculated to accommodate about 750 children,—500 boys and girls, and 250 infants. The different school-rooms measure 50 feet by 30 feet, and, contrary to the usual order, the boys will occupy the lower story and the girls the upper, the infants' school and various class-rooms being situated behind. The reading-room is 40 feet by 24 feet. The kitchen is on the basement, and suitable apartments have been provided for the keeper, and for the convenience of visitors or temporary guests. Mr. Tomkinson is the sole contractor, and the estimated cost of the building is 2,200l. The land on which it stands cost 1,500l., making the total amount 3,700l.; and a subscription of from 600l. to 700l. has been raised in addition for the purpose of furnishing the library.

Sheffield.—The corner-stone of the Oughtibridge National and infant schools has been laid by Lord Wharfedale. The building will be a stone edifice, in the Tudor style of architecture; the estimated cost of which is 600l. The stone used in the construction is quarried in the neighbourhood, and the facings are of freestone. There will be three school-rooms and two class-rooms, furnishing accommodation for 500 scholars, and residences for master and mistress. The site closely adjoins the church and parsonage, which stand on the side of the hill, about 200 yards from the turnpike-road. The architect is Mr. R. G. Smith, of Hull, and the contractors are Messrs. Ash and Clayton, of Sheffield.

**NATURAL MINERAL ASPHALTE SEYSSEL.**

SIR.—Our attention having been directed to the case of F. Seyssel, Architect, before the Vice-Chancellor Kindersley on the 22nd inst., wherein the important works executed at the Waterloo Station are alluded to, we feel it our duty to explain that the works in question were divided into three distinct contracts for their execution, one moiety by ourselves and the other by Mr. Henry Broughton, the material specially stipulated to be used in both cases being the "Genuine Seyssel Asphaltite."

Mr. Broughton, Mr. Strauss, sitting reasons to believe that the material used by Mr. Broughton was not the "Genuine Natural Asphaltite," stayed all further progress with his work until he should be satisfied on that point, which Mr. Broughton having failed to do, the completion of his portion of the work was entrusted to us, in addition to our own contract, and finished by us to the satisfaction of Mr. Strapp.

As we frequently remark that architects, fully satisfied of the goodness of the true Seyssel Asphaltite, simply specify that their works shall be done with "Seyssel Asphaltite," without any other distinguishing name, the following explanation may possibly not be unacceptable to your readers:—

The town of "Seyssel" (from which this natural bituminous lime-stone called "Seyssel Asphaltite," so largely used in this country takes its name) is situated in France, and the mines which produce it are on both sides of the river Rhone, where it separates France from Savoy.

This mineral rock-stone is a natural production, and can only be obtained from three distinct mines, viz.,—Seyssel Eyremont, Seyssel Perrette, and Seyssel Franzy. Of these mines the company represented by Mr. Farrell import the produce of the first, whilst we are the importers of the mine "Seyssel Perrette," and proprietors for half the production of the mine of "Seyssel Franzy."

Except, therefore, from one of these three sources, it is impossible that "Genuine Seyssel Asphaltite" can be obtained.

With the knowledge of these facts, it will be very easy for architects (if they wish to have their work carried out with the "natural" mineral production of Seyssel) to obtain it by simply adding the name of the mine the production of which they desire to use, and by satisfying themselves that the contractors of the works import them direct from the respective mines. ARMANI & CO.

**LEEDS CORN EXCHANGE COMPETITION.**

SIR.—Allow me to say a few words with reference to the competition to which architects are invited, for a design for a new Corn Exchange, at Leeds. In entering into competitions of this sort, architects have been induced to give their time and abilities in honourable rivalry, not so much for the paltry premium offered, as in the hope, if successful, of being allowed to carry out their design in the usual way; and, in cases where such honest intentions are ruling, it is surely enough to enable committees to fulfil them, if they require the design to comprise plans, elevation of principal front, and one or two sections, together with a general description as to the way in which the several works are to be done, and an approximate estimate of the cost. But what do we find in the instructions to architects in this case? Why? The architects are to state in detail the cost of completing the works according to their several plans. The architects are to supply a complete set of working plans, sections, and elevations, all drawn to a scale of one eighth of an inch to the foot, with all requisite details, and a minute specification, sufficient to enable contractors to tender from."

Now, it appears, the Leeds corporation have secured the services of a gentleman, who signs himself "C. E.," as their thorough surveyor, no doubt a very proper person, and we may take it for granted not overpaid. This fact, coupled with the craving for "a complete set of working plans, sections, and elevations, and a minute specification, sufficient to enable contractors to tender from," raises in the mind a very strong suspicion that these "complete sets" are, when obtained, to be handed in to "C. E.," to be carried out under his direction; and it would have been only honest to have said so.

The lucky author of the first prize will then have his name and address handed over, and "no further questions asked," as the custom is with fortunate finders of gentlemen's pocket-books, or ladies' pet dogs. But stop, there is yet another difficulty to be encountered; for, says the instructions, "should the actual cost of the selected plan, when contracted for, exceed the architect's estimate, he will be held to have forfeited his claim to the Premium." &c.

Now, the plain English of the matter is this,—the architect who employs himself in such a competition gives his time and talent to it, with a very remote chance of obtaining the money prize, and without the slightest chance of any further advantage. It is, supposing the works to amount to 12,000*l.*, about one-third of the fair charge upon similar works, carried out in the usual way, viz., at 24 per cent., and he is deprived of a further 24 per cent. for carrying out the works. Sicut.

**Books Received.**

*An Inquiry into the Law of "Strikes."* By FRANCIS D. LONGE, of the Inner Temple, Barrister-at-Law. Cambridge and London: Macmillan & Co.

Is this pamphlet, which comes at what we very much fear will be an opportune moment, the author has brought together with care the various authorities bearing on the subject. A simple exposition of the law is out of the question, so conflicting are the precedents; but, by a careful perusal of this pamphlet, those desiring to strike or coerce may at any rate see what they must do if they wish to keep within the law. We have, to speak candidly, no desire to aid in such investigation; our earnest hope being that, by the exercise of common sense and honesty of purpose, the necessity for looking into the law of strikes may be altogether avoided.

*Peaks, Passes, and Glaciers. A Series of Excursions by Members of the Alpine Club.* Edited by JOHN BALL, M.R.C.S., &c., President of the Club. Fifth edition. London: Longmans and Co. 1860.

The voluntary facing of out-of-the-way dangers and difficulties, and the persistent contention with and overcoming of them, are characteristics of the Anglo-Saxon race acknowledged even by their most inveterate foes. The ascent of the ice-bound peaks and passes of the high Alps of Switzerland affords a good field for the exercise of this commendable spirit. The Alpine Club now numbers at least 100 members, every one of whom doubtless has his own story to tell of dangers faced and difficulties vanquished. The present volume contains interesting narratives of a few of these, together with the scientific and other information picked up by the way. In a scientific point of view, indeed, the glacial districts of the Alps are of especial interest now even to archaeologists, as they afford some idea of that strange state of the world in which the glacial remnant of the modern Arctic regions had spread over nearly all the globe—at least over nearly all our own northern hemisphere,—at a time when unknown tribes of men traversed its ice-bound surface in pursuit of monsters now extinct, which they attacked with those implements of flint so recently discovered in the glacial drift and gravel of our own and other countries,—then partly covered by icy oceans, and partly, like the high Alps, frozen up under everlasting glaciers.

Even apart from all geological or other scientific associations, however, the sublimity of the scenery of the snow-clad peak and glacier, associated as these are with the softer beauty of lake and valley, constitute of themselves a rich and all-sufficient recompense for the healthful labour and enticing peril of the ascent; and crowds of Anglo-Saxon tourists, many of them doubtless excited to the task by the graphic narratives of recent writers, such as those of the Alpine Club, and of that incomparable popular yarn-spinner poor Albert Smith, are now scrambling up the "peaks, passes, and glaciers" of Switzerland.

**Miscellaneous.**

**DECAY OF BUILDING MATERIALS.**—At the Royal Institution last week Professor Aunsted delivered a lecture on "The Decay and Preservation of Building Materials."

**PILGRIMAGE TO NEWSTEAD ABBEY.**—Under this title the *Nottinghamshire Guardian* contains a pleasantly-written account of Newstead Abbey and the associations it awakens. The estate is to be sold on the 13th of this month.

**CRYSTAL PALACE.**—The annual meeting of the children of the charity schools of the metropolis, which has so long been annually held in St. Paul's Cathedral, will this year be discontinued; but it is announced that a more than ordinarily great gathering of the children will take place in the Crystal Palace on Wednesday next, June 6, preparations for which have been in active progress for some time past.

**THE SOCIETY OF ARTS.**—The second convocation of the Society of Arts took place on Saturday evening last at the Brompton Museum. The company was received at the entrance to the Educational Department of the Museum by Sir Thomas Phillips, chairman, and the various members of the council of the society. All the departments of the museum were open on the occasion. The band of the Coldstream Guards performed a selection of music. There were 2,500 persons present, and the arrangements seemed to give satisfaction to all.

**CAMBRIDGE ARCHITECTURAL CONGRESS.**—The arrangements for the week, under the presidency of Mr. Beresford Hope, were promising. On Monday, Mr. E. A. Freeman was to meet a party at Waltham Abbey, *en route* to Cambridge, and to explain to them the various points of interest connected with the recent restoration. In the evening, at Cambridge, the president was to deliver an opening address; and a lecture was to be given by the Rev. Professor Willis, on "The Architectural History of the University." On Tuesday, an excursion to Ely, with a lecture on the Cathedral, and a *conversazione* in the Town Hall, Cambridge, when Mr. Le Strange was to read a paper on "The Application of Colour to Architecture." Wednesday was appropriated to the various objects of interest in the town. In the evening there was to be a lecture, by the president, on "The English Cathedral of the Nineteenth Century;" and Thursday was set apart for Bury Saint Edmund's.

**RENAISSANCE ART IN "SOUTH KENSINGTON MUSEUM."**—Some interesting works of the period of the revival of art have been opened to view, we can scarcely say set up, in the Museum, and an account of them, by Mr. C. J. Robinson, has been printed. We are forced by the pressure on our columns to postpone notice of them.

**THE GALLERY OF ILLUSTRATIONS, REGENT STREET.**—Mr. and Mrs. Germain Reed have made some agreeable additions to their excellent entertainment. Both highly accomplished in their arts, and refined in their own tastes and feelings, the most fastidious may go to them with the certainty of being pleased. They stand quite alone, and thoroughly deserve what they are obtaining, the warm support of the public.

**SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.**—The fourth *conversazione* of the season was held (by permission of the Earl of Ellesmere) in the Bridgewater Gallery, on Friday evening, the 25th of May, and was very fully attended. Mr. H. Ottley read a paper on the Italian and Dutch Schools, with reference to the Bridgewater Collection; and there was afterwards a concert of vocal and instrumental music, under the direction of M. Benedict. Madame Cillag, Madame Jenny Meyer, and Herr Steger were amongst the executants. The gallery is scarcely sufficiently lighted for such meetings.

**THE 1862 EXHIBITION.**—The guarantee fund now amounts to 291,900*l.*, and a committee has been formed to increase it still further. The 1851 Commissioners have not yet replied to the application of the Council of the Society of Arts for a portion of the land at Kensington, purchased out of the surplus fund of the last Exhibition, in order that it may be secured for the next and future International Exhibitions. The Council will deem it necessary to apply for a Royal Commission, so that the managers may be in a proper position to correspond direct with foreign countries.

**ROME IN LEICESTER-SQUARE.**—The View of Rome, at the Panorama in Leicester-square, painted by Mr. Burford and Mr. Henry C. Selous, from sketches made by the former, is one of the best we have seen for some time. Apart from the undying interest belonging to the subject, it is beautifully painted, and gives a very truthful and striking picture of the lone mother of many nations. The effect of distance looking towards the Lago di Albano, and Monte Saveli, is charmingly conveyed. The panorama is taken from the Campidoglio, or tower of the capital, and embraces all the prominent objects in both the ancient and the modern portions.

**ROYAL ITALIAN OPERA, COVENT-GARDEN.**—"*Il Barbiere di Siviglia*" never went more charmingly than it did on Monday night last. Madame Carvalho is an admirable *Rosina*, while Mario's *Almaviva* and Ronconi's *Figaro* are unapproachable. Who shall estimate the amount of gratitude due to a composer who gives the world a set of heart-filling melodies such as are here, for its delight and elevation? Mr. Gye is redeeming his promises one by one. On Wednesday the first of the morning concerts was given in the New Floral Hall, nearly the whole of the chief artists assisting. The duet from "Semiramide" by Grisi and Didée, and the serenata from "Don Pasquale" by Mario, were encored. Amongst the other successes, we should name Madame Carvalho's "Carnivale di Venezia," and Grisi's aria from "Puritani," "Qui la voce." "The Huguenots" is announced for Tuesday next, with Grisi, Carvalho, Didée, Faure, and Mario in the principal parts; and it may be anticipated, with such a *Fides* in the house as Madame Cillag, that the "Propheète" will follow before long.

**TO ASCERTAIN WEIGHT OF LEAD.**—SIR: Can one of your correspondents inform me whether there is any kind of instrument for the purpose of ascertaining the weight of lead, glass, and other similar articles used in the building trades, without putting them to the test of scales and weights, when a doubt may arise as to the accuracy of the weight, size, or thickness of such articles when being used. Such an instrument would be exceedingly useful to the profession and their representatives, when inspecting works, especially in the country, where the means are not always at hand for putting such materials to the ordinary test when required. Such an instrument, if made sufficiently portable to be carried in the pocket, would be a ready means of settling disputes of this kind, which are not unfrequent.

**ONE OF THE PROFESSION.**  
\* \* \* We do not know of such an instrument. The weight of lead may be ascertained nearly from its thickness.

THE GUESTEN HALL, WORCESTER.—Edeu- vours are being made to ensure the preservation of this ancient hall, with its interesting wooden roof. It is to be hoped they will be successful.

STRIKE OF THE RAINFORD PIPEMAKERS.—This body of men have struck for an advance of wages in consequence of the briskness of their trade. Hitherto, they have been paid at the rate of 8d. per gross, and they now ask 9d.

LUBRICATING COMPOUND.—Mr. C. Collins, Lower-road, Islington, provisionally specified an invention for a lubricating compound made of tallow, vegetable wax, soap, lead, and bone-black or animal charcoal.

PRESERVATION OF STONE.—When the Caen stone statue of Captain Coram was put up in front of the Foundling Hospital, we mentioned that a stone-preserving process had been tried upon it (known as Daines's, if we remember rightly), and said it should be watched as an experiment. We owe it to our readers to say that it failed entirely: parts of the figure, indeed, dropped off. Afterwards another process was tried, without effect, and more recently the statue has been repaired and thoroughly painted.

DONCASTER RAGGED SCHOOLS.—A design for the new school building proposed to be erected in Factory-lane has been prepared by Messrs. Blundell & Arnold, of this town, architects and engineers. The entire cost of site and buildings may be estimated, says the Doncaster Chronicle, at least at 700. Messrs. Blundell & Arnold have placed these plans at the disposal of the committee without charge, and offered to undertake the superintendence on the same terms. An appeal will be made to the Town Council for assistance.

TIMBER LANDS OF VICTORIA.—The timber lands of Victoria lie in the valley of the Gull River. The timber hitherto cut upon this stream has been wholly in the section below the Fenelon Falls. Some of this has been manufactured into square timber, and in that shape has reached the Quebec and other markets. A portion also was put into saw logs, and converted into boards. Twenty per cent. more can be made of the raw material in board timber than in square, which, added to 20 per cent. made out of square timber curls, give 40 per cent. in favour of board timber over square timber. It has remained, however, for this past winter to see the lumbermen above the falls, and we now learn that by the end of the present season not less than from 1,000,000 to 1,200,000 cubic feet of square and board timber will be sent to market from this new and prolific region.—Quebec Chronicle.

RIDGE TREESTLE.—Among patents recently specified by Mr. Henry, patent agent, Fleet-street, is one taken by Mr. Wilkins, builder, Banbury, for a "ridge trestle," or apparatus to be employed on ridges of buildings for supporting persons and planking. This ingenious apparatus consists of a pair of wood bars hinged together at top, and having hinged to them at their junction a pair of beams, and at their lower ends a pair of supporting bars. The apparatus is set up by opening out the first-named bars at an angle corresponding to the pitch of the ridge, extending the beams horizontally, and resting their outer ends on the supporting bars, which are provided with a step arrangement to adjust the level of the horizontal beams to the pitch of the ridge, and are kept in position by stays and recesses on the ends of the beams. When so set up, a person may stand thereon, or two such trestles may be set on the ridge and putlogs for scaffold planking laid across. When not in use the whole folds up into a portable shape, to be carried about from place to place.

FEMALE SCHOOL OF ART AND DESIGN.—The movement for raising a fund to build premises for this school is making progress, aided as it is by all the old supporters of the school, and by other friends of art education. The pupils themselves, the teachers, and the ladies visitors, are using their most active exertions to carry out, not only as an attractive *flou*, but as a means of accomplishing their object, the *conversations* which is to be held on the 21st inst. at the South Kensington Museum. The collection of ancient and modern jewellery, to be contributed by the Council of the Fine Arts Club, will be believed to be exceedingly interesting; and, to say nothing of other treasures which will be collected for the occasion, the "Mountain of Light,"—the world-famed "Koh-i-noor," will, by the gracious permission of her Majesty, dazzle the eyes of her subjects there assembled with the increased brilliancy which it has acquired since it has been recut. We find, by a paper lately issued, that up to the 17th inst. the subscriptions had amounted to 493. 12s.; but as an expenditure of at least 2,000. is contemplated, there is yet much to be done.

PAINTERS' HALL, QUEENHITHE.—The exhibition of works of decorative art arranged by the Painters' Company is open. We shall have something to say of it next week.

BLENHEIM PALACE.—This structure has lately been undergoing considerable alteration, with various additions, to bring it more in accordance with modern notions of domestic comfort. The noble owner has just employed Messrs. Price & Co., of Westminster, to warm the halls, corridors, and passages by hot water pipes, which are distributed in a series of coils, and made to assume certain forms suitable to the building, and intended to harmonize with the general character of the interior. Some of these coils of pipes are in the shape of ornamental columns: others are placed in recesses concealed by ornamental tables.

DECAY OF THE OAK.—We had occasion lately to draw attention to the decay of the lurch in this country. It now appears that the oak itself is in danger, and it is said that unless Government immediately issues a commission for investigating the cause of the decay of oak trees by the nut-gall insects, and suggesting a remedy, there will not, in the course of a few years, be a single oak left. The same state of things exists in America, and as yet without a remedy.

FATAL ACCIDENT AT THE NEW SEWER, DEVONSHIRE-STREET, BISHOPSGATE.—A few days since, workmen in the employ of Messrs. Ashby & Sons, builders, Bishopsgate-street, were ordered to commence the preliminary business of shoring up the properties in the neighbourhood, and, whilst engaged in this duty, two of the men were fixing shores at a considerable height, when the ladder broke with one of them, and precipitated him to the pavement, and the other man, as if shocked by the fall of his mate, instantly fell from the beam on which he was standing on to the pavement also. Both were removed to St. Bartholomew's Hospital, in an insensible state: one of them shortly after expired, and but slight hopes were entertained of the recovery of the other.

METAL TRADES' PENSION SOCIETY.—The seventeenth anniversary of this Society was celebrated at the London Tavern, on Tuesday week, when about 100 of the most influential persons connected with the metal trades were present. The chair was occupied by Mr. Alderman Mechi, the vice-chair by Mr. Lloyd, mayor of Birmingham. The chairman, in proposing the toast of the evening, said he was glad to see that the society had 67 pensioners,—27 men, and 40 women, and that the contributions last year amounted to 1,352. That was very creditable as a beginning; but seeing that coal and iron were, so to speak, the backbone of the nation, he did not think that 1,352. per annum represented, in its full power, the metal trades of the country. The total amount subscribed during the evening was 671s., the Birmingham deputation having subscribed 80s.

METROPOLITAN BOARD OF WORKS.—At the usual ordinary weekly meeting last week, the Board proceeded to receive tenders for the construction of the Ranelagh overflow sewer Hyde-park. The following tenders were received:—Hemming, 35,800s.; Newton, 29,690s.; Moxon, 27,600s.; Dethick, 23,800s.; R. Robinson, 24,963s.; W. Hill, 25,926s.; Battersby, 26,500s.; Thirst, 24,927s.; Lavis, 26,317s.; Rowe, 29,689s.; Bird, 26,779s.; Hare, 30,765s.; Tredwell, 35,435s. The tender of Mr. Dethick, as an old contractor to the Board, was unanimously accepted, subject to the usual inquiries as to securities. A report was received from the Street Improvement Committee submitting a specification for the formation of a subway along the Covent-garden approach, by the construction of arches and vaults, for the laying down of pipes for gas, water, &c., to render unnecessary the frequent breaking up of the streets for these purposes. This proposition led to a long discussion, but ultimately the report of the committee was adopted by a majority of 20 to 6.

TENDERS

For improvements to remainder of Newgate; Mr. J. B. Bunning, architect to the corporation:—  
Jury (eight months) ..... £10,720 0 0  
Myers ..... 10,120 0 0  
Walker & Neave (nine months) 10,094 0 0  
Perry & Co. .... 9,793 0 0  
Mansfield & Son ..... 9,775 0 0  
Holland & Hannen ..... 9,614 0 0  
Little (eight months) ..... 9,524 0 0  
Piper & Sons (ten months).... 9,497 0 0  
Axford & Co. (ten months).... 9,482 0 0  
Gammon & Co. .... 9,465 0 0  
Ashby & Horner ..... 9,357 0 0  
Brown & Robinson (nine months) 9,230 0 0  
Haydon, for heating, ..... 532 10 0

For the erection of an Hotel, in the Victoria-road, Aldershot, for Rhomas Tautou; Mr. Frederick Eggar, architect:—  
Smith ..... £1,470 0 0

For the erection of Residence, Offices, and Farm Buildings, at Moulton-park, Northampton, for Mr. G. M. W. Peacock, M.P. Mr. Frederick Eggar, architect, Farmstead and Albany:—  
Ireson, Northampton ..... £1,613 0 0  
Watkin, Northampton ..... 4,350 0 0  
Boddington, Wellingborough ..... 4,137 0 0

For alterations at the National Scotch Church, Regent-square; Mr. J. Gibson, architect:—  
Church. Lecture Hall.  
Wardle & Baker ..... £4,100 ..... £1,150  
Holland & Hannan ..... 3,840 ..... 1,010  
Piper ..... 3,755 ..... 1,180  
Clarke ..... 3,750 ..... 1,225  
Jackson & Shaw ..... 3,665 ..... 1,165  
Patman & Co. .... 3,653 ..... 1,140  
J. & W. Sanders ..... 3,590 ..... 1,090  
Lucas, Brothers ..... 3,440 ..... 1,033  
Mansfield & Son, ..... 3,340 ..... 1,033  
Lawrence ..... 3,290 ..... 900

For works to be done in pulling down and rebuilding Premises, No. 9 and 10, Adde-street, City, for Mr. A. Shore; Messrs. Tiltott & Chamberlain, architects. Quantities supplied:—  
Fish ..... £1,613 0 0  
Rider ..... 1,502 0 0  
Browne & Robinson ..... 1,458 0 0  
W. Hill ..... 1,373 0 0  
Pritchard & Son ..... 1,266 0 0  
Cannon (accepted) ..... 1,150 0 0

For alterations at 87, Hatton-garden, for C. Meeking & Co. Architects; Mr. C. Shopper, architect. Quantities supplied by Mr. Williams:—  
Battam & Craske ..... £1,569 0 0  
Searave & Blonfield ..... 1,425 0 0  
G. Mansfield & Son ..... 1,410 0 0  
Wagstaff & Son ..... 1,390 0 0  
Clarke & Co. .... 1,333 0 0

For Villa Residence, for Mr. Thomas Ford, Hailes; Mr. Robert Schriener, architect:—  
Mathews ..... £665 10 8  
Hammerley ..... 615 0 0  
Jones ..... 629 0 0  
Staford (accepted) ..... 600 0 0

For alterations to the premises, No. 108, Prand-street, Paddington, for Mr. J. C. Wood; Mr. Ridley, architect:—  
Wardle & Baker ..... £700 0 0  
King & Son ..... 595 0 0  
Jackson & Shaw ..... 575 0 0  
Bowley, Brothers ..... 525 0 0  
Greig, Brothers ..... 522 10 0

For the erection of a Detached Villa, for Mr. T. Confield, Buckhurst hill, Essex; Mr. J. H. Rowley, architect:—  
Rivet ..... £1,033 0 0  
Cordery ..... 670 0 0  
Goodman ..... 619 0 0  
Humphreys ..... 620 0 0  
Sewell ..... 604 0 0

For new Rail Fence, at the Marine Parade, Dover. The contractor to take the old fence; supposed to be about two tons:—  
Allowed for Old Nails, s. d.  
Ismay & Co. .... £246 0 0 ..... 6 per cwt.  
Probble ..... 169 0 0 ..... 5 0  
J. & J. Joyce ..... 151 10 0 ..... 5 6  
Wright & Thomas ..... 119 0 0 ..... 4 0  
Reed ..... 118 14 0 ..... 2 0  
\* Accepted.

For new North Aisle, &c., to the Parish Church of Weston-on-Trent, near Stafford; Mr. G. G. Scott, architect:—  
Espley ..... £467 0 0  
Ratcliffe ..... 415 0 0  
Espley ..... 413 0 0  
Emery ..... 398 17 0  
Lilly ..... 383 10 0

For the Croydon Cemetery Works; Mr. E. C. Robins, architect:—

	Chapels.	Lodge.	Drain.	Total.
	£.	£.	£.	£.
Downes	2,433	511	1,253	4,197
Batterbury	2,191	489	1,319	4,199
Kent	2,350	489	1,314	4,153
Jackson & Shaw	2,180	523	1,330	4,033
Ebbutt	2,200	460	1,327	3,987
Beavers	2,195	523	1,262	3,980
King, Barton, & Hipwell	2,460	470	1,180	3,970
McLellan & Birt	1,940	439	1,223	3,583
Pickard	1,777	425	784	2,987
Boss	2,150	460	...	...

\* Accepted.

For the Ironwork in Gates and Railings, for the Croydon Cemetery:—  
Hill & Smith ..... £865 10 0  
Randall ..... 800 0 0  
White ..... 740 10 0  
Ford & Son ..... 615 0 0  
Hood & Son ..... 598 0 0  
Jordan ..... 573 0 0  
Lainworthy & Reed (accepted).... 540 0 0

ST. MATTHEW, BETHNAL GREEN.  
Sir,—For the restoration of this church, tenders were invited, but as those tenders were not approved, certain changes were directed, and the committee determined to advertise. The existing cause of this communication is to assure intending competitors that the list of tenders forwarded to you, evidently with a purpose, has been without my sanction.—I am, Sir, &c.  
THOMAS EDWARD KNIGHTLEY.

# The Builder.

VOL. XVIII.—No. 903.

The Exhibition in Painters' Hall, and the Painters' Company.



THE Exhibition of the Specimens of "Decorative Works of Art," at Painters' Hall, Little Trinity-lane, Queenhithe, briefly mentioned in our last, and which will remain open till the 21st inst. deserves a recognition as an effort by one of the City Companies,—one

that has other claims, than those which are obvious, on the attention of our readers,—to confer advantage on a calling with which the name of the company is associated. Whilst we have no desire, were it possible, to see revived many of the ancient privileges, it is obvious that some of the Companies might effect much more than they at present attempt for the improvement of the crafts with which they are supposed identified, as well as for the advancement of art,—if not also for the cultivation of an understanding between master and workmen, based on the ground of common interest. Of the companies concerning which we might be particularly interested, there are of "the twelve," the Goldsmiths' and the Ironmongers'; and of the others, taking them in order of precedence, the Armourers' and Braziers', the Carpenters', the Painters', the Masons', the Plumbers', the Founders', the Bricklayers', the Blacksmiths', the Joiners', the Plasterers', the Stationers', the Broderers' or Embroiderers', the Upholders' or Upholders', the Turners', the Glaziers', the Paviers', the Shipwrights', the Clockmakers', the Gardeners', the Tinplate Workers', the Glass-sellers', and the Wire-Drawers',—the Painters' at present ranking twenty-eighth of the Companies. Some of the Companies retain important privileges, like the Goldsmiths'; but, generally they, or their ruling bodies, are little more than trustees for charities or chartered festivals; and the liverymen and commonalty being persons entitled to participate in these charities, and to partake of the dinners, and who are qualified for office, or to vote. In this light only, says the report of one of the commissions on affairs of the City and the Corporation, are the different Companies to be viewed.

The position and power of the Companies during the Middle Ages, was very different, as may be seen on reference to "Herbert's History of the Twelve Great Companies," and to Jupp's work on the history of the Carpenters' Company, noticed in our pages at the time of its publication. The evidence of a certain influence which they had in art, remains in descriptions of the City pageants, in some of the paintings out of a number little known which there are in the halls, in their furniture and plate, and in the embroidered funeral palls of several of them. Some of these art-works, like the picture by Holbein, at Barber Surgeons' Hall, are well known; but there are many others, and amongst the latter may be named the works belonging to the Painters' Company, amongst which are the silver cup, shown at the Manchester Exhibition, which was presented

to the Company by Camden, and a portion of a collection of paintings, extending to about fifty altogether, of various orders of merit.

Though the Painters' Company now represents, chiefly or nominally, the trade of house-painting or "decorator's" work, its origin appears to have been in a somewhat higher calling. As late as the seventeenth century, Verrio and Sir Godfrey Kneller belonged to it; and later, the company had the accession of the great name of Sir Joshua Reynolds. In the present livery, with many names unconnected with building, are included those in some way connected with decorative art, of Sir S. M. Peto, Bart., and Messrs. G. J. Morant, G. F. Trollope, J. D. Crace, and others. Like many of the other Companies we have named, that of the painters, however, is very deficient in funds, whether for entertainments, or for any object such as that at present more immediately coming under our notice.

Some particulars of the history of the association here may not be uninteresting or out of place. The "Painters', otherwise Painter-stainers' Company," had its origin in a fraternity of artists formed in the reign of Edward III., and styled a company, though not then incorporated. They called themselves Painter-stainers, from their chief employment, which, in the words of Pennant, was "the staining or painting of glass, illuminating missals, or painting of portatif or other altars, and now and then a portrait; witness that of Richard II., and the portraits of the great John Talbot and his wife, preserved at Castle Ashby." In the year 1575, continues Pennant, "they found that plasterers, and all sorts of unskilful persons, intermeddled in their business, and brought their art into disrepute by the hadness and slightness of their work." They, therefore, determined "to keep their mystery pure from all pretenders," and were incorporated in 1576. The date of incorporation is given 1582 by others, as Maitland, though 1580 by Strype. The company was called that "of the Art and Mystery of Painting called Painter-Stainers within the City of London." The author of "A New View of London" (1708), who gives the date of incorporation 1580, speaks of the company as "composed of Face Painters, History Painters, Arms Painters, and House Painters;" and of the panels of the wainscot and ceiling of their hall, as "inbelleished with great variety of History and other Painture exquisitely performed," &c.

John Stow, writing before the Great Fire of London, identifies them on their present site of habitation, or in 1598, saying,—“In Trinity-lane, on the west side thereof, is the Painter-stainers' Hall, for so, of old time, were they called, but now that workmanship of staining is departed out of use in England.”\*

In Strype's edition of Stow, there is an interesting account of the circumstances of the incorporation. The story runs:—

“But now, about the time before said [that of Queen Elizabeth], their Trade began to go to decay, by reason of other Persons that had not been apprentices to it, who undertook Painting; as Plasterers and others, intermeddling in the same Science; And the Painters, having no Power to restrain them by virtue of any Corporation, to the great Slander of the Art and Science, and the utter Decay and Ruine of all such as would endeavour themselves to be good Workmen in the same. Much slight work went off; as Pictures of the Queen and other Noblemen and others; and all other manner of Works, which showed fair to sight: And the people bought the same, being much deceived; for that such Pictures and Works were not substantially wrought: A Slander to the whole Company of Painters, and a great decay of Workmanship in the said Science; and also a great Discouragement to divers forward Young Men, very desirous to travel for knowledge in the same.”

Of this state of things, not much unlike what exists now, the painters, according to Strype, made complaint from time to time to the Lord Mayor, but could never get redress, the reason given to them, on the part of the City authority, being the want of "judgment or skill in that science," to distinguish the

bad from the good. Therefore it was that the painters addressed the Queen, desiring to be incorporated, and have privileges, amongst which were "to restrain, that none be suffered to use that Trade but such as have been, or shall be, Apprentices to some of that Mystery seven years; to have Authority to enter into any Shops, Warehouses, or Workhouses of Men exercising that Mystery, and to search, examine, and survey their Works, Paintings, Colours, or other Stuff," &c. This was granted. One George Gower was the Queen's Serjeant Painter; and he had authority "to take up and provide for the Queen," "for the only provision of ber service, all Colour, Oil, Varnish, Workmen, and Labourers, as well Free as Foreign," and barges, carriages, and other things necessary for conveyance, at reasonable payments. The oath taken by freemen still enjoins the keeping "well and faithfully," "the secrets of the same Mystery and Science," and that these shall not be taught except to an apprentice, or one who has been an apprentice for seven years. In the first year of the reign of James I. it was, with other stipulations, again enacted that,—

“\* \* \* no Plasterer shall exercise the art of a Painter in the City or suburbs of London, or lay any colour, or painting whatsoever, unless he be a servant or apprentice to a painter, or have served seven years' apprenticeship to that trade, under the penalty of five Pounds.”

Yet "plasterers" might use whitening, "blackening," red ochre, &c. mingled with size only, and not with oil, without any fine. Eventually many painters settled in Westminster, and these had little intercourse with one another. We find, however, that the Painters are specially referred to in an Act of the Common Council (15th November, 1667) after the Great Fire, which, as we learn from Mr. Jupp, besides regulations applicable to the City and to the Twelve Companies, required the Carpenters, Bricklayers, Plasterers, Painters, Masons, Smiths, Plumbers, and Paviers, each to elect yearly two master workmen, four journeymen, eight apprentices, and sixteen labourers, to be ready on all occasions of fire to attend the Lord Mayor and Sheriffs. We have not been able to obtain any account of the original building which was destroyed in the Fire; and, perhaps, there is none, beyond the slight reference of Stow.

The persons relieved by the Company in 1859 were 221 in number, and amongst the charities is Mr. John Stock's "Charity for Poor Lame Painters, more or less incapacitated from illness arising from the injurious effects of Painters' colours, who receive pensions of 10l. per annum." May we suggest to the Company that as in other cases, which are analogous, much more may be done by the principle of prevention than that of cure? The "illness" of working painters (some who are members of the Company will, perhaps, bear us out) is greatly caused by the want of cleanly habits; and, considering there are even grounds for an opinion which has been entertained, that all charities, so called, do harm, it might be a good expenditure of the funds to appropriate something to the publication and diffusion of information on means of prevention, amongst the class in question; in short, this is one of those lines of action which we should be glad to see pursued by the Companies generally. The other charities of the Painters are chiefly to the blind.

Besides the work in connection with the charities and the duties which they are just now, so very creditably, imposing upon themselves, the Worshipful Company of Painters issue a list of prices which their practical men consider a standard for work of the most durable nature, and executed in the best style. It was last established by the Master, Wardens, and Court of Assistants, at a Court held in May, 1851. It includes fifteen to twenty per cent. profit, and is considered to be still applicable. The rates in it are high, as compared with those of other lists, or very high as compared with what work is done for, especially the prices for work in common colours. There is no sort of work in which there is greater difference of price and greater deception, than painter's work. If the Company could manage to alter

\* Edit. Thoms, 1842.

the practices in the trade, so far as to insure more generally the acquirement of the article paid for,—which they will perhaps tell us, they can hardly do, until they are able to raise the standard of *morality* in the one trade, or generally,—great good would be effected; and their prices would be low in comparison with others which are the half of theirs,—for, positively, such prices, the half, are somewhere about what is occasionally charged and paid for.

There is little in the building internally, any more than externally, that should detain us from the works which it now contains—those belonging to the Company, or those just now more prominently exhibited. The Hall, Court Room, Clerk's Office, Painted Chamber, and staircase, are pretty thickly furnished with the permanently-disposed works—nearly all works of painting. These pictures are mostly let into panels, as mentioned by the writer already quoted, who also speaks of a “handsome screen, arches, pillars, and pilasters of the Corinthian order, painted in imitation of porphyry, with gilded capitals:” these, however, did not make any great impression upon us. Most of the pictures are temporarily concealed by the specimens which are exhibited; but amongst those which can be examined, in the Hall, is a small picture, of great merit, painted on copper, “A Magdalen,” by Sebastian Franks: there is also in this Hall, the picture of the Fire of London, by Waggoner, engraved in Pennant's History of London and elsewhere; and also in the collection there are, by Catton, R.A., “Reason governing Strength,” painted in 1761, and presented by the artist, who was a member of the Company; architectural compositions by Trivett, or Trevit, who was Master in 1713; and some works of Hondius, Hogarth (figures in a landscape, by Lambert), Baptist, Sebastian Ricci, Smirke, R.A., Houseman, Sir Godfrey Kneller, Huis, and others: but of scarcely any of these should we be able to give particulars. Some works named by the old writers are now not to be found. There is a portrait of Camden in the Hall, from which an enamel was copied by the late H. Bone, R.A., for his Elizabeth Gallery. A card of invitation to “accompany the Society of Painters, at St. Luke's Feast, kept on Thursday, ye 24th November, 1687, at 12 of the clock, in Paynter Stayners' Hall, where you shall be entertained by us,” and signed “Anthony Verrio, Nicholas Shepherd, Godfrey Kneller,” and “Ed. Polehampton, Stewards,” was designed by Sir Godfrey Kneller; and of this, an engraving is in the hall—presented by the Clerk of the Company, Mr. P. N. Tomlins, to whom much is due of the success so far, of the movement in the present exhibition. Mr. John Sewell is the Master of the Company, this year. There are no corporate funds applicable to festivals; but the members of the court club together for a dinner on such an anniversary as that of the patron Saint, or St. Luke's day. The old master then drinks to the one newly elected, out of the Camden Cup. This cup was originally valued at 16*l.*; and it is inscribed,—“Guil. Camdenus Clarenieux, Filius Saupsonis Pictoris Londinensis dono dedit.”

The exhibition now open, comprises about 180 specimens, by 35 bards; and it includes some works of arabesque and Medieval ecclesiastical decoration, many imitations of marble and inlaid work, of graining, and writing, and also specimens of “enamelling,” as on deal. The work is executed on different materials, as wood, canvas, paper, slate, and glass. Four prizes were awarded by the judges, who were five in number—three belonging to the company, and two to the general trade. The prizes consist each of a certificate of merit and the freedom of the Company; but the chief advantage derived by producers of the works, will be one in which all the exhibitors are allowed to participate, namely, that from the publication of the names and addresses in the catalogue. The judges in awarding the prizes, we believe, felt that more than four could have been claimed on the score of merit; and their awards do not represent the entire merit belonging to the same name, in such cases as where one person had

contributed work both of graining and marbling. It had been decided that only one first-class certificate could be awarded to an “artist.” The classification was made into decoration, marbling, writing, and graining; and the awards were in favour of Mr. J. Simkin for a specimen of decoration in arabesque, to Mr. J. McDouall for inlaid marbling, to Mr. J. Edmett for writing on plate-glass, and to Mr. T. Kershaw for ornamental inlaid graining, as given,—though there were works amongst the thirteen produced by this last-named bard as remarkable, as imitations of marbling, and others, such as flower-paintings, as works of decoration. The works of the first-named class, or *decoration* so called, are mostly very inferior to what can be produced, or for instance to much of what was shown at the Exhibition at the St. James's Bazaar in 1844, preliminary to the decoration of the Westminster Palace. The deficiency observable is in the element of invention, as well as that of drawing.

It will be seen that for a matured judgment on the exhibition generally, as well as the direction taken in the movement, we should have to discuss the whole of the question heretofore so much debated, of the propriety of using painted imitations of wood and marble. But such imitations,—whether or not they are to be tabooed and interdicted as “slams”—that is, whether they are to be condemned the more, as according to one person, the more they are successful as imitations; or whether, as according to other persons, they are to be condemned only when placed in situations where we should not expect to find the original materials,—are clearly not works entitling the producer to the designation *artist* in the sense which may be understood by the use of the term in some parts of the printed list of specimens, or the notices to the exhibitors. We have, ere this, taken great pains to inculcate right views of what is, and what is not, *art*. There is considerable difficulty in finding an appropriate term; but that difficulty will not excuse the misuse of one, and use which, as in this case, perpetrates the misconception and deficiency of that which is most desired,—*art* real, or the thing itself.

Supposing that a need of some variation of effect in surface be held to justify the imitations, graining and marbling, as according to one argument that has been put forth,—that would not therefore justify the substitution of an imitation for *inlaid* work. But in all these cases, the imitation, as shown by specimens at Painters' Hall, is perfect: there is much reason, however, before deciding in favour of any imitation, to take into consideration the appearance after wear. Should other than painted imitations be more advantageous in this latter point of view, it would be decidedly well, on all grounds, to divert the attention of house-painters from the branch of their pursuit which has been most followed by the “practical artists” of the “decorative works of art” as they are called, to be found at Painters' Hall, and to direct them to true art-work and to the perfection of the ordinary manipulation of painting. It deserves consideration and experiment whether the whole aesthetic result supposed to accrue from marbling and graining might not be produced by diaper, and other surface ornament “on the flat,” which could be executed by stencilling. In more important works, the panels, of course, would be treated pictorially. At the Architectural Exhibition, last year, there were two doors which showed what might be done. The prejudice on the part of the public in favour of graining is probably due chiefly to there not having been of late years anything better—designed by artists, or executed by practical painters.

We do not here attempt to decide the question; the “art,” however, as it is called, of graining and marbling requires no encouragement,—works, such as there are at Painters' Hall, being perfect in their way; but there are other departments of the painter's craft which require considerable improvement. We have already spoken of the difficulty that there is about the execution of durable work and about price. There is, we say, much greater difficulty in getting well executed, other descriptions of

decorative work than marbling and graining. Such other work may be divided into two kinds,—that which like arabesque decoration may require that the workman should be indeed an artist to some extent, and that which like diaper and stencilled work, is more distinctively the enlargement of another person's—an artist's—design, and which, as requiring only a steady hand, and a knowledge of pigments and the mixing of colours, should be within the scope of ability of every workman. There is, however, almost as much difficulty in procuring a workman who can draw an even line with the fitch, as there is in getting a good artist-decorator.

Therefore, whilst the Painters' Company are paying attention to the improvement of work generally, they will do well not to confine themselves to awarding prizes to the best imitations, or to works of arabesque decoration; but will seek both to elevate the trade, and to improve the manipulatory skill of ordinary workmen, whereby they will, besides other results, conduce to the result from the introduction of true art, decorative, into all kinds of buildings.

Leaving the questions which are here involved, for the consideration of the Painters' Company, between this year and next,—expressing, however, our conviction that they can do much good,—we may specify as amongst the best of the works not already named, those of inlaid graining, by Mr. C. Smith and Mr. W. Glover; of enamelling on deal, by Mr. E. G. Sinton; of marbling on slate, by Mr. C. Dainton, and marbling on glass, by Mr. B. W. Maughan; of inlaid marbling and gilding on glass (with a photograph in the centre of each specimen), by Mr. J. H. Dearsley; and of graining and marbling, by Mr. T. Newby; and those of church decoration (with a good lettering in several cases), as by Messrs. A. O. P. Harrison, W. Pitman, and T. L. Coulton,—the last of whom, however, has failed in the drawing of the figure. An ornamental glass door is exhibited by Mr. J. Price: it is not altogether satisfactory in design, but is suggestive; and the latter observation may be applied to some specimens which there are in the exhibition, of natural leaves placed under glass.

There is reason to believe that several of the producers of the works have toiled hard to be successful; and it will be doubtless satisfactory to the Company and to the more energetic promoters of the exhibition, should, in those cases, as in the general furtherance of the craft, and the improvement of the “art and mystery of painting,” the efforts on both sides attain the results desired. We have witnessed the inauguration of the movement with much pleasure, and we look forward to the continuance of it which is proposed for subsequent years, and to the consummation or extension of it which we have suggested, hopefully as well as expectingly. Could not other companies whose names we have identified as connected in some manner with architecture or building, take similar steps? We are certain that benefit might be found in “arts and mysteries” the chief of those referred to, which some old builders (claiming to understand their business, rather than to be only capitalists and contractors) say are not the crafts they were, and which certainly do not progress as they might; whilst the relations of masters and workmen, now imperilled, would probably be drawn closer by the same means.

#### CAMBRIDGE ARCHITECTURAL CONGRESS.

The programme we gave was followed out, and some interesting papers were read, which, but for the number of such papers at this moment, we should willingly print. We must content ourselves with two or three references, referring those who wish a fuller account to the local *Press* and *Chronicle*.

At Waltham, Mr. Edward Freeman, in his discourse, said, he found historical evidence that the nave was consecrated in 1060: from that he was of opinion, judging from the details of the architecture, that it was the work of the Saxon King Harold: it was right, however, to say that Professor Willis thinks it is later work. In “De Inventione,” which was written before 1175, there



Priapus. In Seneca, ep. 57, and in a passage in Suetonius (Caligula, 57), the word "crypta" clearly means a subterranean tunnel or passage. Vitruvius uses the word but once (lib. vi. 8), and that in the list of offices necessary to a country-house, viz.—"Stables and sheds in the vestibules (or outer courts), and crypts, 'cryptæ,' granaries (horrea), and apothecæ (storage places, particularly for wines—see Julius Pollux, vi. 11), and other places for preserving fruit, which should be in the houses."

An attempt has been made to show, as Varro de R. R., lib. 1, tells us the corn was often kept in pits under ground, that the "cryptæ" must necessarily be subterraneous; but, as "horrea" clearly are the granaries, the proof is defective. In fact, all we can gather from the passage in Vitruvius is that "cryptæ" were used, among other places, "ad fructus servandos."

It is therefore doubtful whether the word in classic times ever had the signification which we now give to it; still less should we confuse it with the word "crypto-porticus," a construction which resembled rather the walks of one of our cloisters than what we call a crypt, although we gather from the description of Pliny, ep. ii. 17, and from Sidonius Apollinarius, ii. 2, that these walks were sometimes partly sunk in the ground to keep them cool. The best example extant is perhaps that round the garden in the villa of Dionces, at Pompeii.

But before going directly into the history of the crypts in Christian churches, it will be well to advert to some of the Etruscan sepulchral chambers, which resemble very closely the early crypts, and by which they probably may have been suggested. Like the tombs of the Greeks, they were always below ground; in fact, where this was difficult to accomplish, from the flatness of the country, a circular apartment was built, and the earth piled over it so as to completely cover it. The Greek tomb was generally a sort of chamber to enclose the body; sometimes a mere stone coffin; sometimes very much like our own family vaults, but without the arch. The Etruscan tomb, on the contrary, was the banqueting-hall of the departed spirits. Hewn out of the solid rock, the ceiling was, nevertheless, curved to resemble the timber rafters of a chamber, the walls panelled like wainscot,—benches, arm-chairs, footstools, tables,—all hewn from the solid rock, fill the chambers; while the walls are hung with weapons and tripods; lamps and other utensils lie about; and the panels are filled with pictorial representations and stucco figures. There is, in fact, little doubt that the Etruscan subterranean chamber was a complete copy, in design, decoration, and arrangement, of an Etruscan dwelling-house. A plan and interior view of the famous tomb at Tarquinii, commonly called that of the Cardinal, is given by Canina, "Etruria Mar." pl. 81. Attention is particularly called to the plan, which, it will be seen, strongly resembles that of some of the early crypts.

It would now be a very curious and interesting inquiry as to the customs of sepulture among the ancients by burning or by burial; but it would, though bearing directly on the subject, be too wide and extensive an inquiry for the present occasion. Suffice it to say, that the customs of burning, and sometimes burying the dead, were practised by all the three nations—the Greeks, Romans, and Etruscans. A very high authority, the Canon di Iorio, who had excavated as largely as any one, says ("Sepul." p. 28) that, among the Greeks, not more than one body out of ten was burned; while, among the Romans, not more than one out of ten was buried. In fact, it appears from a passage in Homer ("Iliad," vii. 334), that burning was practised among the Greeks as a matter of convenience, for Nestor recommends that the bodies which had fallen in battle should be sought out and burned, that the remains might be more easily carried to their children when the heroes returned to Greece. Among the Romans we have the direct testimony of Pliny ("Hist. Nat.," vii. 55) that in ancient times their practice was to bury the dead, and this prevailed among the old families even till a late period, Sylla being, as he informs us, the first of the gens Cornelia whose body was burned.

At the time of the Christian era, as we shall see, the practice became almost universal; but, as Christianity became more diffused, it gradually fell into disuse, till Macrobius (Saturn. vii. cap. 7), who is supposed to have written his work about A.D. 420, tells us, in his days the practice of cremation was quite left off, and it was known to him only from reading.

But whether the one or the other of the modes were preferred by the Romans, one rule was

strictly observed. It was a law of the Twelve Tables neither to burn or bury a dead body within the city walls, a space which of course included also the "Pomerium." The words are given by Cicero in his treatise (De Legibus, l. 2), thus, "Hominem mortuum in urbe sepelire neve urito;" and this law prevailed for many centuries after the Christian era.

One great barrier which the early Christians invariably opposed to the persecutions of their heathen rulers was this,—that they scrupulously obeyed the laws of the country wherein they may have sojourned, or of the superior who governed; provided that these laws did not positively command them to do anything absolutely contrary to their faith,—the most prominent of which was the sacrificing to idols. In other respects they declared themselves the most faithful of citizens. Accordingly, we find there were no burials within the bounds of any cities, either Christian or Pagan, for several centuries after the Christian era.

The Roman antiquary will remember how he must have been struck to see the huge vestiges of tombs and monuments stretching away across the Campagna down the Flaminian, Salarian, Praenestine, and above all, the Latin and Appian Ways. For miles the memorials extend along both sides of the road leading to the city; for miles, tombs—some of gigantic, some of moderate, and some of very small proportions—line the roads leading to the refined city that once governed the whole world, and must have given a strangely impressive effect to its entrance, viz., that the introduction to the presence of the greatest among the living should have been through the silent ranks of the remains of the dead.

But the Christian feeling revolted from the practice of burning the dead; and this variation from the conventionalities of society (as it is the fashion to express ourselves in this day) gave rise to great prejudice on the part of the Pagans against the Christians at that time. Many of my hearers must have read the delightful apology of Minucius Felix, for the Christian religion. This beautiful little treatise, in manner, language, and to elegance, worthy to be compared to some of the best philosophical essays of Cicero, introduces the Christian Octavius, walking with his heathen friend, Cæcilius, at Ostia. The mighty ocean, the everlasting hills are before them, exhibiting the unlimited power of the Deity, while the occupation of a few boys, who are amusing themselves with pitching smooth pebbles into the sea, and watching them spring from wave to wave, is a fine illustration of the vanity, the nothingness of human pursuits. The friends begin to moralize, and the Pagan, after remarking with his Christian companion as to some gross charges brought against them—such as worshipping an ass's head,—an accusation, by the way, which it appears from some coins may not have been unfounded as against that strange sect, the Gnostics, who represented their deity, Abraxas, with an ass's head. After this has been refuted, Cæcilius begins to blame the Christians for some peculiarities he deems absurd. He objects that they are not content, like other people, that their dead bodies should be burnt; because they fancy, if they should be deposited in the earth instead, they are to arise again to the skies at some future time. But the Christian apologist answers him, "What care we if our bodies are dried up in the sands, or perish in the waters, or are consumed into cinders, or are dissolved into vapour—the Almighty receives the elements. Nor do we, as you believe, fear any damage to the soul from any manner of sepulture, but we follow that which we consider the older and better method, of burial in the earth." I will not pursue the eloquent and touching explanation of the Christian; it is too long for our purpose. I only quote a short part, to show how the customs of the heathens and Christians differed at that time, and how the latter adhered to the practice of inhumation.

But this was written scarcely a century after the apostolical period, and before the more organized persecutions which followed; the history of which, though deformed by ridiculous legends and exaggerations, is still a very great and affecting part of the annals of our religion.

To go into this history would be not only beside the purpose, but far too extended an inquiry for the space we have. Suffice it to say, from the exigencies of the persecution of the Christians arose two most important circumstances—the use of the basilica as a place of worship, which afterwards became the settled form of the Christian church; and the use of the catacombs, the cubicles or crypts, in which were the principal cause of the use of crypts in churches. It appears that at first the Christians interred the dead in open

fields, which were called "arenæ," and we have the testimony of Tertullian (ad Scapulam, 3), that when Hilarion was prefect, the use of these "arenæ sepulchrorum" was denied to the Christians. "Let there be no arena," was the decree. A similar expression is found in the Acts of St. Cyprian. Eusebius (vii. 10; ix. 2; vii. 12) tells us, too, that their cemeteries were taken away from the early Christians, and not restored to them till the time of Gallienus, A.D. 262.

In fact, one part of the policy of the persecutor was to deny the rites of sepulture to his victims. According to Prudentius, the body of Hippolytus was cut into little pieces, and scattered abroad. Many bodies were burnt, and the ashes given to the winds; many thrown into wells, and others into the sea. One of the most curious instances is cited by Baronius, in the Acts of the Martyr Tharacus, or Taracus. The Præses Maximus, who seems to have resembled Judge Jefferys in his violence of temper and language, burst out at the martyr—"Won't I destroy you? Yes! and, as I said before, even your remains. The little woman (mulierculus) shall not roll up your carcass in fine linen, and cover it with ointments and odours. No! I'll command you to be burnt, you scoundrel (seleste), and your ashes to be scattered to the winds."

Under these trying circumstances, one tradition tells us the Christians were compelled to flee to the crypts, or catacombs, both for the exercise of their worship and for the burial of the dead.

Another tradition, recorded by Baronius, states that the Christians, being condemned by their persecutors to labour in the mines like slaves, some of them were sent to these sand excavations, and took the opportunity to use them for the purposes before named.

Through the greater part of Italy, particularly round Rome and Naples, as most of us are aware, there are vast beds of an arenaceous substance called pozzolano. It is a very close and compact body of sand, mixed with a sort of burnt argillaceous matter in granules, very much resembling pounded brick, and is evidently of volcanic origin. It being the best possible material for making hydraulic mortar, it has been dug out in a countless number of excavations for ages; in fact, the excavations are going on now.

The material is very easily moved, and yet stands with extraordinary firmness; in fact, unless water has got amongst it, there is scarcely an instance of the roof or walls (so to speak) of an excavation falling in. It, however, varies much in hardness and quality, which probably accounts for the irregularity of the passages. The workman turning to the right or left, or ascending or descending, as the material was more or less easily worked, or more or less valuable. It also contains frequent masses of tufa, in which the cubicles, or crypts proper, are generally excavated.

The Romans called the pozzolano "arena," or sand, and the excavations "arenarie," or sand-holes. Many of the Roman burial-places, for depositing the "ollæ" or urns, which contain the ashes of the dead, are excavated in this soil. But the most remarkable of all are these celebrated "crypts" in the Catacombs near Rome.

These last are innumerable narrow passages tunneled out in the solid earth, not more than 4 or 5 feet in width, and about 7 to 10 feet in height. Having been excavated without plan or settled purpose, they run in every conceivable direction—some side by side, some over each other, forming a most intricate labyrinth—and that of such dimensions as to astound and bewilder the visitor. Aringhi has given several plans of parts of these passages, one of which is before us. It will be seen they form mazes of passages, like the adits in a mine. The principal plans given by this writer are those called the Catacombs of St. Callistus, St. Agnes, and St. Marcellinus. In the plan before us, that of a small part of the former, it has been estimated there are full 5 miles in length of those passages. In the time of Baronius, forty-three of these cemeteries were known: at present it is probable twice the number have been found. Taken together, it is estimated that there is a sort of net-work of these passages under Rome, which must measure at least 100 miles.

In the sides or walls of these are a countless multitude of excavations, mostly about half a yard deep, and about 6 feet in length; in fact, square horizontal niches, to hold the body—not of the pigeon-hole fashion of the Egyptians, but like hodies, laid lengthwise, on a sort of shelves.

Sometimes there is but one body in the height; sometimes two, three, and four, and in the catacombs of S. Saturninus are many places, where no less than five bodies are deposited, one above the other, in the height of the passage.

The front is covered by a slab of stone, or very commonly of marble, and sometimes of terra-cotta, on which is usually carved the name and age, and any other particulars, of the deceased, and generally some Christian emblems.

Some, however, are constructed by cutting a semi-circular arch into the natural wall, and then sinking beneath it an excavation to receive the body, which is afterwards covered with a stone slab, and forms a tomb much like the monuments recessed into the walls of our cathedrals. These tomb tops have been used as altars.

To give some idea of the vast numbers deposited in this city of the dead, it has been reckoned that there are upwards of 170,000 bodies in the crypts of St. Sebastian only.

I know nothing more extraordinary than visiting these solemn places, which, on the first occasion, I did alone. It was at St. Sebastian. I had seen the noble church, and was then directed to a small door which opened, and there was a descent to the catacombs,—a narrow passage scarcely higher than one's head. At the entrance I was met by a single bare-footed monk, in the coarse brown robe of his Order, the cowl of which he drew over his head, to ward off the cold, for it was winter, and the air was chilly to him, for below, in the excavations, it is warm and close.

He lighted a large torch, and we descended, proceeding by one winding turn after another, sometimes ascending and sometimes descending for a very long time. To me it seemed marvellous that he did not lose his way, but he evidently knew every step and almost every tomb, pausing to point out, as we passed, those of the greatest interest.

The atmosphere, as I said before, is close, and stifling, and smelling of earth. Not a living thing, not an insect, not even a spider, is found there. It is, in every sense, the abode of death.

Many stories have been related, and I can readily believe them, of persons who have ventured into these passages without proper guides, and who have been hopelessly lost. In fact, it is said, that as late as the year 1837, the teacher of a school, accompanied by thirty pupils, went into an excavation that happened to be open, stating that among so many it was impossible to lose their way, and that not one of the party was ever seen or heard of from the time of their entering, though every possible search was made by proper persons as soon as the fact was known.

Other tales are related of those who have been so affected by the "gelidus horror" of their situation, the deep burial beneath the earth, in an inextricable labyrinth, and in close contact with a vast multitude of the dead, as to become mad with terror. Nothing can describe these awful solitudes better than the words of St. Jerome, in his commentary on Ezekiel (cap. 40), who says,—“When I was a boy at Rome (A.D. 350), and studied the liberal sciences, I was accustomed, with others of the same age and disposition, to go round on Sundays, and visit the sepulchres of the apostles and martyrs, and frequently to enter into the crypts, which are dug deep in the earth, and on each side of them, to those who enter, they have the bones of the dead for walls, and are so dark as almost to fulfil the saying of the prophet, ‘Let them go down alive into hell.’”

SUGGESTIONS ON ARCHITECTURAL COMPOSITION.†

Gothic architecture is a combination of small parts, in general forms and constructive features: the lines have a vertical tendency, but more especially as applied to cathedrals or other public buildings. In the early art the openings of windows and doors had high pointed arches, but in the later periods the arches were generally depressed, and the windows square-headed. It is not my present business to inquire how Gothic architecture arose: it is sufficient to know that it employed the materials of the district; or, when necessary to be obtained from a distance, they were of such dimensions as made them easy of transit: that they did use small stones in the construction of their buildings, and that these stones harmonized with the small divisions of their composition, are sufficient now for our purpose; but such fact is certain evidence of their artistic skill, and that they considered and applied the materials of a locality in a natural manner.

The forms of Gothic architecture were always united: they grew out of each other, and blended with the construction: they were usually continuous and rarely abrupt, except in such positions

where contrast was required. This system was the very reverse in the Classic style, where the blocks were placed abruptly upon each other with few connecting links to unite the whole mass, and the contrasts consisted in any continuous lines that were found necessary in the composition. One style may be considered as the union of curved and pliable lines, and inseparably linked together; the other a union of massive forms, square arrangement, and abrupt lines, requiring little but the positive indication of ponderous strength to satisfy our scrutiny as to its perfect combination of harmonious parts. I have taken this wide parallel as most suitable to my illustration of the incompatibility of the two styles existing in the same group or arrangement of buildings without positive detriment to either the one or the other: together it would be difficult to dispose a composition that could be pleasing in an artistic point of view, but, separately, the same principles of esthetics would establish a perfect work of art. Various columns in the same portico, a mixture of various sizes of various forms, a composition of various dates, windows of various widths and forms would not be more offensive to the laws of harmony in one building than the arrangement of the different styles of architecture in juxtaposition in a number. How, then, can we reconcile the practice so generally adopted and constantly advocated as the application or reproduction of the two styles of art so diametrically opposed to each other—one for ecclesiastical, and the other for domestic purposes? In the Gothic art the windows are large, but subdivided by mullions, and, when any increased size is required in the windows, an increased number of mullions is introduced, so that very little difference is made in the sizes of the general forms, and thus harmony of form is preserved. In a composition where numerous windows are required of nearly the same form, the division of the parts of construction should be similar; and, if larger windows were required, as in a tower or other parts of the structure, the increased size should be obtained by increasing the number of divisions, and not by merely magnifying the general forms; for, in the latter case, the effect would be to decrease the apparent size of the tower.

The general effect of any composition will depend upon its unity of form or outline. Outline gives our first impression: whatever this may be, it should be studied first, independently of any arrangement of light and shade and colour contained within it. Outline applies as much to the composition of many other subjects as well as to architecture, and should be amenable to the same principles. The beauty of an outline may not entirely depend upon flowing and graceful lines: it may consist of straight and short lines, and abrupt angles: the harmonious arrangement of the lines would, of themselves, constitute a beauty, although in one case of a yielding and flowing character, which might indicate elegance and delicacy; in another, short, crisp, and angular, imparting to the design an appearance of firmness, weight, solidity, strength, and durability: still they would be equally beautiful if harmoniously arranged. It is the combination of like parts which produce a harmonious whole, whether those parts be curved or square in their general forms. I have before shown that compositions of perfectly opposite character may be harmonious in themselves: it is not the materials, but the proper arrangement of materials which constitutes a beautiful picture.

It would be well to turn our attention more frequently to the value and importance of outline, when scrutinizing any works of art: it is impressed upon us in a greater or less degree according to the variety of its arrangement, and it should always retain that position even when in connection with the forms it surrounds; and in order that these forms should harmonize with it, they should indicate its presence in a minor degree, and be the index, as it were, of the other features.

It may be almost said that outline embodies imagination, for the mind conceives an occupancy, and gives solidity to a mere outline drawn upon any surface: the limited space is immediately filled up by the mind, and connected with whatever prescribed form the outline partakes: in this disposition of the imagination the conceived composition is pleasing or disagreeable according to the quality of the outline, its leading principle.

Outline and harmony of form will naturally lead to the consideration of what is termed "proportion." Proportion is too frequently considered a fixed standard, or type of art: it should rather be considered a relative quality, by which we regulate the numerous details of a composition.

Proportion is a term in such general use, when

applied to architecture, that I feel a degree of diffidence in attempting to explain what proportion is, and not what it is generally understood to be. Proportion *must* be a relative quality, as it must have a direct reference to some other thing; yet we constantly hear of a column being in good proportion: true, it may be in good proportion in reference to another of the same kind, or when applied to the object it supports: still, if this were the case, a column supporting a statue could hardly be in good proportion as compared with a similar column supporting an entablature: there can be no comparison between the weights supported—then what becomes of the standard proportion? A column by association as well as fact, is only part of a composition—a limb of a perfect body, and it is inconsistent to apply it to a use for which it was never intended. A column is an established part of Classic architecture, and applied in every age for a specific purpose; it therefore offends our associations by placing it out of its position, and shows by this misapplication a lack of thought and invention, and how little study is given to the contrivance of characteristic composition. It is quite true that numerous precedents can be cited for such misapplication, in Rome and elsewhere, but I cannot help doubting the good taste of those authorities: it was a custom rarely if ever practised by the Greeks or the Mediaevalists, but if it had been so practised, I still think it a custom more honoured in the breach than the observance.

Proportion we have been taught to believe to be also a fixed standard for the dimensions of rooms, and that when the measure is many breadths in length and height, that such proportions are essential to beauty in architecture. But are these the only proportions that we must look to for a satisfactory and esthetic composition? If so, I fear there is little of our art that can claim any beauty; nay, more, that there is little chance in these degenerate days of utilitarianism of adopting the elevated proportions laid down by the Italian masters. Yet I do not despair that at the present time many works will stand the test of criticism for ages to come, although they may be composed upon rules quite contrary to those I have alluded to. Rules, I have before stated, must give place to principles, and a clear conception of harmonious arrangement. And when the relative proportion of the parts to the whole is fully carried out, at least, an agreeable composition may be attained. I would lay a great stress upon *this* system of proportion—this equipose in the composition, as it must be evident that such a system would engender fresh thoughts and new ideas, which when thoroughly analysed, and found perfectly connected, must yield a satisfactory composition. Upon these principles I would recommend all works to be tested: such investigation would be severe, but instructive, and would soon lead to a wholesome state of critical inquiry and study: we should hear less of dogmatical ridicule, and receive more instructive information in architecture.

I cannot refrain here from remarking upon the various ingenious modes of ascertaining the system of composition which produced those marvellous works the ecclesiastical edifices of the Middle Ages. Much labour and thought have been bestowed upon the supposed origin of the composition of these edifices. One theory is based upon a combination and intersection of a series of triangles, and might apply to two or three structures, but it rarely fits more than that number; and, even then, some portions of the design do not exactly coincide; yet we are told that this fact is not to be taken as a defect in the theory, but as a defect in the execution of the work. It is not my intention or wish to depreciate such labours: any one who will take the trouble to propound a theory renders a great service to art, and, although we may differ in opinion, at least he has called attention to the subject in a way that may lead to further investigation, by which we may elicit much valuable information. I do not feel at present convinced upon this subject any more than that of the theory of proportion laid down by the Italian architects. I consider that the great works of the Middle Ages are the result of an intuitive and artistic inspiration,—in the first instance roughly sketched out, then reduced to the principles of harmony in form, colour, material, and construction. I would rather take this system of composition with strict analysis, than all the piling of triangles one above another according to the theories just alluded to.

It would be a useful study for the young architect to test his compositions by the principle I am advocating. I feel assured that although all I say may not be correct, at least he would acquire a power

\* To be continued.

† By Mr. E. B. Lamb. See p. 324, ante.

of analysis very useful to him in describing his own works or those of antiquity that he may have seen. In the numerous excellent illustrated works published the descriptions are in such general terms that little information is obtained from them that can be useful to the student; but by acquiring a power of just criticism the architect would not only be storing much information for his own benefit, but he would be in the way of imparting knowledge to others—that knowledge, in short, that would round again to his benefit—for the more the public obtain knowledge of our art the more they appreciate it; they then feel greater diffidence in attempting to carry out works in architecture without a previous amount of arduous study—such study as can be rarely acquired by an amateur.

I will not now speak of the system of composition founded upon squares, as my objections, however ill-founded, apply equally to that system; these theories, in short, are but expedients—helps to composition, and lame helps too,—they fetter the mind and cramp the energies, for “although art has its boundaries, imagination has none.”

Proportion is too frequently associated with our knowledge of existing works of art as standards of excellence from which no deviation can be allowed; yet by such works we are apt to judge all others instead of judging by the abstract laws of harmony; convenience, scientific construction, durable materials, locality, and other requirements incidental to circumstances, must always be considered before any attempt is made to use any particular style of architecture in a composition. This should invariably be the case, as the requirements of circumstances and the materials to be used would most likely lead to the application of such forms only as would be fresh. The materials of the locality would have considerable influence upon the general character of the composition. Presuming that nothing remained to be done but to arrange the artistic composition, this must necessarily arise out of the wants previously considered; and in all districts opportunities occur for considerable variety in embellishment without launching into profuse display.

It can scarcely have escaped the observation of persons acquainted little with art that, if an artist desires to produce a good effect in a building, although only part of his picture, he does this in many instances by a crispness of touch and subdivision of parts, which gives decision to the jointing of his masonry, and breaks up his surface: it produces different dispositions of light and shade, and keeps the eye employed and prepared to receive the other and more important divisions of his composition without violent contrast; broken surface, too, gives greater apparent size. In stone districts, the common walling is frequently extremely picturesque, and when soundly built becomes an important surface decoration. The introduction of brick with stone, where the latter material is rare, gives an excellent opportunity for contrast; brick and flint, in alternate courses, form a chequer, and various other modes, form great variety and pictorial effect. In all this description of surface decoration, great attention is required to the jointing,—not merely the practical masonry, but the artistic jointing; no line of joint should appear to be continuous, or merely wavy, or with such regular undulations that produce smoothness; the joints should be crisp, the angles of the stones sparkling, not neat, the termination of the lines abrupt,—such, in short, as Prout used to delight in, leaving on the mind an impression of brilliancy: flint walling produces a similar effect; then, too, the bond stones of window and door jambs should bear the same character of work; they should not be square, regular in the tail of the bond, or of equal heights; they should be varied, just as the man who worked the stone had found it when fresh from the quarry. This is almost imperative, as the rough tail of the stone, when united with the rough wall, harmonizes with it, and prepares the mind by easy stages to the more finished portion of the work, in the moulded jamb. Again, it gives greater value to the decoration in the window, or other feature, by the gradual union of the strong or rugged with the more finished and delicate portions; and at the same time, by concentrating the objects, draws the eye to the most observable forms in an unobtrusive and yet pleasing manner. In commenting to this kind of rough building, it is not my intention to disparage squared masonry. I am now merely pointing out the simplest means of legitimate surface decoration—a subject full of suggestion, and worthy of the greatest attention;—but, although full of interest and value as an artistic

study, it has its limits: roughness should not merge into unsmoothness or sloveliness, and an affectation of roughness; nor should the distortion of natural smoothness, by giving the appearance of roughness, at an amount of additional labour and cost, be allowed; such labour would always prove abortive. Roughness of surface must arise from evident consistency of construction, and when thus tinted with it, shows a certainty of strength and durability, and another charm is then added to the composition. In some districts the native material is of such a description that there can be no roughness without bad masonry, except, indeed, where the stone is chopped into shape—a very useful mode of surface work. In smooth-surface masonry it is much more difficult to produce an effect at a moderate cost, as the regular, close, horizontal, and vertical joints produce little or no variety in the wall, and in many instances look like a wall of one stone perforated with openings; and, if without string courses, or other apparent ties, the decorations of windows and doors appear unconnected with the wall. We need not look far from this metropolis to see ample illustrations of this fact: in such work the object of the mason is to make his work look “all of a piece,” and the union of the parts become abrupt. We do not see where the jamb unites, or bonds into the wall. Frequently pilasters or columns are in larger blocks than the wall masonry, and are practically and positively defective in construction. In positions where bricks are used for the surface of walls and jambs of windows and doors of stone, it is a common practice to carry the stone jambs the whole height without any apparent union: this is not only defective in composition but also in construction, and the loss of the uniting tie of the jambs is a loss in pictorial effect of the wall decoration.

I speak of these matters irrespective of style, as the picturesque and pleasing in all architecture would be in like manner produced in either or any style.

Hitherto I have spoken of walling, or surface, in the first or simplest mode of artistic decoration—an incrustation, in short, upon the surface; but the similar principles of arrangement will apply to the most elaborate ornament. On the surface, as a whole, it forms but an incrustation, a roughness acted upon by the sun's rays, and thus producing lights and shades. The size and distribution of those parts also tend to produce a relative magnitude in the grouping. For we only observe the magnitude of buildings by their relative proportions. Take for instance a mere plain wall, the size and extent of that wall would appear greater or less if a door or opening of large or small dimensions were placed in it. The plain squared stone, with little appearance of joints, would also reduce the apparent size; but a few breaks, either in a difference of construction or panels, a small bracket or corbel, a baso-relievo, on the surface, would add to the appearance of extent, and at the same time produce a pictorial and pleasing variety. But suppose the doorway and panel to be nearly of the same size, and divide the attention; whereas a decided difference in dimension would give value to the larger feature, and leave the smaller one, being less, in consequence, to carry the eye by degrees to the plain surfaces or repose in the wall. Too great a similarity of surface decoration, whether of simple or ornate character, would be as defective as too little, and become monotonous in the extreme. In architectural composition there are many things which would give us the power of breaking up the surface of a wall without resorting to the commonplace expedient of liank windows, useless doors, or tenanted niches. Whatever is used for purposes of this kind should be perfect in itself, not left to the imagination of the observer to complete, or, in the country, to be filled up by the growing plants of the gardener.

You will at once see how a multitude of useful forms of every description may be legitimately used in the decoration of walls: a rough wall becomes decorated by the mode of arrangement and construction of its materials; any wall, however elaborately wrought or panelled, would, at a certain distance—that distance from which we view an outline properly—produce no more pictorial effect than its rough relation, and, upon a nearer approach, it should be evidently constructed upon the same consistent principles, so that the several parts should be undoubtedly united, and that one part could not be removed without the destruction, not only constructively, but artistically, of the whole composition. The Egyptians decorated their walls most profusely with sculpture and hieroglyphics; in the Grecian

temples the walls were almost invariably plain. The Romans introduced panels and ornamental sculpture on their walls; the moderns carried to a greater extent this system. The Early Medieval artists decorated their walls with panelling, which, at a later date became profuse, extravagant, and frequently monotonous. All these methods of ornamenting surface walling may be artistically called, a production of incrusting to create variety of light and shade; and in an artistic point of view, when considered in a general composition, they must be taken in that sense. It is in a particular inspection that these matters must derive a further individual interest, and so aid in producing a fine work of art.

If it were easy to remove any part of a composition without detriment to the general effect, it must be evident that such part of the design would not only be unnecessary, but would amount to an intrusion and a deformity. One of the great leading principles of all composition is, that every single part should have a positive relation to the whole constructively and esthetically. If the whole outline of a composition is pleasing, and the balance of parts is in perfect relation to each other, the minor accessories should hold a similar relationship; the contrasts, the light and shade, the *incrusting* and repose, require a like balance and relative proportion. The important feature should not only be sufficient to demand the first consideration, but the repetition of some connecting link should be carried throughout the whole work, leaving a greater influence in the parts most required to be brought into secondary consideration. As in the composition of a picture the painter draws your attention to the main subject by slow gradations; his high lights, his colour, his forms, are carried in lesser degrees throughout his canvas, so contriving his composition that his satellites shall reflect, though in diminished lustre, the rays of the parent planet.

In speaking of surface decoration, I am naturally led to the consideration of those features which individually may come under the denomination of distinct designs; but, as I have before mentioned, when connected with the walling, must be inseparable from it, and should, therefore, next claim our attention.

The early writers on classic architecture have laid down rules for the *proportion*, as they call them, of windows and other openings, the breadth of spaces or piers between, and the size of their decorations. In most of the erections which come under the hands of architects of the present day, such rules may have formed the study of previous years; but although known, how are they to be now applied? for every new building requires a new treatment, as it is most likely for a new purpose. How, then, are we to reconcile those dogmas with the necessities of the case? Certainly not by such rules.

I have before stated how necessary it is for the student in architecture to store his mind with the knowledge of every style of architecture, and to study each style so as to ascertain in what way the great effects have been arrived at in those works that have received universal commendation. No doubt it will be found that this arises from the principles of harmony being carried out to the fullest extent, and that every single design is governed by the principles of harmony, which principles are universal.

But the rules for one subject can only be derived from the principles of that subject. Perhaps I may be more clearly understood by stating that the principles of harmony are universal, without regard to style or particular subject; but the rules derivable from the harmonious composition of one design may be perfectly different to any other; for instance, the massive, simple, plain, and sturdily appearance of the temples at Paestum, require that the details should partake of the same massive character and size. The relative proportions of the parts of this design would be unsuited to that of a temple or other building of a lighter, more ornate, or simple structure; hence it is that no rules can be universal, but principles must be so. Taking this broad basis, I again reiterate that the rules laid down by old writers must be regarded with care and jealousy, as they may lead to error, and, by a too zealous attention to precedent, the principles of harmony be destroyed.

I feel that I have exhausted my time and your patience in the subject I have so feebly discussed. I feel, too, that I have touched but lightly upon the subject of architectural composition—a subject of unbounded interest;—and the unconnected way in which I have treated these suggestions, will, I fear, contribute little to the general stock of usefulness. The matter still wants to be treated by abler hands; yet I feel a certain conviction that

the close of these remarks, that it is still necessary to speak out, and, unequivocally,—“Man builds houses to live in.” It is a stubborn, cold fact, entirely divested of all antiquarian or architectural enthusiasm, that millions will still be knocked out of Gothic windows, because they are useless; that the Gothic style will be still difficult of application in its full truthfulness; Classic art will be mangled into utility; and Act of Parliament houses still are, and will be continued to be built; for, as we are taught, that in “a multiplicity of opinions there is wisdom,” I think there can be no doubt that in a multiplicity of modern houses, there is the wisdom of convenience.

Out of these facts we shall, no doubt, find a new style, or progressive change in art, suitable to our purposes. I feel that that change has already commenced; but the ultimate result is a problem I must leave for others to solve.

It may appear in these suggestions that I desire to set at naught all established rules and authority. This I trust you will not place to my charge. A knowledge of architecture is not to be derived without a close study of every connecting link in the art: this connection can only be firmly held by grasping all information, whether from buildings or books, yet there must be a time after long and arduous striving, that buildings and books should be considered only as the foundations of new theories and fresh ideas. In the heyday of life we are, perhaps, too apt to give our imaginations full scope, before we have sufficiently digested the ideas of others. In more mature age we may endeavour to enlarge upon those principles which we have received as a bountiful legacy from our forefathers. We should, however, bend our energies to the task with unflinching zeal: we should follow the art for the art alone, for he who merely looks to the amount of his commission for the repayment of his labours, will not only lose the pleasure derivable from the study of a noble art, but will do little worthy of regard; nor can he hardly be considered to have added his quota for the benefit of his species, for no pursuit tends so much to the profit of the mind as the development of the arts of the beautiful.

SUGGESTIONS

ON THE EARLY EDUCATION OF THE ARTISTICALLY ENDOWED.

MANY pens are already at work in the endeavour to conduce to the enrichment and elucidation of art and science; and, in venturing myself to add a few words on this subject, I do so solely from a desire to aid the removal and suppression of some peculiarities, but too prevalent, in the present mode of writing on art. My chief object at the present time, is to direct attention to early artistic education; and, by unfolding my views and mode of conception, to suggest that help which seems most needful. Every true artist will agree with me, that the fundamental, and consequently most important, step in artistic education is the training of the eye into harmony with the development of the mind. It is an old story, yet always new, that the labour of thinking is indispensable in the life of all classes of men; and with regard to artistic studies, which are intimately related to observation and reflection, it is surely of the utmost indispensability, that, from the commencement, mind and eye should be educated together. Indeed, it is this precise education which so completely distinguishes and elevates every genuine artist. This every-day world he regards from an entirely different point of view, recognizing in nature a multitude of charms, and discovering in her inexhaustible treasures of a purer knowledge, which from others are far ever hidden. It is his constant habit of uniting seeing with thinking, which endows him with the power of understanding aright, where an undisciplined eye perceives nothing save hieroglyphics.

Now, in suggesting the means of procuring such an education, first I would state, that I entirely agree with those of my fellow-artists, who condemn the practice of constant mechanical copying, and endeavour rather to lead the students entrusted to their care, as early as possible, to the only original source and productive fountain—Nature.

Drawing from the object itself, instead of from copies, necessarily compels the student to think, and in a short time imparts to him a power of perception utterly unattainable by any other method. The student's attention should also at once be directed to the fact that, prior to any attempt to delineate, and in order to give anything like an adequate representation of the object placed before him, it is absolutely imperative,

closely to observe and to examine every object as a whole, that is, in its general appearance, and therefore necessarily, at the same time, to observe also all those parts of which this appearance is composed. This examination must be sufficiently prolonged, so as to allow the mind a fair opportunity to seize and retain accurate impressions of both form and colour. By a discipline, as here described, every line, every touch, becomes replete with character, and tells its own story, whereas every other method is not only inferior, but, in point of fact, pernicious in influence, and conduces to a style of drawing which, being altogether deficient in character, is therefore utterly worthless. However, in this drawing from nature, clearly, some preparatory study is needful, which should advance and keep pace along with it; for when the seed, which the teacher sows, does not fall into well prepared soil, and is not quickened by the aid of rain and sunshine, the prospect of an abundant harvest is more than doubtful.

Now this preparatory study—the science of seeing—commonly called perspective, is the only true guide that will ensure real competency to represent faithfully the varieties of appearances, presented by natural objects, in accordance with their retrogression from the eye. The image of every object in nature upon which the eye can rest is exquisitely, in form and colour, impressed upon that most delicate membrane (which lines the interior of our chamber of vision), according to the unchangeable laws of the perspective of nature. In truth, this latter is the magic key that opens to the student the entrance to the mysteries of his art, and the supposition that any artist can dispense with it, will prove itself, without doubt, a fatal error. The student who attempts to draw from nature without being guided by perspective will often find himself in fault, and much retarded by the expenditure of precious time: dreading ever of falling into fresh error, he will not so expeditiously and certainly attain the faculty of reproducing nature on the canvas, with truth and feeling, as he might have done, had he only had the right guidance from the beginning.

Perspective—the science of seeing—must, as already told, be taught in progressive connection with the close observation of nature; and, in that case, I have no hesitation in saying, that the acquiring of its knowledge will be found in no wise a difficult matter. The instructor should also possess a taste and knowledge, sufficient to enable him to avoid everything strictly mathematical, and to reduce the whole to simple principles, in which case the student cannot fail, at length, to arrive at the conclusion, that what is current under the name “Perspective” is, in fact, nothing but a most requisite accessory in art,—namely, the power of seeing accurately.

Nevertheless, no one can be more fully aware than I, of the number of scruples and difficulties to be overcome, ere pupils can be incited to the study of perspective, especially when taught in that irrational manner so generally adopted. Too many mathematical subtleties are apt to alarm beginners, and fill them with a natural aversion, which deters them from penetrating through the shell to the sound and healthy kernel.

With the avowed object of naturalizing perspective, numbers of books have been written, and are continually appearing, though the result, I feel sure, is entirely different from that intended. For example, how repelling to the beginner, and perfectly ridiculous to the artist, if he sees that simply to draw a chair, box, &c. &c., he has to penetrate such an alarmingly intricate web of lines, before he can, and then only with difficulty, observe the required object itself. Moreover, some of the laws of the so-called perspective, given in the majority of books, are entirely opposed to those laws, which the only true perspective of nature dictates. But more of this in its proper place. No critique, I feel sure, can be too plain-blank, in order to combat effectively, this thoughtless fashion of needlessly perplexing the learner. Another impediment, and increasing the difficulties of inciting some pupils to study perspective, is the damaging circumstance, that even leading writers on art have treated it with such comparative indifference; although, of course, they are themselves fully aware of its true import, in a fundamental point of view, and only solicitous that learners should avoid giving it undue weight, in a way that would be derogatory to other studies. It is this comparative indifference on the subject, indulged in by some writers, which has given rise to the absurd—and for the idle, welcome—notion, that perspective is without any substantial value whatever. No real artist will be at all likely to misapprehend

the true significance of this apparent slight cast upon perspective by some writers, or be in the smallest degree disconcerted thereby; but, unfortunately, the multitude, amongst whom might be named, especially, those who possess a singular dexterity in devouring voluptuously the contents of a multiplicity of books, but, strange to say, familiarizing themselves only with the crust, while incapable of piercing to the innermost substratum;—this multitude, I say, is only too apt to follow, blindly, the writers of the most notoriety; and no sooner is anything asserted by them, than the former, parrot-like, chatters it glibly forth, all the while lacking the requisite powers of scrutiny, yet possessing a singular proneness for talking, plausibly and speciously, of subjects they do not understand.

Lastly, in concluding these remarks, I take it for granted no real artist will accuse me of depreciating other studies out of regard for perspective. Knowing well that undue prominence given to one branch of study would most surely prove obstructive to the student, and fully convinced of the truth,—

“Where fashion throws her chain,  
True art can ne'er remain;”

nevertheless, I recommend the study of perspective, founded on the intimate observation of Nature, from the first, as an absolutely necessary, sure, and faithful guide for every student of art. It must be taught and practised early, otherwise the eye falls into a loose and imperfect habit of study. In such a case it is then only with the greatest difficulty—if at all—that the student can rectify such unprofitable and pernicious groundwork. But even to—so-called—artists, who have neglected perspective in former years, I would earnestly recommend the culture of perspective simultaneously with their other studies. I admonish them to reflect that, seeing the last step has been only a retreat, the return to a former position will become a real advance. The foundation of all real improvement, is the recognition of an evil.

A. LE VENGEUR.

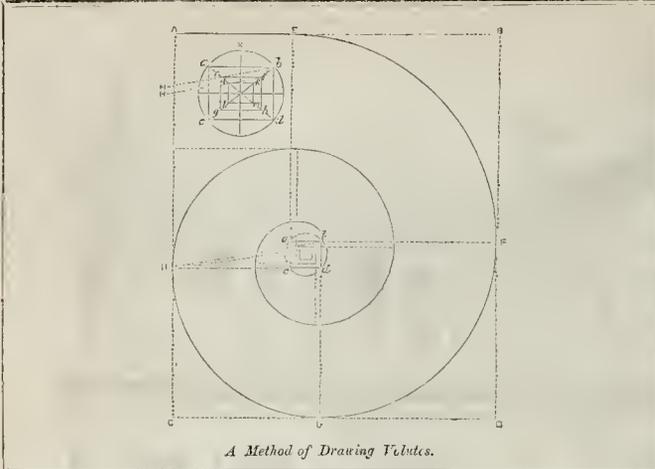
THE PROPOSED DRAMATIC COLLEGE AT MAYBURY.

THE foundation of this institution must be considered an important event in the history of the English drama. An endeavour to provide a shelter for their brethren who, in their old age, may be reduced to need, or to young children, who have been deprived of their natural support, the means of preventing them from falling into the way of temptation and providing them with good education and so preparing the way for future careers of usefulness and respectability, calls for general aid.

A museum and library, of a class character, will be the means of gathering together many curious and valuable matters which, except for such a central place for their reception, would be scattered about, and be comparatively of little value. By persons connected with the theatrical profession, aided by others eminent in literature, arrangements have been made for the completion of part of this work. The special train took a large number of the leading actors and actresses, together with a gathering of friends, on June 1st, to the site of the College, which has been presented by the Woking Cemetery Company. On the ground flags and other decorations were raised, and in the large tent the foundation-stone was suspended in its proposed position. There were flags of all nations and mottoes in honour of the Prince Consort; but, singularly enough, there was nothing which would bring to mind the immortal Shakespeare and other worthies of the British drama. It was observed that such an occasion would be differently treated in Germany; but perhaps the committee considered that the circumstances were sufficient to rouse a host of associations without resorting to other than the ordinary manner of decoration.

From the site of the College extensive views are to be had which to the artist's eyes are not without beauty; but many are inclined to think the wide waste of heath rather a melancholy and bleak prospect. However, by the exertions of skillful men, the grounds surrounding the College will soon become a pleasant garden in the desert; and in all the land around improvement is going forward which will change the appearance of the scene, and in time plantations and fields will be where the heath now is.

It seems to us too far away from London. We have already given some account of the intended structure in our notice of The Royal Academy Exhibition. Mr. Webb is the architect; Mr. Perry the contractor.



A METHOD OF DRAWING VOLUTES.

I SEND you a diagram and description of a method of drawing spirals or volutes, which I have reason to believe is original, as I have searched in vain to see if I have been anticipated in arriving at a means which has cost me no inconsiderable trouble. If I am mistaken in my claim to the originality, many of your readers will doubtless soon be down on me, and I shall with becoming submission withdraw the claim, *after proof*. Peter Nicholson, in his "Principles of Architecture," gives instructions for drawing the various spirals or volutes, such as the archimedean, the logarithmic, &c.; but they are all dependent on one dimension, viz, the height, without any regard to the breadth. But my proposition is:—

A general method of inscribing a spiral in rectangular quadrilateral figure, ABCD.

Multiply the given height by the given breadth, and divide the product by the sum of the height and breadth; subtract that quotient from the height, and the remainder is the radius of the first quarter revolution of the spiral. The formula is

$$h - \frac{h \times b}{h + b} = r$$

Subtract the radius so found from the height, BD, and the remainder, FD, will be the radius of the second quarter of the revolution, and is to be set from F to b. The difference, ab, between aF and bF, will form one side of the quadrilateral abcd. Subtract the radius Fb or bG from the width, CD, and the remainder, bd, will be the other side of the quadrilateral, abcd, and it will be a figure similar to or of the same proportions as the given quadrilateral, ABCD. Then dG will be the radius of the third quarter of the revolution, and He the radius of the fourth quarter.

In the quadrilateral, or parallelogram, abcd, draw the diagonals ad, bc, and draw dh, cutting the diagonals ad in e; then will e be a point for the formation on the diagonals of another parallelogram, efgb, whose angles (aa in that first made) will be the centres for the radii of the second revolution.

By again drawing fH to cut the diagonal ad, another parallelogram, iklm, may be formed, and so on to finish the spiral.

From the nature of the formula it is evident that when h (=1) exceeds by a trifle more than  $\frac{1}{2}$  or 0.236 of the width, the first radius will be greater than the breadth of the quadrilateral, and the spiral cannot be described within the figure. Also that when h and b are equal, the spiral vanishes, for the formula becomes  $h - \frac{h}{2h}$

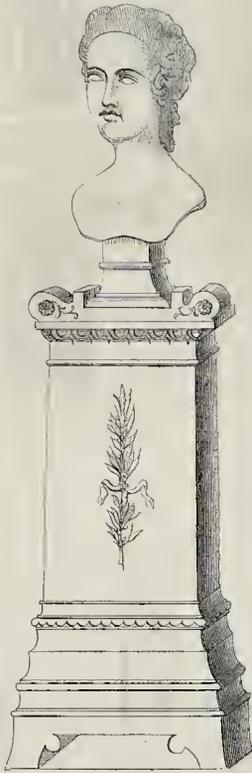
and the first radius is equal to half the circumscribing square. Hence a circle is inscribed. Also, that as the height and breadth approach equality the number of revolutions increases.

In the diagram the height is taken at twenty-seven equal parts, and the breadth, twenty-three parts.

X is the centre part to a larger scale.

JOSEPH GWILT.

SOUTH KENSINGTON MUSEUM.—During the week ending 2nd June, the visitors were within a hundred of 20,000.



A BUST-PEDESTAL.

SOME time ago we gave illustrations of the Pompeian House erected in the Avenue Montaigne, Paris, for Prince Napoleon.\* The accompanying sketch represents one of the pedestals in the atrium.

THE ST. MARTIN'S SCHOOL OF ART.

THE students of this school held their fourth annual *conversations* on Thursday last week, when a considerable number of students received medals and books as prizes. The drawings on the walls included some from the Female School in Gower-street, and others lent for the evening by Mr. Hogarth and Mr. J. C. Robison (early works by Turner being of the number); and amongst the other articles exhibited were some of Messrs. Hart's productions and two or three meritorious

\* See vol. xvii. p. 618.

works in *mezzo-relievo* by Mr. S. Ruddock, sculptor. After the distribution of the prizes, glees were sung. There was a large attendance of members of the volunteer corps of the South Kensington Museum. The works of the students were hung in a very bad light: from the number of prizes distributed, however, we expected that the general display, both as to number of drawings and merit, would have come out better than it did.

One or two of the premiated works, and some by "pupil-teachers," were highly creditable to the school or schools; but it was sufficiently clear that the complaint of the masters is well founded, that pupils too generally remain only long enough to acquire the first lessons, and not the power of drawing elaborate forms. Also, considering the importance of a knowledge of the method of representation by plans, elevations, and sections, to all persons, and specially to workmen, the evidence of attention paid to architectural drawing at the St. Martin's School is not satisfactory—however creditable may be a specimen which we found, by a student who had been a very short time under instruction.

The Department of Art, and the schools in connection with it, under difficulties, are effecting an amount of good that is already manifest, and may eventually place the arts in this country in a high position; but it is clear that the difficulty of the early withdrawal of children and pupils from their opportunities of instruction, which has been so much spoken of generally, extends far out of the agricultural districts, under pressure of the demand of entrance into active life; and that the system of instruction of the Department will need continual revision, to permit it to secure rapidly the ends hoped for from it.

PARIS ARCHITECTURE: THE HOUSE OF AN ARCHITECT.

AT different times we have given numerous examples of buildings erected in Paris, including houses built by sculptors and architects for themselves. We add to the list illustrations of one of the latter class, which we have engraved from views given in the *Revue Générale de l'Architecture*. It is situated at a corner of a street in what is known as the *Cité Malesherbes*, Paris, which takes the character of a London square; the police, the maintenance of the place, the keeper, and the lighting, being paid by a rate of 8*l.* per annum on each house. The residence we are illustrating stands on 230 square *mètres* of ground, 100 of these being arranged as a garden. In making the design it was determined that it should not be expensive, that the ground-floor should be appropriated to the business requirements of the culinary department; and that the first-floor should contain the living and reception-rooms. The top floor, in the roof, provides a spare bed-room, and four servants' sleeping rooms; and the basement contains wine-cellar, pantry, gas, water, a warming apparatus, and fuel-cellar.

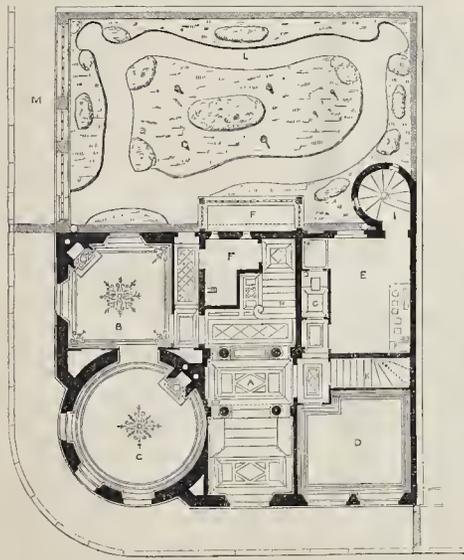
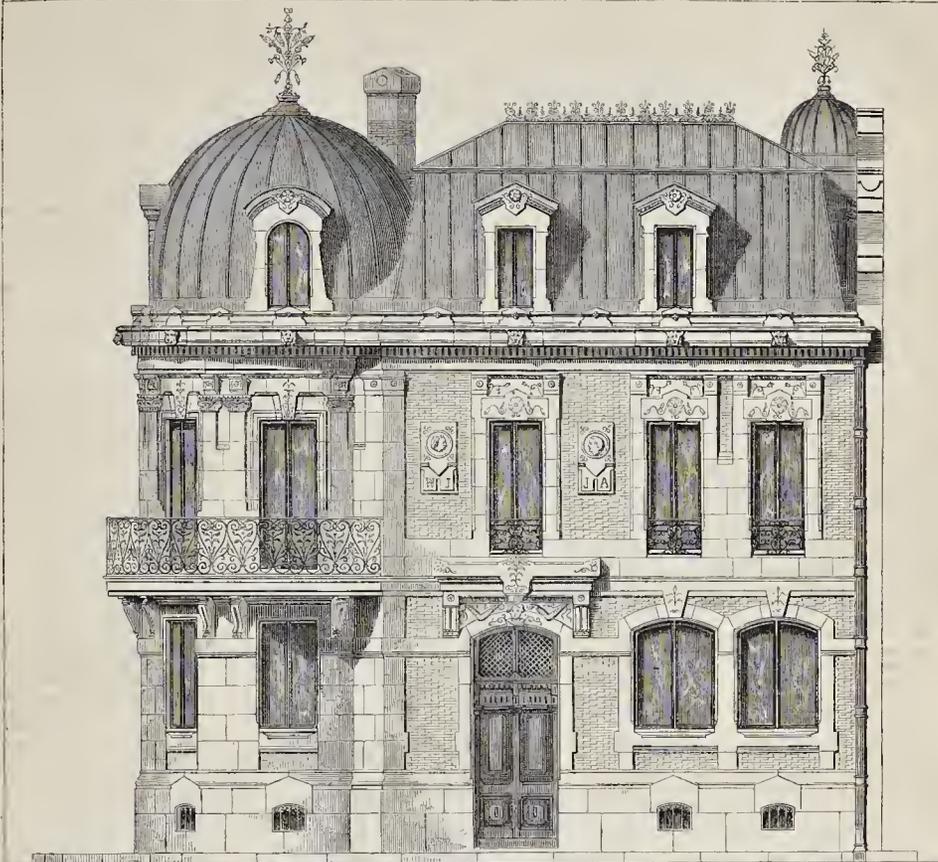
The vestibule on the ground-floor is formed in stone, paved with marble. The four columns which decorate the hall are of stone, as are the stairs. On the left there are a study and library, with a way out to the garden; to the right is an office for assistants, also the kitchen, with water-closet in too close proximity. In the roof there is a reservoir of water, to supply a little fountain in the garden. The kitchen is fitted up very completely, and water is laid on to the bath-room. The bath is of cast iron, lined with earthenware. The lining of the flues is of pottery. The ribs of the cupola are of iron. The interior appears to be fitted up with great elegance and luxury, including tapestry, pictures, and other works of art, and M. Daly makes us understand that it is not all French architects who can permit themselves such indulgences. Nevertheless, says he, it is right to state that, though ordinarily the architect retires from an arduous career with but a modest independence, happily there are some in France who have made or inherited fine fortunes, and can afford to indulge their fancies.

The extreme width of the house is 44 feet; the depth, exclusive of aviary, 32 feet.

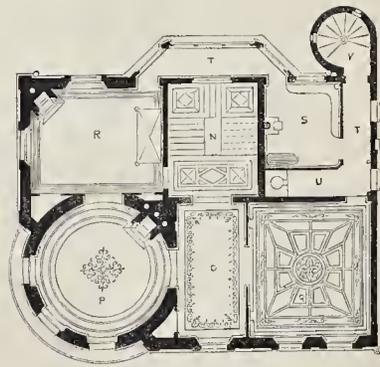
REFERENCES.

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|-------------------------|--|
| Ground-floor.           | First-floor.                           |
| A. Entrance-hall.       | N. Principal staircase.                |
| B. Study.               | O. Music-room.                         |
| C. Library.             | P. Drawing-room.                       |
| D. Office.              | Q. Dining-room.                        |
| E. Kitchen.             | R. Chamber.                            |
| F. P. Aviary, &c.       | S. Dressing-room, with Bath and W.C.   |
| G. W. C.                | T. T. Passage way.                     |
| H. Principal staircase. | U. Furnace for heating water for bath. |
| I. Servants' stairs.    | V. Staircase to rooms in roof.         |
| K. Stairs to cellars.   |  |
| L. Garden.              |  |
| M. Paved way.           |  |

THE HOUSE OF AN ARCHITECT: CITE MALESHERBES, PARIS.—M. AMODRU, ARCHITECT.



Ground floor Plan.



First floor Plan.



### PROPOSED MEMORIAL OF THE LATE SIR CHARLES BARRY.

SEVERAL suggestions under this head have reached us, including one for a stained glass window in Westminster Abbey, next to one which is to be filled with glass in memory of the late Robert Stephenson. It is understood, however, that Sir Charles Barry himself always desired the memorial should take the shape of a statue in some convenient niche in his own Parliament Houses, and this wish should be carried out. We believe that one or two of his friends are quite ready to provide the requisite funds if the arrangement could be satisfactorily made. It would be but a graceful act, however, if the Government were to undertake the duty of erecting the statue.

### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary meeting of members was held on Monday evening last, at the house in Conduit-street. Mr. G. Godwin, V.P., occupied the chair. The minutes of the last special meeting, and of the ordinary general meeting, were read and confirmed.

Mr. T. H. Lewis (honorary secretary) read the following letter, which had been received from the family of the late Sir Charles Barry, conveying their thanks for the warm and cordial sympathy of the Institute:—

"Lady Barry and the family of the late Sir Charles Barry beg to acknowledge, with the most sincere thanks, the resolution of the Royal Institute of British Architects. They are deeply sensible of the honour conferred by such a testimony from that noble profession to which it was his greatest pride to belong. They rejoice to feel that his memory is held in affectionate and respectful remembrance by those friends whose opinions he so highly valued; and for themselves they acknowledge, with gratitude proportionate to the greatness of their loss, the expression of such warm and cordial sympathy.

No man can they ever forget, while they look back with inexpressible emotion to the memories of this day, that to the Institute is due the conception and the conduct of that movement which has laid him in honour among the great men who are departed, and so given a public testimony to the value of his labour in the cause of art, and his services to his native country.

*Clapham, May 22, 1856."*

The chairman said he thought it right to inform the meeting that the council of the Institute had passed a vote of thanks to those members, fellows and associates, who had assisted in the ceremony at Westminster Abbey. They had also passed a vote expressing, through Mr. Quarm, the gratification with which they had witnessed the cordial sympathy of the workmen who had attended the obsequies.

Mr. James Bell (honorary secretary) read a list of donations to the library, which included a copy (large paper) of the "Archives de la Commission des Monuments Historiques," presented by the Imperial Government of France.

Professor Donaldson, in moving that a vote of thanks be presented to the several donors, congratulated the Institute upon possessing so many valuable records of the progress of art. He was glad to perceive by the designs for the new cemetery at Croydon that the distinctions which had been too long kept up between the chapels in places of sepulture of Protestants, Roman Catholics, and Dissenters, were, in the case of the Croydon cemetery, about to be eliminated. He also ventured to express a hope that their excellent secretary for correspondence (Mr. Penrose) might be able to find time to look through the donations which they had received from countries, with the view of bringing them, on a future occasion, more directly under the notice of the members. The speaker also commented at some length on the "Baueitung."

Mr. Penrose seconded the vote of thanks, and called attention to some specimens of coloured marbles which were about to be used by M. Matas in the new façade of the church of Santa Croce at Florence. The marbles consisted of dark green, dusky red, and the ordinary white from the Carrara quarries. The same distinguished architect was about to huddle the façade of the cathedral of similar materials, and it was to be hoped it would prove in every way worthy of the magnificent building of which it was to form a part. Mr. Penrose also spoke in eulogistic terms of the magnificent national work received from the French Government.

The chairman having put the vote, which he declared to be carried, referred to the "Monuments Historiques," and observed that our own Government might take a lesson from the example set them by that of France. It had often been urged, and he thought with great propriety, that some central body having authority should be established

in this country, to which should be delegated the charge of our ancient historical and architectural monuments. In France this national duty had never been lost sight of; and, in spite of revolutions, republics, and empires, the Government of the day had steadily continued the record of those magnificent monuments of antiquity, the continued existence of which it was impossible to guarantee.

Mr. Penrose announced that he had received letters of apology and condolence from several foreign corresponding members who had been invited to attend the funeral of Sir Charles Barry.

Mr. Ashpitel then read his paper on "The Origin and Development of the Use of Crypts in Christian Churches from the Earliest Period," the commencement of which we give elsewhere.

At the conclusion, Mr. Ashpitel remarked upon the fact, that there appeared to have been no examples of the construction of a crypt after "the Decorated period." Just about the origin of that period, and when there were no religious dissensions in the church, the practice of building the crypt suddenly ceased. At all events neither he nor the friends whom he had consulted could remember any case of a regular crypt under a large Perpendicular church or cathedral. Crypts, it was true, had been discovered under Gerrard's Hall and under the Guildhall, but as far as churches were concerned they appeared (for no reason that he could tell) to have fallen into sudden and utter desuetude. He hoped, should his health permit, to be able, early in the ensuing session, to give some account of the crypts in English churches, from the earliest period down to their disuse. He begged to thank those gentlemen who had favoured him with drawings of ancient crypts, and especially a gentleman (a stranger to him), who kindly sent him particulars of a curious building of the kind in the Isle of Man. Any further particulars on the same subject would be gratefully received, not only by himself personally, but by the Institute.

Mr. Bialloblotzky observed that the very interesting paper which they had just heard read brought to his recollection the crypts at Naples and Alexandria. In the latter it was possible to trace the period at which the Christians introduced into these tombs some pleasing ornaments. There was found the introduction of Bacchus worship, with close imitations of the Christian cross. It was to be regretted that the Turks had blown up the Catacombs at Alexandria, for the purpose of converting the marble into lime, a piece of vandalism which it might be useful to protest against. The Catacombs of Paris were somewhat similar to those which had been described by Mr. Ashpitel; but it was extremely difficult to obtain permission to view them. The tombs of the kings at Jerusalem also corresponded with some of the descriptions they had heard.

Mr. Papworth proposed a vote of thanks to Mr. Ashpitel for his interesting paper, and observed that he was sure they had all heard with surprise and satisfaction the clear and lucid manner in which he had worked his way through what some people might term a mass of "antiquarian rubbish," and established the point which he had in view. With regard to the paper which Mr. Ashpitel had promised for next session, it occurred to him (Mr. Papworth) that there were some crypts, lighted from the outside, which might be worthy of special notice.

No member having risen to continue the discussion,

The Chairman said, there could be no diversity of opinion as to the desirability of giving their warm thanks to Mr. Ashpitel for his deeply interesting communication. The paper was one of extraordinary merit, and its fulness and comprehensiveness constituted perhaps the reason why silence had fallen upon what might be termed a usually discussion-loving Society. He was sure they would all agree with him that the paper showed much thought and research, and that their best thanks were due to the author.

Mr. Kerr said that the impression left on his mind by the paper was that the early Christians repudiated art and destroyed it whenever they could find it. The crypts in the Roman catacombs were Christian tombs, and, for his own part, he could see no art about them. It seemed to him that something might be deduced of the progress of the Christian mind in art from the character of these tombs.

The vote having been passed by acclamation, The Chairman announced that on the 18th instant, a paper would be read by Mr. Digby Wyatt "On Illuminated Manuscripts," as illustrative of the history of arts of design; and that on the 25th of June, a special general meeting

would be held to consider the suggestions of the Council as to architectural examinations.

The following gentlemen were elected Fellows of the Institute:—Mr. Harry Robert Newton, Associate, of 6, Argyle-street, Regent-street; and Mr. Henry Dangerfield, of Cheltenham. Mr. Robert Knott Blesley, of 8, Farnival's-inn, Holborn, was elected an Associate.

### ROYAL EXCHANGE.

At length further endeavours are being made to have a glazed roof placed over the quadrangle, as recommended in the *Builder* many years back.

In this cold and variable climate, any space open to the access of rain or unmitigated winds can be but ill adapted for the transactions of the great money market of the greatest of cities; it may be that the remarkable chill of speculation during the last winter and spring has accelerated the desire for standings and niches somewhat more comfortable; or that the improved taste of the time has impressed the frequenters of Change with the desire to protect those frescoes which adorn the walls of the now open corridors. The wonder is, that the protection of a roof, so much needed by wealthy negotiators whose custom is to stand from one to two hours daily, all the while on a paved floor, and plunged in meditative calculations, was not given before.

It is clear that the thing can be done, and for a sum so insignificant, that a small subscription from each person using the Exchange might defray the expense; that it can be accomplished without damaging the aspect of the building; that it may afford protection from the alterations of the weather, as well as from the sun's rays; and, that perfect ventilation may, at the same time, be preserved. Let it be done, not as a railway station, nor yet as a conservatory, but in good taste.

### THE HOLIDAYS AT THE BRITISH MUSEUM.

It is satisfactory to saunter into the national collection on a holiday, when the rooms are crowded with visitors; when the humming of voices and the tramping of feet re-echo in the presence of the gods of antiquity and the effigies of those who have been chief movers in the world's affairs in ages long gone by, and a present living multitude wanders amongst those relics of Egyptian and Greek kings and queens, the choicest works of art which the world has yet produced, and the fragments of cities which have long ceased to exist.

Glancing at the crowd who on these occasions throng the various galleries, it will be seen that nineteen out of twenty consist of working men and their families: excursion trains have brought visitors from many a distant province; the observer will hear the broad dialect of the Scotch, who make an intelligent observation; the guttural and somewhat croaking tongues from the banks of the Tyne; and the characteristic dialects of "canny" Yorkshire and Lancashire.

It is instructive to remark what portions of the Museum seem to be most popular; for it shows us in some degree the intellectual and artistic position of a great mass of the industrious classes of this country.

The mummies and other curiosities in the Egyptian room attract great notice: so do the collection of stuffed birds and beasts, portions of the ethnological gallery, and the letters of eminent personages. The Nineveh marbles are appreciated to a great extent, and the important fragments of Greek art seem to impress the general mass of the visitors in a manner which many would not anticipate.

The galleries containing Etruscan vases and curiosities of Roman and British antiquity are rapidly passed through. When the writer was examining the very interesting group of Mediaeval remains which are here preserved, a man, who with his wife and children had been attracted there, asked, "Are these the things, sir, we brought from the Chinese?" On explaining to him that they were articles of British workmanship made in different reigns, the visitors became deeply interested, and, after some little general information, they went from place to place reading the tickets with great care.

Generally speaking, the keepers with the white wands who move about the rooms keep themselves too much aloof, and do not seem to care to give information when it is asked for: indeed, replies have been made by one or two of these officials which, as regards intelligence, might be compared with the question above noted. Great good and

much pleasure would be the result, if intelligent attendants—and most of them are so—were ready to give useful information.

The rising generation will be able to read for themselves the marvellous lesson of the British Museum; but in the meanwhile no means should be left untried to make it so, and so to advance taste and general information. We want whole-sale teaching in our national collections. Museums should be established, too, in the eastern and southern districts of the metropolis, and in the large provincial towns, to increase the means of instruction and amusement.

#### STAINED GLASS IN LUDLOW CHURCH.

THIS magnificent parish church, dedicated to St. Lawrence, has for many months past been undergoing extensive repairs under the superintendence of Mr. Scott. Among the donors the borough members have each given a window. Of these the great west window is the gift of Mr. Botfield. The window is full of tracery, the top compartment having the emblem of the Trinity, and the seven compartments immediately below it having the Majesty surrounded by the emblems of the four Evangelists, the Lamb, and Pelican; below them the royal arms, and on either side St. George and St. Lawrence, and beneath them the arms of the borough and of the donor of the window. On either side of the above are the arms of the see of Canterbury and Hereford, and various badges of the royal house of York. The subject of the window is principally historical, relating to the castle and town. The seven long openings below the tracery contain full-length figures of "R. De Montgomery," "Josec De Duan;" "Fulke Fitzwinc;" "Peur De Ghien;" "Rog. E. of March;" "Edm. E. of March;" "Rich. E. of Cambridge." Most of them are in armour, and all surrounded by rich canopies, with their names and armorial bearings beneath them. The following inscription runs across the bottom of the openings:—"Humbly offered to God and to this church of S. Lawrence by Beriah and Isabella Botfield. An. Dni. MDCCCLX."

Below the transom of the window the west doorway cuts away the three centre openings, leaving two on each side of the door, which are filled with kneeling figures of "Richard Duke of York;" "King Edward the fourth;" "Edward Pr. of Wales;" "Arthur Pr. of Wales."

The window was designed and executed by Mr. Willement.

There are several old windows in the church, some of which are now being repaired; some new ones by Evans, of Shrewsbury; and one by Messrs. Clayton & Heaton.

#### CHURCH-BUILDING NEWS.

**Sittingbourne.**—Mr. H. M. Molyneux wishes it stated that the works here are being carried out under the joint superintendence of himself and Mr. Winble.

**Market Deeping.**—Thurby Church has been internally restored. Amongst the recent embellishments is a new reredos, executed by Mr. Tinkler, jun., of Stamford. It is of Stamford limestone, and extends the whole width of the chancel. The design is perpendicular, and accords with the window above.

**Oxford.**—Woolvecot Church, which is in the Early Decorated style, has been entirely rebuilt, except the tower, from the designs of Mr. C. Buckridge, of Oxford; the builder being Mr. Thomas, of Abingdon. The total cost of the church, including the faculty and fees, will be about 1,800*l.*, of which 150*l.* have yet to be raised.

**Witley.**—The first stone of the intended chapel for the Union House has been laid. The chapel will be of an Early English character (and, if funds can be obtained), with an apsidal chancel. It will be built for upwards of 200 persons. 200*l.* have been voted by the board of guardians for its erection, and about 250*l.* more will be required, 200*l.* of which have already been subscribed. The architect is Mr. Wilkinson, of Oxford.

**Whippingham.**—Her Majesty has laid the first stone of the new church at Whippingham.

**Devizes.**—The little church of Figheldean, after repair and restoration, has been re-opened. The architect employed was Mr. Huggall; and the builders were Messrs. Rundell, of Devizes. The estimated cost of the restoration, according to the *Dorset Chronicle*, was 1,100*l.*, of which a debt of about 200*l.* still remains to be defrayed.

**Hanley.**—We have obtained the following further particulars as to the new cemetery at Hanley:—Having secured a site, the council offered pre-

lims for the two best designs for chapels, and for laying out the grounds. Sixty-five architects, residing in various parts of the county, competed, and several designs for the arrangement of the grounds were also sent in. The designs were publicly exhibited, and ultimately that of Messrs. Ward & Son, of Hunsley, architects for the chapels and lodges, and that of Messrs. Bellamy & Hardy, of Lincoln, for laying out the grounds, were accepted. For the construction of the chapels and lodges a contract was entered into with Mr. J. Clewes, of Hanley, at a cost of 2,598*l.*; the tender of Mr. Nunn, of Leek, for arranging the grounds, at a cost of 825*l.* was accepted; Mr. J. Hill, of Hilderstone, was employed to plant the grounds, at an expense of 105*l.*; and Mr. T. Durbar contracted for 1,800*l.* to make the road, the deep drainage, and the boundary walls, and also to erect the rails and gates. This contract was carried out under the superintendence of Mr. James Forbes. The burial ground, throughout its entire extent, is drained 12 feet deep by main brick sewers, with auxiliary 6-inch pipe drains at regular distances, and at a depth of 12 feet. The plans of Messrs. Bellamy & Hardy for laying out the grounds have been executed under the supervision of Mr. J. S. Forbes, who also, as borough surveyor, exercised a general oversight of the works. The principal entrance to the cemetery is on the Stoke-road, where two lodges have been erected. Iron gates and railings (supplied by the Coalbrookdale Iron Company) have been erected. The chapels are each about 40 feet long and 21 feet wide. Each chapel has a vestry, and the two buildings are connected by three open archways, the centre of which is groined, and is intended for a carriage-way, while the two side archways are intended for foot passengers. The chapels are built in a uniform manner, and the tower, surmounted by a spirelet, springs from the centre of the group. They are constructed of Werrington stone, with dressings of Hollington stone. The style of the chapels is transitional from the Early English to the Decorated Gothic.

**Down Hatherley (Gloucestershire).**—The parish church of St. Mary, rebuilt by the family of the late Sir Matthew Wood, Bart., M.P., has been opened for public worship. The church is in the Decorated style, and consists of a tower, nave, north aisle, and north porch, a chancel, with vestry and organ-chamber attached. The edifice is entirely new. The stone carving throughout the church is the work of Mr. Purdey, of London. The chancel windows are all filled with stained glass. The subject of the east window is the Crucifixion, in the centre light of which is the Saviour on the cross, with Mary Magdalene at His feet; in the north light, the Virgin and the other Marys; and in the south light, St. John the Centurion and other figures. Over these figures and in the wheel tracery of the window are choirs of angels. The north chancel window, which is small, has for its subject the Nativity. The window on the south side nearest to the east end of the chancel represents the Annunciation. Westward of this is another window representing the Resurrection and the Ascension. These windows are all of them the work of Mr. O'Connor, and are memorial windows. The architects were Messrs. Fulljames & Waller, and the builder was Mr. Oliver Estcourt.

**Moretton-in-Marsh (Gloucestershire).**—The work of removing the old tower of the parish church here has been commenced, for the substitution of a new tower and spire, in architectural character with the new portion of the church. The contractor for the work is Mr. Joseph Gill, of Bourton, and the architects are Messrs. Poulton & Woodman, of Reading. The amount of subscriptions already promised, including 350*l.* from Lord Redesdale, is 665*l.* 10*s.* 6*d.* The subscriptions, however, fall short of the estimated cost by at least 100*l.*

**Curry Rivel (Somerset).**—A contract having been entered into by Messrs. Hartnell & Staples, builders, for the pulling down of the old, and rebuilding of a new tower to Curry Rivel Church (we here nothing of any architect having been employed), accordingly the old tower has been entirely removed, and the foundation-stone of the new one laid by Miss Frances Coker, for Miss Pinney, who used a silver trowel, the handle of which was made from a piece of the famed Glastonbury chert, and curved. The projected tower is to be built in the same style as the old, which was square, differing only in having pinnacles placed at the top of each corner of the tower, and panel tracery round the centre. There will be a carved window in the bell-tower loft, which will contain five bells. The lower level is to be built of the Pilsbury and Ham-hill

stone, and will stand on the same site as before. Its height will be 95 feet 10 inches. Amongst the ruins of the old tower was discovered the tomb of a monk of the days of Richard I.

**Cardiff.**—St. Nicolas Church, near Cardiff, has been opened, after restoration mainly by Mr. J. Bruce Pryce, of Duffryn. The works have been carried out by Mr. Parry, of Llandaff, builder, from the designs and under the superintendence of Messrs. Pritchard & Seddon, the diocesan architects.

#### COMPETITIONS.

**Heyham.**—The Committee for building a New Church at Heyham, Kent, invited several architects to offer designs for the proposed church. From the drawings submitted the Committee have selected the design by Messrs. Peck & Stephens, and it is proposed to proceed with the works forthwith.

**Bristol General Cemetery.**—For designs as to the enlargement of the Cemetery at Arno's Vale, the first premium of fifty guineas was allotted to Mr. Hans P. Price, of Weston-super-Mare; and the second, of thirty guineas, to Messrs. Poole & Newman, of Sherborne. The designs were referred to Mr. Underwood, architect, Bristol, for his decision.

#### IRELAND.

The Augustinian church at Dublin, alluded to in our Royal Academy notice, page 328, has not yet been commenced. There seems to have been an understanding that this building was to have been competed for.

A new Roman Catholic church is to be built at Crosspatrick, county Mayo; also another at Colton, county Louth.

Mr. Gillespie (late district inspector), and Mr. William Welland (assistant, and son of the late Mr. Joseph Welland, architect), have been conjointly appointed architects to the Ecclesiastical Commissioners in Ireland. The professional candidates complain of trouble incurred owing to the result not being arrived at without advertising the vacant appointment, thereby raising expectations.

The chapel school, at Newbridge, county Kildare, relative to which there is an action pending is again advertised for tenders.

The memorabilia case of Kempston v. Butter, relative to fall of house in Graston-street, Dublin, will come on immediately, for the third time.

In the case of Hugh Kelly (a builder) v. Representatives of Craunton, the plaintiff gained a verdict for 400*l.* A contra-action for breach of contract has yet to be tried.

#### THE NINE HOURS MOVEMENT.

SCARCELY has work been resumed before a fresh rupture is threatened, which, it is to be feared, if arrangements cannot be made, will end in the same disastrous results as the last struggle, which brought harm to all concerned in it—good to none.

The considerations which arise are various and important. One of the first is the right of the workmen to combine for the purpose of protecting the price of their labour and themselves from oppression and injustice. Such a right can scarcely be doubted. To the workman his labour is his sole dependence; and, in these days of cutting contracts and the most remarkable competition, it is especially necessary that the men should be able to defend themselves from the injury to which they would be exposed if left without the strength of a rightly-established combination. Care should, however, be taken, not to make this a means of oppression either with the employers or those men who have an objection or a disinclination to join the trade societies.

The next phase of this important subject which suggests itself is the question of the reduction of the hours of labour. In the long run this will more concern the public than the masters.

We have met with few workmen who say that ten hours' honest labour are more than they would willingly undertake; but they urge that in order to find anything like proper accommodation for their families, they are obliged to live at a distance from their work, and that this often forces them to walk several miles before commencing and after they have finished labour, and that this actually makes the hours of labour from twelve to thirteen a day, and many say that on reaching home they are so tired that they cannot raise their heads. This might to some extent be prevented when men are regularly established in one manufactory; but in the building trades a man

may, for a few weeks, be engaged in the direction of Fulham, and the next in the far east, or in the northern parts of Islington or Kentish-town, and then, perhaps, is sent away to Kennington or Clapham. A married man with a family of children to support cannot be constantly changing his residence, nor can he afford to pay for a separate lodging. It has been suggested that the distance at which a job is from the establishment of the master should be thought of, and a fair amount of time allowed the workmen to reach the spot where their operations are required. It is certain that if the physical condition of men is overtaxed their labour becomes of less than its right value: this not only causes the sacrifice of life and health to the men, but is also a loss to the employer.

It is said that the masons, carpenters, and bricklayers should feel especially thankful when their state is compared with the Spitalfields weavers, slop-tailors, shoemakers, and several other workers. This, however, is not the right way of putting the matter before the public, for no greater calamity could befall this great country than that the great industrious masses of the population should fall into such a state of suffering as is above alluded to.

No one who has carefully considered the additional expenses of the metropolis above the country will say that a clear income from 30s. to 35s. a week is too much to ensure the comfort and respectability of a good workman.

It is the duty and the interest of the employers not to stand aloof from the men; and it is equally clear that, while the workmen assume a sufficiently independent condition, they should not exhibit a spirit of antagonism towards those who supply that capital which gives impulse to human industry.

Let us hope that, before the building trades are drifted into another strike, mutual interests may be considered, evils complained of redressed; and, if it can be shown that the present condition of the trades and the demand for workmen will allow it, that a further amount of remuneration should be allowed. The call for a restriction of the day's work to nine hours is simply an absurdity which will not bear arguing.

We have received letters from several working men, deprecating, in the strongest possible manner, as well they may, being forced into a strike by their own leaders. One writes thus:—

"Would the 'nine hours' benefit the unemployed? Would it not increase the cost of building? And has the effect of any article nothing to do with the demand for it? A man with 400l. spare cash buys an eight-roomed house, because it lets for a certain rent, and yields a fair interest; but, if it costs 40l. more, it must let at a higher rent to pay him; and the same consequence would be that three families would occupy the house instead of two; thus six families would do with two houses instead of three, and thousands who now occupy two rooms, at 6s. per week, would make shift with one at 4s., did the two cost 7s. Again, is there any mechanic in the building trade so ignorant as not to know that repairs, alterations, decorations, &c., mostly depend on whether they can be done for a certain sum? A job that is done for 1,000l. would not be done at all were its cost 1,100l.; and to argue otherwise is only asserting that there is no limit to the price the public will pay for building.

Is ten hours' moderate exertion, in a trade where the lifting and carrying are done by labourers, too much for a healthy man? I can truly say I do not find it so. My employer has been a journeyman, knows what a day's work is, and every man in his service must do his 'bit,' or go; and yet I walk three miles to work in the morning, and back again in the evening, without impairing either health or strength.

In conclusion, I must say that if the agitators would let this question rest at its present settlement, I should think far higher of them; that they re-ignite it is as much owing to spleen at the last disappointment to their vanity as leaders as anything else; for, if they had only the good of their fellow workmen at heart, they would not attempt again to plunge them into the want and distress they brought them to last winter, and all for a measure of doubtful good. JOHN OWEN, *Bermingham-street.*"

No sensible person disputes the existence of a growing fluctuation on the part of the toiling masses to elevate themselves in the social scale; but, however much such a result is to be desired, it will never be secured by the agitation of such schemes as that of the nine hours—a plan for it varies at all times, repeatedly proved, with the principles which regulate the relative agencies and action of capital and labour. To aid in securing the results described in the "memorial," I would not hesitate to give my hand, heart, and soul; but I feel strongly convinced that the mere reduction of one hour per day in the hours of labour will not suffice, nor even compensate, for the assertion of a false principle; and if so, it would be most impolitic, unjust, and ruinous in the extreme, to attempt the enforcement of a measure which its most sanguine supporters can never expect to be permanently successful, even though it may be temporarily so. JOHN PLUMMER.

Sir—At this time, any suggestion that will tend to make men pause before they again rush into the fearful horrors and privations attendant upon a strike, is useful. Being an employer of a large number of men, and having conversed with society as well as non-society men

on the subject, it is my sincere conviction that by far the majority of the workmen in the London building trades are desirous that the strike should not take place, as they feel convinced that it would not succeed in its object.

I would suggest to the committee of the Trades' Union to let the men decide the matter for themselves, by either appointing a place to receive votes for and against the strike from all the workmen employed in the building trades, or if that arrangement would cause confusion, to select fifty of the leading building firms in this metropolis, and take their votes by ballot, in order to allow them the free expression of their opinions. If such a course were adopted, I feel sure that the men would give their vote against the strike. And let those persons who from interested motives are urging on the men beware how they again drive strong men, as well as the helpless women and children dependant on them, to starvation, despair, and crime; for few persons are at all aware of the awful amount of misery which follows on a strike. E. Y. C.

Labour is everywhere in a very unsettled state, and it is of the utmost importance that some earnest efforts should be made to bring about a better understanding.

In *Cork*, the masons are out, and according to local papers are beginning to suffer greatly.

In *Glasgow* the painters are out of work, but endeavours are being made to effect an arrangement.

At *Bradford*, in Yorkshire, 300 masons have been parading the streets. The *Manchester Examiner* says:—"The men petitioned for a reduction of six hours' labour per week, that is 57½ to 51½ hours; but to this the masters are opposed, and show that this would be only eight hours and thirty-five minutes per day; and yet it is demanded that this be conceded without any corresponding reduction of wage, the men declaring, at the same time, that, in order to meet this reduction in point of time, they are sacrificing 2s. per week wages as agreed upon seven years ago, but which agreement was violated by the masters when it suited their convenience to do so. It is only proper to state, however, that the employers offered the men an advance of wages at present, rather than allow their contracts to stand; but this the men refused; and, as the two months' notice which they gave their employers expired yesterday, they have remained idle, with the exception of a few indentured apprentices." The masters state that they are open to give or accept any reasonable terms.

At *Blackburn* differences have been arranged. In *Hull* most of the joiners are on strike. The men seek an advance of 6d. per day in their wages, raising their weekly wages from 24s. to 27s. Several of the masters have assented, but others say they are determined to withstand the efforts of the men to gain their object.

There has been a riot amongst the nailmakers of parts of *Staffordshire*, who have been on strike several months.

MEETING IN FURTHERANCE OF THE NINE-HOURS MOVEMENT.

A MEETING of working men, called by advertisement, was held in St. Martin's Hall, to further this movement, on Friday evening, the 1st inst. It was very numerously attended.

Mr. Wheeler, a plasterer, having been called to the chair, opened the proceedings. He denied that the movement was set on foot by paid professional agitators, for it had emanated entirely from the men themselves, who were desirous of ameliorating their own condition both morally and physically.

Mr. G. Potter, secretary of the Conference, then moved, in a speech of some length, the following resolution:—"That the object of this movement is not to injure the master builders, but to benefit the men. That the desired reduction in the hours of labour, whilst it will materially contribute to the physical wealth, the social improvement, the mental development, and the moral elevation of the operative builders, is not calculated to inflict the slightest loss either social or financial on their employers, and that the concession of this boon is certain to beget a better understanding between them and their workmen than that which unhappily prevails at present." The present movement was, he said, one which the workmen were justified in making by the improved state of trade. They all knew the depression of the physical system caused by long hours of labour, and he contended that if one hour were taken away the aggregate amount of work done by the individual workman would be quite as much as they performed by their overtasked energies at present. They had met to-night in the furtherance of a purely legitimate movement, and they had just as much right to demand the shortening of the hours of labour, as they had to demand a rise in wages. So far as combination was concerned it had been shown over and over again that masters com-

lined more against the workmen than the workmen did against the masters. The over-working of labourers, whether engaged in any one branch of the trade, only led to physical infirmity; and if a man through over-working was laid up at home for a month, he lost more than any amount he could gain in the year by the additional work he did. No one could deny that the working men were the producers of wealth in a nation. Yet it was proverbially the case that they obtained less of it than any other class. What the employers said was, that although the workmen might legitimately ask for an advance of wages, they could not ask for a diminution of labour from the present state of trade. He had no hesitation in saying that the men were under, rather than over paid. If the masters would concede the benefit which the workmen sought at their hands, it would be of immense importance to them, particularly in the summer months. The men had now asked the masters in respectful though in firm terms to concede the requests they now made, but they very well knew that they were in a position to demand instead of request the concession.

Mr. Perry seconded the resolution, which was carried unanimously.

Mr. Faery, painter, then moved—"That this meeting is fully convinced that the desired reduction is no more than is justly due to the manifold requirements of the operative builders, and therefore pledges itself, by the use of all the just and lawful means at its disposal, to persevere in the present agitation until the demand for the nine hours has been granted."

Mr. Howe, bricklayer, seconded the motion, and it was agreed to.

A vote of thanks to the chairman terminated the proceedings.

We are requested by "The Conference" to publish the following correspondence:—

"To Mr. Wales, Secretary to Central Association.  
Sir,—At a special meeting of the Conference convened last evening, for the purpose of receiving a suggestion from yourself, to the effect that you thought the employers would receive a deputation if the Conference asked for one. Resolved—  
'That the Conference are willing to send a deputation if the employers wish to receive one, that the question may be fully discussed between the two parties.'  
I am, sir, on behalf of the Conference,  
Yours respectfully,  
GEO. POTTER, Secretary."

In answer to the above, the following resolution was received from Mr. Wales on the 6th inst.—"That Mr. Potter be informed by the Secretary that the Committee of the Central Association decline to renew any discussion on the Nine Hours question."

MASTERS AND OPERATIVES.

The select committee appointed in March to consider what would be the best means of settling disputes between masters and workmen have sent in a concise report, which was issued yesterday. The Masters and Operatives Bill was referred to this committee, and the proposed measure is alluded to in the report, which says:—

"From the evidence taken before them, in which both masters and operatives were examined, and also after referring to the evidence taken before the committee appointed in 1856, your committee have come to the unanimous opinion that the voluntary formation of equitable councils of conciliation would tend to promote a more friendly understanding between the employers and employed, to soften any irritation that might arise, and in most cases to prevent the growth of such a spirit of antagonism as too often leads to a strike."

THE CONDITION OF TRADE.

The following is a portion only of a letter received:—

It strikes me that as long as the Legislature or those connected with the Government hoards give away the contracts of eight or ten different tradesmen's work to one single monopolising contractor, and that society generally adopts the system (which it has), you need never expect contentment amongst the tradesmen; nor will you have good workmen in all or any of the different trades it takes from the commencement to the end to finish a building; and, if this be continued, in a very few years you will have no one to educate apprentices.

It is within the last half century that this wholesale system has been generally adopted in all the Government public boards and with private parties, as previously the bricklayer, stone-cutter, plasterer, carpenter, painter, slater, plumber, sculptor, and many other trades had the benefit of their separate contracts. Then we had respect-

able employers in each and all of these trades, which can be seen by a reference to the different directories of the time, and even since, and who are all but gone, only in name. All these separate trades are monopolised and engrossed by one capital and grinding monopolist contractor, who too often sub-contracts each department of these works to the cheapest journeyman in trade, even should he want knowledge, capital, or character.

Now, what I would suggest as a remedy is, to license all the tradesmen throughout the Queen's territories, of every class and trade; and that, by a test of servitude, skill, and ability, if passed into a law, this would have the effect of doing away with those local trades' societies which every tradesman, as a stranger, has to join in every city he goes into before he will be permitted to work in the majority of employments. Let each working tradesman pay into the Exchequer 1*l.* per year as a license, and each employer, say 3*l.*, which could go, as the Government might choose, either to support the old and infirm of each trade, or to educate their orphan children, or to relieve the general taxation; and by this means the Government would make at least ten millions per year in favour of the Exchequer, and could keep a registry of their names and residences, which could be constituted into a standing army of irresistible power and magnitude, and that, too, without any extra expense to the State.

Also, I would press on the Privy Council or Board of Trade to have all the public works subdivided, so as each separate trade could have the benefit of their own servitude, skill, and ability. This alteration would require new Act of Parliament. By subdividing all those contracts under the Board of Works, Ecclesiastical Board, Board of Ordnance, Woods and Forests, and the army and navy departments, so as each trade would be brought into competition, you would have less jobbing between either architects, engineers, or clerks of works, and monopolising contractors, and do away for ever with sub-letting of every kind, as it is easier to job with one than with many.

THOMAS MANASSEPE.

ARCHITECTURE AND THE ROYAL ACADEMY.

SIR.—As the profession are very likely to overlook the fact in the channels which the council of the Royal Academy select for their advertisement of it, will you generously give them the advantage of your circulation, and state that Mr. Sydney Smirke has been elected Professor of Architecture there? I looked in vain last year for advertisements in your pages of the architectural lectures, and was not surprised to hear afterwards (when the lectures were over, and I could not go) of the comparatively small attendance on these occasions. This is amongst the hundred small foolishnesses by which the Academy show their disregard or want of knowledge of what is going on around them, and annoy their best friends.

AN OLD STUDENT OF THE R. A.

"BLIND BUILDERS."

SIR.—May I call your attention to the two following lists of tenders, again making public that "blind builders" still exist. The first is for an alteration to Clermont Chapel, Pentonville hill, Clerkenwell, and the second for repairs, partly re-building, and alterations to a house, No. 11, Tavistock-row, Covent-garden.

Clermont Chapel—Mr. Tarry, Architect.

Brass	.....	£ 454	0
Madgin	.....	241	0
Roberts	.....	289	0
Powell	.....	266	0
Richards	.....	224	0

No. 11, Tavistock-row, Covent-garden.

Keys & Head	.....	£ 730	0
Scott	.....	536	0
Fowler	.....	432	0
Thompson	.....	429	0
Williams, Brothers	.....	293	0

Comment upon this is unnecessary, but whence arises the discrepancy? In my opinion it arises from the fact that many men who call themselves builders have no right whatever to do so. I can name numbers (many of large firms) who now are professing to understand all the minutie of building (and many of them act as surveyors also), who have been working jewellers, brokers, dealers in old building materials, barbers, &c. &c., and who have amassed fortunes by others' experience and mind. In days gone by, when every part of a building was entrusted to each department, when bricklayers executed brick-work (which now will bear the severest criticism), the mason mason's work, the carpenter and joiner his work—and so on through all the different trades, then a lad was obliged to serve a seven years' apprenticeship to be an accomplished tradesman of his department; but now seven little months are all that is needed for a man (however humble his mind) to understand fully and undertake the whole of the trades combined under the head of a builder. Hence arise those vast differences in estimating, and very naturally persons say, if one man can do a job for 360*l.*, and get a profit therefrom—for it he does not, how can he find food, raiment, and lodging?—what a pro-

digious profit must the other builders require, when another estimate is nearly 50*l.* You have written pretty openly and freely upon the subject, and I will leave in your hands the consideration of those two estimates. I am one who looks with a serious eye at every one who calls himself a builder, and asks the questions where such a man served his time? with whom? and what distinct part of the trade he was taught, worked at, and learned?—and if these three simple questions were asked by every professional man before he invited (self-styled) builders to offer tenders, the remedy would be accomplished to a very great extent.

C. F.

GAUGE FOR LEAD AND GLASS.

SIR.—An architectural friend of mine having been imposed upon by a builder in reference to lead, had a gauge very carefully and accurately made in a thin piece of brass, with the respective weights of from 4*lb.* to 9*lb.* lead, marked on the sides of each slit, and by that means was enabled to test all weights of that article,—thereby preventing 5*½* and 5*¼* *lbs.* being substituted for 6*lbs.*, and other similar "mistakes;" and I believe it answers very well.

Such a one could, with care, be made for glass, &c., to carry in the pocket.

S. Y.

In reply to "One of the Profession," inquiring about an instrument for ascertaining the weight of lead without weighing, I think the following would answer for milled lead.

The weight per foot, according to the several thicknesses, is as follows:—

$\frac{1}{2}$ of an inch thick	... 3 $\frac{3}{4}$ lbs.
$\frac{3}{4}$ .....	5 "
1 .....	6 "
1 $\frac{1}{4}$ .....	7 $\frac{1}{2}$ "
1 $\frac{1}{2}$ .....	10 "
1 $\frac{3}{4}$ .....	12 "
2 .....	14 $\frac{1}{2}$ "
2 $\frac{1}{4}$ .....	17 $\frac{1}{2}$ "
2 $\frac{1}{2}$ .....	20 $\frac{1}{2}$ "
2 $\frac{3}{4}$ .....	24 $\frac{1}{2}$ "
3 .....	30 "
Inch .....	50 "

Take a piece of stout copper, or zinc, and notch out these several thicknesses, and it will form a gauge to ascertain the weight. I apprehend the notches need not go further than  $\frac{1}{4}$  of an inch 14  $\frac{1}{2}$  *lb.*

JAMES EDMONSTON, Salvador House, Bishopsgate.

SIR.—In reply to "One of the Profession," at page 355, allow me to mention that I have seen an instrument for the purpose alluded to. It was of circular form three or four inches diameter, with concentric scales, indices, and a means of taking the thickness with great exactitude; the results being obtained by a process similar to that employed with the slide rule.

With regard to the weight of lead, there can be no difficulty in works of magnitude, as every sheet is stamped in the way noted in the margin; 10 3 1 the first line showing the total in cwt., lbs., ounces, and lbs.; the second the length of the sheet in feet; and the third, the weight per foot. The sheets are all rolled at a 7 feet gauge, and the accuracy of the mark is therefore easily tested. There is usually a side number for reference in the merchants' books.

Sheet glass of thirteen ounces to the foot, is one-sixteenth of an inch thick; and twenty-four ounce glass, one-ninth of an inch. But the young architect should accustom his eye to these points, as instruments are not always at hand when wanted; and to those unaccustomed to their use, are often as mischievous as the cabinman's "distance indicator!"

Far.—What have I to pay?  
Cobby.—Five shillings, sir.  
Far.—Why, I have not ridden two miles!  
Cobby.—Can't help it, sir; we always goes by the index.  
T. M.

LEEDS CORN-EXCHANGE COMPETITION.

SIR.—I observe in your last number a letter upon this subject, signed "Scru," reflecting upon the supposed intentions both of the Leeds Markets Committee (who have the management of the corn-exchange competition) and of myself.

As some of your readers are probably interested in this competition, and as they may fairly presume that such supposititious statements would not have been permitted to appear in so carefully-conducted a journal as the *Builder* without some foundation in fact, I may, perhaps, be allowed to assure them and yourself, sir, that not one of the suspicious so freely indulged in by your correspondent has any such foundation whatever.

The committee have had no intention of placing the works in my hands, nor have I any intention of undertaking them. On the contrary, it is in accordance with my recommendation to them from the first, that they have determined to entrust this building to an architect. They decided to throw the design open to competition, because they believed it to be the most satisfactory course of proceeding.

The stipulations in the conditions for sufficiently detailed plans and minute estimates, which I am desirous to tender from, are intended not only to secure accurate estimates from competing architects, and to enable the committee to have these estimates tested, if necessary, but to prevent "approximate" estimating upon insufficient data. The other stipulations which your correspondent appears to dislike have a similar end in view.

On the other hand, if the best designs submitted are not of too costly a character, and if no other unforeseen objection arise, the committee do not intend, nor do they in their instructions express, otherwise than that a successful architect should carry out his designs, as well as receive the premium.

I would a copy of the instructions for your own information, and shall be happy to give any explanation that

may be in my power to any competing architect who will address a line to me.

I trust, sir, that you and your readers will be satisfied with my assurances that the Markets Committee has had no intention of acting in the discredit manner suggested by your anonymous correspondent, and I only regret that he should have been permitted to occupy your valuable columns with groundless suspicions of a public body, and with uncalculated personal remarks upon a professional man.

EDWARD FILLITER, Civil Engineer, Borough Surveyor, Leeds.

"HERTFORD BUILDING COMPANY'S COTTAGE COMPETITION."

SIR.—I have anxiously watched your two last impressions, expecting to have seen something relative to the above competition.

Designs from about twenty-eight architects were received; and, after exhibiting them to the public two or three days, eight gentlemen were written to, requesting their attendance; and upon the day named eight gentlemen made their appearance, each surprised at seeing so many others. One by one they had an audience, and were told by the directors that it was not possible to decide on that day. After a lapse of some days letters were received stating that the premium of 20*l.* had been awarded to Mr. D'ball, of Cheswick. Now, sir, Mr. D'ball was not one of the eight who were brought from Norfolk, Nottinghamshire, Somersetshire, Kent, Hampshire, and London.

I am also informed, on the authority of persons living at Hertford, and who inspected the designs, that Mr. D.'s plans were sent in two or three days after the other designs were exhibited to the public.

Can we not claim our time and expenses?  
ONE OF THE EIGHT.

STAINED GLASS.

Southwater.—One of the windows of the church of this place has been recently enlarged, and filled with stained glass, to the memory of Sir Henry Fletcher. The glass is by Messrs. Bell & Clayton. The subjects illustrated in it are,—1. The Massacre of the Innocents. 2. The Circumcision of Christ. 3. Christ Receiving and Blessing Little Children. 4. Infant Baptism. In the upper compartment of the window is the figure of our Saviour, seated on his mediatorial throne, in the attitude of imparting benediction.

Taunton.—A stained glass window, says the *Taunton Courier*, has just been placed in the south wall of the church of Taunton, St. Mary Magdalene, to the memory of the late Lord Hinton, Colonel of the 1st Somerset Militia, and his brother officers. It is a three-light, and has full-length effigies of three of the warriors of the Old Testament—Joshua, David, and Gideon, under light canopies. Beneath are panels illustrative of Joshua's vision of the captain of the host, David slaying Goliath, and Gideon breaking down the idol. In the tracery are angels holding Christian armour.

Launceston.—A stained window, value 200*l.*, has been placed in the centre aisle of the east end of the church here. It represents a scene at Bethany after the Ascension. Above are the two angels. The window is the gift of the late Mr. Edmund Spettigue, of Launceston.

Warrington.—A stained glass window is about to be erected in St. Paul's Church, Warrington, in memory of the late Mrs. Beaumont. The subject is "Dorcas distributing Alms to the Poor." The cost will be about 130*l.* It is to be executed by Messrs. Clayton & Bell.

Books Received.

An Analysis of Ancient Domestic Architecture in Great Britain. By F. T. DOLLMAN and J. R. JOBBINS. No. 7. London: Masters.

The current number of this well-executed work contains four plates illustrative of the Guesten Hall, Worcester, of the efforts to preserve which we have lately spoken. The illustrations comprise an interior and exterior elevation, and full details of the elegant timber roof which distinguishes it. The Guesten Hall appears to have been commenced about the year 1320, in connection with the monastic establishment of Worcester, as a place for the entertainment of visitors.

Speaking of Worcester, we may mention that the further restoration of the cathedral, under the direction of Mr. Perkins, has been commenced. Messrs. Bennett & Sons, of Birmingham, are the contractors.

VARIORUM.

The state of progress made with the additions to the American Houses of Parliament,—the United States Capitol,—is recorded in the printed "Reports of Captain M. C. Meigs, accompanying the annual Report of the Secretary of War, for the year 1859" (G. Bowman, Washington, printer). From these reports it appears that the interior of the Capitol extension is now nearly completed; and the re-

building of the dome is so far on the way, that the iron framework is put up, and a part of the iron covering laid on; and that the subject of ventilation turns out to have been nearly as great a problem in the United States Capitol as in the British Houses of Parliament. — In a tract on the Thames Navigation, titled "Reduction of the flow of the tide, with the beneficial results thereof" (Blackwood, Paternoster-row), Mr. George Wyson, C.E., suggests the formation of breakwaters, to limit the width of the river, at Southend, by which means, he maintains, a proportionate reduction of the high tides will take place, the beneficial effects of which he sums up as comprehending the drainage of London and its suburbs; the reclaiming of land from the influence of the high tide; the offering facilities for the safe, speedy, and economical erection of river-walls; the further deepening of the bed of the river; increased and ready dock-accommodation; shelter for vessels from storms at the mouth of the Thames; and the extension of railways in conjunction with the breakwaters.

### Miscellaneous.

**TO ASCERTAIN WHETHER A ROOM IS DAMP OR NOT.**—Place a weighed quantity of fresh lime in an open vessel in the room, and leave it there for twenty-four hours, carefully closing the windows and doors. At the end of the twenty-four hours re-weigh the lime, and if the increase exceeds one per cent. of the original weight, it is not safe to live in the room. — *Cosmos.*

**ABERYSKIR, NEAR BRECON.**—A vestry meeting took place on Friday, the 1st of June, for the purpose of receiving tenders for the restoration of the church. The designs are by Mr. Charles Buckridge, Oxford. The following tenders were opened in the presence of the contractors by the rector, the Rev. Mr. Morgan.—Williams & Sons, Brecon, 622l.; R. Price, Brecon, 542l.; Griffiths & Son, Brecon (accepted), 510l.; E. Winstone, Brecon, 441l. The works are to commence immediately.

**BIKENHEAD.**—On Monday, 4th June, it was stated at the meeting of the Birkenhead commissioners, that the net profits upon the supply of gas and water to the township, during the past year, amounted to 2,800l., and that in time the local rates would be very materially reduced from these sources. — During some remarks at the meeting of the Birkenhead commissioners recently, the chairman, Mr. John Laird, stated that the new landing stage for Woodside would be ready in twelve months, and that the contract had just been given to Messrs. Vernon & Son, the builders of the present great landing stage at Liverpool.

**RAILWAY MATTERS.**—It is decided to erect a new railway station at Kendal. The designs have been furnished by Mr. Worthington, of Manchester, and the cost is estimated to be between 7,000l. and 8,000l. — The new station at the Leamington avenue terminus of the London and North-Western railway is approaching completion. The building is composed of white brick and stone. The platform is 250 feet long by 12 feet, with entrance-hall, first and second-class waiting-rooms, and various offices. The building has been designed by Mr. W. Baker, the engineer of the company, and erected by Mr. Purnell, of Rugby, at a cost of about 4,500l. — A company is being formed for piercing a tunnel through the Simplon, in connection with a railway line which is to start from Geneva, touch at Thonon, Martigny, Sion, and Brig, and end at Arosa on the Italian side.

**PROPOSED CASCADES AND FOUNTAINS FOR THE VICTORIA-PARK, BATH.**—It is proposed, says the *Bath Chronicle*, to construct near the level of the river a filtering apparatus, and from thence to force the water up to a tank or pond (to be made in centre of paddock at the corner of Park-lane) by means of "Fryer's Water-Raising Apparatus." From the tank or pond it would flow on to Cascade No. 1, in upper dell, and winding round the dell flowing on to Cascade No. 2, in lower dell, and passing on, underneath the proposed ornamental bridge, down through pipes to the pond, and rising there as a fountain should, viz., a graceful display of water, unincumbered by inexpensive river gods and nymphs, or vomiting gurgoyles. From thence, if desirable and the funds will admit, Cascade No. 4 may be formed in the valley below the pond: the water would then return to its original source through the drains, unless the inhabitants of Norfolk-crescent desired to make use of it first to adorn the centre of their lawn. In raising the funds for the first cost no difficulty is apprehended, liberal offers of assistance having been already promised.

**IRON AND THE IRON TRADE.**—The London Association of Foremen Engineers (St. Swithin's-lane) have printed for distribution a paper read by Mr. James Robertson, at one of their meetings, on the "History of Iron and the Iron Trade." It is a sensible sketch of the subject.

**GAS AT EARLSTOWN.**—Since the introduction of gas into Earlstown (upwards of twenty years ago) the price of this useful article has never been below 15s. per 1,000 cubic feet. No wonder the consumption of gas is very small with a price so primitively and extravagantly high. A reduction of 1s. 3d. per 1,000 cubic feet, according to the *Kelso Chronicle*, has just been announced, making the present price 13s. 9d.; but the reduction is far too small to do any good either to the consumer or the manufacturer: it is still, in fact, all but prohibitive.

**PREVENTION OF BANKRUPTCY.**—Mr. David Smith, an extensive wholesale merchant, of Glasgow, and a county magistrate, has submitted a proposal to the Attorney-General of England for the prevention of bankruptcy. A study of the systems of bankruptcy in other countries, especially those of France, Belgium, and Hamburg, has suggested to him the expediency of enacting stringent rules, under severe penalties, for compelling every man who trades on credit to balance his books at least once a year, and providing that where a trader, at the end of any year, finds that he has lost all his own capital and is below par, it shall be imperative on him, under the penalty of imprisonment, to call a meeting of his creditors, and lay before them a statement of his affairs.

**MONUMENTAL.**—The committee, at Southampton, for the erection of a memorial to the late Alderman Richard Andrews, have resolved—That Mr. Brannon's design be adopted, provided Mr. Bryer and Mr. Brain will agree to enter into a joint contract to carry the same into effect, in accordance with the plans and specifications submitted for the same, for 320l.; and provided they do obtain two surveys, to be approved of by the committee, and that no Bath stone be used externally. — A monument, at the expense of the members of the Waterford Hunt Club, has been erected to the memory of the late Marquis of Waterford. It consists of a plain ancient Irish cross and pedestal, of Wicklow granite, placed upon a cubic base, constructed of stone, and 7 feet in dimension. The cross is raised upon the spot where the marquis was killed. The monument, including cross, pedestal, and base, presents an elevation of more than 20 feet.

**IMPORTANT TO WELL-SINKERS AND OTHERS.**—It is well known, remarks a contemporary, "that carbonic acid often accumulates in large quantities at the bottom of wells, and that its presence may be ascertained by letting down a lighted candle, which will go out as soon as the flame comes into contact with the gas. Many men have lost their lives from descending into wells in this state. M. Sylvestre has discovered an easy way of absorbing this fatal gas. He pours lime-water (water in which lime has been slaked) gradually into the well, allowing it to trickle down the sides; and then throws down some five or six pounds of quicklime in lumps. By the next day the carbonic acid gas is all absorbed, and the well is safe." Who M. Sylvestre may be we know not, but it is many years since this mode of absorbing the carbonic acid of wells was pointed out in our columns. We only mention what is now said as to it, because we still occasionally see recorded cases in which persons lose their lives from not adopting some such precautionary measure.

**CONDITION OF OUR MONUMENTS.**—Remarks have been justly made on the delays which take place in the completion and erection of our public monuments; but the utter neglect of these monuments after they have been erected is perhaps still more unaccountable. We pay extravagant prices for our statuary; yet, when a statue is once placed on its pedestal, paid for, and consigned to the blackening and corroding influence of the London atmosphere, no one seems to care any more for it. A few weeks ago the Prince Consort was invited to view the decorations of the arcades of the Royal Exchange; and it is to be hoped that some means were taken on that occasion to conceal from sight the statue of her Majesty, by Lough, which occupies the centre of the quadrangle, and which is now so begrimed and disfigured by soot that the features are scarcely discernible, and if seen by his Royal Highness, must have been a positive eyecore. A trifling outlay would suffice for cleansing and keeping clean all the public statues of London; but it is begrudged, and we act in respect of the smoke nuisance as if it were irremediable. — A. F. H.

**EFFECT OF THE REMOVAL OF DUTIES.**—A correspondent of the *Morning Star* gives statistics showing that between 1841 and 1851, when the excise duties on bricks and glass were abolished, the population of Great Britain increased not quite thirteen per cent.—the number of people employed in making glass rather more than fifty per cent.; the number of bricklayers, brickmakers, and dealers, rather more than seventy per cent.; and the number of other persons employed in the building trade, rather more than forty per cent.

**FRESCOES AT NETLEY ABBEY.**—Mr. J. Smith, of the Ordnance Office, Southampton, in the *Hampshire Advertiser*, announces the discovery of fresco paintings on the walls of Netley Abbey. Pieces of coloured ornament, he says, are still adhering to the walls, although to decipher them requires a considerable amount of patience, owing to successive coats of whitewash having been passed over their surface, which holds so firmly on to the original ground that it is almost, in many instances, impossible to remove it, whilst damp and mildew have been doing their subtle work, rendering what remains quite brittle or rotten.

**ARTISANS AND THE VOLUNTEER MOVEMENT.**—Through the zeal of the Rev. Harry Jones, incumbent of St. Luke's, Berwick-street, the Lord Lieutenant of the county has rescinded the rule which obliged all members of the Working Men's College Corps to be members of the College. A company is being formed at St. Luke's, subscription small and uniform inexpensive, to enable artisans to join the Volunteers without special pecuniary help from others. The "St. Luke's Rifles" will form a company of the "19th Middlesex," which was the "Working Men's College Corps," and now a Working Men's Corps, and have battalion drill with them: their company drill, however, will be held in the school-room, under St. Luke's Church, Berwick-street, on Mondays, Wednesdays, and Saturdays, from 8 till 10 p.m. We want to see working men in general, and operative builders in particular, taking a more active share in the movement.

**PREVENTION OF BOILER EXPLOSIONS.**—Recent explosions of boilers have induced the *Wolverhampton Advertiser* to call attention to an invention patented by Mr. Thomas York, of this town, in 1856. It is designated a "Patent Safety Valve and Low and High Water Indicator." Its peculiarity consists chiefly in blowing off the steam from the boiler when the water rises too high, or sinks too low, and when the steam exceeds the pressure applied by a spring, it escapes as in an ordinary safety-valve. The apparatus consists of a lever, from each end of which descends a rod, bearing a float. The lever is suspended within the boiler by a fulcrum, upon the centre of which it moves freely in a vertical direction. An iron box containing the valve and the spring (which is spiral) presses upon the valve.

**THE METROPOLITAN DRINKING-FOUNTAINS ASSOCIATION.**—The first annual meeting of this association was held on the 31st of May, at Willis's Rooms, Mr. Samuel Gurney, M.P., in the chair. From the report we learn that the plan of attaching money-boxes to the fountains for the donations of friends has been adopted, and the first money-box has been placed at the first erected fountain on Snow-hill. So far as the experience of four weeks justifies an opinion, it is very encouraging, and a sum of 8d. a day has been deposited in small coins varying from farthings to two-shilling pieces. The experiment is to be extended to five other fountains, when, if successful, it is proposed to supply every fountain with a money-box, when the erection will be more than self-supporting. Among the fountains in preparation may be instanced, besides that for the Royal Exchange,—the donation of Mr. Samuel Gurney,—a costly fountain, of Gothic design, intended for Palace-yard, or some other site contiguous to Westminster Abbey, the gift of Mr. Charles Buxton, M.P.; a fountain, of classic design, to be placed in the Strand, presented by Mr. Robert Hanbury, M.P.; and a fountain for which Mr. Theed, the sculptor, is preparing statues. Another fountain has just been erected in front of St. George's Hospital, Hyde-park-corner, the design by Mr. Westmacott, I.R.A. Mr. John Bell has also prepared some designs of both standard and mural fountains, and other designs are in preparation by Messrs. Wills. A turncock has been appointed, whose exclusive duty it is to visit the fountains at regular intervals, for the purpose of keeping them clean and in good order. A daily return is made by him to the central office. The past receipts of the association during the past year have amounted to 2,609l., and the expenditure to 2,346l., leaving a balance of 263l.

SASHES AND CASEMENTS.—Mr. John Brown, of Norwich, has patented an arrangement to render window-sashes and French casements dust and water tight when closed. The method of effecting this appears to be inexpensive and easy of application. Cloth padding, of a simple description, and a screw sash-fastener, being all that is required for sashes, and for casements, a small apparatus with padding. It is worth looking into.

THE BUSINESS OF THE LATE MR. THOMAS CUBITT.—We go a little out of our usual course to mention that the executors of the late Mr. Cubitt have relinquished that portion of the building business which up to the present time has been carried on at the premises in Grosvenor-road, Thames Bank, in favour of Mr. George Dines, to whom they have granted a lease of the workshops and premises. Mr. Dines has been with the late Mr. Cubitt and his executors for upwards of twenty-six years, and, during that period, has taken a leading part in the management of nearly all his larger works. We were indebted to Mr. Dines, on more than one occasion, during Mr. Cubitt's lifetime, for careful experiments as to certain desirable facts.

ACCIDENT AND LOSS OF LIFE, GUERNSEY.—On the 25th ult., a workman employed at the Methodist New Connection Chapel, in course of erection at Guernsey, was killed. This chapel is to be built on the site of a house that once belonged to the late Lord Saumarez. To accomplish this the old mansion has to be demolished. A great part had been taken down, when, in the act of bringing a vault to the ground, a quantity of brickwork fell upon one of the workmen: the others escaped. The accident happened through neglect on the workmen's part. The builder had given the necessary orders the day before, but, unfortunately, they had been disregarded. Instead of demolishing gradually, they took down some stones at the springing of the arch. This straining the arch caused it to fall, and before the deceased had time to escape the ruins had covered him.

THE COPPER TRADE.—By a special return, ordered by the House of Commons, of the exports and imports of copper and copper ore for the twelve months ending Dec. 31, 1859, we find that the total amount of copper ore imported into the United Kingdom was 71,277 tons, and copper wrought and unwrought, 25,105 tons. The total declared quantity of the copper ore exported was 987 tons, of which 921 tons were foreign, and 66 tons British. The copper, wrought and unwrought, exported amounted to 25,382 tons, being 22,788 tons of British, and 2,594 tons of foreign copper. The imports were received chiefly from Chili, Cuba, and Australia, while British India and France were the largest recipients of our exports; the former took 7,123 tons, and the latter 5,270 tons of copper.

A NEW MODE OF CONVEYANCE.—A prospectus has been issued of the Pneumatic Despatch Company, to be established for the construction of pneumatic tubes for the conveyance of despatches and parcels between various stations in the metropolis. The system has for several years been privately in operation, the Electric and International Telegraph Company having employed it between their central station in Lothbury and the subsidiary stations in Cornhill and the Stock-Exchange. It is now proposed to lay down a complete and extended series of public lines in London, on a scale which will receive not merely papers and packets, but parcels of considerable bulk, including the mail-bags of the Post-office, between railways and the district offices. It is considered, also, that it will be found desirable to connect the various Government establishments. The capital is to be 250,000*l.* in 10*l.* shares. The Marquis of Chandos is the chairman.

DISCOVERY OF ASSYRIAN ANTIQUITIES IN ARMENIA.—The discovery of "a perfect mine of antique art treasures," in some mounds outside the old Armeno-Assyrian city of Van, is spoken of by a correspondent of the *Levant Herald*. A couple of peasants were engaged in digging out some loose stones from the mounds in question, when they came upon, first one, and then a second bronze plate, thickly embossed with cuneiform inscriptions, interspersed with rude angular figures of men and animals. The pasha then despatched a party of explorers to the mounds, and the result of a few days' search was the discovery of a splendid bronze human-headed bull, about three-quarters life-size, a large winged eagle, and two elaborately carved serpents, all of seemingly the purest bronze. The exploration has not been carried further, and the pasha has hauled over all to the *Karabash* of the Armenians, who is about to melt them down for the sake of the copper! Won't he sell?

COLLECTION OF ENGLISH AND FOREIGN MSS. FROM FIFTEENTH CENTURY.—We see from a catalogue of sale issued by Messrs. Chinnock & Galsworthy, that 1,175 lots, forming only a small portion of the collection, will be dispersed under the hammer during the present month. The historical value of many of the documents referred to is very great, particularly those relating to the Stuart family and the time of the Commonwealth; those also of the reigns of Henry I, II, III, and IV, of France, are very interesting. The great aim, however, of the collector, seems to have been the full and almost perfect illustration of the History of the first Republic, and the Consulate and Empire of the first Napoleon.

THE METROPOLITAN RAILWAY.—On Tuesday Mr. Burchell, the solicitor to the company, appeared before a bench of county magistrates, at the Freemasons' Tavern, and applied to them, under the 85th section of the Lands Clauses Consolidation Act, 1815, to appoint a surveyor to value certain property in the neighbourhood of Gray's-inn-lane, which the company desired at once to take possession of. A good deal of discussion took place, and ultimately it was held that there was no proper proof that this property was a portion of that which was authorized to be taken under the Company's Act; and it was arranged that the application should be repeated.

GAS ACCOUNTS.—A report by Mr. J. McClelland, a Glasgow accountant, has been printed, in which the results of an investigation of the books of the City and Suburban Gas Company of Glasgow are given by order of a court of law, in connection with a case in progress at the instance of certain gas consumers, to ascertain, among other points, whether the profits of the company have exceeded 10 per cent. on paid-up capital. The accountant reported that the paid-up capital was 185,740*l.*; expenditure on works and buildings, 156,228*l.*; average gross income, 33,433*l.*; average working expenses, 20,983*l.*; average of gas made, 159,737,748 cubic feet; of gas sold, 130,498,300 cubic feet; of loss, 29,239,445 cubic feet (per annum, of course, or 18,300 per cent. on the make); average cost of manufacture, 3s. 2d. 590 per 1,000 cubic feet; average price to public, 5s. 1d., '486; average apparent profit, 1s. 10d., '896 per 1,000 cubic feet; average net income, 10,570*l.*; average dividend thence payable, 7,787 per cent.; average dividend from 1845 to 1858 paid, 8,200 per cent. (surplus from premiums on shares sold). Of late years the company had paid the maximum dividend of 10 per cent., free of income-tax. In 1853, about the period when this maximum dividend first began to be paid, the price had been reduced from 5s. to 4s. 7d., and this reduction, says the accountant, "formed, with the augmented consumption of gas, the chief operative cause of the increased surplus revenue of the company," and one of the elements of its "prosperous" state of progress. Since then, however, the price to its 25,000 consumers had been raised again to 5s., on the ground of a rise in the price of coal.

TENDERS
For building St. Luke's Church, Heywood, Lancashire; Mr. Joseph Clarke, F.S.A., architect.
Hay, Cochran, & Co. £11,652 0 0
J. Bramall 11,431 0 0
William Buxton 11,303 0 0
Bowden, Edwards, & Co. 10,291 0 0
Thomas Penk 10,060 0 0
High Yates 9,990 0 0
Mark Foggett 9,952 0 0
Edward Hughes (accepted) 9,589 0 0

For the erection of Three Houses on the New-road, Rochester, for Mr. J. L. Levy Messrs. Andrews & Son, architects:—
Kemp, Chatham £3,475 0 0
Spicer, Strood 3,218 0 0
Jennings, Rochester 3,598 0 0
Lilley, Strood (accepted) 2,555 0 0

For the erection of Seven Houses, Earl-street, Kensington; Mr. W. Sim, architect:—
For 4 Houses. For 5 Houses. For 7 Houses.
Cowland £2,914 0 0 £3,635 0 0 £3,167 0 0
Bird... No price given. 3,130 0 0 No price given.
Fish... 3,479 0 0 3,835 0 0 4,267 0 0
Mr. Fish's tender for the four Houses accepted.

For erecting Corn and Flour Store, Horsfall Basin, Regent's Canal, for Messrs. Waters & Steel; Mr. G. A. Burn, architect:—
Bird £2,986 0 0
Downs (accepted) 2,438 0 0
2,835 0 0

For works in erecting Offices, Warehouses, and Workshops for Messrs. Parkhoun, Gas Meter Manufacturers, College-lane, City-road; Mr. T. Taring, architect:—
Higgs, Lambeth £2,300 0 0
Patman & Potheringham 2,224 0 0
Brass 2,100 0 0
Myers 2,114 0 0
Roberts, Islington 2,130 0 0
Poster, Whitefriars 2,090 0 0
Batterbury (accepted) 1,989 0 0

For the erection of New Farmhouse, Offices, and Home-street, (with Cowshed, Cambridge-shire); Mr. Robert Hutchinson, of Huntingdon, architect. Quantities supplied:—
Stairs & Bridge £2,600 0 0
Frensh & Leach 1,114 12 0
French 1,750 0 0
Mason 1,741 0 0
Saint 1,739 10 0
Allison & Smith 1,720 0 0
Jobbott & King 1,726 13 0
Allen & Smith 1,690 0 0
Bunting & Son 1,650 0 0

For additions to the Plumbago Crucible Works, Bat-tersea; Mr. G. O. Leicester, architect:—
Fowler £1,117 0 0
Newman & Mann 1,075 0 0
Coleman 1,029 0 0
Wilson 990 0 0
McLennan & Bird 967 0 0
Downs (accepted) 954 0 0

For Roads and Drains on the Suburban Land Society's Estate at Bromley, Middlesex:—
Rivett £960 0 0
Ley 589 0 0
Leyton 479 0 0
Pound 452 15 0

For draining and forming Roads to the Building ground adjoining the Hartford-road, in Huntingdon; Mr. Robert Hutchinson, surveyor:—
William Mosher £637 15 0
Zachariah Hobbs 670 0 0
Samuel Mason 617 8 0
John Saint 506 0 0
Richard Brown 450 0 0

TO CORRESPONDENTS.

R. L. (shall appear).—R. N. S.—E. Y.—Two Years' Subscriber (see note at Wedd's, Hohen; and Fallston's, Newgate-street)—W. C.—J. P. E. H.—J. G.—E. D. (declined, with thanks)—J. P.—E. T. B.—E. A.—E. C. (would find the endeavour to prevent, a great risk)—W. M. (not very clear)—M. J. (the duty of a clerk of works is to see that the orders and intentions of the architect are properly carried out)—R. R.—Canon Gray—C. O. E. (we cannot attempt to pronounce on the expediency of arranging the provision of "quantities for estimating" is not ordinarily included in the work for which 5 per cent. is charged)—M. N.—E. W. T. (shall appear)—R. H. B.—W. E.—T. P.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and not to the "Publisher." Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ADVERTISEMENTS.

Just published, price 6*l.* or 1*l.* in boards, MEMORIALS OF WORKERS: the Past and the Future. By GEORGE COPPIN. Author of "The Social Struggle," &c. "This printed lecture should be read and thought over in the home of every peasant and artisan in Great Britain."—Art-Journal. London: GOSWOLD, Tremlett, and at the Office of "The Builder," 1, York-street.

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# The Builder.

VOL. XVIII.—No. 906.

Condition of London—Italians—Children.

**B**ETHNAL-GREEN was startled two or three weeks ago by an inquiry before the coroner touching the death of a woman which had occurred in St. Bartholomew's street. The evidence showed that deceased, her husband, and seven children, the eldest eighteen years of age, slept huddled together in one small wretched apartment, and the jury returned a verdict "That the deceased died from asphyxia, produced by the overcrowded and unwholesome state of the room where she had resided."

This overcrowding and other evils in a sanitary point of view, are still permitted to a lamentable extent. It may be noticed as satisfactory, however, that in many districts to which we have directed

attention, improvements have been effected. For instance, in the Soho district, where one of the earliest of our sanitary sketches was made, model lodging-houses have been raised; and close to Charlotte's-buildings, in Gray's Inn-lane, schools have been opened, improved dwellings have been erected, and a church is now rapidly rising. Nevertheless, the buildings described seven or eight years ago in Soho, and those in Charlotte's-buildings, still remain unchanged, in spite of the appointment of district boards, inspectors of nuisances, and the usefulness of the sanitary department of the police.

From time to time since the publication of our first statement respecting Charlotte's-buildings, we have inspected its condition, considering that this may be considered as a type of many other places which are thickly inhabited, and where, through ill arrangements, health and life are constantly sacrificed. At times when the public attention has been directed to this dismal spot, the dilapidations have been, to some extent, repaired, the dingy walls whitewashed, and some attention has been paid to the cleanliness of the back part of the premises. This partial benefit is, however, but temporary, for the north side of the place is as filthy and dangerous as it was nine or ten years ago. When we last saw it the pavement was broken, and the earth saturated with every kind of refuse. The closets were stopped and overflowing into the yards, and the atmosphere was so heavy that the people declared that they were not able to have the windows open. The condition of the interiors was equally bad, and no words can give an idea of the pictures of neglect which were there presented, close though it be to the life and wealth of a great London thoroughfare.

To one circumstance we would particularly direct attention. The time of our visit was about three o'clock on a Saturday afternoon. At that hour the butts were empty, and not a drop of water was to be had on that side of the court, nor would they have any fresh supply until the following Monday. It seems terrible that for forty-eight hours these poor people should be left without this important necessary of life. How can cleanliness or decency be expected under the circumstances? It should be borne in mind, moreover, that each of

these houses produces an annual rent of from 45*l.* to 50*l.* Surely for this there should be water and other means of comfort provided. The buildings on the other side of the court are in the charge of another person, and are in a better condition, while tanks have been placed for the reception of water, which prevent such frequent scarcity. Between this court and Tyndale's-buildings the contrast is remarkable. In the latter place there is plenty of water, with good ventilation, and order and cleanliness. We well recollect the condition of the rooms there before they were taken possession of by the Association, which has conferred so much benefit on the neighbourhood. A lodging-house, similar to that in Charles-street, Drury-lane, has been opened, and is well occupied. In parts adjoining, and towards Hockley-in-the-Hole,—the Italian quarters,—the neglect of sufficient water supply was much complained of when we last inquired, and this, undoubtedly, is one of the sanitary evils to which thousands of the poorer dwellers in the metropolis are subjected, particularly between Saturday and Monday.

In the winding courts and alleys which stretch from the Sessions-house, Clerkenwell-green, towards Smithfield, hundreds of people had no water. This neighbourhood certainly needs sanitary inspection.

In the course of our wanderings we glanced at several dwellings which have been licensed under the Common Lodging-house Act, and are overlooked by the police. Water is well supplied, and the houses are kept in repair; the closets are in order, and other necessities of health are attended to.

Remembering the beneficial effect which has been produced by the systematic exertions of the sixteen or eighteen sergeants who form the sanitary staff of the metropolitan police, and knowing the fever dens over which they have no authority, we feel the desirability of extending this power to houses which are let in tenements to numerous families of old and young. The law at present has no power in such cases, although the dwellings may be altogether unfit for human habitation, and be crowded from the basement to the roof. Thus human life is wilfully sacrificed, and sickness, immorality, and crime are surely generated.

No one who has thought carefully on this important subject, who has viewed the monster evil which exists, will deny that the better regulation of houses in large towns, crowded with tenants, is absolutely necessary. In many situations the amount of ignorance is startling. To persons thus situated the enforcement of sanitary improvements is necessary for the protection of themselves and children,—while to those of intelligence who may have been driven to seek shelter in such places the benefit of proper inspection will be readily acknowledged.

We have watched with attention the efforts of the sanitary staff to which reference has been made, and have noted their general civility and intelligence. In very few instances are their operations found fault with. Indeed, generally speaking, the poor people are glad of their care,—and sadly, indeed, is care needed. We earnestly hope that, before this session of Parliament is finished, another attempt will be made to obtain increased powers of inspection, which will force those who let buildings to the struggling classes to make them wholesome and fit for human occupation, and to ensure everywhere a sufficient water-supply and proper drainage. Enough, however, for the present on this head.

We mentioned just now the "Italian Quarter."

Amongst those who throng the dwellings in the back parts of Drury-lane and Gray's Inn-lane, Saffron-hill, the neighbourhood of Hockley-in-the-Hole, and some other localities in the metropolis, the wandering Italians, familiar to all who live in London, call for notice. The Italians, who come in great numbers to London, are of different classes, and have strayed from various parts of their beautiful and picturesque country. Some of them are casters and vendors of plaster images,—others manufacture and sell barometers, or cheap picture-frames,—others travel with "shows," organs

and animals of various descriptions; while a considerable number become waiters and servants at inns. Far away from their mountain homes and their friends, these strangers, in their different ways, make exertions in order to save a sum of money with which to return, and purchase some little property, that will enable them to supply their simple wants in inexpensive neighbourhoods.

In England, Germany, through the wild wastes of Russia, and other countries, the Italians, real missionaries of art, spread both instruction and amusement. Before menageries were regularly established, they roamed about with dancing bears, camels, and other animals. A considerable number of these visitors come from the north of Italy; these are generally more intelligent, and are better off than the poor peasants, who are natives of the Apennine region. The former of these come principally from the lakes of Upper Italy, and the valleys and declivities of the Alps. In these parts it has been the custom for many generations for the inhabitants of each district to follow some distinct branch of industry: for instance, one place sends forth vendors of barometers and mathematical and philosophical instruments; another place, stone-cutters; a third, house painters and whitewashers; another, masons; while the manufacturers of plaster figures come chiefly from Lucca.

In some instances these workmen only go to such a distance that they are able to return in winter, after they have completed a summer's labour. Others during the winter manufacture toys and other saleable matter, and they travel in the summer and dispose of them in the adjoining states. To such an extent is the roving disposition of the portion of the Italians above referred to carried, that it is seldom one-tenth of the male population is at home. The cultivation of the soil, which in many cases is but ill adapted to the purposes of husbandry, is generally managed by the women. At a very early age many of the boys are engaged to persons who have acquired a certain amount of capital and experience. Some of them learn the art of figure casting and painting, and others are entrusted with white mice or an organ.

A stated sum is agreed to be paid for their services, the employer providing them with food, lodging, and clothing, and depending for his remuneration upon the amount of the earnings of the lads. In London and other places, where the distance will permit it, the boys return with the result of each day's work to one of the lodgings just mentioned, and there receive their humble fare. If, however, they take a wider range, they may be absent for several days, under which circumstances they would purchase their own cheap food and shelter, and would hand over the money remaining on their return.

It may be, by this arrangement, that one Italian has more than a dozen lads of different ages in his employ, some of whom, in addition to their musical instruments, have monkeys, white mice, dogs, and other animals. This arrangement leads to much mischief; for the master, anxious to gain as much as he can, and, perhaps, not being aware of the dangers, in a sanitary point of view, crowds the sleepers into an insufficient space, and thus causes injury to health. In some of the inconvenient houses in the neighbourhoods alluded to, several bands of Italians may be found lodged in the different apartments. Of late, the sanitary police has effected much good; for although the overcrowding is still great, some attention has been shown to cleanliness. With the exceptions alluded to, it does not seem that the adventurous strangers are ill used. In the night we have seen picturesque and cheerful groups of them resting after their day's labour, some of them, perhaps, contrasting the fresh mountain air and the clear sky with the dusky and loaded atmosphere of Saffron-hill, but comforting themselves with the recollection of the object in view.

Some of the Italians, who originally came to England in the poorest condition, have accumulated considerable sums of money. Formerly, when bears, camels, hyenas, were a fashionable exhibition, successful Italians speculated in

these creatures to a considerable extent. It was not always that one poor man could afford the cost of the hire of the whole creature; so it was customary for two travellers to agree to take two quarters, the proprietor retaining two, and all the profits of the wandering were divided in the due proportions.

Hand-organs are lent to those who can be trusted at a certain rent: these instruments have been greatly improved; and, notwithstanding that a difference of opinion exists, it is clear that much pleasure is afforded by them in places where better music cannot be heard.

In various ways the operations of the wandering Italians are of much benefit. The savings they make during a course of years are invested in the improvement of the places of their nativity, and usually on their return they carry for sale a quantity of goods of English manufacture.

Generally speaking, the wandering Italians are a well-conducted body: they are seldom brought to the police-courts on charges of dishonesty, or seen intoxicated. At times brawls take place chiefly between them and the Irish, which give trouble, but in other ways these foreigners set an example worthy of the imitation of many of those among whom they reside.

So far as we have seen, both those who have charge of the young Italians and those who have the management of the lodging-houses provided for their reception are willing to attend to suggestions for improvement. It would be beneficial to institute a more rigorous examination, particularly at night time, and for the sake of these poor strangers to enforce the regulations made for the metropolitan lodging-houses.

Dr. Croly asserts, on good authority, that there are in the metropolis 16,000 children trained to crime, 15,000 men living by low gambling, 50,000 by constant thieving, 5,000 receivers of stolen goods, and 150,000 men and women subsisting by other disgraceful means. There are not fewer than 25,000 beggars. So that there are more than 250,000 persons in the London district, of all ages and sexes, who prey upon the honest and industrious part of the community.

The above are terrible figures. It is right to say that there is a difference of opinion as to the amount of the evil, but none deny that it is enormous.

This is a matter, however, on which there should be no doubt. We ought to know clearly and distinctly the extent of the evil which exists, in order to be able, with proper strength, to face the danger. A searching inquiry into the condition of the metropolis is one of the necessities of the age. We want some distinct data by which to judge of the increase or decrease of evil conditions: we should know to what extent the police and prisons have had the effect of checking crime: we should have evidence respecting the working of the detective body of the police force; and know if it would be advisable to increase this power or give greater strength to the visible part of the police.

The mode of improving reformatories and ragged schools—the treatment of the pauper population, both “in-door” and “out-door”—the medical relief of the poor—the working of societies for ameliorating particular conditions—the effects produced by the City Missionaries,—these and fifty other considerations suggest themselves to those who have thought carefully on the matter, and call for settlement.

For the purpose of solving these questions—to enable us to get at something like the true state of affairs—a careful and well-managed commission to probe the condition of the metropolis, to penetrate its shadows, would be the means of consolidating and making useful a large amount of knowledge, which is now of but little avail in consequence of its being dispersed. Especially should we seek to rescue the rising generation from the misery which threatens them.

Children have been called the poetry of the earth, beams of light, and “living jewels dropp’d unstained from heaven.” As Longfellow writes, beautifully:—

“Childhood is the bough where slumber’d  
Birds and blossoms many number’d.”

If society get but a gnarled, deformed, and hurtful stump instead of a flowering, gladdening, good-giving tree, the blame and crime are society's own. Every child is a white page on which may be written good things; an impressible mass which waits to receive beautiful forms. The blame be on those who permit the page to be blurred, and the forms to be made repulsive. Children are the sacred trust of the State. The neglect of this trust—a great sin—brings its own great punishment.

#### ON THE ORIGIN OF OUR EMOTIONS OF THE BEAUTIFUL.

AMONG the many subjects which have engaged the attention of metaphysicians not the least interesting or instructive is the inquiry into the cause of the pleasurable emotions which the presence of beauty excites in our minds. Numerous, diverse, and opposite have been the theories propounded, all of them unsatisfactory as a whole, yet most containing the germs of truth, though seemingly so contradictory. Some consider that it is a simple emotion due to our perception of design; and that is truly a noble theory, for without this ultimate decision of our intellect we feel not half the ennobling sentiments which inspire those who can “look from nature unto nature's God,”—who, feeling themselves in the presence of the Deity, hasten to offer the ovations of a full, hearty confidence in the overflowing bounty and benevolence of the Almighty, trustful in the wisdom of His laws and certain of His omniscience.

There are others who reduce our perception of the beautiful to an *original faculty* implanted in our nature for the sole purpose of admiring and being delighted with external nature. Again, there are a more limited circle who think it due to the *perception of relation and proportion*; while others, such as Alison, will admit of no inherent beauty in external form, and attribute all our pleasure to the *imagination*, being strangely obtuse to the self-evident contradictions contained in almost every page and sentence. Mr. Ruskin has given it as his opinion that it is neither sensual nor intellectual, but moral; a most difficult position to defend, though no doubt true to a certain extent. Among those who have penetrated deeply into the nature of things to discover the original cause of the beautiful, Oersted stands pre-eminent; yet his profundities tend more to obscure than to enlighten, and we rise from his book with an amazing impression of the greatness of his intellect, but hopelessly bewildered in our ideas respecting beauty. Burke's essay is clever, curious, and surprisingly pleasing, considering the dry, philosophical manner in which the afterwards great orator has chosen to write it. Hogarth's analysis contains an *artist's* notion of the beautiful, and is perhaps one of the most complete expositions of the practical knowledge required in the production and composition of works of beauty. It does not pretend to metaphysical investigation, but analyses the qualities, curves, and modes of composition governing the beautiful in art, on the simple supposition that we have faculties planted in our minds purposely for the appreciation of the beautiful.

Where, then, have arisen these opposite and contradictory theories? If we closely examine them, we shall find that, though each is at first extremely plausible, before many pages are turned over, both the reader and the author get hopelessly confused;—that in attempting to bend nature to their theories, they resort to the most contradictory statements, seemingly in quite an unsuspecting manner. We may be sure that where a writer has entangled himself in the web of his own ideas, he has commenced with but a limited view of the subject he treats of, and cannot take that comprehensive grasp so necessary for useful investigation. Many of the theories respecting beauty can be likened to nothing but a card-house, which juveniles build up with great assiduity and perseverance, until, overloaded, they tumble down, from their own inherent defects.

Such unsatisfactory theories respecting beauty must result from very imperfect and crude ideas, and we consequently find that it is usually assumed that the emotion excited is simple and definite—not complex, but of one kind. A very slight investigation will, however, serve to show us that the term beautiful is applied by mankind to objects totally dissimilar in their effects, yet it is in a most unaccountable manner assumed that the origin of all beauty is the same. This is the great fallacy which, if I succeed in overthrowing, I think will be a great step in advance towards a solution of the difficulty.

If we take a glance at the varied objects, emotions, and sensations to which we apply the term beautiful, it will be seen that it is invariably associated with a feeling that the object in which we discover beauty is possessed of a certain degree of goodness and perfectibility. It does not arise from a mere pleasure of the mind or body, for all pleasures are not beautiful: it would seem that it is a comparative term, used to distinguish the *highest* pleasures.

Thus an object which we may at one time have considered the very perfection of beauty, as our knowledge increases and our notation of the sensations affecting us becomes more exact, frequently ceases to be considered beautiful. Consequently, the term beauty is used in the sense of goodness and perfectness; and as our observation of external things, and our penetration into their inner nature, and our perceptions of the spiritual workings of the mind are enlarged, our opinions respecting the order in which we should place them must be constantly changing. Our ideas of beauty are dependant upon our judgment—and that which it pronounces to be good, the same we call beautiful.

As the pleasures of the human kind are both spiritual and material, it will follow that beauty is both spiritual and material; or, in simple words, dependant either upon mind or sensation, or both combined. Consequently, there will be sensational beauty as well as spiritual or mind beauty, and subdivisions too numerous to mention.

It will be well at this point of our problem to examine some of the things which we are in the habit of calling beautiful, which we shall find perfectly corresponds with this view of the question; and, indeed, the position here advanced is so self-evident, after a little thought, that it is extremely strange none of the writers I have named should have thought of noting this fact. Their minds seem to have been so bent upon proving the *common* origin of beauty, that they have neglected to examine even the meaning of the term, which, had they done, the whole would have unfolded itself as easily as the leaves of a book. Alison almost stumbles upon the truth when he proves that the emotion of beauty is usually complex; yet so perverse is the human mind, that when on the very point of discovering the great highway, it suddenly turns, and strikes off into a by-path. After pointing out the complex nature of the emotion, he suddenly refers the whole to the *imagination* or association of ideas, in doing which he gets so bewildered in the labyrinth of contradictions resulting, that it is almost hopeless for those who follow him to extricate themselves. The first species of beauty of which the mind becomes conscious is sensational: it arises from the mind concentrating its attention on the quality of certain sensations, and may be considered the lowest in the scale, though often the strongest in effect.

When a child is shown a brilliant bit of colour, say scarlet or blue, it will, by way of expressing its delight, frequently throw up its hands and look pleased. This it evidently does from a consciousness of a pleasing sensation conveyed to the brain through the nerves of sight. It instantly distinguishes the new impression from its activity being greater than that produced by the dull tones around. Now, if the child had happened to be in a room covered all over with a colour of the same depth and brilliancy, it would have evinced no pleasure at the sight of the scarlet or blue; hence it follows that the sensation is only pleasing during the transition, as the nervous energy is only active then.

This effect of colours we see takes place at first, and pleases us without any association of ideas intervening. As well might we say that the taste of the palate is due to the association of ideas, and that there is no inherent quality to produce the effect of taste in food, as to say that there is no inherent beauty; or that because when we shut our eyes we see nothing, declare that there is no such thing as material existence. As our knowledge and experience of effects increase, we associate ideas and sensations, both consciously and unconsciously, and then the beauty, though the basis is the original sensation, becomes of a mixed character,—complex, as I will explain as I unfold my theory.

If we examine how we become possessed of accurate ideas respecting the taste of various kinds of food, we shall find that we go through exactly the same process as we do when forming our ideas of the comparative beauty or purity of colours. We direct our attention to the sensations, note their various difference, and compare their effects. It will be seen that to do this requires an effort of memory, for we must have a distinct recollection of the former impressions before we can pro-

nounce authoritatively respecting their beauty. In this process of comparison, the mind takes a positive pleasure, and we unconsciously connect the amount of the difficulty overcome with the original sensations, and so enhance its beauty. Thus though a child is pleased with a bit of brilliant colour, it cannot by any means appreciate the full beauty of it. This brings us back to my first position, that beauty is a comparative term, used to denote the goodness or perfectness of any work. Hence, we call a neat mitre beautiful; an accurately built wall is said to be beautifully built; a well-made door is beautifully made. If any one could make a neat mitre, a good door, or build a firm wall, we should cease to use the term beautiful in connection with them.

Though beauty always implies the presence of a certain amount of goodness and perfectibility in an object, it is not on that account quite synonymous with either, for it implies often something more, and frequently the words cannot be used interchangeably. A fine, clear blue sky is softly and brightly beautiful; it is also good and perfect. Yet a rainy day, though in common parlance not a beautiful one, must be considered good, if we look beyond our own present and individual wishes.

It would seem that the beautiful cannot co-exist except with pleasurable emotions, and that the word is applied by mankind to those things which in their nature, when uninterfered with by any disturbing force or emotion, are capable of affecting the human mind with pleasure. Thus though a rainy day may be beautiful to a farmer, a strong wind to a mariner, or a suit of mourning to an undertaker, by the general consent of mankind it is determined that the nature of each generally tends to feelings otherwise than pleasurable; therefore they are not beautiful to the generality of mankind.

In the formation of a good taste it frequently happens that our former decisions affect present emotions—what the judgment has once acknowledged the eye afterwards recognizes as beauty. If the proportions of a column are those which we have found by constant observation to be just sufficiently strong to carry the superimposed weight without much effort, we say that the proportions are elegant. If, on the contrary, the columns are very stout and closely set, we say they possess massy dignity. Now, in this there must be some unconscious reference to former impressions, for were the material of the latter of such a loose nature as to render the whole insecure, no dignity would result. The same with costly materials—the main beauty of these consists in their durability, polish, texture, colour, and costliness. However good any imitations are, the moment it is discovered that they are neither so durable nor so costly, dissatisfaction is sure to ensue. Of the value of costliness we have a striking illustration in the comparative effect over the mind of marble and plastic figures. In a large hall I have seen both in proximity, of which, what with dust and distance, the difference of material could hardly be detected. As the eye ranged over the whole, without special thought as to whether they were all of marble, the effect was almost equally good, the plaster figures scarcely suffering in an æsthetic point of view. When, however, the eye discovered the difference in value, they lost incomparably. Marble, we know, is a much finer material, and the recollection of this, together with its great value, influences our judgments. Even if it were possible to manufacture a marble in every respect equal to the natural stone, and at one fourth the cost, though æsthetically the effect would be exactly the same, we should not be half as well satisfied with the result. The Greeks had the finest marble in the world, but as it was easily obtained and in large quantities, they scrupled not to cover the surface with a thin coat of fine stucco, to receive paint. Horrible barbarism! it is said. Human nature, replies our judgment.

The theory of unconscious association accounts in a much more satisfactory manner for the disgust which many people feel towards imitations of costly woods, stones, and other valuable materials, than the common one of untruthfulness and effort at deception; and, indeed, it also accounts for the effect of all those theories which have been imbibed from a one-sided and partial view of a question. For instance, we establish as an axiom that untruth is immoral, and to be despised in every shape. So far so good; but we must estimate truth by intention, otherwise it is but verbal. The intention of *graining* I take to be, not for the purpose of deceiving us respecting the nature of the material beneath, but to give a fine glossy, varied, and lasting surface to the wood. There-

fore, on principle I do not object to it; while others, who hold different sentiments respecting its intention, think the contrary. That graining will, when well executed, be often more durable and more brilliant than the natural wood, admits of no dispute. The colours are likewise more under our control and the effects within our reach greater. The propriety of an imitation must be judged of by the success of the effect as a decorative feature; independently of this there is a real pleasure in seeing a good imitation,—as when the great Turner, attracted by a bit of oak graining next to one of his pictures, exclaimed, "The fellow that did that knew how to paint."

When the intention of an imitation is to deceive, and it fails, we pity the meanness of the device. When one material is imitated in another, to which its statistical principles are altogether opposed, we are disgusted.

But all imitation is not a gross attempt at deception. We have only to go a step further than those who pride themselves so much upon the honesty of their materials, and prohibit imitation altogether, to condemn festoons, wreathed capitals, and all naturalistic foliage. Some do even go as far as to condemn decorative ornament painted in natural colours, but here an insuperable difficulty in the practice of the old Italian Masters presents itself,—a difficulty that all the distinctions in the world will not help them over.

Many have been the devices concocted for reconciling the difference of opinion respecting honesty of purpose, in which the article *common sense* has been strangely neglected. The whole matter lies in a nut-shell. Imitation, which has for its object mere ostentation, disgusts us. A gilt chain is a moral swindle, and excites either our anger, pity, or laughter, for it professes to be solid gold. On the contrary, a gilt moulding does not, for we know that it is gilt solely for effect, the size preventing even the most ignorant from being deceived.

Unconscious and imperfect association of ideas is one great cause of the difference of taste exhibited by various people, and nothing is so likely to lead us from the truth. All association, to be true, must have its foundation in nature. Expressional beauty is the result of associations of this sort: it arises from the discovery of analogous impressions. Thus, in saying that a precipitous cliff possesses *stern grandeur*, we mean that it impresses us in a manner analogous to the effect produced on the mind by a firm and severe aspect. In this we may distinguish the difference which lies between *expressional* and *sensational* beauty. Sensational beauty chooses words for its expression drawn from the sensational vocabulary, such as sweetness, harshness, softness, hardness, &c., clearly showing that the effect of the picture on the mind or senses is analogous to that sensation which originally suggested the term. One relates to an *impression of the mind and imagination*, producing an emotion of awe; the other relates to the direct physical effect on the nerves.

Unless the association which moves us is founded in natural laws, it is accidental, and as such should have no influence on our taste; it is here where the judgment comes into play to form the correct taste. God gave us passions, emotions, desires; but He also gave us reason to direct and control them: passion is the motive power,—reason, the guide. Unless we have intellect, it is impossible that we should select the good from the bad, the beautiful from the vicious. It is folly, then, to let our likings blindly lead captive the imagination and intellect, and shows how cautious we should be in approval or condemnation. Never like a thing until you find a reason for it, or *vice versa*, would be a good axiom for the formation of a correct taste. Naturally, however strong a man's tastes may be, they are constantly changing and advancing (or ought to be), as he penetrates more deeply into the nature of the beautiful.

Strong contrasts give power in expression, as in the angularity of the oak; easy curves and cadences, sweetness. The sublime is but a series of magnificent contrasts, which amaze the mind by their vastness. Fear heightens the effect, as when on the edge of a precipice, wondering at the depth below, we suddenly and involuntarily slither and step back. The awful possibility of falling where sure destruction awaits us,—the terrific crash, the maimed limbs, and lifeless trunk are instantaneously pictured by the imagination. The sublime, therefore, results from the association of ideas, as does, also, every case where the *emotions of the mind* are called forth.

The sympathetic chords of the human soul vibrate in unison with the inner meaning of nature. The imagination penetrates the superficial coat enveloping her works, and sees, as

through a glass, the inward workings and soul of matter. It needs more than the artistic eye, the keen sense, or the contemplative mind, to discover her hidden meaning, and feel, when communing with her, as if constituting a part of the scene before us, or as if the unthinking and lifeless matter were endowed with sentient faculties and sympathetic feelings.

The associations connected with certain forms may be said to constitute part of their inherent beauties when the impression made upon the mind is constant and unchangeable. Expressional beauties are dependant upon association, and give character to every scene. They are the main test of originality in art, and show the comprehensiveness of mind possessed by the designer, for expression is unity—the idea of the whole impressed upon the mind in its oneness. The false architect joins a number of forms possessing no common coherence—a confused mass of meaningless ideas,—a second Babel of tongues, all speaking, and no one comprehending. On the contrary, unity may be compared to a thousand men at work upon different parts of an edifice, yet having one common object, and directed by a single mind. That expressional beauties are also inherent beauties, I think no one, unless hopelessly confused by a perusal of Alison, would attempt to dispute. I take an inherent beauty to be a beauty that is not dependant upon accidental association, for if the form of an object constantly impresses us with the same ideas, it must do so by virtue of the nature of the form itself. As well might we say that the taste of sugar is due to association, as to attempt to prove that because we do not always feel the same emotions, therefore the beauty is in the mind, not in the object. Sugar itself has not the same taste at all times. Sometimes it sickens us; and in like manner the disturbing effect of accidental associations sometimes destroys the proper emotion due to the form. When the mind is pre-occupied, an object may pass before the eye without our perceiving it; yet, without doubt, it must, at the same time, have been mirrored upon the retina. Though we may shut our eyes to external things, we cannot doubt of a material existence. We do not at the time see them, but that does not prove their non-existence. So it is with beauty; the mind is not always attuned to receive pleasing impressions, and what will at one time delight us, we view at another time with perfect indifference, or perhaps disgust. The eye may perceive and acknowledge the beauty, yet the mind may not receive the slightest satisfaction from viewing it.

The imagination is dependant upon the conscious association of ideas. The poet gives expression to the mute feelings of mankind. We are enraptured with a bright sun, with green fields, and the full foliage of summer. We are pleased, but we know not why; for, if asked to give a reason for our delight, we are usually unable to get beyond a few unsatisfactory common places or imane repetitions. The poet's imagination penetrates the inward springs of thought, and vividly pictures in its bright, shining images, the common connection and relation between matter and ideas, the object and the conception. Imagination brings together the points in which things agree. The analytical faculty separates and arranges. To form a correct taste, there must be a balance of the two faculties; the latter must control the former, and bring its life-images to the test of reason.

In the exercise of our imagination lies the consciousness of the similarity of ideas. Most people are unconsciously poets; they receive the same impressions, feel the same emotions, experience the same delight, yet, from their incapacity to create tangible images illustrating their feelings and ideas, their impressions die with them. The act of discovering our ideas by clothing them in the garb of imagery, is a pleasure entirely distinct from art beauty; for the painter, though he may penetrate beyond mere surface form, cannot give tangible expression to associations. He presents to us the picture, and each must read the interpretation in the way his own tastes lead him. The poet, on the contrary, gives direct expression to thought, and reads you his interpretation of nature in a manner that cannot be mistaken.

The crowning charm of all art, architecture included, draws its force from the imagination of the observer. Æsthetic beauty is nature itself; poetry is its interpretation. What is more common than to observe, in reference to some matter-of-fact individual, who persistently and dogmatically refuses to see any utility in a thing which does not minister directly to material or bodily comfort, that he has no *imagination*? This is certainly a tacit admission, that the main delight

of the human mind in beauty is due to the imagination: we are pleased with colours, satisfied with form; but the imagination holds us enthralled, enraptured, and enthusiastic. The vivid pictures of beauty floating before the artist's mind, entice him onward to the goal of perfection. As we walk through the streets of a large town, and view its beautiful buildings, dreams of prosperity, wealth, refinement, learning, science, and art, are indulged in, till wrought up to a key of intense sensibility, the mind is ready to receive deep impressions and lasting emotions. A person of unimaginative mind feels no such pleasures; he dwells, perhaps, on the number of inhabitants, the height of the buildings, the extent in square miles of the city; or, if of a modern turn, the sanitary condition of the houses or streets, the mode of sewerage, or the supply and quality of the water,—all very important objects in their way. He attaches no ideas to, or has no conception of these matter-of-fact ones; his mind is eternally upon the comfort of the body, and never rises into the region of poetic fancy. To illustrate my meaning, we will suppose a stranger in London for the first time,—a man of imagination. He will, perhaps, compare her with ancient Rome, and from the accounts transmitted to us through nineteen centuries, attempt to picture Rome in all the pride of glory and conquest. From that he will proceed to develop the difference of the two civilizations,—the grandeur yet debasement of the one, and the political privileges of the other. Gratified with the superiority of modern civilization in reference to the mass of mankind, he will thank God that His laws are those of humanity and progress. St. Paul's Cathedral, Westminster Abbey, and the Parliament Houses will by turns excite his attention and admiration; the colossal grandeur of the one, and the beauty and age of the other, enshrining as it does the chiefest of those whom England has delighted to honour, and will hold famous so long as genius, virtue, and manly devotion are prized; the splendour of the modern palace where the representatives of the people meet to protect the country's honour and pass laws for her well-being, present such a mass of association to every patriotic Englishman, that he must be cold-blooded indeed who does not feel his heart warmed and his conceptions exalted.

Is it not apparent from this that the imagination of all our faculties yields us the most delight, and constitutes through its images the greater part of the pleasure we receive from the perception of beauty? As to the imagination is due the first conception of a beautiful design, therefore the imagination takes most pleasure in afterwards interpreting it. Our pleasures would be small indeed were we left only to sensual beauty; our feelings would be dulled and our senses blunted could we see only the intellectuality. The sensual, the intellectual, and the imaginative must unite in one harmonious whole before we can rejoice in the fulness of gratification. It is indeed, so difficult to find each kind of beauty distinct and separate, that most of the treatises on the subject end in confusion. The first impressions of colour may be considered to be entirely sensual in the pleasure which they give. A problem in "Euclid" contains intellectual beauty, abstract, pure, and unalloyed; but the third it is impossible to find except in conjunction with one or both of the other two. In poetry, being prohibited by the mode of expression from the exactness and precision of painting, and intellectual beauty, being by itself in a poem a pure impossibility, imagination constitutes its chief charm.

The three kinds of beauty are so mixed up and complicated in their effects, that it is all but an impossibility to tell with certainty to which class we must attribute certain emotions. For instance, on examining a noble classic portico in the full blaze of a mid-day sun, the unprejudiced mind feels fully and deeply impressed by the glowing grandeur of the sight. Then whence our pleasure? We know that to design well we must enter into the soul of the dull stones, even as the orator enters into and forms a portion of the soul of his audience. We must vivify our materials, or we cannot have any hold on the human heart. Dull conceptions and rapid thought never conceived anything worth preserving. The lifeless stones must receive their impress from *mind*, and then they will speak to others intelligibly, eloquently, and well. Still we cannot point out or analyze the separate springs of our emotions, and if we are asked to give an explanation of the causes of our pleasure, we shall probably attribute it to graceful proportion, harmonious combination, variety, play of light and shade, or strength of expression, recognizing the original cause to be an æsthetic impression. The

æsthetic sense must be satisfied before the imagination can delight us with its images, for observe, that the imagination in architecture can scarcely be said to discover inherent beauties, but rather to heighten them. Beauty of imagery is a beauty independent of the object which excites it; it is a mental beauty,—a discovery of relation, similarity, and connection. Æsthetic beauty is an impression of beauty associated with sensational effects. Sensational beauty may also be modified in its effects by association; red may be associated with warmth, blue with cold,—one is called a refining colour, the other a prominent one. Thus, then, our simplest ideas of beauty may be both sensational and associative, and the delight we take in a certain thing may be owing to our generally finding it associated with something which naturally provokes pleasing sensations. Sunlight derives part of its beauty from association, for it presents to our minds a picture of activity, vitality, and happiness. The beauty of many natural things is owing greatly to their brightness: the mirrored surface of water, the clear brightness of the sky, and the shining coat of gum laid over the upper surface of most foliage, are in themselves great attractions. Who can doubt that it is due in part to association as well as to sensation? Artistically speaking, it is æsthetic and mind beauty, but in its great power over the generality of mankind we must look to pleasing association as the cause.

Again, the pleasure which we feel in objects of beauty is due in a measure to the direct evidence of mind. The mind reads mind even as the imagination interprets works of the imagination. In the case of a good design we attribute part of our satisfaction to originality, confirming at once the origin of the pleasure. Many of our pleasurable emotions are also to be ascribed to the indirect association with mind. The pleasure which we feel in the noble outlines of St. Paul's is indirectly associated with admiration for Wren. He is the good genius of the place: though his spirit be passed away, he and his work are inseparable.\*

T. MELLIARD READE.

#### ON THE ORIGIN AND DEVELOPMENT OF THE USE OF CRYPTS IN CHRISTIAN CHURCHES FROM THE EARLIEST PERIODS.†

HERE and there, however, are small chambers, commonly called "cubicula" or crypts proper, of the greatest interest. In them the Primitive Christians are said to have assembled for a species of service, called by Tertullian (*ad Uxor. i.*) and by St. Cyprian (*de Lapsis*) *συναγωγὴ*, or gathering together; but this is simply impossible, as out of some fifty or sixty described by Aringhi, and which he gives the dimensions, the largest is only 15 feet by 7 feet 6 inches: the greater part being only nine or ten palms (about 7 feet 6 inches) square, while those lately discovered by Perret, and published by the French Government, seldom exceed ½ metres each way. As has been said before, they are generally cut out of the solid tuff rock. The probability is, they were oratories, or perhaps mortuary chapels. That of St. Hermes, who is said to have been a prefect at Rome, who suffered martyrdom in the time of Hadrian, contains a tomb, which is to this day occasionally used as an altar. It may be convenient to describe this crypt as a type of very many others. It is about 13 English feet in length, by about 6 feet 6 inches in width and about 8 feet in height, and arched like a barrel vault. It is approached by some steps leading out of one of the mazes of passages before described; it is plastered with a fine intonaco, and filled with paintings, as, in fact, a large majority are. The tomb at the end is, in fact, a sarcophagus; the top of which is plain, and the front is sculptured in three compartments. It is supposed there were two bodies buried at the end (besides that of the saint), four on the right side, and four on the left, besides three smaller spaces which probably held the bodies of children. In the centre a lamp has been suspended. This crypt of St. Hermes must not, however, be confounded with the church dedicated to that saint, which is of considerable size; and though now entirely covered over, apparently was originally only partly sunk in the earth, as there are a sort of clerestory windows, which gave light apparently through openings resembling the walls round the area window of our houses.

The illustration (Baldetti, pl. 2) shows another crypt, which is in the catacombs of St. Agnes. It is groined, and on three sides has tombs, which have been used as altars. On one side is a large chair cut in the solid rock, said by him to have

been an episcopal seat; by others the seat of a priest, while giving instruction to catechumens. Such chairs, however, are not uncommon in these crypts. In one given in Aringhi, vol. ii. p. 81, there are two similar chairs cut out of the solid tuff, and a bench of the same kind which goes round the other three sides of the room. It is said, but on what authority I do not know, that the second seat was for the deaconess, and used by her at the catechising or instructing the female converts. The crypt is, however, but 8 feet long, 7 feet 6 inches wide and 8 feet high, and has contained eight bodies, besides one (probably) over the door. In addition to those with arched or groined roofs, there are some of which the ceilings are quite flat. The crypt, called the oratory of St. Helena, is of this class; it is supported by four columns each, at a little distance from the wall. Sometimes the tombs were covered by a sort of grating carved in marble, through which visitors might look, and probably view the coffin of the martyr. A very curious one is found in the crypt of St. Calixtus. The grating is of peculiar form, and much like that under the altar at St. Nereo and Achilleo.

It is the opinion of Seroux D'Agincourt, and seems a very probable conjecture, that the idea of these crypts was taken from a species of construction common among the Romans, where a "sacellum" containing an "ædiculum," or shrine, to the tutelary god of the family, was erected over the "columbarium," or place of depositing the urns which contained the ashes of the different members of it. The illustration shows one not far from the church of St. Agnes. It is wholly of brick, even the capitals of the columns being cut out of that material, and is supposed to be of the time of the early emperors. The shrine of the genius of the family is above, and below is an arched chamber, which was the sepulchre. On each of the four sides of this lower part is a niche, probably intended for the statues or "imagines" of the principal members, and eight other very small niches, each of which contained two urns full of the ashes of the dead. There can indeed be but little doubt, that these Roman structures (which were a combination of the tomb and the oratory) gave the origin not only to the crypts of the ancient and medieval church, but also to those picturesque tombs now so common in the cemeteries of Italy and France, where the family vault is below, and above is a little chapel, whose grated door displays an altar and crucifix, where the relatives repair at certain times to pray and to suspend crowns of "immortelles" in memory of the dead.

It will not be within my limits to describe the various objects found in these crypts. The greater part, as I have said, contain paintings, some of very great merit: the subjects are mostly from Scripture history. There are also, as might be expected, many rings, coins, lamps, &c. found plain chalices of mixed metal have also been discovered, probably eucharistic; strange and horrible instruments supposed to have been used for the purposes of torture; phials of glass, in which, it may be now to some to hear, are paintings. M. Perret is said to have made no less than eighty-six copies of paintings on, or rather <sup>in</sup> glass in the various catacombs. To describe the symbols found on the tombs and the inscriptions would fill many volumes. They comprehend not only sepulchral inscriptions, the history and memory of the dead, pious ejaculations, religious emblems, but in many cases delineations of the instruments of the worldly calling or profession of the departed.

There is one, however, of great interest to the architect, as probably forming the tomb of a mason or sculptor. There are represented the ordinary compasses, callipers, a rule, square, level, mallet, and chisels, and what is more curious, an instrument much resembling a trowel, and which has been surmised to be intended for the delineation of ellipses.

A few words, however, may be said as to the style and date of these crypts. In the admirable work of Seroux d'Agincourt a very curious parallel is given between the pictures found in the Pagan tombs and those in the Christian crypts. The author is inclined to think they range in point of style and date from the second century to the eighth, and in instances at Naples even later. He gives as a parallel the paintings in a tomb discovered by Bartoli near Rome, which is clearly of the time of the Antonines and those discovered in the crypt of Saint Priscilla, which may be said to be identical in point of style.

That many of the paintings in the Christian crypts must be of very early date is also indicated by their still preserving some traces of Pagan

\* To be continued.

† See p. 324, ante.

emblems. Thus the Muses still exemplify harmony; and for some time Orpheus, with his lyre, attracting the beasts around him, was given as an emblem of our Saviour: and this is of frequent occurrence, and being surrounded by Scriptural subjects, as Daniel in the Lions' Den, Moses striking the Rock, the Raising of Lazarus, all prove them not to be the tombs of Pagans, but of Christians; and they also show how the memory of Orpheus was associated in their minds with the idea of the law-giver, the leader of civilization; and, which is perhaps still stranger, to typify the inventor of fine art; for it has been too much the case to represent the early Christians as stern ascetics, for whom poetry, music, art, and architecture had no charms.

Again, the whale swallowing Jonah is exactly like the dragons on the walls at Pompeii; Elijah departs for heaven in a regular classic quadriga; and the three kings seek the Saviour, each having on the Phrygian cap. On some are representations of persons dining together at a table, not reclining like Romans upon the lectum or bed around the triclinium, but seated in chairs. These we know, from the inscription *αγαπη*, written on them, must be representations of the "love feasts" of the early Christians. Another curious subject would lead us to believe that the Christians often employed heathen artists, for on one of the tombs the sculptor has probably forgotten and cut the usual Pagan D.M., or Dis Manibus, but has recollected himself, and struck his chisel across the letters, and placed the well-known Christian monogram by its side. These last-cited circumstances, however, prove but little, as the *αγαπη* are continued in churches as late as the sixth Council of Constantinople, commonly called the Council in Trullo, which was at the end of the seventh century, and if the tradition as regards the celebrated monogram be correct, the inscription alluded to must at least be as late as the time of Constantine. Of course without direct evidence, it is difficult absolutely to pronounce on such a point; if, however, we may be allowed to reason from similarity in art, we may believe some of these crypts to be as old as the third if not the second century. The art, however, gives an idea of wealth and refinement among the early Christians, which we are usually taught not to expect at that period. It seems still more extraordinary that they should be permitted so to adorn their tombs. It must have been not only an expensive work, but one which must have taken up a great deal of time, and therefore could hardly have been done, at any rate, to such an extent, without the knowledge of the authorities. It must, however, be borne in mind, that the persecutions broke out at intervals, and then ceased; and, according to the worst accounts, the Christians had peace for more than 140 years out of the three first centuries.

If the internal evidences as to art give us no certain data, those as to architecture give us less. There are no distinctive marks about the construction of the passages, or the arching, or groining the crypts, that differ from what we know decidedly to be Pagan work. It is true that the details of the capitals in the crypt at S. Agnese, mentioned before, seem to be Classic, but those in another of the same crypts, given by Perret in his magnificent book, seem very late indeed, and can hardly be called Classic work. Still more unlike are the caps of the crypt of S. Pretextatus, given in the same book; they certainly must be referred to a late period; while a corbel in the same crypt, discovered in 1846, is quite unlike anything Classic, but rather resembles Byzantine work.

I fear this long account of the subterraneous world must have weary'd my hearers. I must now crave of them,—

"Though long detain'd,  
In that obscure sojourn, while in my flight,  
Through utter and through middle darkness borne,"  
to return to the upper world, and see what effect the objects below had on those above.

My hearers will remember the law of the Romans, quoted some time back, on extramarital interments. It appears that frequent attempts were made from time to time on the one hand to evade and on the other to enforce it. Adrian passed a law, fining any person 40 aurei (about 30*l.*) who buried any person in cities. Short as was the time between his reign and that of Antoninus Pius, we find (from Julius Capitolinus) that the latter was obliged to re-enact the same law, and that a few years after Domitian was obliged to do the same. The consequence was, all the Christians, whether martyrs or not, were buried, not only without the city, but also without the pomerium, or suburbs, as Sidonius Apollin-

naris (i. 5) tells us. Constantine seems to have been the first buried in a city. Eusebius (Vit. Constan. iv. cap. 71) says he was buried at Constantinople, in the Church of the Apostles; but St. Chrysostom (Quod Christus sit Deus) says "in the porch without the church, so they who were diadems think it a favour to be buried so that kings are the fisherman's doorkeepers." It will be unnecessary to go through the history in all its points; it will suffice that the Council of Braga (A.D. 563) gave permission for men to be buried in the churchyard in cases of necessity (*si necesse est*), but on no account within the "walls of the church." The claim, however, to lay their bones under a holy roof grew so on men that we find a council at Mayence deciding that "no one should be buried in the church but bishops, abbots, or worthy priests, or faithful laymen;" and at last we find the Council of Meaux (Meldense) leaves it to the bishop and presbyter to settle who should be buried in churches and who should not. The result from that time to the present is well known.

But to return to the other branch of our subject. When the persecution had ceased we naturally find the remains of those who had testified their faith with their blood held in greater reverence day by day. These tombs were first visited by those who dwelt near, and then became an object of pilgrimage to those who lived afar off. Pride of such a situation as the proximity of a holy grave in some, and the love of luxury in others, caused all sort of pretences to be set up to the possession of a martyr's tomb, or relics, and these like all other possessions, soon became objects of barter or sale. In the "Codex" of Theodosius (lib. ix. tit. 7, de Sepul. Violat.) we find this law:—"Let no one move a corpse once buried to another place; let no one take away or make merchandise of the body of a martyr; but, nevertheless, if any of the saints is buried in any place for the sake of venerating him, let them add [or construct] any fabric which they please as a martyrrium." That this trafficking in relics of saints and bodies of martyrs had become scandalous, we learn from St. Augustin, who wrote about this time. He says ("De Vita Monach." c. 28), "The most cunning enemy of souls has sent forth everywhere so many hypocrites in the habit of monks, going about the provinces, without any mission, never fixed, never settled, some selling the members of martyrs, if, indeed, they are members of martyrs; others make broad their phylacteries," &c., &c. This state of things may also be still better illustrated by a solemn canon of the fifth council of Carthage (A.D. 437). It is the 14th chapter, and the title is "Concerning churches [hasilicis] which are dedicated without the relics of martyrs." The canon runs thus:—"Whereas, altars, everywhere, through fields, or by roads, are set up to the memory of martyrs, in which no bodies or relics of martyrs can be proved to be buried. Let them be pulled down by the bishops who preside over such places, if it can be done. But if it cannot be done on account of popular tumults, let the common people be admonished that they should not frequent such places, so that those who think rightly should not be caught and bound by any superstition." Then certain principles are laid down for ascertaining the truth in such cases, and the canon concludes,— "As to those who, through dreams, and certain vain quasi-revelations, put up everywhere the altars of men, let them, in every manner, meet reprobation."

It is not my intention, nor would it be in place, to go into the history of the increasing reverence paid to the relics of martyrs. It will be necessary, however, to mention that people were not content that the bodies of holy men should be venerated at their tombs, but a system of removing the relics into different churches now prevailed, which system was called "translation." The earliest mention I have found of this, in the works of the ecclesiastical historians, is in Socrates Scholasticus (lib. vii. cap. 25). He mentions a sect of Novatians, who dug up the body of Sabbatius from the Isle of Rhodes, and conveyed it to Constantinople, and prayed on his tomb. Atticus, the bishop, however, caused the body to be removed (this must have been about A.D. 425). The same author (vii. 44) says that Proclus, about fifteen years later, removed the body of St. Chrysostom, who had been buried at Comana, to Constantinople, and laid it on the left side of the Church of the Apostles. But before this we have long accounts by St. Jerome of the deposition of the bones of SS. Peter and Paul under the altars at Rome; of SS. Andrew, Luke, and Timothy, and Sannol, the Judge of Israel, at Constantinople. But we have no time to enter into

details, which may be found in Baronius, and in the letters of the curious controversy between St. Jerome and Vigilantius. Suffice it to say that in almost every church relics of martyrs were deposited under the altars.

This, at first, was done by simply making an opening under the altar, in which the bones or other relics were deposited, the front of which was closed by a sort of grating carved out of marble. It must be remembered that in the early Basilican church the altar did not stand against the wall, but at the chord of the arc of the bema, or tribunal, on the edge of the raised platform itself, behind which, in the middle of the apsis and against the wall, was the *θρονος*, or seat of the bishop, and on each side of which were the seats of the presbyters, ranged in the form of a semi-circle. To this day it is so in all churches which claim either to have been erected by the early Christians or re-erected on their foundations; and, to this day, in all such churches, the priest says mass at the back of the altar, with his face towards the people, instead of the opposite method which is usual in other churches.

This place for depositing the relics was called the "confessionne," or place where the relics of those who had confessed the faith are deposited, and this name is retained to the present day. The simplest and no doubt oldest form is that which was at the church of the Quattro Incoronati, before the alterations, and which was a simple aperture under the altar, about 2 feet wide. Very much like this was that at S. Nereo and Achilleo, which is closed by a curious grating, resembling in design very much that in the crypt of S. Calixtus, mentioned above. At S. Maria in Trastevere, the "confessionne" is a sort of small chamber, about 5 feet square, also under the altar. As time went on, the confessionne becomes larger, and more and more resembling the crypts in the Catacombs. At S. Maria, in Domnica, it is in reality a small crypt, about 13 feet by 10 feet, and is partly below the floor, and approached by a descent of five steps. In this is a sarcophagus, containing, it is said, the body of St. Ciriacus. At S. Prisca the crypt is still larger. It is a vaulted chamber, about 10 feet by 22 feet: the arch supported on two masses of masonry, strongly reminding us of the Etruscan tombs, behind which are two flights of stairs, of about thirty steps in each. I must now call your attention to two confessionnes which partake more of the character of the passages of the Catacombs than of the crypts therein; one is that of St. Marco, (A.D. 336 the Pope, not the Evangelist); this is a sort of passage way, of semicircular form, the extreme diameter of which is about 24 feet: the passage itself is about 4 feet wide. It receives light from the grating under the altar. The other is at S. Prassede. Here the entrance is immediately under the altar, by a descent of eight or ten steps: this leads to a passage about 40 feet long, which branches off into two semicircular passages, much like that at St. Marco. This must have been in existence in A.D. 493, in which year it was restored, we are told, by Pope Adrian, in a life of him, written by Anastasius. A still larger crypt is at S. Martino; this was originally partly supported by a block of masonry, and partly on square pillars, like the Etruscan tombs, and forms in fact a small church, about 45 feet each way. In fact, this is the form the crypt now began to assume. At S. Maria in Cosmedin, it has a nave and side aisles, formed partly by six columns, three on each side, and partly by two solid blocks of masonry, and is about 22 feet by 13 feet. At San Lorenzo it is still larger, about 30 feet by 16 feet, and has four columns on each side, and also a tomb in the centre.

I have thus shown that, as time progressed, the small aperture called the confessionne had increased till it became larger and larger, till at S. Minato, near Florence, and S. Michele, at Pavia, it had lengthened to 60 feet and upwards, and become a second church.

THE STORY OF A GREAT AND GOOD MAN,—WILLIAM OF WYKEHAM.\*

WYKEHAM made no change in his coat-of-arms: he still kept his carpenter's couple, the symbol not only of his architectural knowledge, but also of his accomplishment of difficult works. His administration of his diocese was vigorous and firm. His oversight was most exact. The value of the bishopric in 1345 was 2,977*l.* 15*s.* 10*d.*: the dilapidations actually paid to Wykeham were 700 marks, corn, &c., in kind, worth 1,660*l.*, and stock equal in value to 20,000*l.* sterling; and nobly he spent his revenues. From an account-roll it appears that

\* By the Rev. Mackenzie Walcott. See page 345, ante.

on his journeys alms to the poor were freely dispensed in every village through which he passed. In the last year of his life there is an entry on the back of a roll, mentioning that a person wrote to ask him for money, and the note is added, "An answer received, and they are sped." In 1377 he paid all the debts of the Austin Canons of Selborne, and gave the house a second large grant, while in 1387 he rebuked them for their neglect and evil conduct. In his hall twenty-four bedesmen daily dined. On taking possession of his see he forgave the customs due from poor tenants; he presented a magnificent sum to the infirm and aged servants, gave lands to the chapter, and paid 3,000 marks to liberate poor debtors from prison. The University of Cambridge commemorated him as a benefactor; his arms are seen carved on the walls of Beaulieu, Luton, and Etchingham; the church of Adderbury and the palaces of Wolvesey, Farnham, Southwark, and Waltham were almost reconstructed by him at a cost of about 160,000*l.* sterling. On repairs upon the estates he expended about 13,000*l.* Mr. Cockerell estimates the sum devoted to architectural works alone at 500,000*l.* exclusive of his foundations. The restoration of the revenues of the Hospital of St. Cross, near Winchester, in opposition to a fraudulent master, cost him six years of dreary litigation. His visitations of the diocese were searching and vigilant: those of 1386-7 are still preserved. Two of his rebukes of careless clergy are remembered; the one,—"If I pleased men, I should not be the minister of Christ;" and the other,—"It is sin to praise that which God abhorreth." However, he would not allow old customs to fall into desuetude, but in the presence of the primate obtained the restoration of the old practice of the chapter to send daily to him, when resident in Winchester, eight loaves of wassail bread and four bottles of good wine, by the hands of the junior canon, who presented them, saying in French:—"Sir, SS. Peter and Paul send you these."

William of Wykeham, before he received the mitre, was nominated Lord High Chancellor, in September, 1367. On August 24th, 1368, he signed the treaty of peace with Scotland. On May 27th, 1369, the Parliament met to consider the state of affairs, for a war with France was imminent. Wykeham made the opening speech, and, like a sensible man, did not, as his predecessors were wont, preface it with a text, or dilute it with wordiness. He spoke out bravely that "the king of England had not slacked his duty; yet his enemy, the king of France, had done contrariwise, for neither had he delivered up the countries and lands agreed upon by the treaty, nor had he made full and due payment of the monies, but had sent armed men to wage war, and to lay hands upon the lieges of the king, and had surprised divers of the king's garrisons and towns." Charles summoned the Black Prince to appear before him at Paris to answer for his rule in Gascony, and Edward replied he would come with a helmet on his head and 60,000 men behind him. Wykeham spoke, also, on the rising of Parliament. Charles V. threatened that he would hang a challenge on the gates of London. On February 21st, 1370, Wykeham again addressed both houses. "Sirs," he said, "the king has received by his friends and allies that his enemy, the king of France, is making himself stronger than ever he was before, and hath levied such a number of forces as seemeth to him sufficient this year to dispossess the king of all the lands and possessions which he hath beyond the seas. He has, moreover, gotten ready so many galleys and other ships of war as seem to him sufficient to destroy the whole navy of England, and useth, also, his utmost efforts to send a vast force of armed men into this country, to destroy it, and subject it to his own power. Therefore the king requireth and chargeth his Lords and Commons here assembled to consult upon these points and to give him their advice, how his kingdom may be well guarded and the navy defended and maintained against the malice of his enemies, and for the safeguard of the king's countries beyond the seas." In consequence of this appeal the laity and clergy made an offering of 100,000*l.* towards the defence of the realm. A panic seems to have seized the Parliament, and they entreated the king to appoint a layman and chancellor in place of an ecclesiastic. Wykeham at once resigned the Great Seal, and was succeeded by Sir Robert Thorp, March 14th, 1371. But it was not long before he was again recalled to office, for he was one of the three bishops who were summoned to the great council which met at Winchester in the following April to decide on the means of raising 50,000*l.* voted by Parliament. In 1373

John, duke of Lancaster, named him as one of the committee of seven to confer with the Commons on the subject of supplies, and held him in such high esteem that both in 1369 and in 1373 he appointed him the trustee of his affairs and the keeper of his castles and estates. In 1373 Pope Gregory XI. importuned him to use his influence and to forward the treaty of peace between England and France. The king's indolence and declining health resigned the administration of affairs into the hands of the designing and ambitious Duke of Lancaster, who aimed at such changes in the law of succession as would give him hopes of attaining the crown, as his elder brother, the Black Prince, was dying, and his nephew, Richard, was a minor. After a recess of two years the Parliament met on April 23th, 1376, and recommended a council to the king to be retained about his person for the government of affairs. The king assented, and William of Wykeham was one of the nine. In 1377 he is styled Chief of the Privy Council and Governor of the Great Council. The Parliament which the nation named "the good," renewed their subsidies for three years, but complained that the grant would not have been required but owing to the incompetency and fraud of ministers. William, Lord Latimer, the Lord Chamberlain, was fined 20,000 marks, and imprisoned in the Marshalsea, and Alice Piers was banished from the court: these were the Duke of Lancaster's confederates, and the blow fell heavily upon him. He waited to have revenge. On June 8 the Black Prince died, having appointed Wykeham his executor, an office he afterwards held by desire of the Princess of Wales as "her very dear friend." The Parliament desired the king to name Richard, then a boy of ten years old, heir apparent to the crown; and on November 20 the king formally declared him Prince of Wales. At the close of the session Alice Piers and the duke prevailed on the king to dismiss his council, to imprison Sir Peter de la Mare, who had impeached Lord Latimer in the Commons, and to undo all reforms. On the information of nameless sources, the vindictive duke had eight articles, which were fabrications without proof or evidence, advanced against Wykeham before the Privy Council. On one charge only they gave judgment, a matter of 40*l.* which the bishop had ordered to be refunded to the defendant in the case of a fine of 80*l.* to the Hanaper: for the informality of the procedure, done in open court, the creatures of Lancaster banished Wykeham from court, and seized upon his temporalities. There is a similar instance of Wykeham's lenity. When Devereux, a tailor, who had brought an action against him for a portion of the site of Winchester, was cast in 200*l.*, Wykeham paid the fine, and afterwards gave him a pension.

In 1376, on the occasion of a general pardon at the king's jubilee, Wykeham only was excepted, while, significantly enough, Lord Latimer and Alice Piers were restored to favour. In the Convocation of February, 1377, Courtenay, Bishop of London, vindicated Wykeham, and the synd addressed the Crown, stating that they would vote no subsidy until redress was made. Before the close of the month Wykeham was restored to his see, but the revenues were granted to the Prince of Wales. The violence of the Duke of Lancaster in St. Paul's Cathedral, his vulgar insolence and threatenings against the bishops in favour of Wycliffe, coupled with his proposal in Parliament to deprive the city of London of its privileges, roused the indignation of the people, and they compelled the duke to fly for his life, and required that the king should restore Sir Peter de la Mare and Wykeham to their rights. On June 18, 1377, Wykeham recovered his temporalities, and on July 15 took part in the consecration of Richard II. The young king, on July 31, 1377, issued a pardon to Wykeham, and in it mentions "his acceptable, advantageous, and praiseworthy services rendered in very many ways, at great charge and with great trouble, to his grandfather, the high place he held in their affairs of various kinds, and the peculiar affection and true love borne to him by his late father." The Commons chose Sir Peter de la Mare their speaker; confiscated the lands of Alice Piers; demanded the confirmation of Wykeham's pardon, and the appointment of a Supreme Council of nine; and on May 2, 1380, the king appointed sixteen commissioners, of whom Wykeham was one, to examine into the state of the finances; and on August 7 annulled all grants of Wykeham's possessions made to others. On August 9, 1381, Wykeham witnessed the treaty of marriage between the king and Anne of Bohemia, the famous queen who introduced the lady's side-saddle. They expressly named Wykeham as one of the commissioners with

whom they desired to confer on the low state of the exchequer, for the protection of English commerce, and touching a treaty with France. In 1385 he assisted in calling in all debts due to the Crown, amounting to 120,000*l.* Within five years Wykeham himself lent 500*l.* to the king. In 1386 the Commons demanded a commission to redress grievances, to curtail the Royal expenditure, and to provide for a just administration of the laws. Wykeham was one of the fourteen members appointed to examine into the expenses of the king's household. Richard soon after declared the commission illegal, and the authors traitors; and the Duke of Gloucester marched upon London with 40,000 men; then halting at the gates, they permitted Wykeham, the Duke of York, and five other commissioners, to wait upon the king at once, to mediate and reconstitute. Wykeham bore himself with such moderation, that, on May 4, 1389, the king appointed him Lord Chancellor. His administration was brilliant and conciliatory. Within a few days two royal proclamations were issued, promising a better rule for the honour, peace, and welfare of the kingdom, and the suspension of the payment of certain taxes until they were indispensably required.

On January 17, 1390, Wykeham, in his opening speech, declared that the king would rule with justice, and maintain the liberties of his people; that it was necessary to provide for the safety of the frontier and coast of the realm, but that the taxes raised for the purpose should be levied in a manner the least burdensome. He invited all persons who had petitions or grievances to submit them to a royal commission, and desired the Commons to ensure the observance of the laws and maintenance of peace. He then laid down his office, submitting his conduct to the judgment of Parliament, who returned to him the thanks of the House. At the close of the year he again opened Parliament, with a speech requiring money to pay the expenses of a treaty with France, and to secure the frontiers against the Scots, and both Houses thanked the king for his professions of attachment. Wykeham, who had re-established the good understanding between the Crown, the Parliament, and nation, finally laid down his office on September 27, 1391. In 1394, the king and queen were his guests for several days at Wolvesey and Farnham. The expense of entertaining their majesties and 210 guests, on September 16 and 17, was 385*l.* sterling. He was now reconciled to the Duke of Lancaster. The infuriated king, deprived of advice, proceeded to deny the Commons their right of free speech, or control of the public expenditure. On September 17, 1397, he intimidated them by the presence of an armed force into submission; they annulled the proceedings of the commission of 1386, and the session of the following year. From Wykeham the tyrant extorted 1,000*l.* as the price of a royal acquittal of any evil design in its intent and execution. Wykeham, on September 26, swore with the Lords to observe the statutes made in that session, in St. Edward's Chapel, in Westminster Abbey. In the following year he successfully pleaded his age and infirmity as an excuse for his absence from the Parliament of Shrewsbury. On September 30, 1399, he witnessed the abdication of the king in Westminster Hall, but he stayed away on October 23, although residing at Winchester House, Southwark, when Richard was sentenced to perpetual banishment. However, at the coronation feast of Henry IV. he was present, believing that he had been invited to redress the grievances of an oppressed people, and knowing that he had received the welcome of the chief persons in the realm. The last public act of Wykeham was to give his vote in a great assembly of lords and bishops, February, 1400, at Westminster, when they charged themselves only with a considerable sum of money to be raised for the defence of the realm against France and Scotland. He received the crown jewels in pledge for a loan of 400*l.* to Henry IV.

No one will be prepared to deny to Wykeham great statesmanship, political sagacity, high moral and intellectual command, and peculiar tact in dealing with princes, people, and diplomatists. His principles were the truest loyalty to the crown; silent under his own wrongs, earnest for the redress of injuries to others. When stripped of wealth he went uncomplaining to the calm retreat of Merton and Waverley, until the Parliament and his own order demanded his restoration. As a financier he advocated economy in the administration, the removal of burdensome imposts, and the levy of taxes in ways most easy to the payer. In foreign policy he recommended

the formation of definite treaties, and peace wherever possible, whilst at the same time he distinctly urged forward the necessity of a Channel fleet, and of the maintenance of the British navy for the safety of these shores, when there was an apprehension of a French invasion. He gave not only words but money to that great cause, and I am proud to say that the first public school which gave a company to the corps of volunteers was Wykeham's own, at Winchester. No doubt the aged bishop gladly retired from public life: he had seen two kings uncrowned, and done to death: he saw the follies, fail, and calamities of the ancestor reproduced in his great grandson. Before the close of life he witnessed the usurpation of Bolingbroke, the germ of the civil distractions which opposed the fœdral to the courtier noble, extinguished the pomp and power of the former from the Exe to the Tweed, and changed the entire social aspect of the kingdom. On January 27, 1403, Henry IV. was married to Queen Joan, in Winchester Cathedral.

"In 1378 the population amounted to 2,300,000. 'So greatly had it been impoverished,' said Parliament in its address in 1376, 'by war, pestilence, famine, and murder, that there was but one-third of the people left,' owing to the French wars of Edward, and those of the Duke of Lancaster to secure the crown of Castile, and five fearful plagues between 1349—1382. The great political movements of the period emanated from the faction and intrigue of the nobles, the divisions and feuds of ecclesiastics, and popular risings under leaders to resent the oppression of Government. The franklin stood but one step beneath a noble: the power of the burghers began to be felt in parliament; and free intercourse to prevail among all classes. The discipline of religious bodies had grievously degenerated: the clergy were few, and for the most part illiterate: the University of Oxford was the arena of furious disputes and quarrels, which too often terminated in actual blows: the course of study had fallen low: degrees were offered for sale, and poor scholars were the ridicule of the day; wandering students in the vacation begging alms for their maintenance, and living in hostels, and inns, and licensed private houses, or as menials in the colleges. Oxford was then not the grand city it is now: it had but six colleges in 1340; narrow streets overhung by wooden-fronted buildings without chimneys, and thatched on their high-pitched roofs; a highway with footpath and wheel-track in one; and gowmsnuckstering at a stall or beside the packhorse on fair days, chaffering with the itinerant pedlar. Four of the little halls occupied by the students of the monasteries may still be seen at Worcester College. Colleges were first founded by the general name for all incorporated houses deemed religious—the word *domus*—as we use head of a house to this day, afterwards by the local appellation of hall, and lastly by the corporate and expressive term *collegium*, the first so called being Wykeham's College, the collection of persons into a unanimous body living together. He tells us that he had observed with a troubled heart the neglect of the statutes of founders; that he implored the guidance of God's spirit, and determined in his own life-time to provide a liberal education, far above the common standard of teaching; a grand design of leading the scholar from the first elements to the highest acquirements of knowledge. He resolved to provide this bounty for "poor scholars, men of letters, and acquainted with various sciences, who would have God before their eyes, and do His will in all things." It is quite certain that in the Black Friars, London, Wykeham signed his name in 1382, in condemnation of Wickliffe's opinions, and, with the primate, expelled him from the University of Oxford. Wickliffe was a reckless assailant of all opinions which he disliked, and fell into grievous errors. Wykeham was calm and temperate in his reform, and foresaw danger in the heat of the intemperate favourite of the Duke of Lancaster. When he was reproached that there were Lollards in his college, he said there was a Judas among apostles, a had man in the ark, a Nicholas among deacons. He interposed, however, in favour of the Chancellor of Oxford, when he was exposed to severe punishment for his countenance of a Lollard preacher. His religious views were most decided: he distinctly says that in founding his College of Winchester his ultimate design was that his scholars should have "a true knowledge of the mystery of Holy Scripture." His colleges are dedicated in honour of the Annunciation of the Saviour, as is evident from the sculptures still remaining; and it is remarkable that in his will there is not a word relating to any doctrine or tradition which was

renounced at the Reformation: "I recommend my soul to Almighty God, my Creator and Saviour, who made me from nothing, with most humble heart, praying for His mercy, and asking, that of His great pity, He would vouchsafe to set it in the company of His elect." His statutes adjure every member of his foundation "by the mercies of Jesus Christ, by the hope of happiness both in this life and in the world to come, and by the expectation of divine judgment, above every thing, and in all things to maintain unity, mutual charity, peace, concord, and brotherly love; to desire and be zealous for those bonds of kindness; to avoid every word of envy, contempt, and braggartry, quarrel, jarring, hurt, foul speech, contention, whispering, scoff, injurious scandal, or wicked imputation, or any comparison of birth, or of nobility with nobility or low estate." This was surely the rule of bringing up the boy as a Christian and an English gentleman.

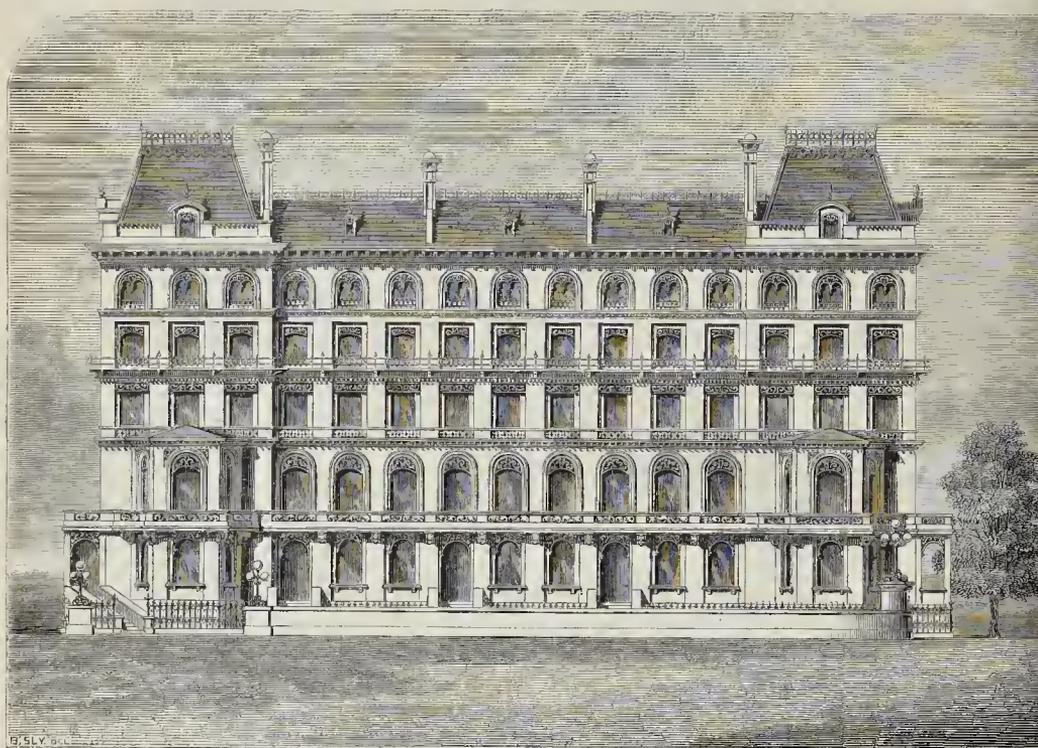
The arrangement of his buildings at Winchester and Oxford remains: change has little affected them; and the happy, graceful, and convenient design, peculiar and original, furnished the model for similar foundations. The hall and chapel, the munition-room and library, the chambers of fellows, chaplains, and scholars, and cloisters, the earliest instance in a college, were seen for the first time gathered into one group. Wykeham here first lowered the pitch of roofs, and employed lead as a covering in place of shingle; and in the wooden vaulting at Winchester, may be seen the germ of fan tracery. The library was richly supplied by him with MSS. at Winchester: at New College it included in theology, sixty-two vols., valued at more than 82*l.*; in medicine, fifty-two vols.; and in Canon Law, fifty-three vols., valued at 33*l.*; in decretals and treatises, thirty-seven, worth 17*l.*, exclusive of gifts. The buildings show the artist and man of taste in their solidity, proportion, picturesqueness, and harmony of ornament. The Society of New College, on April 11, 1386; that of Winchester, on March 28, 1393, took possession of the new buildings. The course of study at New College was thus prescribed:—"Holy Scripture, the mother and sovereign of all other sciences; philosophy; canon and civil law." He desires that *especially Christ may be preached more often and more fervently, and the faith and worship of God, read, and more strongly upheld; and all sciences and virtues more richly abound and strengthened, and that every member may be always a learner, and endeavour to become a better man, and assist his fellows, that all tending to one end might have one heart and one mind.* Out of seventy fellows, ten were to be civilians, ten canonists; the remaining fifty to be students in arts, philosophy, and divinity; two being students of medicine, and two of astronomy. The entire system, we must remember, included geometry, mathematics, grammar, logic, rhetoric, music, arithmetic, astronomy, and physics. His sumptuary laws were most excellent; but he encouraged a cheerful gathering round the fire on every holiday, to sing ballads, to enjoy all honest merriment, and read poems, chronicles, and marvels of the world. Latin was to be the ordinary language; but Wykeham, like a courteous gentleman, forbade its use in the presence of strangers. And what did Wykeham for architecture? He gave the sound preliminary education. He reared Fox, the founder of Corpus Christi College; Chicheley, of all Souls' College, Wuyufete of Magdalen, at Oxford; and Field, one of the architects of King's College, Cambridge. Henry VI., a frequent guest at Winchester, there was induced to found Eton and King's College, adopting his statutes almost literally: Wolsley, at Ipswich and Christchurch; Sir T. White, at Merchant Taylors' and St. John's; and Queen Elizabeth, at Westminster and Christchurch, adopted the form which he had originated. And the impulse he gave is not dead at Winchester; for we can still point out with pleasure, as one of Wykeham's sons, the name of Mr. Penrose. And more, Wykeham was no destructive of earlier works: when he created his colleges he did not, like Beckington, or Wolsley, or Alocck, found them out of the funds or on the ruins of earlier buildings. When the king gave him the lands of certain French monks, he never rested till he found them a house and ample revenues at Paris. And what did he do for education and literature? In his school he reared four archbishops of Canterbury, numbering the gentle Warham, Bilson, Burgess, Lowth, and Ken; Grocyin, the reviver of the Greek language; philosophic Shaftesbury, Norris, Sir H. Wotton, and profound Harris; Sir T. Browne, the moralist; of poets, Otway, Young, Collins, Somerville, Phillips, Crowe, and Bowles; Sir R. Maclure, Professors Empson and Daubeay,

Dr. Arnold, and Dean Buckland. Four speakers of the House of Commons, one of whom is the respected Lord Eversley. Among seamen, Keats and Warren; and among soldiers, Guildford, Dalbair, Myers, and F. M. Lord Sauton. It is right to add that he educated two grandsons of his early patron, Sir N. Uvedale, at Winchester.

His work on earth was nearly completed. He carefully repaired the priory church of St. Mary, Southwick, where his father and mother, and sister, were buried. It is related that he could never sing the Requiem without tears, for their sweet memory. He framed a will remarkable for display of a religious mind, good heart, gratitude, benevolence, singular exactitude, and tender consideration for all with whom he had been connected. It contains 230 bequests to the value of 7,000*l.*; 1,000*l.* devised in a codicil he had paid in his lifetime. But his great bequest was in the service of architecture, in which he established and introduced a new style. When Edingwood commenced his episcopate, Wykeham was twenty-three years of age; and, probably, as he had then been recommended by Uvedale to the bishop, and received by him as one competent in architecture, designed the alterations made in the cathedral. That building forms an epoch in the art, an innovation founded upon the remodelling of an ancient structure, where prominence was first given to a new and animating feature, the development of an idea to which a tendency had already been made. No one has ever denied the grandeur of the nave of Winchester, the only one of such enormous size that has been carried out in a consistent style, and still standing in the highest rank. Wykeham neither wholly destroyed nor merely overlaid—he retained the proportions of the old Norman fabric, while he exhibited the richness and fertility of his own mind. Every word of this straightforward and honest-hearted man carries a special weight. He distinctly claims the merit of design and construction in his will, where a man must speak the truth. He directs that the windows shall be glazed, beginning at the "west end of the church in the new work made by me, in the windows, both upper and lower, on the south side of the church repaired by me." He desires his "executors to cause to be repaired the body or middle of the church between the N. and S. aisles, from the west door of the choir down to the west door of the church, in the walls, in the windows, and vaulting, honestly and honourably, conformably and orderly, according to the exigency, form, and mode, of the new work of the aisles now begun, and the aisles also for the same length, for the completion and consummation of the work, according to the mode and form limited above." He deposes the disposal and ordering of the new work to the men he had employed in his college, Wm. Wynter, the stone mason; the paymastership and surveyorship of the works to Simon Membury, treasurer of Wolsley; and the comptrollership, to J. Wayte, monk of Winchester, who acted on the part of the dean and chapter. He bequeathes 2,500 marks to these works, and 500 marks to the glazing of the windows. He died Sept. 27, 1404, having transacted business within four days of his decease, and was buried at Winchester.

The splendid testimony borne to Wykeham's reputation as an architect by the venerated president of the Royal Institute of Architects is singularly in harmony with the character of the man in his public and private life—"simplicity and sincerity of purpose; wisdom, forecast, and economy; enlightened principles of taste;" the admission of "no ornament but what is appropriate; variety of resource and mastery of design; his consideration of wants and requirements." Vitruvius sums up every accomplishment in his ideal of an architect. Wykeham reached that standard. His golden sentence was, "There can be no true dignity where there is no real high principle." His motto is a scrmou in itself, full of lofty meaning. Manners maketh man,—manners which affect more than laws: on them, in a degree, laws depend, and touch us but partially. Manners exalt or debase, civilize or corrupt us, by their steady, continuous, insensible operation: life takes its form and colour from them: they form or destroy morals. Not on wealth, not on rank, not on birth, accidental advantages, but on his own conduct and worth, depends a man's whole estimation in life.

Such was Wykeham. He rose by natural genius, knowledge of mankind, and talent for business, by honesty of purpose, and reliance on God. He was humble, and, therefore, became great. He devoted his whole heart to every labour which he undertook. The highest witness has been borne to his patriotism and integrity by his own sovereign, his order, and by parliament, in whose



THORNTON TERRACE, CLAPHAM COMMON, NEAR LONDON,

confidence be always stood high. He first instituted the system of a public school, "the best adapted," said Gibbon, "to the genius and constitution of the English people." "In my conscience," said Mr. Canning, "I believe that without it England would not be what she is." There in his own school,—I trust many here will visit it one day in their lives,—you will find his statues observed in the memorable words with which he closed them, commending all his sons to observe God's will as the servants of Christ, and maintain the bond of perfect charity.

And when I look round this room and see the beautiful works of art which adorn its walls, I recognize those who labour in the same school that Wykeham toiled in. I cannot but see the promise of a still wider dissemination of the growing appreciation by the public of "the queen of arts," in proportion as the triumphs of peace are preferred to the excitement of war; and the opening of galleries and museums and exhibitions such as this elevate and instruct the taste of the people. Nor can I doubt that higher honours await the professors of this art, or that, as buildings, religious and civil, of the merit which they now possess, are multiplied throughout the land as its chiefest ornament, the country will fail to bestow on them adequate recognition of their services, and take for a precedent the glorious name of Wykeham, the crined architect.

**THE FREE PUBLIC LIBRARY AT LIVERPOOL.**—At a meeting of the Liverpool town council, a resolution (rescinding a former one refusing an allowance of money from the corporation funds towards the opening of the Free Public Library, the gift of Wm. Brown, esq.), was passed unanimously, granting a sum not exceeding 10,000*l.*, for the purpose of opening the Brown Library and Museum in October next. It is stated that the Queen will be invited to attend on the occasion.

#### NEW TERRACES ON CLAPHAM COMMON.

THESE terraces form part of a large building operation now being carried out upon an estate formerly called "The Cedars," connecting Battersea-park with Clapham-common, and about twenty acres in extent.

A broad road will be cut through the centre of the ground, planted boulevard fashion, with a double row of limes, and having a fountain in the middle of its length. On each side of the road detached houses, at rentals of about 120*l.* or 130*l.* will be built, and at each end of it, coupled terraces,—those we illustrate facing the western end of Clapham-common,—and corresponding, but smaller blocks, at the other end of the road, overlooking Battersea-park, the Thames, and Chelsea.

The terraces represented above are now in course of rapid erection. They will each consist of five residences, the corner houses having twelve, and the intermediate houses nine bed-rooms and dressing-rooms, besides bath-rooms and closets. The drawing-rooms will be 50 or 40 feet long, with houndoirs overlooking the common attached to them, and the dining-rooms 27 feet by 17 feet.

The stabling is arranged as a mews at the extremity of the gardens behind. The rentals in the terraces will be from 200*l.* to 250*l.* per annum. The material employed in the architecture is almost entirely white brick, the window hoods, strings, and pierced balcony panels being in Portland cement. The iron work to ridge crests, upper balconies, and front railings, will be painted chocolate and gold, after the manner of the Tuileries. The dwarf walls in front, separating the carriage-drive from the common, will be of white brick and stone, with clustered lamps upon the terminating pedestals, gilded and painted to match the other metal work.

The whole scheme is the property and speculation of Mr. Harris, of West-road, Clapham-park, who has already done much towards transforming the "sanctified ville" of the past into the great suburb of to-day.

The designs are by Mr. Knowles, jun., of Gray's-inn, and will be of similar character and style throughout the whole estate, to that shown in the elevation of the front terraces.

These have been named "Thornton-terrace," from the fact of the estate upon which they stand having been once the property of the Thornton family, so intimately connected with the establishment and influence of the famous "Clapham Sect."

The new road itself is named the "Prince's-road," and will probably become at no distant date the channel of direct communication, by means of Chelsea Suspension-bridge, between Pimlico, Belgravia, and Kensington, on the one side, and Battersea-park, Clapham, Wandsworth, Tooting, and Brixton, on the other side of the Thames.

#### WORKS OF RENAISSANCE, ARCHITECTURE, AND SCULPTURE ACQUIRED FOR THE SOUTH KENSINGTON MUSEUM.

AMONGST the works obtained for the Government Museum during the early part of last year, and now, as we mentioned some time ago, to be seen there, the most striking is the "Cantoria," or singing gallery of the Conventual Church of Santa Maria Novella, Florence, concerning which a good deal has been said in the newspapers. It is the work of the sculptor Baccio d'Agnolo, dating about the year 1500, and is executed in Carrara marble. The length is 16 feet, height 7 feet 6 inches, and projection from the wall 5 feet.

The wealthy confraternity of Santa Maria Novella having determined to renovate their celebrated church, amongst other judicious proceedings, decided to do away with the ancient "Cantoria," and to erect another in its stead, designed in the style of the edifice itself, which is of the thirteenth or early part of the fourteenth century. Accordingly, in the beginning of the year 1859, this noble monument was taken down, and sold to Signor Freppa, an eminent dealer of Florence; and immediately afterwards, whilst still lying in disjointed pieces on the pavement of the church, it was repurchased for the Kensington Museum.



Rev. Dr. Croly,—so that several hours may be spent with advantage in examination of the topographical and architectural points of the subject. We should expect to find, notwithstanding the "authorities," differences of opinion in many cases on the identity of a site; and there may be similar differences on the correctness of some of the details of the architecture, as those of the "Holy Place" of the Temple; nevertheless, one of the pictures especially is a work of extraordinary interest, and both of them are works of great power and beauty. Both views are taken from the same point, or looking across the valley of Jehoshaphat, to the area of the Temple, where now the Mosque of Omar is the prominent object, and so as to include almost every feature of interest in the ancient city or the modern. In place of the procession of upwards of 150 figures in the foreground of the one picture, we see in the other modern Arabs and a party of English travellers. The pictures were painted for Mr. G. L. Beaufort, of Scarborough, who commissioned the artist by the advice of Mr. David Roberts, to whom the subjects were first named. The principal subject will require even greater care in the engraving, in details of the architecture, than was thought necessary in the picture, and much greater than is shown in the painting on the photograph taken preparatory to engraving.

#### PRE-RAFFAELITISM AND ARCHITECTURE.

##### THE ECCLIOLOGICAL SOCIETY.

THE annual meeting of this Society was held on Monday evening last in the Gallery of the Architectural Exhibition, Conduit-street, Hanover-square.

The chair was taken by Mr. Bressford Hope, president of the Society.

The President, in opening the proceedings, said that the Society, having come of age that evening, met for the first time in the Gallery of the Exhibition; but he trusted they met with the same heart and the same spirit as ever. The progress which their views had made during the last twenty-one years was apparent from the drawings on the walls. Every church or cathedral represented there embodied the principles which they were accounted fanatics for enunciating in 1839. The success of the movement had been exhibited in every town in England; churches were being built and cathedrals restored in a spirit unknown a short time ago. Sculpture and painting, as applicable to church ornamentation, were rapidly showing the greatest improvements, and the vandalism which had hitherto destroyed old buildings was fast expiring. Yet, when they heard of such destruction as had recently occurred at the Guestern Hall, Worcester, they felt that much remained to be done. This building, though capable of restoration, was allowed to meet its fate because the body of local authorities knew not what to do with it. The committee had selected for discussion this evening "The Tendencies of Pre-Raffaellism, and its Connection with the Gothic Movement." He knew no subject so likely to elicit difference of opinion, and he hoped that every one had come determined to put forward his own views.

The Rev. Mr. Webb, secretary, then read the annual report.

The report said, *inter alia*—

"Your committee has to thank the following architects, who have favoured us with drawings of their various works during the past year.—Messrs. Buckridge, Burgess, Bodley, R. Brandon, Clarke, Douglas, Fowcett, Hopkins, Hills, Hugall, Jones, Lee, Norton, Pearson, Pullan, Robson, Scott, Seddon, Slater, St. Aubyn, Street, S. S. Teulon, W. M. Teulon, Truett, Turner, White, and Withers. To this list must be added Her estate, of Cologne, and Messrs. F. C. Withers and C. M. Buris, of the United States. In stained glass must be noticed Messrs. Clayton & Bell, and Messrs. Lavers & Barnard; and in metal work Mr. Skidmore and Mr. Keith, who has worked some excellent church plate from the designs of Mr. Butterfield and Mr. Street.

The principal new church of the year is undoubtedly Mr. Scott's noble building of All Souls', Haley-hill, Halifax, which was consecrated last November. This fine work has been noticed at large in the *Eccliologicalist*, and it was pointed out how important an example it is of the introduction of sculpture into church decoration. The same architect's chapel for Exeter College, Oxford, has also been consecrated. Mr. Butterfield's church of St. John Evangelist, Hammer-smith, has been finished; his St. Alban's, Baldwin's-gardens, is in progress. Mr. Street's church of St. James the Less, Garden street, Westminster, is rising; and another, by the same architect, in the parish of St. Giles, Oxford, has been begun. The committee observe with satisfaction that in the chancels of these two churches, and in Exeter College Chapel, vaulting has been adopted. Mr. Brandon's church in Great Windmill-street will be commenced in the course of the summer. Mr. Slater's cathedral at Kilmore is almost ready for consecration; and he is about to build a mortuary chapel of unusual scale and dignity at Sherrborne, as well as a satisfactory church at Bray, near Dublin. Another work of peculiar interest is the trans-

mutation, by Mr. Butterfield, of the parish church of St. Columb, Cornwall, in hope of its becoming the cathedral of the future diocese of Cornwall. The plans include the addition of a chancel to the nave, and the substitution of a more dignified choir for the existing chancel. Mr. Burgess's memorial church at Constantinople is at last ready in hand.

We are able to mention this year with great approbation several colonial churches. Foremost of these is a very original design by Mr. Burgess for a cathedral at Brisbane, Australia. Mr. Slater has completed the very successful church of St. George, Basseeterre, St. Kitts; and Mr. Bodley has designed a peculiarly good parish church for the diocese of Graham's Town. Montreal Cathedral was opened for service on Advent Sunday, and the cathedral for Sydney is approaching completion. The high roof recently added to Calcutta Cathedral is an improvement to that unsatisfactory structure.

Of foreign churches we may mention St. Lawrence, Alkmaar, by M. Cuyvers; the votive church at Aix-la-Chapelle, and the cathedral at Litz, by M. Stutz; and the Lutheran churches of St. Bartholomew, Berlin, and St. Ansharum, Hamburg. A volume of designs for churches, built or projected by Herr Stutz, testifies to great ecclesiastical activity in Germany. Mr. Scott's church at Hamburg is nearly completed.

The new Park Church at Glasgow, by Mr. Roebuck, may be referred to as a conspicuous example of the now common use of the Pointed style among the Presbyterians of Scotland."

The Venerable Archdeacon Thorpe, of Bristol, moved the adoption of the report, and, in doing so, pointed out a mistake into which the committee had fallen in complaining that the present architectural movement had not produced a new church completely groined throughout. They had forgotten Mr. Scott's church at Leeds.

A gentleman, in the body of the hall,—“Yes, and Chalcot.” A second gentleman,—“And Exeter College, Oxford.”

Mr. Street, in seconding the report, asked whether the committee had come to any decision upon the admission of chairs into churches. The subject was brought before the last annual meeting, and he expected that some allusion would have been made to it in the report. He felt that an opinion from this Society would have some influence upon the Incorporated Society for Building Churches, who had adopted a rule not to make grants in the erection of a church where moveable seats were used.

The President thanked Archdeacon Thorpe for correcting the mistake into which the committee had fallen in overlooking the groined church at Leeds. The Cathedral Church at Exeter College, Oxford, did not apply to the observations in the report, as it only spoke of parochial churches. In reply to Mr. Street, he had to say that the committee had slumbered on their seats, but that the change from the benches at New Brompton, to the chairs in Conduit-street, might awaken them next year to pay attention to the subject.

Mr. Street thought that the matter should be taken up seriously. A memorial from an independent society might have some effect upon the Church Building Society. He felt, as a church restorer, very strongly upon the matter.

The President suggested that the question was one of policy rather than of ecclesiology, and that any active steps taken by them might give an air of party to it in the eyes of narrow-minded people. The *English Churchman*, a journal which still lingered on in undisturbed obscurity, objected to their introduction, on the ground that chairs were a badge of party. He was anxious that no steps taken by them should countenance the idea. Perhaps Mr. Street would be good enough to move a resolution calling the attention of the Society to the subject, and full justice would be done to it in the report for next year.

After some discussion, the following resolution was adopted, “That it is the opinion of this meeting that the question of seating churches is one well worthy of the attention of the committee, and that it be requested to take steps in the matter, with reference to the existing rules of Church Building Societies in regard to the use of chairs, and the terms of their grants.”

The Rev. S. S. Greathead, treasurer, then read the financial statements, which showed that the Society, starting with a balance from last year of 61*l.* 9*s.*, had received 128*l.* 13*s.*, and expended 43*l.* 5*s.* 11*d.*, thus leaving a balance in his hands of 85*l.* 4*s.* 11*d.*, but that some printing expenses were still due.

The business of the annual meeting having been disposed of,

The President opened the subject of debate by remarking that the committee having made ecclesiastical art the subject of study, had observed that along with the Gothic or Pointed movement there had sprung up another, which had attracted much attention, and which had been described in the public press as identical with it. He believed that the Pre-Raffaellite movement had excited as much attention as any matter outside the field of politics. In proposing a discussion on the subject

the committee did not ask the meeting to give any opinion, as the question could not be decided in a promiscuous one like the present. Accordingly, all the remarks he might make on the Pre-Raffaellite movement, from a Gothic point of view, were made in his personal character, as a member of the Association, and not as its president. Some of his views had never been announced before, and were now thrown out to provoke friendly discussion. He had been first attracted to the views of this school by a series of papers which appeared in 1849 and 1850, and which, under the title of the “Germ,” announced strange opinions. The school had, from their first starting, laid down two distinct principles. One was a phase of mysticism, the other a phase of strong and determined realism,—to paint nature more naturally than nature itself. Nature, as seen by man, was a compromise; for nature must be ever viewed by different eyes. The effects produced by nature on one sight would be lost on another; and the various atmospheric effects of the same scenes were seen by different persons in different aspects. No representation could be representative of nature which did not deal with that *chiaro-oscuro* which was a principal element in all nature. The Pre-Raffaellites were determined to sum up every detail, and from these details to form a natural result. Holman Hunt's last painting, “Our Lord discussing with the Doctors,” must be looked upon by the Pre-Raffaellites as the triumph of their art. All who had seen it had been struck with the perfection with which the details were worked up. It was wonderful for its minuteness; but then it was so grouped that the Saviour of the World was made the centre figure? Was it not a conglomeration of wonderfully studied models? Where was there in it the glorification of one figure? The intense realism was gradually overcoming the mysticism with which Pre-Raffaellism had started. However, the question before them was whether this peculiar style was the correlative of Gothic art. He declared it was not. At the same time he was ready to acknowledge the good it had done. Painting had fallen into blotched habits that required correction; but since the appearance of Pre-Raffaellism the Academy had paid more attention to details, and so proved that this movement had done good. Gothic architecture aimed at an imaginative scale, the Grecian temple did not: the spiritualism embodied in the Gothic design was never absent, but in Pre-Raffaellism could not be discovered. He always admired the facial line of the Greeks, and could not approve of the Pre-Raffaellite abandoning the Greek model for the English face of everyday life. He did not look for the spiritualism of Gothic art amongst this school. He had thrown out these cursory remarks to provoke discussion on the subject.

Mr. Burgess observed that the Pre-Raffaellites had tried to do with painting what the Camden Society had done with architecture: the latter had gone back to first principles, to correct the irregularities which were springing up: the former had faithfully adhered to nature. Rosetti, Hunt, and Millais still adhered to nature, and were improving; he expected that the world would be delivered by their labours of the conventionalism under which it had been bound. He hoped that the Pre-Raffaellites would break the facial line of Greek face which the president so much admired, and thought that if Venus were turned into flesh and blood, she would not be such a creature as any one here would admire.

Mr. Seddon remarked, that the Pre-Raffaellites had worked under great difficulties, but were gradually getting rid of early faults. The last production of Holman Hunt's, was a vast improvement on any of his previous works.

Mr. Gaubier Parry thought that Pre-Raffaellism should be called Pre-Reynoldism, because it was a return to the pure system of colouring.

Mr. Street felt strongly in favour of the school. The main object it proposed was to do everything in the most natural manner. Pre-Raffaellites had a most enthusiastic love of Gothic art, and had been the only body who forwarded a memorial in favour of Mr. Scott's design for the Houses of Parliament. They were desirous for minute details; but if the walls of cathedrals and public buildings were given up to them, they would soon lay aside this fault. Instead of paying two guineas a foot for painted windows, patrons of art should encourage the Pre-Raffaellite by commissioning him to paint his walls. The enthusiasts of the school had shown the determination to succeed in their art, by painting, gratuitously, the walls of the Oxford Union. The Eccliological Society would be devoting itself to the principles with which it had started, if it secured for the

schools the balls of some churches, on which to develop their art.

The Rev. W. Scott observed that he had been struck with the fidelity of Pre-Raphaelite painting, when he went to southern latitudes. Mr. Holman Hunt's last painting was an exact representation of the atmospheric perspective, as he had seen it in the latitude of Jerusalem; for he might remind the meeting that chiaro-oscuro did not exist in tropical climates. In consequence objects appeared much flatter than in this country; at the same time it was a great mistake to introduce flat treatment in northern latitudes. There was a great deal of cant amongst Pre-Raphaelites as to the study of the nude figure; if the school applied itself to the greatest work of God, that which He pronounced very good when He had created it, they would do more good than by their present outcry, and deserve more of it.

The Rev. George Williams confirmed Mr. Scott's observation as to the fidelity with which the Pre-Raphaelites painted Eastern scenes. Mr. Seddon's picture of Jerusalem, now the nation's property, forcibly reminded him of the very scenes among which he had moved for eighteen months. The devotion to their art which prompted members of the school to undertake journeys to the East and sacrifice valuable time was beyond all praise.

Several specimens of art in connection with eccelesiology were exhibited at the conclusion of the discussion, and the society adjourned its meeting.

THE BRITISH INSTITUTION.

The collection of works by deceased foreign and English masters, now exhibiting in Pall Mall, is one of the most interesting we have seen there; for some years, including, in the first room, some noble Vandyses,—“St. John” (25), and “St. Matthew” (31), by Carlo Dolce; Rembrandt's marvellous “Standard Bearer” (27), and some exquisite Ruysdaels. If the “Giulio de Medici” (21) be not by Raffiello, it is nevertheless a work of wonderful power and beauty. The Countess of Jersey's version of Vaudyke's “Charles I. on Horseback” (1) is greatly inferior to that in Warwick Castle; in fact, if genuine, it has evidently been painted over by another hand.

In the middle room are several early works, notably (102) “Virgin and Child, with Angels,” by S. Botticelli, and (114) “Virgin and Child,” by D. Ghirlandajo. “Christ at the Pillar,” by Velasquez (81), a remarkable work, is injured by its position. Sir Joshua Reynolds (Burke, Dr. Hawkesworth, and others), Gainsborough, Calcott (in force), Smirke (especially his designs from “The Rambler,” 130), and Leslie, of whose works here we have spoken on another page, maintain with honour the position of the British school.

ART AND PHOTOGRAPHY.

In the hands of a good artist there are few materials, either in animate or inanimate nature, which cannot be so arranged as to be made to tell as pleasantly on the sight as sweet music does upon the ear. A crumbling moss-grown wall, a piece of brickwork with fresh creeping plants, or a flower or two close by, a little cluster of wild flowers, the bleak and monotonous henth, the clustering of branches against the sky of varying shade, groups of simple objects in farm-yards or at cottage-doors, and a thousand other matters can be made into things of beauty which have an effect upon the senses. It is remarkable, however, how differently each artist sees and translates nature.

Not long since we saw some out-door studies of a cottage, with a simple background, sketched by seven artists, each, in his way, distinguished; and it was surprising to note how different was the feeling displayed, and yet each view would have been pronounced by a close observer to be a good transcript of nature. It is the same with the human countenance. Take, for instance, half a dozen portraits of an eminent man, executed by different hands, and although all good likenesses, how different are the expression and treatment in each!

If we could get a drawing from a similar point of view of the same subject by Roberts, Cattermole, Prout, Nash, and Mackenzie, each would have an impress of fidelity; and yet how varied would be each picture! Painting is in its way similar to poetry, and each artist in his peculiar manner appeals to the senses of others. Some delight in the lofty strata of Milton, others in the pleasing but more simple images of Cowper or Crabbe. So it is with pictures: each in its way, if true to the principles of harmony and art, finds its class of admirers.

The trained artist, who is gifted with a natural

faculty for art, sees the wonderful combinations preserved by nature,—the glowing reflections, the mingling and falling of tints, all in tune. He seizes and makes the most of points of interest, and what is faulty throws “discreetly into shade;” and it is this mental quality in art which will always render photography its useful handmaid, and not a rival.

THE LATE MR. JOHN WHICHCOKD, SEN., ARCHITECT.

We regret to have to record the death of this much-respected architect, which took place at his house, in Maidstone, on Sunday last. He was born at Devides, in Wiltshire, in 1790, where his father practised as a surveyor, but died while quite in his youth. He was articled in 1806, in the usual way, to Mr. C. Harcourt Masters, architect, of Bath, at the expiration of which he entered the drawing-office of the celebrated D. Alexander, by whom he was afterwards engaged on the great works at the London Docks, and subsequently at that large and original hudding,—the goal at Maidstone. On Mr. Alexander's retirement he succeeded him in all the county business, and not only so, but to a very large practice, both public and private. His principal works were the large county lunatic asylum, the churches of the Holy Trinity and St. Philip at Maidstone, the corn exchange, the Kent Fire-office, and many other works at the same place. He also built no fewer than fifteen union poor-houses through various parts of the county.

His cool judgment, talent, and integrity, gave him a very large share of reference business, and secured him the confidence of the clergy: indeed, he is said to have built more parsonage houses, or transacted other business in relation to them, than almost any man in England.

His late preceptor, Alexander, being equally well known as an engineer and as an architect, Mr. Whichcokd was appointed the surveyor (as it is called) to the Medway Navigation Company, and executed on that river several extensive hydraulic works, particularly some difficult tidal locks, besides erecting a great number of bridges through the county. As a professional man, as an active magistrate, and as a private friend, few have had more respect, or in the language of our great poet—(lines which he often repeated to younger men)—have had a greater share of

“That which should accompany old age,—  
As honour, love, obedience, troops of friends.”

Few men indeed have left this life with greater respect from all classes, from the highest to the lowest, than he who is the subject of our present notice.

FRENCH INTELLIGENCE.

The town of Melan, on the 27th ult., inaugurated the statue of Jacques Amyot, the celebrated translator of Plutarch, bishop of Auxerre, and founder of the college of that town. Among the personages present were the Comte de Nieuwerkerke, director of the Imperial museums; M. Maury, and M. Longprer, of the Institute of France; and the ancient minister, M. Drouyn de Lhuys. Much interest was excited by the presence of the last descendants of Jacques Amyot, viz. Nicholas Amyot, his brother, viz. Amyot de Fontainebleau, and Vicomte de Kerkiguen, deputy at the Chambers of France. The usual discourses were pronounced by the Prefect of the Seine-et-Marne, M. Nieuwerkerke, and M. Maury. The statue is due to the chisel of one of his townsmen, M. Godiu, and bears the following inscription:—

“Enfant d'une famille humble et pauvre,  
Il va chercher la science à Paris  
Soul et sans appui.  
Sert des écoliers pour vivre et s'instruire.  
Maître des Arts à XIX ans,  
Professeur de Grec et de Latin à l'Université de Bourges,  
Honoré pour ses écrits,  
De l'abbaye de Beilozanne par François I<sup>er</sup>  
Précepteur de deux fils de Henri II.  
Grand amonier de France, Evêque d'Auxerre,  
Commandeur de l'Ordre du Saint Esprit,  
Toujours modeste, retiré, laborieux,  
Bienfaisant et tolérant pour tous.”

He died in 1593.

A silver medal was awarded at the last agricultural meeting in Bordeaux, on the 13th ult., to the inventor of a new tipping cart or tumbrel, which he calls *tomereau remblayeur*. In the culture of the vine up to the present time an inconvenience has always occurred which was not easily remedied. The furrows left by the plough

have to be filled up by the hand carefully, as any water lodging in them would materially affect the safety of the plants. This machine, perched on an axle-tree sufficiently long to have each wheel in a furrow and the horse and man in the centre one, tips the earth where required: the axles are placed at such a height as to leave the vines untouched, and, in consequence, the diameter of the wheels is enormous. Its use has been appreciated by those best acquainted with vine-growing and vineyards, viz. the Bordeaux farmers. The inventor is M. Sansot, of the Gironde.

The French Government has ordered the immediate execution of the works for deepening the canal of the Haute Deule, between the Fort de Scarpe and the Lock of La Barre, above the town of Lillo, at an expense of 290,000 francs (11,600*l.*).

The adjudication of the fortification works, near the Kehl bridge, on the Baden side of the Rhine, took place these last few days. The estimate of masonry, ironwork, and carpentry work, amounted to 332,000 florins. The tenders were numerous, and the greatest portion of the works was awarded to foreign contractors, says the *Gazette*, of Fribourg, who took them at 2½ per cent. below the estimated cost. By this diminution the State gains 20,000 florins. At Kehl there is a veritable mania of house building and decorating, especially in large shops, cafés, and beer-shops; and the inhabitants look forward to an influx of visitors from Strashourg and Alsatia, when the railway junction is completed.

Mons. Auguste Mariette, the celebrated archaeologist writes from Egypt, says the *Payis*, that he has just discovered the whole of an immense palace, in granite, a few paces from the great Sphinx. He believes it to be the palace of the famous Chephrem, who lived about 3,600 years B.C., and who constructed the Great Pyramid. Seven superb statues of this prince were found in the structure, imbedded in sand.

At Havre an enormous buoy, of riveted iron, has excited some interest. This buoy, measuring at least 8 mètres from the base to the summit, has the form of an inverted balloon. On the round or upper portion, an open-work map of the world is displayed: beneath it is suspended a bell, of pretty large dimensions, with seven banners ranged around it, and disposed so that the slightest oscillation is sufficient to render sound. The lower portion submerged is hollow and watertight. On the outside are four ladders, uniformly spaced, for ascending to the top of the buoy from the water.

THE ARCHITECTURAL MUSEUM.

The following letter was read at the meeting of the Architectural Museum Committee, on Monday last:—

The family of a late Sir Charles Barry beg to tender their hearty thanks for the resolution of the committee of the Architectural Museum. Living, as he did, almost wholly for art, it would have been deeply gratifying to him, and it is therefore in the highest degree consoling to them, to receive so emphatic and so general a recognition of the value of his public services. It is scarcely less gratifying to find that in those institutions, in the work of which he had some practical part, and took at all times a strong personal interest, his loss is so truly felt, and his memory so kindly regarded. And for themselves they must ever retain a deep sense of the warm and kindly sympathy which has been given to them in their trouble, and been valued by them in a degree proportionate to the greatness of their loss. Nor can they fail, at the same time, to return their sincere thanks to the committee for the part taken by them in the ceremonial of this day, and in that general and spontaneous tribute of respect which would have been highly appreciated by its object, and will ever live in the recollection of those whom he has left behind.

Clapham, May 29<sup>th</sup>, 1860.

BATH AND WEST OF ENGLAND SOCIETY FOR THE ENCOURAGEMENT OF AGRICULTURE, ARTS, MANUFACTURES, AND COMMERCE.

On the 4th instant the annual exhibition of this society was opened at Dorchester. The exhibition appears to have been a very extensive one, and not the least interesting feature in it was the fine-art and manufacturing department, more particularly the “special protection” shed, a building of wood, 100 feet by 40 feet, covered with corrugated iron, and lighted by a skylight at the junction of the roof from end to end. Here the choicest and most valuable contributions were arranged. It contained upwards of 270 artistic specimens. The collection of works of art from the Kensington Museum and the Science and Art Department alone was estimated at 30,000*l.* value. The art branch of the exhibition also included a gallery of pictures and a collection of antiquities, specimens of carving, &c. The west end of the

"special protection" shed was fitted up with a stained-glass window. The department of machinery (in motion), implements, &c., was crowded with objects of agricultural interest. The town was gay with decorations—public and private,—ringing of bells, and a numerous accession of visitors.\*

#### SHREWSBURY CONGRESS OF THE BRITISH ARCHEOLOGICAL ASSOCIATION.

The proposed congress, to be held in Shrewsbury, August 6th to 11th inclusive, promises to be more than usually successful. Berial Botfield, esq., M.P., is the president. The following is an outline of the intended proceedings:—

Monday, August 6.—General meeting, three p.m. precisely; the president's address; visit to the Abbey Church; St. Mary's; the School and Library; remains of castle; old Loues; table d'hôte; evening meeting at the Towmill for papers.

Tuesday.—Visit to Buildwas Abbey; Messrs. Maw's encaustic tile manufactory; luncheon given by Messrs. Maw at Benthall Hall; Wenlock and Priory; Acton Burnell; Pitchford Hall; evening meeting, half-past eight.

Wednesday.—Visit to Shifnal Church; Tong Church; White Ladies; Boschell; Royal Oak; luncheon given by the president at Decker-hill; Lilleshall Abbey; evening meeting.

Thursday.—Visit to the Roman lead mines at Shelve; luncheon given by Rev. T. F. More, at Linley Hall; Roman villa at Linley; More Church; evening meeting.

Friday.—Visit to Ludlow Castle, church, &c.; luncheon given by Sir Charles Boughton, bart., at Ludlow; Stokesay Castle; evening meeting.

Saturday.—Visit to Battlefield and church; Haughmond Abbey and hill; camp on Ebury-hill; Wroxeter, the excavations on the site of Uriconium; Wroxeter Church; Ateam Church; table d'hôte; evening meeting; conclusion.

#### THE DRINKING-FOUNTAIN MOVEMENT.

**Brighton.**—The want of taste displayed in most of the drinking-fountains here is protested against by the *Brighton Times*, which especially alludes to the conventional absurdity of lions' mouths spouting water, the faces, so far from being like those of lions, being neither the likeness of least nor man, but something between the two. What we said in the first instance, as to London, is being repeated elsewhere.

**Poole.**—The drinking-fountain presented to the town by Mr. G. W. Franklyn, one of the borough members, says the *Shear and Journal*, has been erected in the square, in front of the National Provincial Bank. The base is a column, the four sides of which represent different figures. This is surmounted by a kind of cupola, supported upon four light columns, resting upon swans. Within this cupola the water descends from the roof in a slight stream. From the top of the cupola an iron pillar springs, which supports a lamp. The material is iron bronzed.

**Hanley.**—The drinking-fountain presented to the borough of Hanley by Mr. Brownfield during his mayoralty has been formally dedicated to the public service. It has been erected in the Lower Market-square, and is a *fac simile* of that at the Royal Exchange, and the only copy which the owners of the design have allowed to be erected in the provinces. A stone platform composed of three broad steps supports a pedestal, the base and cap of which are of Aberdeen granite, and the shaft of "Lizard" marble. The pedestal is surmounted by a female figure in bronze. The figure is draped, and holds in its hands a cover or vase, from which the water flows. A small trough at the base of the platform is intended for the refreshment of members of the canine fraternity. The entire cost of the fountain and of its erection will be about 200l. The figure, which is 4 feet 6 inches in height, was cast by the Coalbrookdale Company, from the design of Messrs. Wills, Brothers, of London, and was erected under the superintendence of Mr. Scrivener, of Hanley, architect.

**Glasgow.**—A drinking-fountain has been placed in the centre of St. Enoch's-square, to commemorate the inauguration, by her Majesty, of the City of Glasgow Corporation Waterworks. It is composed of cast-iron, and occupies an area of 3 feet square, by 9 feet 6 inches in height. The structure consists of a square basement (which also supplies water to dogs), surmounted at each angle

by columns composed of reeds and clustering water leaves. Surmounting this is an open and enriched dome, the apex being occupied by a crown, to which, if necessary, may also be added a lamp. Under the canopy stands the font. Messrs. Walter M'Farlane & Co. are the manufacturers and patentees.

#### THE IRON AND MACHINE TRADES.

The immense expansion of the iron trade of late years, remarks the *Mining Review*, is rendered obvious by recent official returns. The value of the exports last year and in 1854, 1849, and 1844, was as follows:—

	1859.	1854.	1849.	1844.
Pig iron.....	901,929	1,244,853	417,457	316,400
Bar, bolt, and rod.....	2,373,910	3,731,071	2,655,247	1,498,141
Railroad.....	4,125,088			
Cast.....	795,819	737,428	174,452	188,972
Other kinds.....	275,919	158,400	82,091	46,831
Wrought iron..	3,129,381	3,129,381	1,386,867	949,515
Unwrought steel	805,832	681,852	319,881	192,392

The demand for British machinery exhibits a similar progress. The value of the steam engines exported in 1844 was 317,092l.; 152,519l. in 1849; 566,768l. in 1854; and 973,340l. in 1859. Other machinery was exported of 459,923l. in 1844; 548,112l. in 1849; 1,364,092l. in 1854; and 2,757,941l. in 1859.

#### COMPETITIONS.

**Public Rooms, Kirkcubright.**—The premium of 20l. for the best design for public rooms has been adjudged to Messrs. Haig & Low, of West George-street, Glasgow. There were eighteen competitors from various parts of the country—London, Southampton, Leeds, South Shields, Newcastle, Kilmarnock, Glasgow, Edinburgh, &c.

**Aldershot Cemetery.**—The Burial Board for the parish of Aldershot have decided in favour of the design submitted by Mr. T. Goodchild, F.S.A., architect, Guildford, and these are to be carried into execution forthwith.

**Scarborough.**—Mr. W. B. Stewart, architect, is the successful competitor for the building of the New Primitive Methodist Chapel in this place. Six plans were sent in. Mr. Stewart was the architect of the Royal Northern Sea Bathing Infirmary, at Scarborough.

**Wolfe Cemetery.**—In answer to this advertisement, which appeared in our columns, numerous designs were received, of which, after consideration, those bearing the motto, "I take aim for the mark," were selected, and, upon opening the letter accompanying them, were found to be from Mr. C. H. Edwards, of London, architect.

#### CHURCH-BUILDING NEWS.

**Tickwell (Leicestershire).**—The church of All Saints, which is in a very dilapidated state, is about to undergo a restoration, consisting of new roofs on nave and aisles, rebuilding the south aisle and porch, entirely resetting, with new pulpit and reading-desk, and sundry door and window restorations. The chancel was restored some years since by the patron of the living, the Earl of Gainsborough. The chief features in the church are the Norman arcade, on north side of nave, and the tower. The works are going to be carried out under the superintendence of Mr. R. W. Johnson, of Melton Mowbray, architect.

**Northampton.**—The restoration of the decorated church at Fincon, according to the *Northampton Herald*, is now completed. A reredos, after a design by Mr. Slater, the architect of the restored church, has been erected against the east wall behind the altar. It is of the same style as the rest of the church. It consists of five highly-pointed canopies of Caen stone, supported by red marble pilasters. The restored chancel screen is of Caen stone, excepting the portion behind the pulpit, where the only perfect piece of the original is inserted.

**Colchester.**—Wivenhoe Church has been restored and reopened. The first stone of the nearly new structure was laid about the middle of June of last year, by Lady Georgiana Gordon Rebow, and the restorations have now been completed at a sum amounting to nearly 3,000l. The building operations have been carried out under the superintendence of Mr. E. C. Hukewill, architect, London, and Messrs. White, of Vauxhall-road, and Eade of Wivenhoe. Oak doors, covered with iron work, open into the north and south aisles of the nave, the two first arches of which were original, and, with some dilapidated windows of

the north aisle which have been replaced with new, have given a key to the architectural period of the whole work—namely, the Decorated of the fourteenth century. Except the south aisle, which has been added, all the walls are on the old foundations. There are now no galleries to be seen, and the tower arch, which is therefore open, shows the west window above the organ with the old instrument in a renovated case. The whole of the pewing is of oak. The east window to chancel, and the west window of north chancel aisle, are filled with stained glass, and are both memorial windows, as are also the tower window and the west window of south aisle of nave. Open timber roofs of high pitch cover the building. In the east chancel, over the altar, is a memorial stained-glass window. The subjects comprise, the Annunciation, Baptism, Crucifixion, and Entombment. In the east of the north chancel aisle is also a stained-glass memorial window. The two side-lights represent our Saviour bearing the Cross, and His appearance to Mary Magdalene in the garden; and the central light depicts Christ's Ascension. The upper tracery contains symbolic representations of the Trinity and the Four Evangelists. These windows were executed by Mr. Warrington, of London. There are memorial windows at the west-end of the church, representing "Christ walking upon the Sea and stilling the Tempest;" and in the church tower, behind the organ, depicting two full-sized figures of angels, expressive of praise. The two latter windows were executed by Cassell, of London.

**Maldstone.**—The Baptist chapel in King-street, having become very much dilapidated, is now being pulled down, preparatory to the erection of a more commodious building. The new chapel will be a Gothic structure, the front towards King-street, presenting two tiers of windows, the upper windows being placed in small gables rising from the parapet of the chapel roof. The entrance will be under a tower at the N.W. angle. The upper portion of the tower is finished by angle pinnacles, from which a spire rises to the height of 100 feet. The west end is lighted by a five-light window, the staircases to galleries and approaches to school-rooms being arranged under. The south side is similar in elevation to the front facing King-street. The east end is a polygonal apse: in each face is a single-light window, and it is proposed to fill these windows with stained glass. The internal arrangement is a combination of the early Gothic styles with the requirements of the present age. Messrs. Peck and Stephens are the architects, and the contract of Messrs. Sutton, Walker, and Goodwin has been accepted for the erection of the building.

**St. Helier's.**—The foundation-stone of the new Congregational chapel, Victoria street, St. Helier, according to the *Jersey Times*, has just been laid. The edifice will be in the early English style, and built of blue and grey native granite with Caen stone dressings. There is a tower at the south-east angle, surmounted with a corresponding spire, at a height of 100 feet, the lower stages of which consist of eight arcades of the pointed trefoil arch, sharply moulded, and finished with carved canopies and finials. The front elevation exhibits a central doorway, and over it a three-light window, after the example of the great western window of Salisbury Cathedral. There are also two-light windows on each side of the door to give light to the lobbies, windows of similar construction in the tower, and a small sharply-moulded quatrefoil window in the centre of the gable. The interior of the church has an open-arched ceiling, wrought in plaster of Paris, in imitation of groined stone roof, with ribs moulded rising from ornamental bosses, and ornamented with bosses at their intersections. In the rear of the church is a school-room. Mr. Philip Brée is the architect, and Mr. James E. Hoday the builder.

**Chen-Magna (Somerset).**—The parish church here has been re-opened, after having been closed since September last, for the purpose of repair and restoration. The nave, north and south aisles, and Strachey and Baber chapels, have been furnished with open seats. The tower arch, at the west end, has been opened to view by the removal of the organ, which blocked up the west entrance. The organ has been placed on the north side of the sanctuary, forming an ornamental screen in front of the vestry. The screen, which divides the chancel from the nave and aisles, has now been divided into three parts, all the old bays restored, and put between the columns of the centre arch of the chancel leading into the nave, and the arches leading into the Strachey and Baber chapels. When the funds will permit, it is intended to complete the restoration of this screen

\* An elaborate and extended account of the whole of the exhibition and proceedings, prizes, &c., appears in the *Dorset Chronicle* of 7th instant.

by the addition of a carved cornice of vine foliage and crocketing. In restoring the screen, the ancient polychrome decorations were brought to light, on the removal of the modern coats of paint, and it is proposed to restore the gildings and colourings of the fifteenth century. One of the bays has been rigidised and coloured. The chancel has been repaved with Peumant stone, inlaid with tiles, the gift of Mr. Rose. During the progress of this part of the work the old altar slab was discovered buried under the chancel. This slab has been restored as far as possible, and now forms a dais or platform for the present altar-table. New roofs have been added to the north and south aisles, the tower chamber, and the Strachey and Baber chapels. The additional restorations in the side chapels are of minor character, but the stone work throughout all the columns and arches has been restored. By the new arrangement of the seats, accommodation is provided for about 460 persons. The works have been carried out under the superintendence of Mr. Norton, of London, architect. The general contractor was Mr. Kingham, of Ipswich, but the mason's, plasterer's, and carved stone work, were entrusted to Mr. J. King, of Bristol. The foundation stone of a new vicarage-house has been laid. The site adjoins the old parsonage-house, which is to be pulled down, and as much of the old material used as possible. The style of the new building will be Gothic. The architect is Mr. Norton.

**Dunham (Cheshire).**—The foundation-stone of a new church has been laid at Dunham by Miss Park, of Ince Hall, the first sod having been cut by Mrs. Barker on the 6th of April. Dunham Church is to be a chapel of ease in the parish of Thornton. The edifice is to be erected of stone, in the Decorated style. It will have a chancel, nave, vestry, south porch, and a bell-cot on the west gable. Accommodation will be provided for 110 persons, in open seats, all free. The building is estimated to cost 800*l*. Mr. Joseph Barton, of Dunham, is the contractor; and Mr. James Harrison, of Chester, the architect.

**Heywood (Lancashire).**—Two of the foundation-stones of the new church of St. Luke were laid on Thursday, May 31st; one stone, in the north-west angle, being laid by the clergy; and one, in the north-east corner, by the Masonic brethren. The day was observed as a general holiday. The members of nearly all the "orders" or "clubs" in the town and neighbourhood assembled, and walked in procession to the churchyard, where immense platforms had been erected. Some 18,000 to 20,000 persons were astir about the ceremonial. The church comprises a parallelogram of 131 feet by 67 feet, divided into a chancel, 42 feet by 22 feet; a nave of 80 feet by 24 feet wide; and aisles, 16 feet 6 inches wide, extending the whole length of the nave and chancel, excepting where meeting the vestry, with the heating-chamber under, on the south side of the chancel. On the north side, next to York-street, and approached by a wide flight of steps, is a detached tower, 23 feet square, exclusive of the buttresses, and a spire of the total height of 188 feet, forming the principal entrance into the church; whilst on the south side, next to Church-street, is a porch entrance. Attached to the north side of the chancel aisle is to be a chapel belonging to Mr. Joseph Fenton, J.P., of Banford Hall. The church is designed in the character of ecclesiastical architecture which flourished during the period of Edward III. It will be built with Yorkshire freestone and Staffordshire ashlar stone externally, and Bath stone ashlar work internally. The roofs will be open, of pitch pine, springing from a lofty clerestory, with the lights carried on slender shafts of coloured stone. The east window is of seven lights, and it is expected, will be filled with stained glass. The west window is also large, and of six lights. The clustered columns in the chancel, with the shaft of the chancel arch, as well as the shafts of corbel supporting the roofs, will be of local-coloured stones, mixed with marbles and serpentine, as the funds will allow. The seats will be of pitch pine, varnished. A great amount of carving is intended. A sum of more than 10,000*l*. has been raised to rebuild the church. The edifice is being erected from plans furnished by Mr. Joseph Clarke; and the contractor is Mr. E. Hughes, of Liverpool. Mr. Radcliffe is clerk of the works. The church will accommodate 1,000 sitting, without galleries.

**Grimston.**—We understand, says the *York Herald*, that the parish church of Grimston, or Kirkby Wharfe, near Tadcaster, is at present being restored, enlarged, and beautified by the family of the late Lord Londesborough, in the memory of his lordship. It is intended to preserve all the interesting old architectural features of

the church, including the Norman doorway, the early English lancet windows in the tower, and the transition pillars and arches of the nave. Considerable accommodation will be gained by the addition of a north aisle, which will at the same time afford a west window towards the park. The east window, which will be entirely new, and in the Decorated style, is to be filled with stained glass by Capronnier, of Brussels. The furniture for the chancel will be worked by Lady Londesborough and the Hon. Miss Denison.

SCHOOL-BUILDING NEWS.

**Caversham.**—The foundation stone has been laid of "Amersham Hall School," Caversham, near Reading. The building, which is in the Tudor style, is from the design of Messrs. Haslam & Buckland, of Reading and London, and the contractors are Messrs. Orton & Child, of Reading, who have undertaken the work at something over 4,000*l*. It forms three sides of a quadrangle; the centre occupied by the dwelling-house; the western wing, intended for the class-rooms and dormitories, affording accommodation for nearly 100 pupils, and externally approached from the quadrangle by cloisters; the eastern wing includes all the domestic offices, and the dining-hall, and will communicate with the centre school wing by a corridor. The site is upon an elevated piece of land on the road leading from Caversham to Henley, about one mile from Reading.

**York.**—The foundation stone of a new Wesleyan Sabbath School has been laid adjoining the Centenary Chapel, in St. Saviour-gate. The cost will be about 1,600*l*. There will be two rooms, the larger one 54 by 36 feet, and the smaller one about 30 feet square. They will communicate with each other, and there will be connected with them six class-rooms, including a large room for a library. The architect is Mr. Edward Taylor, of York, and the following are the contractors:—Young & Biscorn, builders; Shaw & Young, joiners; Close, Ayre, & Nicholson, the iron work and hot-water apparatus; Wm. Hartley, plumber; H. Rayson, painter; and Francis Rawling, plasterer. The school will be capable of accommodating about 400 children.

**Sheffield.**—The local Poor-law Guardians have received the following tenders for the alterations at the Pitsmoor schools:—B. Carr, 825*l*.; Wm. Turtle, 775*l*.; Wm. Reynolds, 818*l*.; G. Smith, 790*l*.; B. Marshall, 650*l*.; J. Hickson (the contractor for the mason work in the Workhouse alterations), original tender, 742*l*.; amended tender, 796*l*. The tender of Mr. Turtle has been accepted, being the lowest. Mr. Stafford tendered for the painting, and Messrs. W. T. Larder & C. W. Black, sent in a joint tender, one to do the joiners' work, and the other the masons' and other work. These tenders were laid aside as informal, the guardians requiring to have one contractor for the whole work. The tender of Messrs. Larder & Black was over 900*l*. Mr. Cashin, who made the design, has been appointed architect, at the usual per centage.

**Thurso.**—The foundation-stone of the Miller Educational Institution has been laid, according to the *John O'Groat Journal*. Sir George Sinclair took the principal part in the ceremonial. The builder is Mr. Smith, who has erected various buildings in Thurso, including the new church, with spire, which has just been built for the Free West congregation. The site of Miller's Institution is to the south of Sinclair-street, a short distance from the Free West Church. This is in what is called the New Town of Thurso, which is extending rapidly. The academy is intended to occupy the centre of what will be a square. The front, built of polished ashlar, will be to Sinclair-street. The style of architecture will be the Roman Doric. The building will be cruciform, consisting of a centre-piece with four wings, the frontal one consisting of a portico, faced by four columns. The shape will not be unlike that of Pulteney-town Academy, and, as in it, there will be but one floor, the height of the side walls, above the platform, being 14 feet. The whole will be surrounded by a wall, which will enclose the play-ground. Mr. Miller is to give the sum of 1,500*l*. for the building, should that sum be necessary for its completion, besides sinking a considerable sum for a permanent endowment.

A SHEET OF PAPER FOUR MILES LONG.—A sheet of tissue paper has been exhibiting at Colyton, Devonshire. It measures in length four miles, being 21,000 feet long, and is in breadth 6 feet 3 inches. The weight of it is but 196 lbs. It was manufactured in twelve hours.

STAINED GLASS.

**Harrow.**—A stained glass window by Clayton & Bell has recently been erected in Harrow School Chapel. Subject, St. Paul's Farewell to the Ephesians. We may here note that a window in Ludlow Church, lately alluded to in our columns, was by the same artists.

**Newport (Isle of Wight).**—Another window of stained glass has been added to St. Thomas's Church, according to the *Hampshire Advertiser*. It is placed immediately over the monument erected by her Majesty to the memory of Elizabeth, daughter of Charles I. The window was designed by Mr. R. J. Withers, architect, London. In the centre the subject is, Our Lord, with Mary and Martha. The sides represent the parable of the Ten Virgins. The work was done by Messrs. Lavers & Barraud, of Bloomsbury, and was erected by Messrs. Stannard, of Newport. The funds for the same were collected and subscribed by young ladies. It is therefore called the "Maiden Window." It is intended as a tribute of dutiful respect and gratitude to the Queen.

THE GREAT MALTA HOSPITAL.—WHERE IS IT?

In an article on the "Site and Construction of Hospitals," in the current number of the *British and Foreign Medico-Chirurgical Review*, and at page 310, there occurs the following passage:—"In the very elegant new garrison hospital in course of erection at Malta, from designs by the Sanitary Commission on Barracks and Hospitals, the distance between the pavilions is about a third less, and the walls most exposed to the sun are double, to subdue the effects of the sun's rays on the interior of the wards, while the windows are provided with *jalousies*."

I have put questions about this hospital to several officers of more than usual intelligence and of more than usual observation, who have lately returned from Malta, and one and all declare that there is no such building in course of erection, or indeed thought of; that one of the old *ambryes* is being converted into an hospital, but that no new hospital building is known in the island.

Now the "little military hot-house" is not the sort of place at which a pavilioned hospital for eight battalions is likely to be long kept out of view; and besides that, on looking through the army estimates for the last four years, one finds that not a farthing has been voted for such a purpose.

Can any of your readers give any information on this subject? Perhaps the reviewer himself, who seems, by his context, to have the good taste to be a reader of *The Builder*, will be so good as to answer the question. Cwm.

A SOCIAL WANT.

I KNOW from observation that your remarks some time ago on the small, unclean, and unventilated eating-houses in the City have led, by gradual changes, to the opening of new, or altering old, places for this purpose, which are much more comfortable than the "horse-boxes" in which we had hitherto been compelled to dine. Having thus been benefited by your suggestions, it is now my object to draw your attention to the number of men, a great portion of them bachelors, who labour in town, but sleep in the suburbs. If you notice the "bus" loads from either Camberwell, Euston, and Clapham, on the south, or from Islington, Highbury, and Kingsland, on the north of the Thames, which pour into London every morning, it will, I think, at once strike you as an important question,—how do these people spend their evenings? I have a tolerable acquaintance amongst them, and know for a certainty that, if a true answer could be obtained to this question, it would show that, in the absence of better places of resort, they were in the habit of frequenting the bar-parlours of the public-houses in the neighbourhood of their lodgings. Several instances have come under my eye, where in the pernicious influences of such a habit have had a most injurious effect upon the future of those who have formed it. Therefore, I beg to suggest, through your columns, that as there are places in the centre of London where the wealthy man can spend his evening at his club, in various kinds of enjoyment, including eating, drinking, smoking, billiards, &c., whilst the middle classes have reading-rooms, with town and country papers, magazines, and reviews,—may smoke, play chess, or take part in a public debate if disposed, or can join "The Whittington Club," which offers similar advantages; and, in addition, receive social

refinement and conversational benefit from "the drawing-room," and "evening *soirée*,"—features of that institution;—I suggest, that if some such means of spending an evening as these were at the hands of young men, who, living at the suburbs, are too distant to be benefited by those now existing in our cities, it would be found productive of a vast change to the moral and physical benefit of this portion of the community. I believe such establishments would be well supported if some speculator thought it worth his investment to erect here and there round London large buildings, similar in advantages and objects to the above stated, with from 100 to 200 bed-rooms, plainly but comfortably furnished: baths, both hot and cold, and as well as landriads, also should be a branch of each establishment. There should be no more restriction upon the habits of each inmate than is necessary to the quiet, health, and comfort of others. Such a plan, if carried out, would benefit the investor, and confer a great social benefit upon thousands of men engaged in business during the day, and who now spend their evenings in a miserable and unhappy manner. A man may take lodgings which are good in many respects, but he may be a smoker, and his landlady object to smoking; he may be quiet and fond of reading, yet living in a house where there are noisy children; he may wish for society, and yet not find the company of those he is lodging with at all general. I have had a tolerable experience of these things, and have also heard the same complaints from myriads of others, who desiderate the opening of places here hinted at, where they could associate with men of their own age and class—where the literary and social resources would be an attraction stronger than late hours at a tavern. I am afraid that this subject, important as it is, will occupy too much of your valuable space; but whoever takes it up will, in my opinion, find a good return for his money, and confer a benefit upon men who are, like me, A CITY CLERK.

THE ARCHITECTURAL ASSOCIATION.

A MEETING of this Society was held in the Rooms, Conduit street, on Friday evening, June 8, for the nomination of candidates for the several offices of the ensuing year, and the transaction of general business: Mr. J. W. Penfold, in the chair.

Mr. H. A. Reeves brought before the Society a report of the sub-committee appointed the last night of meeting, to select among the younger members such as would be willing to serve on the committee of next year.

The report recommended that voting by proxy should be done away with in the election of officers, and nominated the following gentlemen as candidates:—Mr. T. Roger Smith, to fill the office of president; Mr. B. A. C. Ferring, the vice-president; Mr. B. A. Herring and Mr. Arthur Smith, for the honorary treasurer; Mr. Francis Trenchard, for the honorary solicitorship; Mr. Arthur Smith and Mr. E. Winbridge, for the honorary secretaryship; Mr. S. C. Capes, to fill the office of registrar; Mr. C. H. Lewis and Mr. B. O. Harris, as curators. The report submitted as willing to serve upon the committee, Mr. B. Bewell, Mr. R. Billins, Mr. Banker, Mr. W. Griffen, Mr. R. O. Harris, Mr. C. H. F. Lewis, Mr. New, Mr. Pain, Mr. H. A. Reeves, Mr. T. M. Rice, Mr. W. Winbridge, and Mr. A. Walters. Mr. W. T. Sams and Mr. S. C. Rogers were named as auditors.

The President said that the recommendation in the report to abolish voting by proxy could not be effected, without the repeal of one of the general laws of the Society, and must fall to the ground for the present.

The receipt of the report was duly mentioned and accepted.

Mr. Roger Smith proposed Mr. Bashill, to fill the office of president.

Mr. Rickman seconded the nomination.

Mr. Alfou was proposed and seconded, to fill the office of vice-president.

Mr. Parare hoped the meeting would allow him to make a few observations. He was not a member, but as he had heard of the present position of the Society, he determined to attend and lay before it a few practical suggestions, the carrying out of which might impart new life into the Association. When he was a member ten years ago, he found the papers read of such a stamp as did not seem to meet with the difficulties which a young man had to encounter in entering upon the drudgery of the profession, and this led him to take little interest in what was going on. He feared that the society at the present day was confining itself to the same beaten track, and that the papers submitted were beyond the grasp of most apprentices. He thought if the subjects were of a practical rather than artistic nature, and if half-a-dozen members were invited to bring each a paper on a particular evening, a discussion would be got up on the several points in which each presented peculiar views. This would interest all who attended. Thereby the points which were never explained in his office would be brought before an apprentice. He thought, also, that some test of a practical nature should be submitted to every person applying for admission into the society, in order to induce only those who could understand professional matters to attend. Mr. Parare having made some observations on the tendencies of the present day to break up the profession of the architect, and to allow the legitimate fees of the profession to fall into the hands of surveyors and auctioneers, concluded by expressing his anxious desire to contribute in every way to the welfare of the Association.

After some further conversation, Mr. Reeves proposed, and Mr. Pain seconded, Mr. A. Alfou, Mr. J. W. Penfold, and Mr. T. Roger Smith, as judges of essays and sketches made by the members of the Class of Design.

The President announced the 1st of September as the last day for the receipt of essays. The successful members will be declared the first meeting of next session.

COUNCILS OF CONCILIATION.

THE Bill, intitled "Masters and Operatives," introduced by Mr. Mackinnon in the month of February, and subsequently referred to a Select-Committee (who unanimously reported in its favour), finally passed the House of Commons on Tuesday, the 11th instant, and is now before the House of Lords.

I hope those who feel desirous that the Bill should pass will not delay in forwarding petitions to the House of Lords in favour of the same. Any information respecting the measure, will be cheerfully given upon application to the promoters.

I enclose form of petition: if you can find space for insertion, with this note, you will oblige,

THOMAS WINTERS, Secretary.

269, Strand, London.

To the Right Honourable the Lords Spiritual and Temporal of Great Britain and Ireland in Parliament assembled.

The humble petition of (here insert the name of the trade) (here insert the name of the town or place), humbly sheweth, that your petitioners beg to represent to your Right Honourable House, that the statute of George 4, cap 96, intitled, "An Act to Consolidate and Amend the Laws relative to the Arbitration of Disputes between Masters and Workmen" is inoperative.

That there exists a great unwillingness to go before a magistrate under this Act, as having some appearance of a criminal proceeding.

Your petitioners further submit to your Right Honourable House, that many of them are liable to heavy losses under various pretexts, which they are compelled to submit to, or summon their employers before a magistrate, the consequences of which would be, first, a long delay in the settlement of the dispute; second, a discharge from their employment. Either of these alternatives is sufficient to induce them to submit to a wrong. They feel, therefore, a necessity for some tribunal of ready access, capable of securing the respect and confidence of master and workman in cases of dispute, and of exercising salutary influence with regard to matters affecting the trade in general.

Your petitioners therefore pray, that your Right Honourable House will be pleased to pass the bill now before your Right Honourable House to enable masters and workmen to form equitable councils of conciliation and arbitration. And your petitioners, as in duty bound, will ever pray, &c., &c.

THE BUILDERS' THREATENED STRIKE.

RESPECTED Sir,—It afforded me great satisfaction, in perusing the article in last week's *Builder*, to find the practical common-sense view in which you put it; for, most certainly, it is not a diminution of the hours of actual labour that the majority of operative builders seek (though unfortunately it has been brought as such before the public), but it is unjust to judge the many for the few. I am practically acquainted with the position of the London operative, and the disadvantage he labours under, as compared with those of us in the country. I have walked five and six miles to my work when in London, and, in the contrary, had to be there six o'clock in the morning, and, after working ten hours, have had the same distance to walk home again. I ask, what opportunity has such a man to superintend and regulate his own business, and to be a limited partner in a concern? Is he to be a domestic, that must not be thought of by the working-man in London. It is true, we are told, by the Peace-at-any-Price Society, we must not toil on, but in our country, we are not so well off. But I am one of those who would like to make the best of both worlds, and I think there is many more like me.

A LUCKLESS J. NER.

P.S.—It is a rule here, when the distance to the work exceeds one mile, to walk it in the employer's time, and home again in our own.

COMMITTAL OF WORKMEN FOR THREATS.

At Clerkenwell Police-court, on 11th inst., three carpenters and joiners, lately in the employment of Mr. Philip Anley, builder, of Whitecross-street, St. Luke's, were charged, before Mr. Corrie, with endeavouring to compel their employer, by threats, to dismiss two other workmen who had signed the well-known "declaration." There was a unanimous assent to a fourth for a similar offence, but he had got out of the way.

Evidence having been given by the magistrate considered sufficient to prove the case against two of the defendants, William Walsby and John Griffin, and in course of which it appeared that Mr. Anley had proceeded against the defendants with the approval and support of the Masters' Association, Mr. Corrie proceeded at some length to express his opinion and decision on the case before him. The defendants, he said, were charged with a serious offence. They had attempted by threats and strike to stop the business of their employers, and to throw their fellow workmen or themselves, and their wives and children, out of the means of living, and probably to burden the public with their support. The question was, had the defendants made use of a threat punishable under Sec. 3 of 6th Geo. IV., cap. 129. He had no doubt, and was of opinion, that there was a very case in which the Act was passed to meet. It was clearly, in the words of the Act, an endeavour "to force the master to limit the description of his workmen." He must keep in mind the "declaration" which was made under the Act, and "clarification" referred to, that it was the master who had himself required the labourer to work under this "declaration." Mr. Anley said he had no workmen who had not made the "declaration" in the last year, and therefore, wherever might have been its terms, it would have been cowardly and mean on the part of the master had he consented to sacrifice the poor non-militant workman to the demands of the militant workmen, and that the man who had "declared" was, that they would not be guilty of a crime. Now, continued the magistrate, sitting here to administer the law indifferently between the masters and the men, and between one class of workmen and another—the "unionists" and the "declarations,"—

then I say that "societies with such objects are," adopting the words of the prosecuting counsel, "tyrannies." I say that nothing can be more monstrous or illegal than the conduct of the defendants, who have combined together and threatened the prosecution, that they would strike, and who have in fact struck work, with a view to prevent him from carrying on his business unless he will discharge men whose only offence, as far as I can see, is that, at the request of their employer, they have promised not to break the law. I have said that nothing can be more monstrous and illegal, and I add that few crimes can be named which are more wicked than the object which the defendants have in view is to deprive innocent men of the means of getting their living, and thus to drive their wives and families into the workhouse, unless these poor men will also offend against the law by joining these illegal societies. Having authority to administer the law, I tell the defendants and their associates that the law of England will not tolerate such tyranny, and that all such combinations and conspiracies will be put down by the strong arm of the law. I gave distinct notice in Perham's case that if illegal threats of this kind were again brought before me I would inflict upon the offenders the most severe punishment in my power. The threats used by these defendants are far worse than in Perham's case. The objects of these defendants are more wicked than his were. The threats are used with a view of ruining innocent men who have a right to the protection of the law in the disposal of their skill and labour.

Mr. Corrie then sentenced the defendants to be imprisoned for three months, with hard labour, with the exception of Trimlett, who was discharged for want of evidence.

Notice of appeal was given in both cases, and the defendants were liberated on bail.

BUILDERS' ACTIONS.

Williamson v. Lovelace.—This was a special case in the Court of Exchequer, June 6, stated for the opinion of the court by an arbitrator. The action was commenced by the plaintiff, a builder, against the Local Board of Health in respect of the work performed by him. Such a notice entered into a contract under seal to effect the necessary repairs, one of the covenants stipulating that if the Board should direct that the repairs should be made by the Board in the performance of the work they might remove him from the continuance of it, and all the moneys received by him up to that time should be deemed to be in full satisfaction of the work performed by him. Such a notice was given, and the plaintiff's removal was consequent upon it, and he sought to recover a sum of money which he alleged to be due to him from the Board, who pleaded that stipulations contained in the covenants.

Mr. Welsby (with whom was Mr. Horace Lloyd), argued for the plaintiff; Mr. Lush, Q.C. (with whom was Mr. M'Mahon) for the defendant.

Their Lordships held that the covenant in the contract prevented the plaintiff from recovering anything beyond the amount which he had received prior to his dismissal.—Judgment for the defendant.

LIGHT AND AIR.

FIMLICO HOTEL, BUCKINGHAM PALACE.

Baker v. Breach.—The defendant erected a wall, depriving the plaintiff of light and air, whereby his premises were rendered less commodious and valuable. On an injunction being moved for, the case was agreed to be deferred under the Lands Clauses Consolidation Act, as for compulsory sale.

Mr. G. Dent, Mr. R. L. Sibley, and Mr. E. Roberts deposed to the plaintiff having a beneficial lease and interest in the premises to the extent of about 1,000 ft.

On the part of defendant, it was contended that there was no value in the lease, and very little in business, and goodwill. He valued the whole at less than a third of that amount.—300l.

Mr. Oakley, to whom the matter was eventually referred, awarded 562l.: the expenses to be borne by defendant.

"SEYSELL ASPHALTE."

Sir,—I cannot but regret the use sought to be made of your columns, under the guise of imparting information to the public, by those whose real object is to narrow in their own favour the already exclusive limits of the Asphalt Trade.

In reply to Messrs. Armani's letter I beg to say—The bituminous limestone known in the trade as "Seyssel Asphalt." Messrs. Armani constantly attempted to prejudice Mr. Strapp, the engineer, to whom I furnished under the most exclusive evidence of the genuineness of my material, which evidence is at the service of any of your readers who care to see it. Mr. Strapp, however, on the solicitation of these gentlemen, granted, as understood, on their having a superfluity of material on the spot, allowed them to do a small portion of the work I had contracted for, the wisdom of which course I, am informed, been proved by the work being attacked under reply. My asphalt has been tested by an eminent analytical chemist, and pronounced superior to any other in use. Mr. Strapp has expressed himself as dissatisfied with my work, for which I have made and under certificate.

2. I do not enter upon the topography of the bituminous mines of France, because I should be sorry to occupy your space by exposing the contradictory statements made by competing firms, as to the source whence the supplies come. Of the genuineness of my own I have the fullest warrant; but, unless directly attacked, as in this instance, I would prefer to leave my work to abide the test of time and wear, to parading its merits at the expense of others engaged in the same trade.

June 6th. H. SEYSSSEL.

P.S.—With this the correspondence must cease. The public have before them the evidence given at the trial.

THE FRENCH VISIT TO THE CRYSTAL PALACE.

THE visit, in a week or two, of 3,000 intelligent Frenchmen, from all parts of France, as representatives of 30,000 of their fellow-countrymen, who constitute the members of the Amateur Choral Association or Orpheon of France, is an event of international importance. These gentlemen must nearly all be utter strangers here, and will form their impressions of England and Englishmen for the first time from personal observation. Let us fervently hope that any prejudice which may exist in their minds against us will be utterly effaced by the cordial reception they are destined to meet with from us. Their influence, in course of time, upon their fellow-countrymen in the heart of France, will be considerable, for good or for evil. Let us make sure it is for good. Much depends upon ourselves. The French press have already expressed unqualified satisfaction with the projected visit, and we doubt not the press of this country will do all honour to our friendly visitors. Public buildings should be opened free to them, and it is a pity something of the same kind could not be said of public places of amusement, such as operas and theatres. The secretary to the Crystal Palace Company makes some useful suggestions in a communication we, as well as other members of the press, have received. Among these he hints at the advisability of the Metropolitan Rifle Corps adopting some means of manifesting a fraternal spirit towards our visitors. On the whole it is to be hoped, as Mr. Grove remarks, "that the reception given to them, during their brief glimpse of this country, shall be such as to send them back to their homes full of the pleasures and advantages which will result from a visit to England."

The music for the first day includes the choruses of the Enfants de Paris, by Adolphe Adam; the Veni Creator of Besozzi; the Requite of Laurent de Rille; the Depart du Chasseur of Mendelssohn, &c. &c. (Hunter's Farewell); concluding with the Septuor in the duel scene of Meyerbeer's Huguenots, which, sung by thousands of voices and accompanied by military music, produced the most marked enthusiasm when performed in Paris at the Palais de l'Industrie in March of last year.

PUBLIC HALLS IN THE PROVINCES.

**Ashbourn.**—The proprietary of the market hall undertaking, says the *Derbyshire Advertiser*, have appointed Mr. B. Wilson, of Derby, their architect, and given instructions on their requirements, which comprise, first, a market hall, from 70 to 80 feet long, furnished with forms, stalls, pump, and other requisites; an assembly-room, with ante-rooms; and other apartments, which may be available for either a public news-room, with accommodation for librarian, or for accountants' and attorneys' offices.

**Wokingham.**—The new town-hall here has been opened. The building is in the centre of the market-place, and embraces a town-hall and county police-station, with a residence for a superintendent and four constables. The town-hall is to be used for a court, and there are witnesses' and consulting rooms, in connection with it. Attached to the hall are rooms for savings' bank and a reading-room, in connection with the Mechanics' Institution. Beneath there is a covered market. The shape of the building is peculiar, apparently caused by the irregular outline of the market-place. It is mainly constructed with bricks of various colours, red predominating. The roofs are covered with green slates. The clock tower is placed over the roof of the hall, and rises to an altitude of nearly 80 feet. Over the entrances to the hall, on the north and south sides, there are slated turrets. The interior of the hall has an open timbered roof, the framing of which is of ornamental character. The pictures belonging to the corporation have been restored by Mr. Butler, of Reading, framed in accordance with the style of the building, and suspended from the walls. The hall is lighted at night by eight star-light gaseliers, in blue and gold. The design was selected in the autumn of 1855, in a limited competition. The cost of the building is about 3,500*l.*, and it has been executed by Messrs. Wheeler & Woodroffe, of Reading, under the direction of the architects, Messrs. Poulton & Woodman.

**LIVERPOOL BOROUGH CEMETERY.**—On Monday last Mr. Gay, of the Undercliffe Cemetery, was elected by the Liverpool Burial Board their surveyor and manager for the formation of the intended new cemetery at Walton-on-the-Hill, the extent of which will be upwards of 100 acres, and the probable cost 100,000*l.*

Books Received.

*Autobiographical Recollections of the late Charles Robert Leslie, R.A.* Edited, with a Prefatory Essay, by TOM TAYLOR, Esq. 2 vols. London: John Murray, 1860.

MR. TOM TAYLOR, in the prefatory essay of these interesting volumes, places the works of Leslie high in the list of artistic productions, on the ground of their "inborn refinement, their liberal element of loveliness, their sweet sentiment of nature, their literary associations, and their genial humour;" and, again, as "pictures which it makes us happier, gentler, and better to look upon,—pictures which help us to love hooks more and to regard our fellow-creatures with kinder eyes." In this we go wholly with him; and they who may remember best some of Leslie's latest productions and speak of chalkiness and opacity, should see the two fine works now in the British Institution Exhibition, "The Reading of the Will," from "Roderick Random," and "Don Quixote Reproving the Canon," to say nothing of the charming specimens of his skill in the national collection at Brompton. Still he cannot be placed in the first rank of artists. He seldom did more than set forth admirably the conceptions of others. In this respect he was inferior to Hogarth. Hogarth was a creator; Leslie an illustrator. His illustrations, however, are full of beauty, good taste, and, where needed, fine humour, and will always be highly prized. He lived to get a notion of the sums his pictures will hereafter command. The version of "Sancho and the Duchess," painted for Mr. Rogers, brought 1,150 guineas at the sale of the poet's collection. "Mr. Leslie was present. A country dealer, seated beside him, who had been absent from the room when the picture was knocked down, seeing that his neighbour had noted the prices in his catalogue, asked to look at it. 'Good gracious me! 1,150 guineas for Leslie's picture!' Did you ever hear of such a price, sir?" "Monstrous, is it not?" said Leslie, who told the story to his family with great glee on his return home.

The first volume includes an autobiography prepared by himself for posthumous publication, and the second volume consists of selections from his correspondence. Leslie appears to have been fortunate in his friendships; and what better fortune can befall a man? "I often look back with fondness and regret," writes Washington Irving to him, in one of the many letters from that genial sketcher given in the second volume, "on the times we lived together in London, in a delightful community of thought and feeling; struggling our way onward in the world, but cheering and encouraging each other. I find nothing to supply the place of that heartfelt fellowship."

The memoir is full of anecdotes of others rather than notices of Leslie himself, but his knowledge of art, and his wide wisdom, make themselves evident throughout. We quote an anecdote he gives of Lord Melbourne, though it involves an injurious opinion of architects more common than true. "He asked me how it was that Raffaele was employed by the Pope to paint the walls of the Vatican.—I said, 'Because of his great excellence.'—'But was not his uncle, Bramante, architect to the Pope?'—I replied, 'I believe Bramante was his uncle.'—Then it was a joke, you may be sure," he said, with his hearty laugh.

With the following few will agree—  
"Turner often expressed himself happily. I remember that when it was proposed that the new Houses of Parliament were to be decorated with pictures, he said, 'Painting can never show her nose in company with architecture, but to have it snubbed.' How true this is! No architect ever seems capable of understanding in what light, and at what distance painting can be seen; and it is a great pity that first-rate art, either sculpture or painting, should ever be employed in the decoration of architecture. The Egin marbles were never seen till now, when they are in ruins. The concert art world have as well ornamented the Parthenon, and Lucca Giordano might have been better employed in decorating the Sistine Chapel and the chambers of the Vatican, than Michelangelo and Raffaele."

No argument against these assertions can be necessary to our readers.  
Mr. Tom Taylor has executed his share of the work with ability, knowledge, and good taste, and the result is a very good and charming book.

*Astro-theology.* By HENRY MOSLEY, F.R.S., &c. Third edition. Longman & Co. 1860.

THE object of this well-written treatise is to point attention, with an educational view, to those evidences of the wisdom and goodness of God which may be seen in the daily changes of the heavens. The papers were first published in the *Church of England Magazine* in 1838, and were republished

in the hope that they might promote the cause of popular instruction,—a hope which the demand for a third edition has fully justified. The style of the work is simple, clear, and well adapted to the purpose in view; and it is gratifying to find a new work of the class to which Paley and Derham contributed, meeting with a favourable reception and demand among the young of the present generation.

*Lyrics and Legends of Rome; with a Prologue and Epilogue.* By IDEA. London: Chapman & Hall. 1860.

THE subject of these poems gives them a claim to our attention, and entitles them to a word of comment. Rome,—

"Where we steer  
Stumbling o'er recollections,"  
must always retain, spite of changing factions and opinions, a power of attraction over the student of every fine art which no other city exercises, and it is there he may best hope to perfect his taste and enlarge his views of art.

The writer of these poems has sought to make them serve to recall agreeable recollections in those who know the glories of the "fallen mistress of the world," and to induce those who have not to take the *strada di ferro* forthwith, and get some fresh emotions. We take a verse or two at random:—

"Now mount the 'Campidoglio's' square tower,  
A startling vision will the senses greet,  
The 'Roman Forum'—all her vanished power  
In crumbling relics lying at your feet:  
Oh! wondrous spectacle! the 'Ancient World'  
Lies wreck'd and cast in ruins o'er the plain,  
Crush'd and o'erthrown, as if by tempests hurld,  
The 'Lambstones of 'Departed Rome' remain.  
From hence we count the 'seven proud hills' of yore,  
Nature's own landmarks of old Roman clay,  
This throne remains,—the kingdom is no more,—  
Her countless Legions long have pass'd away;  
Her hurruish'd Temples, too, where shouts would thrill,  
And Songs of Triumph, no reflected beam  
Illumes the Forum, all is hush'd and still—  
Her greatness like the 'Story of a Dream!'"

'Campo Vaccino,' by a lofty flight  
Of steps we reach thy atmosphere sublime,  
The shafts of 'Janitor Tommas' on the right,  
And on the left the prison 'Mamertine,'  
Where 'Paul and Peter' lay in prayer prostrate,  
Where 'Aurigha's' gave his dying groan,  
The 'Castine Conspirators' here met their fate,  
Sejanus too—in 'Flavim Tiber' throw'd!  
In front, the Arch of 'Severus' must command  
Our admiration, from the earth exhumed,  
It rises now majestically grand.—  
Fresh as the day its beauties were entomb'd,  
This 'Arch of Triumph' tells a truthful tale  
Of brilliant victories, o'er which the gloom  
Of savage cruelty must draw a veil—  
Rome has her Temple! Britain has her Tomb!"

In "The Clock of St. Cosmo," and other poems in the latter half of the book, the author takes a higher flight, and he shows the variety of his talent by prefixing a photograph from a drawing by himself of the statue of St. Peter, in the Church of St. Peter, at Rome.

Miscellanea.

**STATUE OF HAYLOCK FOR SUNDERLAND.**—Mr. Belmes has finished the model, in clay, of a colossal statue of General Haylock, to be erected at Sunderland.

**LINCOLN DIOCESAN ARCHITECTURAL SOCIETY.**—The annual meeting of this society was held last week in Workshop. The Rev. Edward Trollope was the chief guide and lecturer. Mr. Heming and Mr. F. Bury have acted as local secretaries.

**FLORAL HALL.**—Very charming indeed was the aspect of the Hall, made literally floral, on Wednesday and Thursday last, and to remain so till the close of this week. The flowers with which it is filled are disposed with great taste, and, with the decoration of the building, show the hand of Mr. Gye, whose skill in such matters is well known. When the building is brought to its intended use—a flower-market,—it can scarcely fail to become a general resort and cheap gladdener of the metropolitan eyesight.

"AUTUMN ON THE HUDSON."—Messrs. Thompson & Co., known to some of our readers as architectural publishers, have inaugurated a new gallery, 45, Pall-mall, for the sale of works of art, with the exhibition of Mr. Gossey's very charming picture of an American autumn, which we had the satisfaction of first making known to the public. It is proposed to engrave it in the mixed style, when a sufficient number of subscribers has been found; and Mr. T. O. Barlow has been selected for the work, and will, doubtless, produce a worthy engraving. The opinion we expressed of this excellent picture has been confirmed emphatically in many quarters.

BRIGHTON MUSEUM.—We have great pleasure in announcing the fact that the town-council have, at length, been able to take decisive steps towards the formation of a public museum worthy of this important town; several gentlemen of eminence having liberally responded to their request for aid in the prosecution of so noble a purpose.

A HEAD OF THE "CENTURY OF INVENTIONS." It is stated that the grave of the Earl of Worcester, who was buried in the time of Henry VIII, is to be opened for the purpose of ascertaining whether it contains a model of a steam-engine invented by him, and, as asserted, buried with him.

GAS AT RUGBY.—The low rate of gas per 1,000 feet in Rugby, as compared with neighbouring towns, is thus alluded to by the Rugby Gazette:—"At Davenport the price of gas is 8s. 4d. per 1,000 feet; at Lutterworth, 7s.; at Warwick, 6s.; at Leamington, 5s.; while at Rugby the charge is but 4s. 6d. for the same quantity, a reduction of 6d. per 1,000 having just been made by the company. We also find that five per cent. is allowed upon all accounts paid within twenty-eight days after each quarter-day.

ENGLISH SHIPWRIGHTS AND THE FRENCH DOCKYARDS.—In reply to a question put in Parliament it was stated, on the part of the Government, that, on inquiry, it was found that the report that English shipwrights were being employed in the French dockyards was without foundation. On the contrary, not only had 400 men been dismissed from these dockyards, but the wages given were only four francs a day, while in England shipwrights could obtain 6s. a day.

MR. BIDDER'S CONVERSATIONS AND THE FRENCH ENGINEERS.—The annual conversation of the president of Civil Engineers, which was held last week, was, as usual, well attended and well managed. If the "hat and cloak" question could be more satisfactorily resolved, there would be nothing to desire on these occasions. Wedged in with a score of people under the stairs, the expectant may console himself with the recollection that,—"He also works who stands and waits," but there are certainly pleasanter ways of doing one's duty. The rooms were filled with interesting inventions and works of art.

THE VICTORIA STATION AND PIMLICO RAILWAY.—This line, which forms a connection between all the railways south of the Thames and the Victoria station, now in course of erection at Pimlico, was opened on Saturday. The line of railway so opened forms an important feature in the metropolitan communications, as affording access from all the railways south of the Thames to the western and central districts of London. The chief work on the line is the bridge over the Thames, which consists of four openings of 175 feet each, and is entirely composed of wrought iron, with stone piers and abutments.

THE STOCKPORT BOROUGH SURVEYORSHIP.—At the last monthly meeting of the town council of Stockport, the minutes of the special committee appointed to define the duties of a borough surveyor were brought up. Mr. Alderman Williamson said the committee did not believe the council were justified in giving the salary of 500*l.* in order to secure the whole of his time to the office, because it would be unnecessary. They, however, agreed to give a salary of 100*l.*, and allow the surveyor to follow his own profession, subject to the duties so defined. A resolution to this effect was carried. It was also arranged that candidates be advertised for, their testimonials to be sent in at the next monthly meeting of the council, and the appointment to be made at that meeting.

PRESERVATION OF WOOD FROM DECAY.—A correspondent, in "J. B. N.," suggests the following composition, in preference to tar or ochre, as a preservative of wood from decay, the purpose especially in view being the painting of our decaying gun-boats with it:—"Take," he says, "three parts of air-slacked lime, two of wood ashes, and one of fine sand: pass them through a fine sieve, and add as much linseed oil as will bring it to a proper consistence for working with a painter's brush. As particular care must be taken to mix it perfectly smooth, it should be ground on a stone slab with a proper muller, in the same manner as painters grind their white lead, &c. Two coats of this composition being necessary, the first may be rather thin, but the second should be as thick as it can be conveniently worked." This preparation, chemically speaking, appears to be no other than the silicate of lime prepared with potash, or wood ashes, and mixed with oil, and it is identical in effect with Hanson's patent for the preservation of stone, only the composition is made up with linseed oil as a paint, to be coated over the surface to be preserved.

FALL OF A HOUSE IN THE CITY.—On Saturday afternoon, the inhabitants of Water-lane, Blackfriars, were alarmed by the fall of a lofty building, five stories high, which was in course of being pulled down, in Pilgrim-street. The premises belonged to Messrs. Spicer & Co., paper manufacturers, and new premises were to be erected on the site. The men had an intimation from the police that the building did not look safe, and the last man had just descended the ladder, when it fell.

NEW ORGAN FOR GODMANCHESTER CHURCH.—A large and powerful instrument, containing thirty-two stops, distributed on two manuals, and an independent pedal organ, was publicly opened on Monday and Tuesday last, at the factory of the builder, Messrs. Bryceson & Fucham, Brook-street, Easton-road. Mr. Archer (late organist of the Royal Pauopticon) and Mr. W. H. Strickland, were the performers. Although the church for which the organ is constructed is large and spacious, great difficulty has been experienced in finding a position for an organ. A chamber has now been built, with arches opening into the chancel and north aisle, in which the organ will be placed, thus obviating any removal of the oak seats and stalls, with which the church has lately been restored.

ORNAMENTAL BUILDINGS AT GLASGOW.—The rapid increase of such buildings in Glasgow within the last few years, especially in the west end streets, terraces, and crescents, is alluded to by the local Gazette, with incidental reference to an erection nearly finished, on the Dumbarton road, opposite the west end of St. Vincent-street, and forming the front and show room of the Glasgow Marble Works, belonging to Mr. Keenan, marble cutter, formerly of Beilwell-street. The facade is built of white Sicilian marble, while the pilasters on each side of the two windows, the arch over the tops of these, and the border of the circular window above the door are of a darker streaked marble, known as "rouge royal." The marble front, it adds, is an idea scarcely to be found in this part of the country.

THE GREAT OIL WELLS IN PENNSYLVANIA.—Western Pennsylvania and a portion of Ohio are rife with excitement. The grand discovery of the age there is oil springs. The earth is bored and burrowed into in every direction to pump out the subterranean fluid. The price of land has gone up, and the price of oil has not yet come down. Vanago county, Pennsylvania, boasts of nearly 100 "wells" of oil already, and wherever it is found or guessed to exist, the soil instantly trebles or quadruples in value. One well yields eighteen barrels of oil per day, another twenty-five, and the great well at Crosby, which has been sunk to the depth of 181 feet, yields ninety barrels per day. This last, it is shrewdly supposed, must have struck the jugular vein of the oil region, and is drawing on its richest fountains. One man, a blacksmith, in Frankland, Pennsylvania, who bored his own well, has been offered 100,000 dollars for it. The boring machines used are very simple, and are driven by steam power. There are no less than 200 wells now in progress in Pennsylvania, and in a few weeks it was estimated there would be 1,000. The oil found is the species variously known as naphtha, coal oil, petroleum, Seneca oil, and rock oil. The principal market for it is New York, where it is shipped, to be distilled and purified.

ELECTRO-TELEGRAPHIC PROGRESS.—When the Atlantic submarine telegraph failed, it appeared very desirable that a thorough experimental investigation into the subject of submarine telegraphs should be instituted before any other deep-sea cable was formed. This, in the cause of electro-telegraphic progress itself, we frequently urged; and, indeed, a commission was thereupon appointed on the part of the Government in order to carry out such an investigation. The late Mr. R. Stephenson was one of the commission, but whether his death interfered with its purpose we do not know: we have heard nothing of it for some time. Our fear that the extension of submarine telegraphs would be checked by repeated failures, were more put in operation before some further light was shed on their best possible form and mode of laying down and lifting up, has been justified already to a certain extent by repeated failures which have since taken place, and which are still, we regret to say, occurring; and the Chancellor of the Exchequer pointed to these failures the other day as a reason why the Government hesitated to proceed with the Gibraltar line. It is really a pity that such a thorough experimental investigation as we have referred to should not at once be proceeded with, and the result made public as soon as possible, for the guidance of future projects.

FALLING IN OF A SEWER.—The shaft of the main sewer in Oxford-road, Manchester, opposite Chester-street, has fallen in to the depth of about 4 feet, and 9 feet in diameter.

FALL OF TWO HOUSES.—About four o'clock on Saturday afternoon, two houses, long unoccupied, in the Waterloo-road, fell out on the pavement. No person received any injury.

STRADES OF THE COMPETITION SYSTEM.—A new church, to cost 4,300*l.*, is to be built to relieve the old parish church of Tor, near Torquay. A select number of architects seem to be invited to give plans, and it appears that the designs are to be contrived with and without a tower, as circumstances may admit. Drawings of details are to be included. It is to be clearly understood that no premium or payment is offered for the competition, and something is said about a reserved right of not adopting any of the designs. So we go on and on.—A NON-COMPETITOR.

TENDERS

For Cuxwold Hall, near Great Grimsby, Lincolnshire. Mr. James G. Colling, architect. Quantities supplied by Messrs. Lander & Bedells:—

Table with 2 columns: Name and Amount. Includes Dove, Brothers, Brown, Holborn & Taylor, Hollingsworth, Myers, Walls & Son, R. Young (accepted).

For a set of farm buildings and bailiff's house, at Harbour, near Tenterden, Kent, for Mr. Henry Lutter. Mr. James G. Smither, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes Donnelly, McLean & Bird, Porter, Ellis, Simthorpe & Co., Greenwood & Co., Humphris & Luxford, Fisher.

For building schools, out-buildings, &c., at Bronyard Herefordshire. Mr. F. R. Kempton, architect:—

Table with 2 columns: Name and Amount. Includes Nott, Tenhill.

For pulling down and rebuilding No. 9, Lower Thames-street, for Mr. Palmer. Messrs. Young & Son, architects:—

Table with 2 columns: Name and Amount. Includes Piper & Son, Browne & Robinson, Verry & Turner, Down, Hardman & Sandon.

For the erection of a new Warehouse, Meeting-house-square, City, for Mr. Joseph Myers, Messrs. John Young & Son, architects:—

Table with 2 columns: Name and Amount. Includes Hall & Son, Raby, Henshaw, Larke & Son, Chessum.

For building St. Dunstan's Schools, Canterbury; Mr. Joseph Clarke, architect:—

Table with 2 columns: Name and Amount. Includes Gozens, Gaskin & Godden.

For a house at Dalston, for Mr. J. Harman. Mr. J. Clever, architect:—

Table with 2 columns: Name and Amount. Includes Bishop, Jarvis, East, Raby, Rowland (accepted).

For alterations and additions to the Old Brewery, Harwich. Mr. Horace Darken, architect:—

Table with 2 columns: Name and Amount. Includes Henry Lamb, J. Corder, Spooner & Co., S. J. Newton, Worswick & Co., Wilding (accepted).

For Drainage Work for the Poplar Board of Works:—

Table with 2 columns: Name and Amount. Includes Toole, Hartland, Salt.

For additions to Trinity Asylum, Acre-lane, Frixton. Mr. Samuel Field, architect. Quantities supplied:—

Table with 2 columns: Name and Amount. Includes R. Roberts, J. Wilson, Skinner.

For building a presbytery and Catholic school at Atherton. Mr. R. Jennings, architect:—

Table with 2 columns: Name and Amount. Includes Fox & Brother, Potter, Spencer.

TO CORRESPONDENTS.

S. C.—A Workman (well intentioned, but not fit for printing).—L. H.—Jack Plane.—J. G.—J. H. B.—J. E. G.—W. H. (will come).—J. D. W.—M. J. L.—Con. Sub. (at the house of members).—S. F.—(Miss) Mungton (must look to his "Bonyestie").—C. R.—M. C.—B. G. S.

ERRATA.—In Mr. Gull's paper on "Drawing Values," a break of type, after going to press, changed the formula, on 17th line from bottom. Instead of a — it should be a —.

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

# The Builder.

VOL. XVIII.—No. 907.

*Progress of the Metropolitan Main-Drainage.*



SINCE we last reported progress of the great work of the sewerage of London, the main lines then begun, namely, the Northern and the Southern High-level Sewers, have been proceeded with; the Middle-level Sewer, north side of the Thames, has been commenced at Old Ford, and other parts of its course; and the Southern Outfall Sewer also has been commenced, and is being carried forward with energy. A commencement likewise has been made with the Low-level Sewer, south side, at Deptford. The line generally for the low-level is not yet tendered for. Since our last report also, much has been determined upon, or spoken of, which may need explanation to justify a claim for the accuracy of our original account of the whole scheme for the metropolis, and that of our subsequent particulars.

We allude in the last sentence, to the plans for the diversion of sewage from the Serpentine, and to the announcement that the low-level line, north side, would be taken along the Strand. The supposition here referred to, as to the Strand, is important so far as it has proceeded from a statement in the House of Commons, and been fortified by a report of Mr. Thwaites's evidence before the committee on the Thames embankment, and is apparently corroborated by the operations which have been commenced in various parts of the line, or at the ends of streets joining the Strand. Nevertheless, our original particulars in all points were correct; and they are so to this moment. Although a public meeting of the ratepayers of St. Martin's parish has been thought necessary on the subject, we have the best reason for stating that no decision has been arrived at subservive of the conclusions of the report by Messrs. Bidder, Hawksley, and Bazalgette, wherein the Strand line, which had been first proposed by the engineer to the Board, was abandoned in favour of a line on the margin of the river, to be in conjunction with an embankment. Besides the more obvious argument for the embankment line, one of the reasons was that by taking the Strand line, all the sewers between the Strand and the Thames would require to be reversed. Mr. Bazalgette himself is paying attention to the subject of the embankment, and has given evidence before the committee; so that the statements and apprehensions are at least premature.

It is necessary, indeed, for the engineer of the Board to anticipate so far, the rejection of an embankment scheme, as to take means to ascertain the nature of the strata in the Strand; and these investigations, desirable for many objects besides any of a particular sewer, are what are now in progress, and are the most that is at present contemplated. It occurred to some of the officers of the Board, from observation of the strata in Long-acre, that the London clay would be found within the space which the sewer would occupy, should the Strand line have to be chosen; and to certify this, borings were in the first instance made in a few places, from the position of inverts of existing sewers. It is now, we believe, quite ascertained that the clay exists as anticipated; so that the sewer, if in the Strand, would be tunnelled; and at least there would be comparatively little obstruction to

the traffic,—since even the shafts for the execution of the work would be arranged in the manner of side-entrances, placed at the ends of the streets of junction, and might not differ very considerably from the present hoarded spaces where the borings are in progress. We trust, however, that the intention of the embankment line will be steadily pursued, and that the alternative will not for the present be further thought of.

Referring to the diversion of sewage from the Serpentine, which, it has been announced, requires the construction of a sewer from the head of the Serpentine, or from the Bayswater-road, to a junction with the Ranelagh Sewer, at Albert-gate,—that is to say, diverting, but conducting the contents of the sewer towards an outfall into the Thames; our original account and later particulars of the Middle-level Sewer remain correct. The Middle-level Sewer, to pass along the Bayswater-road, is to divert the sewage proper and the ordinary rainfall (as, indeed the existing sewer diverts these from the Serpentine); and these ordinary contents of the sewer will run on to the junction with the High-level Sewer at Old Ford, and further, or to the general outfall of the northern sewage, at Barking Creek. But as throughout the sewerage system which is in process of construction, means of escape for excessive rainfall are provided or left,—the existing sewers falling into the Thames (such as the Fleet, so far as its length where along Farringdon-street and Bridge-street), being made use of to a large extent,—means of relief would be required for the waters which at present on certain occasions flow over into the Serpentine, or required in substitution for that outlet. With such object, the sewer through the north-eastern portion of Kensington-gardens, and along the north of the Serpentine, is to be constructed, and tenders for it have recently been received. The line was not shown in the drawings of the Middle-level Sewerage, and was not decided upon at the time those drawings came before us.

The total length of the sewer in question, called the Ranelagh Storm-overflow, starting from the weir in the Middle-level Sewer, which is opposite the junction of the Ranelagh Main-sewer, or near the Crown Inn, and ending in a junction with the Ranelagh sewer just north of Albert-gate, will be 1 mile 420 feet. The greater part of the length, or 4,700 feet, will be 8 feet 6 inches barrel sewer; but the first or upper portion of the whole length, 520 feet, will be equal in area to 9 feet barrel; and the lower portion, 480 feet, to the same diameter. The inclination will be 1 in 421.5, or 12.5 feet per mile. Borings appear to have been taken in the line at six places. The sewer is intended not only to provide the overflow for the storm-waters from the upland districts, and intercept any sewage matter from the Serpentine, but also to provide means for drainage of the barracks and other Government property in the park. Her Majesty's Commissioners of Works contribute 2,000*l.* The engineer's original estimate was about 23,000*l.*; but this was afterwards somewhat increased. Tenders, however, were received at the end of last month, which were all, except one out of twelve, in excess of the estimate; several of them considerably so. The excess is ascribed to the rise in the price of materials and the complicated state of the labour market. The accepted tender, by Mr. Treadwell, amounted to 35,455*l.* Operations will be commenced in a day or two.

The work commenced towards the formation of the Low-level Sewer, south side, is near to the railway and bridge over Deptford Creek; and is not far from the site of the intended pumping station (which we have already described), but on the opposite, or western, side of the creek. The portion of the sewer is commenced now, in consequence of the intended construction of a new gas-holder at the works adjoining. The work of this sewerage is in the hands of the contractor for the ordinary jobbing of the sewers in the district. The ground is in great part loose sand copiously charged with water; whilst the excavation—at present about 130 feet long by 23 feet broad, and 46 feet deep—reaches to the edge of the creek, or very nearly, and goes down to 22 feet below the bed of it; so that, altogether, the work is of a peculiarly

difficult nature. Four pumps are constantly going by steam,—having to raise upwards of 3,000 gallons of water a minute, constantly impregnated with sand, and often so to an extent which would stop the action of ordinary pumps. Our readers will not have forgotten our interrogatory to the engineer of the Board of Works, relative to the intention to use valved pumps at the Deptford Pumping station. The pumps now in use at Deptford, working day and night, are chain-pumps. There is frequent trouble with them, owing to an accumulation of sand or earth; and valved pumps would be useless. Centrifugal pumps which served at Old Ford, it is thought would equally become choked in the present case. It is doubtful, however, whether the chains would wear sufficiently well to admit the use of pumps on the principle, for the constant service.

Besides the difficulty in the watery state of the soil, there is that of the looseness of the sides of the excavation. The wet sand begins at about 20 feet from the surface. Here sheet-piling or pile-planking, with the edges of the planks grooved and iron-tongued, is used; and the whole of the excavation presents a network of cross-strutting of timber, of which material alone the value may be upwards of 1,500*l.* Probably it may be necessary, besides the provision here referred to, to execute the whole of the work in portions,—in a considerable number of small coffer-dams. At the Broadway, Deptford, in the construction of the High-level Sewer so far as completed, or in difficult ground, iron sheet-piling was used where not required to be left in; and the same kind of piling will be adopted in the present case wherever the circumstances are similar.

Difficulty has arisen both in this portion of the southern drainage-works, and in those of the Middle-level Sewer, north side, from the present scarcity of bricks. The price of bricks has risen, perhaps chiefly in consequence of the demand for the sewerage works, higher than we have known it since the duty was taken off. The first bricks brought to the works of the Middle-level Sewer had to be condemned; and the same thing occurred in the works we are noticing as regards bricks of average quality, though not equal to the requirements, where the price given, we were told, had been as much as 4*s.* a thousand. The price now being paid is said to be 45*s.* a thousand.

The Southern High-level Sewer is complete so far as the length of the Broadway, and some distance along the road westward towards the North Kent Railway,—whilst each of its branches traced upwards, is in progress at several points; but it has yet to be carried along Church-street to the storm-water outfall. We must notice any points of interest in the work here, or in different parts of the same division of the sewerage, as in the case of the tunnel at Dulwich, and also any points in the work of the Outfall Sewer towards Woolwich, and in the marshes, on some future occasion. Mr. John Grant, the engineer for the southern district, is the resident engineer under whose immediate direction the works we have last noticed are being carried into effect. These operations, and the bulk of those yet uncommenced, will task all the skill of the officers of the Board of Works, and all the resources of contractors.

## ON THE ORIGIN OF OUR EMOTIONS OF THE BEAUTIFUL.\*

THESE are pleasures that have nothing in common with æsthetic beauty, and ought not to be considered when forming a correct estimate of a design. To do that we must disconnect our ideas from any biasing or accidental associations, and judge of it as a whole in relation only to itself and the mind contained in it. Afterwards, when our judgment has given its consent—for the activity of the critical faculty cannot co-exist with ar-t pleasure, the imagination may revel in intoxicating delight, and serve to heighten the inherent charms of the work.

The beauty of a problem in Euclid to which geometric beauty has much in common may be considered to be inherent as well as associative; for truly the mind recognizes it as such in its first impressions. It is a sort of acknowledgment of

\* See p. 374, ante.

the harmony of its properties and the fulness and completeness of thought contained in it. It is a discovery of the relation existing between its own members, and exemplifies the unity of universality—an idea complete in itself. All works of art must have this inward relation and coherence, otherwise they remain unfinished ideas. This unity of purpose and object gives in art that high quality termed repose. For a work cannot have repose unless it is at rest within itself, and the object is represented as well as the action. The Fighting Gladiator is the representation of action with its object beyond its own circumference. While the Laocoon, as a complete work, contains all within its own circle, a complete incident, and notwithstanding the convulsions of the figures, possesses repose, considered in the group,—the Fighting Gladiator is an anomaly seldom found in art. Gibson's Hunter, than which there never was a more perfectly knit and gracefully-turned figure—strong, yet elegant—the very perfection of mainly *physique*, is slightly liable to the same objection. That most beautiful figure of the mad Opella, by Calder Marshall, which was exhibited at the Manchester Art Treasures Exhibition, and is as exquisite a production as was ever turned out of an artist's studio, possesses also the merit of being a self-contained work. How miserably poor are Canova's Venuses, compared with the sublime sentiment of melancholy, womanly madness conveyed by this artistically complete statue, the very impersonation of Shakespeare's creation. With her hand clutching the rock, and her sweet, mad face turned up to Heaven, a more affecting sight it were impossible to conceive. This is the true modern sculpture—beautiful, expressive, yet classically true, individual in character, and as far superior in healthy sentiment to the god generalities of the Greeks as Shakespeare is wiser than Homer.

Of the value of this completeness and relation of parts we may judge by comparing Bulwer's "Caxtons" with "My Novel." The first is as complete a work of art in every respect, and as interesting, instructive, and learned a novel as ever was written. The latter bids fair at first, even to outdo its predecessor, for in it there is the most exquisite description of a quiet country life among characters so diverse, original, quaint, and clever, combined with such repose, completeness, and finish, artistically considered, up to the end of the first volume, that the hustling activity and hurrying incident of the second reminds our more of Reynolds than Bulwer.

Æsthetic beauty is mind as well as sensational beauty. It is the mind that estimates proportions and judges of the harmony of relations, but by intuitive perceptions rather than reasoning power. The thickness of a beam or column, or any structural support required to carry a certain weight, may be calculated to a nicety if the length be given, provided we have made ourselves acquainted with the comparative strength of the material. But it would be impossible to calculate ratios of proportions except in time-music; for the formula would be so involved as to be inextricable: consequently we must rest satisfied with the natural capacities of judging by sensational effect: our process must be inductive, not deductive. Æsthetic effects may be sensorially pleasing, from the varied play of light and shade, independently of any associations, and, I think, may also be perceived without much exercise of mind. Sensations are the foundation of beauty; the mind judges, arranges, compares, and thus leads to a correct knowledge of effects, and to intellectual satisfaction. With the ordinary observer the intellectual pleasure is much smaller: he judges through naturally acute perceptions and correct associations, but receives most pleasure through the indulgence of the imagination.

The question naturally presents itself to the mind,—Does associative beauty please through the discovery of similarity, or would the impression which provokes it equally please us, were it not associated with some property or quality? I think it would not, for expressional beauty pleases us through the beauty of the sentiment conveyed, and that is a beauty which we could not see except in connection with something else. Admiration is excited by elevation of character, loftiness of purpose, and decision of will,—these beauties belonging rightfully to the human mind; yet the imagination connects these qualities with material and lifeless objects through similarity in the ideas present. A great rock is said to be *grand* and *noble*. In that expression we at once detect the connection between the original idea of nobility and the object which, from its *expression*, excites the associative power of the imagination. Unconscious association has nothing in common with

the imagination; but expressional beauty is due to the images excited in the mind by the impression. The one is passive assent; the other active energy of the mind and soul.

The theory that association of ideas is the sole cause of our emotions of the beautiful, is one which, at first sight, seems likely to be true. Many have taken this view as well as Alison; but any one willing to take the pains to test it, will find how incapable it is of accounting for all beauty. The theory has arisen from confusion of terms and want of clearness in distinguishing the several functions of the mind and sensations. For my own part I consider that the associated faculty has beauties peculiarly its own, and that it is, also, in itself, the means of *intensifying* our emotions and sensations. It causes a re-action of the mind upon the body, or sensations exalting our faculties and rendering them keen and acute. Its principal use, then, is in brightening our pleasure in the beautiful from passive satisfaction to active delight. The sight of a fine building, a beautiful vase, a charming picture, may not at all times raise in us any pleasure which approaches delight from the inactivity of the associative faculty; while at others they may hold us in wrapt admiration. If we see a beautiful picture when the mind is either inactive, or engaged with some other object, the beautiful is acknowledged, but the pleasure is but transitory. Reasoning from this, Alison has supposed that the pleasure is owing entirely to the association. I think, however, if we will take the trouble to examine and note the mental process involved, that we experience satisfaction before any active association can possibly be formed, and often unknowingly exclaim,—“How beautiful! how splendid! what a charming landscape! what a delightful prospect!”

It is quite true that a magnificent view, suddenly hursting upon you while perhaps traversing the gorge of a mountain, creates a quick sense of delight and expansiveness of mind, which may partly result from association, unconsciously rapid, undeveloped, and mysterious; but can we possibly argue from this, that inherent beauty does not exist. Absurd! to suppose that the association of one thing which gives no inherent pleasure with another thing, equally dull, can ever excite such intense satisfaction. Such would actually be the creation of something out of nothing. No; there are certain things which in their nature are necessary to our being in which we move and breathe, and have our existence; and it is one of the bounteous gifts of God to man, that the knowledge of this should be unconsciously associated with their effect, and prove an added gratification. “And God said, Let there be light, and there was light; and God saw that it was good.” There is the soul of light—speaking in every respect—so that it was good—good in every respect—consequently, *beautiful*. We cannot separate the sight-beauty from the knowledge of its innate goodness, its necessity to our health and vitality, its all-renewing powers from its radiant splendour. The soft, diffusive, all-pervading quality of daylight has been felt and admired by generations of authors. Addison, in the *Spectator*, speaking of mirth compared to cheerfulness, treats us to a beautiful simile. “Mirth,” says he, “is like a flash of lightning that breaks through a gloom of clouds and glitters for a moment; cheerfulness keeps up a kind of daylight in the mind, and fills it with a steady perpetual serenity.”

In these and such like figures and similes, which we think beautiful, the authors display a hidden sympathy with the objects,—an entering into their very nature. If they describe rocks, it is as if the immovable matter were endowed with reason and feelings, for they speak and think. What is it that gives such a quiet, humorous charm to Sterne's description of the famous Lyons donkey unless it be that we are brought into communion with the donkey's ideas, real or supposed? Sterne's imagination endowed the creature with thought and feeling, and in this imaginary conversation with a dumb animal we trace through an exquisite humour the exact truth of the description, for not only is its outward mien correctly represented, but its donkey feelings are photographed to a nicety. It is the kind spirit of the writer that irresistibly engages our sympathies with the poor oppressed brute. Had the same donkey been described by a man of malicious feelings, either our hearts would not have warmed towards the donkey, or our indignation would have risen against the man, or we should merely have looked on and laughed heartlessly.

After reading any of the poets, how absurd it seems to attribute all beauty to the discovery of the relation of parts or the hidden harmonies of

nature, for the harmonies of nature I take to be dependent upon proportion or relation of parts,—a natural sequence by which three proportions being given, the fourth can be evolved. Harmony is the result of proper arrangement of effects regarding the strength of each, and must be found in everything beautiful; for, without this natural sequence, whether it be of form, or tone, or time, or colour, or ideas, the object or work must be incomplete and incoherent. It does not follow, though, because harmony is one of the necessities of beauty, that to it must be referred the origin of all beauty.

Mr. Ruskin has well said, that it is neither accuracy of description nor attendance to the invariable that constitutes what is called poetry, for there may exist both without approaching in the slightest degree to poetic feeling. The words we use are sufficient to show us this; for we say emphatically, poetic *feeling*, not truth, nor accuracy, nor knowledge of the principles of nature, but something that excites our joy or grief, our admiration or awe, our compassion or indignation. Yet, still admitting this, accuracy *is* a beauty, and the invariable, or what is founded on general nature, has charms peculiarly its own. To distinguish between the effects of the various arts which address themselves to the mind and the imagination, to trace their course upwards from whence they sprang, to discriminate between the true and the false, and to study their common connection, is worthy of the highest intellect. Yet the greatest may feel humbled when, after laborious investigation, they find their range of thought so circumscribed that the subject of their study can only be comprehended piecemeal and in detail.

In a subject such as the one I have in hand, the additional difficulty of mental introspection presents itself. Should I, however, be instrumental at all in extending our knowledge of the beautiful, I will leave it to other and greater minds to form a more systematic philosophy.

The emotions of the beautiful, as I have said at the outset, may be classed under four heads, viz.: the sensational, the emotional or imaginative, the purely mental, and the moral. Frequently the sensational induces the other three, either separately or combined. It is, however, only with the first three classes that we have to do with, and any one of these may superinduce the other two. Thus, if it is a statue to which our eye is directed—say the Apollo Belvidere,—the first thing that strikes us is its artistic merit, the graceful pose, the elegantly inclined head, the attentive yet slightly scornful expression of the face, the quivering expectation of the lip, and the god-like air of the figure, too womanly to express great, rough strength, and too innately great to be human. We next, perhaps, turn our attention to the *drapings*, and the proportions of the limbs, and we here discover that the sculptor has produced these effects from a profound knowledge of nature and comparative anatomy; that the lower limbs have been lengthened, to indicate swiftness, and a female softness diffused over the frame, more in consonance with the radiant daylight beams he is the impersonation of. The countenance has been cleared of all gross animalism, and bears a lofty, elevated look, suited to the “Lord of the unerring bow.”

On attentively noting down our impressions, it will be seen that the *graceful* sway of the figure is due to the expressional association by which curves express elegance; that the scornful throwing back of the head, and the slightly-parted and disdainful curve of the lips, express scorn and disdain, because we know from experience that the human countenance is affected so when under the influence of those passions. Elevation of character we admire, because we also admire the conscious knowledge and power which it represents. Now, the composition of the figure, its artistic pose, and the anatomical skill displayed in its design, are emanations of mind, and therefore are interpreted by mind: the pleasure we receive from them is mental. The former beauties, combined with these, produce an associated mental pleasure, from the knowledge of the amount of skill and the warmth of imagination possessed by the creator of the work.

And the mental attribute of the statue may possibly excite the imagination to activity from the superiority to most other performances possessed by it. The sensational beauty which it possesses is a yielding fleshy softness of appearance, due both to association and actual sensational feeling, for the effect of softness is perceived by the senses before the imagination discovers the connection between the sensation and actual touch. The softness of the effect may be divided into

what appertains to two classes of sensation,—the actual softness of the shades, though the substance may be as hard as marble, and the pulpy softness which we know by unconscious association of effect with cause belongs to some substances. Thus the human face may be drawn and shaded in the smoothest shades, yet appear like a hard substance. On the other hand, it may be painted in with a thick impasto, and appear yielding as living flesh.

The grace of curve and flow of line must also, I think, be attributed in part to sensational effect, for the curves lead the eye a sort of dance, as Hogarth has it; and though the expression of the lines is due to the exercise of the associative faculty, for those who have never paid any attention to nature, or who have never taken the trouble to detect the difference of effect in lines, their faculties being naturally wanting in acuteness, or have been unaccustomed to exercise their imaginations by calling up images to represent those effects more clearly to the mental eye, cannot by any means sympathise with the movement, or feel its grace, yet the original sensation must bear an analogy in its effect to the other qualities with which the imagination associates it.

It is only when the cause of an association is incidental that we can properly say that the beauty is not inherent, for if it is the nature of the line to produce a certain effect,—the cause of the beauty must be in itself, and the sensational. Some will perhaps be inclined to think that it is not in the nature of any forms to affect the senses in the manner we ascribe to them, but that the form being invariably found associated with some other quality, that it insensibly raises the idea of that quality in our minds. This may be the case sometimes, but softness of shade, purity of tint, clearness of outline, brilliancy of colour, depth of tone, richness of effect, are surely actualities which we express by means of words borrowed from analogous sensations. Also, in the case of expressional beauties, which, without doubt, depend more upon the imagination than any other; the effects are founded in Nature, and it is through our correct interpretation of her that we perceive them. Then why not consider that to be inherent which inevitably produces the same emotion in every healthy mind. We can no more dissociate power from craggy rock,—for we perceive the mass—the intensity of the forces which have caused its upheaval,—than we can dissociate this universe from the evidence of creative mind. If it is the nature of mass to possess power, then is it not an inherent property which it possesses, and which the associative faculty only discovers?

No mental perception of beauty can be received excepting through the exercise of the associative faculty; for mental perception is mental action, and mind, energy, or thought consists of trains of associated ideas. It is in this limited sense only that association can be said to be the cause of beauty, for without mental perception our pleasures would not be far removed from mere animal enjoyment,—such as a dog may feel when let loose into a green sunny field. Our sensations, notwithstanding, form the substratum or foundation upon which the spiritual emotions are built, and animal enjoyment excites the latent mental energies to vigorous action.

Presuming that I have established the position that the beautiful is the generic term we give to those qualities or combination of qualities which delight the mind, through the medium of the senses, the intellect, the imagination, or the moral feelings, either separately or combined,—it will be seen that the perception of beauty lies in the very nature of the faculties themselves, requiring no distinct single faculty for its due appreciation, and depending upon no one quality, such as truth, harmony, relation of parts, proportion, &c.; nor does it necessarily require the perception of design, but rather in its fullest and highest development requiring them all combined.

It has evidently been ordained that man shall discover the principles of nature, and in the perception of those principles shall feel delight. There have been implanted in man certain innate convictions and feelings in accordance with nature, or rather he has been so organized in harmony with outward things, that nature shall be to him a never-failing mine of instruction and delight. He is the chord that vibrates sympathetically with the mood of outward things. It has been decreed that while certain combinations please, through the very nature of the mind itself, and in the different balance of organism in different minds, we see the reason of the diversity of tastes. It is the province of practical art to point out the laws that govern these combinations, and the principles they must possess to please the human mind.

On that subject this essay does not profess to treat, leaving it, perhaps, for some future occasion on which the practical application of the principles expounded, may be discussed more at length.

T. MELLARD READE.

#### ILLUMINATED MANUSCRIPT AS ILLUSTRATIVE OF THE HISTORY OF THE ARTS OF DESIGN.\*

FROM the invention or introduction of writing in every country of the world to the present date, it has been customary, more or less frequently, as the current of civilization advanced or receded, to embellish manuscript with polychromatic decoration. Of a practice so steadily maintained in spite of ages of indifference and Vandalism, thousands and, indeed, I might say millions of specimens actually exist. Fortunately, the intrinsic value of the materials of which such volumes were made, offered no great temptation to barbarian capidity, and many a precious codex still remains, which, stripped ruthlessly of the costly binding which once encased it, has been thrown aside as worthless by the very hand which despoiled it of the covers, or precious capsule, under which it was once exhibited to the admiration of the faithful, on the altars or lectisteria of the great cathedrals and churches.

Such memorials of the zeal, industry, piety, and taste, of our forefathers lay claim to our attention on two grounds, apparently different, but in reality one and the same, viz. their value as illustrations of the history of the arts of design, and the importance of those lessons of experience, which every artist may unquestionably derive from the study of the beautiful types both of form and colour which they present to his notice.

It is the former of these two divisions of the subject which it constitutes the leading theme of the present paper, but as it would be comparatively deficient in usefulness, if I failed to establish the ultimate identity between that which may be regarded as historical, and that which may be looked upon as more strictly practical, I propose to do so very briefly in drawing this paper to a close.

To commence, therefore, with the historical portion of my theme, I need scarcely recall the facts, that not only was that which we know as the earliest type of writing the most pictorial, but it was also embellished with colour from the most remote ages. A glance at the pages of Rossini or Lepsius, will suffice to convince us that the monumental hieroglyphics of the Egyptians were almost invariably painted with the liveliest tints; and when similar hieroglyphics were executed on a reduced scale, and in a more cursive form upon papyri, or scrolls made from the leaves of the papyrus, the common flowering rush of the Nile, illumination was also employed to make the leading pages more attractive to the eye. Nor was such illumination peculiar to hieroglyphic characters; it prevailed also, but not to the same extent, in the hieratic and demotic modes of writing. Of such papyri, notable specimens may be seen in the British Museum; the most wonderful in existence, however, is the remarkably interesting and graphic illustration of the funeral of a Pharaoh, preserved in the Royal Museum at Turin.

Extraordinary dexterity was acquired in a conventional mode of expressing complicated forms by a few rapid touches, and the life and spirit with which familiar scenes are represented, and ornaments executed, in both the early and late papyri, are truly remarkable. The precise extent, to which the Greeks and Romans were indebted to the Egyptians, for the origination and use of alphabetic symbols, the learned have not yet agreed upon. They have, however, concurred in recognizing the fact that Egypt certainly supplied the principal materials, by means of which writing was ordinarily practised. The primitive books of the ancients were no other than rolls formed of papyri prepared in the following manner:—Two leaves of the rush were plastered together, usually with the mud of the Nile, in such a fashion that the fibres of one leaf should cross the fibres of the other at right angles; the ends of each being then cut off, a square leaf was obtained, equally capable of resisting fracture when pulled or taken hold of in any direction. In this form the papyri were exported in great quantities. In order to form these single leaves into the "scaps," or rolls of the ancients (the prototypes of the rotuli of the middle ages), about twenty were glued together end to end. The writing was then executed in parallel columns a few

inches wide, running transversely to the breadth of the scroll. To each end of the scrolls were attached rounded staves similar to those we use for maps. To these staves, strings, known as "umbilici," were attached, to the ends of which bulse or weights were fixed. The books, when rolled up, were bound round with these umbilici, and were generally kept in cylindrical boxes or capsas, a term from which the Medieval "capsula," or book-cover, was derived. The mode in which the students held the rolls in order to read from them is well shown in a painting in the house of the surgeon at Pompeii. One of the staves, with the papyrus rolled round it was held in each hand, at a distance apart equal to the width of one or more of the transverse columns of writing. As soon as the eye was carried down one of the staves, when, of course, the student had arrived at the end of his book.

Of such papyri I need scarcely remind you that no less than nearly 2,000 were found at Herculaneum, the whole so shrivelled and burnt up as to be susceptible of being opened only at the greatest possible risk of total destruction. By careful steaming, and a variety of ingenious processes, many have been unrolled and displayed. They proved, however, to possess little literary, and no artistic merit.

The first great improvement in book-making, was the substitution of sheets of parchment for the leaves of the papyrus. Necessity was in this case the mother of invention, for Pliny tells us, that owing to the illiberality and jealousy of one of the Ptolemies, Eumenes, king of Pergamus, being unable to procure the Egyptian papyrus, introduced the use of parchment prepared for taking ink and pigments.

The second, and even more important change was introduced, according to Suetonius, by Julius Cæsar, who first divided books into pages. His letters to the Senate were so made up, and subsequently all documents either emanating from, or addressed to that body or the emperors, were arranged much as our modern paper-books are. The volumes so formed were known as *codices*, a term which has been retained to express similar objects during the whole reign of Medieval Latinity.

Although the rolls to which I have alluded, as having been discovered at Herculaneum, were devoid of embellishment, there is sufficient evidence that many of the classical manuscripts were elaborately decorated. Thus Martial alludes to a bookseller's shop opposite the Julian Forum, in which his works may be obtained, "smoothed with pumice-stone, and decorated with purple." Pliny tells us, that Varro illustrated his works by portraits of no less than 700 illustrious persons, and he assures us that writers, on medicine gave representations in their treatises of the plants which they described. Seneca also alludes to books decorated "cum imaginibus." Such were the original classical illuminated manuscripts of the Augustan age.

A distinct class may, however, be recognized of somewhat later introduction into Europe than those in this simple style, founded, no doubt, upon Oriental models. The combination of brilliant colours, with gold upon purple, and other stained vellums, appears to have been derived by the Greeks from India and Persia, and continued to be preferred to the more sober style particularly affected by the Romans during the first three centuries, at least, of the Christian era. The earliest instance of Roman adoption of gold lettering on purple or rose-stained vellum is given by Julius Capitolinus in his life of the Emperor Maximinus the younger. It is therein related that the mother of the emperor presented to him, early in the third century, a copy of the works of Homer written in gold upon purple vellum.

Although evidence is wanting that both styles prevailed among the Romans, the simpler one may be assumed as having been most popular in Italy; as, after the transfer of the seat of empire to Byzantium, scarcely any of the more brilliant class can be traced as emanating from the Roman schools of calligraphy. On the other hand, the simpler style appears to have found but few admirers in Byzantium, since almost all the earliest examples which can be met with of the skill of the artists employed in the capital of the eastern empire are based upon the capital of the eastern illumination in which golden grounds and conventional ornaments, executed in brilliant colours, form the leading features of decoration. The Roman style may be considered as closely allied in its pictorial elements, originally, to the art of

\* Read by Mr. Digby Wyatt, at the Institute, as elsewhere mentioned.

Pompeii and Herculaneum, and, subsequently, to that of the Catacombs; while the Greek style presented, originally, a close relation to Oriental prototypes, and, ultimately, to the popular art of the mosaic worker.

I shall briefly allude to a few of the principal existing specimens of each style, since they must ever be regarded as furnishing the best and indeed the only reliable illustrations of the painter's art during those ages in which classical tradition became all but extinguished.

The most important Latin illuminated manuscript known to the student of palaeography is unquestionably the square Virgil of the Vatican. This originally contained fifty paintings, five of which are now almost entirely effaced. The text is written throughout with considerable regularity, in capital letters, in black ink, and its only ornaments are paintings of subjects derived from the Æneid.

They are executed in body colour, with great spirit, and in a very free hand, but are wanting in finish, and in any considerable attention to gracefulness of composition. The whole of the accessories, architectural and picturesque, are purely classical, and the costume, arms, and technical execution are perfectly characteristic of the fourth century. They are not accompanied by any purely ornamental frame-work, but are separated from the text only by plain, narrow, red bands. It is right to notice this, as in almost all manuscripts of Latin origin a similar mode of simple framing of painted subjects may be observed. The two subjects of this series most interesting to architects are unquestionably those which represent Achates and Æneas inspecting the works undertaken by Dido for the beautifying of Carthage, and King Latinus receiving the ambassadors of Æneas. In the former, masons and other artificers are represented at work, and a curious illustration is given of the primitive crane, worked by a large wheel. In the latter the Trojans approach Latinus, who is seated before a temple with an octastyle portico, the pediment of which is filled with sculpture, and the general architectural character of which is exceedingly clearly defined.

A much ruder series of illustrations of leading incidents in the Æneid is also preserved in the Vatican, in a Virgil, probably, of the fifth century, formerly in the Parisian monastery of St. Denis. The celebrated Terence of the Vatican is a classical MS., of little less interest and importance than the square Virgil, being similarly illustrated with miniatures, but of a much ruder description.

So far as ancient texts are concerned, irrespective of illuminated decoration, some of the most valuable now extant are those which belong to the peculiar class of books known as *palimpsests*, that is, books which have been twice written over, the original writing having been, as far as possible, expunged, in order to provide a fresh surface of vellum for receiving later transcripts. The most important of this class was unquestionably the treatise of Cicero *De Republica*, discovered under a copy of St. Augustine's Commentary on the Psalms, by Cardinal Angelo Mai, the celebrated librarian of the Vatican.

The Imperial Library at Vienna is rich in Roman MSS., of scarcely inferior interest to those contained in the Vatican. The most elegant is a calendar, decorated with eight allegorical figures of the months. Although of about the same period as the square Vatican Virgil, it differs from it in containing, in addition to pictorial representations, numerous elegant ornaments of a conventional description. At Vienna is also the exceedingly curious MS. "*Dioscorides*," a work of peculiar interest in the history of painting, since not only does it contain in its text the earliest allusion to that property of drying which renders oil an eligible material for the painter's use, but in one of its miniatures, illustrative of invention, it shows a scribe writing, and an artist engaged in painting a picture placed upon an easel differing but little from those in use at the present date. In one hand the artist holds his palette, and with the other he is applying the colour to the surface of his picture. At his feet is a slah upon which his pigments are disposed for transfer to his palette. The date of this interesting MS. is satisfactorily fixed by the fact of its containing an elegant portrait of the Empress Juliana Anicia, for whom it is known to have been written at the commencement of the sixth century.

The Ambrosian Library at Milan contains a Homer with fifty-eight pictures, corresponding with those of the Vatican square Virgil. The Laurentian Library at Florence possesses the celebrated Medicean copy of the latter author, a codex much esteemed for the purity of its text, although devoid of illumination. The Paris

Prudentius may be said to correspond (with the exception of a difference in the form of the capital letters in which it is written) with the Medicean Virgil.

The purest of the classical MSS. were written in regularly-formed capitals. The next and less regular class is that in which the characters consist of what are known as rustic capitals, or those in which the writing is slightly inclined, in a manner corresponding with many of the inscriptions which have been found rudely scratched upon the walls of the houses at Pompeii, and in the chapels and other apartments of the catacombs.

Another variety of writing in capital letters was that known as the *uncial* style, which was the first approximation to a cursive or running hand. These letters generally resemble capitals, but instead of being angular are to a great extent composed of rounded forms. Specimens of this uncial character may be traced in the fourth century, and it appears to have changed little until the seventh. It is in this character that the *Dioscorides* of Vienna is written, while the later of the two Vatican Virgils already mentioned, and the Paris Prudentius, are in the rustic.

The uncial character, or rounded capital, was a transition to the *minuscule*, or "lower-case" letter, which at length became an entirely distinct character from the alphabet of capitals, the latter being generally known in contradistinction to the *minuscule* as *magnolet*; but whilst a knowledge of the exact sequence of the varieties of character in which illuminated MSS. have been written, is essential to enable us to arrive at any approximation to a correct determination of the age of any such work, I do not propose to dwell upon this branch of the subject here, but rather to confine myself to the illuminations, which have more direct interest for us as artists.

Having adverted to a few of the most important of the simpler class of classical MSS., I will now proceed to allude to the principal specimens of the more gorgeous kind, including those known to have been executed in the Eastern Empire, at the same time that those already described were completed in the Western.

St. Jerome, writing in the fourth century, exclaims in a well-known passage,—"Let those who will have old books written in gold and silver on purple parchments, or, as they are commonly called, in uncial letters,—rather ponderous loads than books,—so long as they permit me and mine to have poor copies, and rather correct than beautiful books." The principal volumes still existing corresponding with the description given by this great father of the Church, are the celebrated "*Codex Argenteus*," of Upphals, written in gold and silver letters upon a purple ground, A.D. 360; the *Psalter* of St. Germain de Pres; a fragment of the New Testament in the Cottonian Library (Titm. c. 15); and a copy of the Book of Genesis in the Imperial Library at Vienna; the three latter of which are believed to have been executed during the fifth and sixth centuries.

All of these, it may be observed, are in the Greek character, and, with the exception of the *Codex* of Upphals, may be considered as the production of Greek scribes. The only one which contains miniatures is the copy of Genesis, at Vienna, which is illustrated by no less than eighty-eight. These correspond very closely with the paintings which once enriched another celebrated Book of Genesis, which belonged to Sir Robert Cotton, and was almost entirely destroyed in the fire at Ashburnham House, in 1731, which consumed so many irreplaceable relics of past ages. The Cottonian Genesis, as far as can be ascertained from collections made previous to the fire, and from the charred and shrunken fragments which are all that now remain of this precious volume, contained no less than 250 miniatures, each about 4 inches square. These two remarkable versions of the Book of Genesis are supposed to be of nearly equal date, a slight precedence in point of antiquity being conceded to the English specimen. The Vienna text is written, as we have remarked, in letters of gold and silver, while that of the English version is throughout in black. Gold in the English volume is but sparingly introduced in the miniatures; and Dr. Waagen remarks that only the hatched gold upon the borders, the glories, and the lights upon the crimson mantle, indicate the commencement of Byzantine art.

That which is supposed to be the most ancient of all the texts of the Holy Scriptures, the *Codex Alexandrinus* of the British Museum, is written throughout (with the exception of the first three or four lines in each book which are in red) in black letters; a slightly ornamented pen-and-ink line

drawn at the end of each book being the only decorative feature contained in it.

The Libraries of the Vatican, as well as those of Paris, Oxford, and London, contain other specimens of brilliant ancient MSS., written in gold and silver letters, for the most part, no doubt, at Byzantine previous and immediately subsequent to the age of Justinian. There can be very little question that an important modification in the character of illumination took place during the impulse given to the arts by the important works carried on by command of this emperor during the middle of the sixth century. The relations which existed between the empire over which he reigned, and the ruling powers of Persia, were exceedingly intimate, and there can be little doubt that the fruits of the "eternal peace," which he concluded with Chosroes Nushirvan, in the very year in which the great church of St. Sophia was commenced, A.D. 532, may be traced in the golden grounds, the jewelled ornaments, and brilliantly coloured conventional foliage, which speedily and almost completely superseded the traditions of Roman art, which had greatly declined during the interval which occurred between the removal of the seat of empire from Rome to Constantinople by Constantine, in the year 329, and the accession of Justinian, in the year 527.

The most interesting illustration of the participation of the art of illumination in this change we may be proud to possess in this country in the celebrated and unique Eusebian canon, executed on an entirely gold ground, two leaves of which, painted on both sides, are preserved in the British Museum (Addit. MS. No. 5111). Their beauty of coloring is very great, and both in that respect and in the peculiar forms of the ornament by which they are decorated, their divergence from classical tradition, and their affinity to Oriental art, will be at once perceptible. In the more pictorial features, such as the small portraits introduced in circular compartments, they exhibit a mode of painting strictly in consonance with antique precedents, and still retained in tolerable perfection.

To whatever degree this pictorial power might have degenerated from the comparative excellence of Classical ages, it is to be remembered that it was far in advance of any other school at that time existing. The social and political convulsions which prostrated the Latin empire before the Goths, the Vandals, and the Lombards, reduced the traditions of Roman art to an utterly effete condition in the land in which they had once reigned paramount; and it was in the Eastern empire alone that art found that protection and comparative tranquillity under which it can alone flourish.

While all was dark in Europe, with the exception of the flickering light still casting an occasional ray from Constantinople over countries far remote, a new light and a new school were springing up in the islands of the extreme west. The learned have differed in their recognition of the immediate means by which Ireland first became Christianized. It is, however, generally admitted that that providential change from utter darkness to true light took place at a very early period. That the Irish were in possession of some of the most ancient versions of the Gospels is quite clear from the texts of their earliest MSS., which differ essentially from the version introduced by St. Jerome towards the close of the fourth century. The oldest of these works date from the sixth century, and exhibit a series of entirely original features in the extraordinary illuminations by which they are decorated. Many of their saints were distinguished scribes, while their schools became so generalised throughout Europe as to be resorted to by students from many distant lands. In the school of Finian, which is said to have included no less than 3,000 scholars, the great St. Columba, or Columbkille, who was born A.D. 521, was instructed in many arts; and in that of illumination he became especially and justly famous. He it was who about the middle of the sixth century, established that celebrated monastery in the island of Iona, or Icolmkill, which was subsequently transferred under the Irish monk, St. Aidan (635, 651), to Lindisfarne, and from whence St. Cuthbert and his learned associates, spread true religion and sound knowledge far and wide in the north of England. In the library of Trinity College, Dublin, is preserved a precious volume containing an entry of extreme antiquity, relating that it was written by St. Columbkille himself, in the space of twelve days. It is copiously decorated with what Mr. Westwood (who has done more than any other student to spread a knowledge

and illustration of this interesting school of calligraphy) has designated as "fossilated interlaced ornament." Nor is this by any means a singular specimen of Celtic art of the sixth century, since many other volumes of even greater intricacy and elaboration are extant in Ireland, England, France, Germany, and Italy.

The remarkable diffusion of MSS. executed by Irish scribes is accounted for by the exemplary efforts and untiring peregrinations of the Irish and early Anglo-Saxon missionaries. Thus St. Boniface, the apostle of Germany, carried with him to that country his precious book of the Gospels, still preserved as a relic, and a highly-prized one; at Fulda. St. Kilian took with him Franconia books, still preserved at Würzburg. In the public library of St. Gall, in the canton of Switzerland which still bears his name, records of the labours of the saint still exist; and not only did these curious volumes help to form the schools of calligraphy which afterwards became celebrated in Germany and elsewhere, but, in the monasteries which they founded, the saints themselves educated scribes to imitate the writings originally brought from Ireland. Thus, as M. Libri, the great bibliographer, has justly observed, "One cannot help remarking that the most celebrated of these pious missionaries, St. Columbanus, laid the foundations at Luxeuil, in France; at St. Gall, in Switzerland; and at Bobbio, in Italy, of three monasteries which afterwards became famous for their admirable MSS., in many of which, the influence of the Irish and Anglo-Saxon schools can be recognized at a glance. The Bobbio MSS. are known everywhere by the discoveries which have been made in the palimpsests, which once belonged to that collection. As for the MSS. of Luxeuil they have been dispersed; but the specimens of them which are to be found in the Libri collection, joined to what has been published on the subject by Mabillon, O'Connor, and others, prove unambiguously that in this abbey, as well as in that of Stavelot in Belgium, and other ancient monasteries on the Continent, a school of writing and miniature had sprung up, as remarkable for the beauty of its calligraphy as for the care applied to reproduce the forms of the Anglo-Irish schools."

I have never seen any MSS. demanding for their execution greater truth and delicacy of hand than some of these Irish productions, and more particularly the "Book of Kells," a treasure preserved in the library of Trinity College, Dublin, which tradition asserts to have belonged to St. Columba himself. The volume consists of 339 leaves, each 13 inches by 9½ inches. The text is that of the Gospels, and is considered by Biblical students to be a version antecedent to that of Jerome sanctioned by Pope Damasus. In this, like other contemporary books of Gospels, the Eusebian canons precede the sacred texts, and these are written, as is also usual, in arcades. In this respect, and in the conventional attitudes of some of the figures, can be traced the analogy they present to ancient Byzantine or Latin MSS., from which they totally differ in every ornamental detail. With the exception of certain flat tints, forming the fillings in, the whole of the work appears to have been executed with an extraordinarily fine pen; there is no attempt whatever at any expression of light and shade; the whole is perfectly flat, and no graduated tints are introduced. Gold I have never yet seen in a genuine Irish MSS., and, although it is to be found in some of the books executed in a similar style in England, I do not think that it was ever used in Ireland itself. The power of depicting the human figure was almost entirely wanting, but the occasionally some of the animals occurring in the lacertine combinations of ornament were drawn with an approximation to correct form. The colouring, however, is invariably most conventional in its arrangement. The leading elements of ornament are interlaced bands, terminating in spirals, coiled most eccentrically one within another, and interwreathed birds and animals struggling as if in interminable contest. The surfaces inclosed by lines or by ornaments such as those described, are frequently covered over with geometrical patterns of extreme minuteness, executed by repeated symmetrical touches of a finely-pointed pen, and corresponding occasionally both with the class of ornament exhibited on Chinese and Japanese work, and with that found on the carved woodwork of aboriginal races. The most agreeable contrasts of colour in these manuscripts are those of purple with yellow. Considerable life and distinctness was given to combinations of ornament by enclosing the bounding lines with closely-serried minute red dots. Although small, one of the most elegant of all the Irish volumes is that known as the Gospels of

McDurnan, preserved in the library of the Archbishop of Canterbury at Lambeth.

It is exceedingly difficult to predicate with any certainty as to the relative ages of the various specimens of Irish illuminated MSS. which still exist; as, although some are ruder than others, there is scarcely any alteration in the system of ornament, or the representation of animated objects, to be recognized in the whole series. How profoundly they were admired in the Middle Ages is testified by several citations given by Mr. Westwood; the most interesting perhaps being that of Giraldus, written in the twelfth century. That author describes a book which he saw at Kildare, said to have been written by St. Bridget, who died A.D. 525, and concludes what Mr. Westwood calls his "flaming account" of it by stating that "scarcely could Apelles himself execute similar works, which appeared to have been formed and painted by some scarcely mortal hand."

From the monastery of Lindisfarne, to which I have already alluded, the arts taught in the schools of Ireland were communicated to various English monastic institutions, and more particularly to that at Glastonbury. How completely identical the practice of the scribes, both Irish and Anglo-Saxon, who exercised their art at Lindisfarne was with those of Ireland itself, may be clearly traced by a comparison of books known to have been illuminated in Ireland, with such works as the Durham Book, or Gospels of St. Cathbert, and others which we cannot doubt were executed in this country.

The last-named volume, which is probably the most remarkable MS. in the British Museum, is of world-wide celebrity. St. Cuthbert died in the year 685, and by way of a memorial to him, his successor, Bishop Eadfrith, caused this noble volume to be written. It was greatly enriched by Ethelwald, Bishop of Lindisfarne, who succeeded Eadfrith in 721. This prelate caused the book to be richly illuminated by the hermit Bilfrith, who prefixed an elaborate painting of an evangelist to each of the four Gospels, and also illuminated the capital letters at the commencement of each book. The bishop caused the whole to be encased in a splendid binding of gold, set with precious stones; and in the year 959 a priest named Aldred rendered the book still more valuable, by interlining it with a Saxon version of the original, which (unlike the more ancient Irish MSS.) was in the Latin text of St. Jerome. In the diagrams on the wall I exhibit to your notice various ornamental features from this extraordinary book, some drawn to the exact size of the original, and others magnified so as to enable you to perceive the general characteristics of the style from a distance.

The preservation of this most elaborate volume is of the highest importance, as showing that, for at least 100 years after the advent of St. Augustine in this country, the Irish style of illumination was adhered to in the north of England by Anglo-Saxon students; and that very few traces were manifested of those changes in style which were unquestionably introduced through the admiration excited by the comparative pictorial excellence of the illuminated books known to have been brought by the envoy of Pope Gregory the Great into this country in the year 597.

These books are known to have consisted of a Bible in two volumes; two Psalters; two Books of the Gospels; a Book of Martyrology; Apocryphal Lives of the Apostles; and Expositions of certain Epistles and Gospels. The Bible, which was beautifully written on purple and rose-coloured leaves, with rubricated capitals, with portions in gold and silver, was certainly in existence in the reign of James I. Some of the learned think that this original Gregorian Bible may be traced in the magnificent purple Latin Gospels of the British Museum (Royal Library, I. E. 6); but a careful examination will, I think, suffice to establish the presence in that volume of features so decidedly characteristic of Anglo-Saxon work, as to render it exceedingly unlikely that the volume could have been written anywhere but in this country. There can be little doubt, however, that if not the identical volume, it was one of the earliest transcripts made from it; and probably under the superintendence of St. Augustine himself. In this book of the Gospels the execution of the figures is entirely different from that commonly practised by the Irish scribes. There is an attempt at shading, and there is a sketchiness of touch which appears to me to clearly indicate the attempts of an artist, accustomed only to the use of the pen, to copy the touches and effects produced by means of the brush.\*

\* To be continued.

#### ON THE DISCOVERIES OF THE BUDRUM EXPEDITION.

The concluding lecture at the Architectural Exhibition, delivered by Mr. R. P. Pullan, on the 5th inst., was on the "Discoveries of the Budrum Expedition." The subject has been treated of on various occasions in our pages, but the following portions of the paper will be found to convey additional information.

It was reserved for the Budrum expedition, under Mr. Newton, to be the means of adding to our national collection the finest sculpture it possesses, after the Elgin marbles. This gentleman united to the necessary qualification of being a scholar, that of being imbued with an enthusiastic love of Greek art, and what is of more consequence to the leader of an expedition, he possessed a thoroughly practical turn of mind and great administrative talent, for it is not only the acquisition of antiquities he has to consider, but the daily requirements of those united under his charge.

Mr. Newton had been appointed vice-consul of Mitylene, by Lord Granville, in order that he might have the opportunity of exploring the neighbouring coast, and that he might turn to the national advantage any discoveries that might there be made. After a residence of a few years, which enabled him to master the language and become acquainted with the customs of the people amongst whom he dwelt, he turned his attention to an object that had always been the nearest to his heart, viz. the discovery of the sepulchre of Mausolus, king of Caria—one of the seven wonders of the ancient world, the exact site of which had never been determined, though several had visited Budrum for the purpose of ascertaining its exact position.

The expedition reached Budrum on the 22nd November, 1857, and here, perhaps, it would be as well for me to describe the beautiful spot at which they arrived, which was to be for a year the scene of their labours.

The city of Halicarnassus, now Budrum, was situated on the shores of a bay curved in the form of a horseshoe, on ground gradually sloping up to rocky mountains, which lay about a mile from the shore, and the lower parts of which were included in the circuit of the walls. The city was built on terraces, formed by low walls, which prevented the alluvial soil washed from the hills from being carried away. The hills encircling the bay gave the ancient city the form of a theatre, and in this respect it resembled Rhodes; possibly it was laid out by the same architect, Hippodamus, who is known as an architect of cities. The bay was divided into two equal parts by a rocky promontory, upon which stood the palace of Mausolus, where now the castle is situated.

Of the several travellers who visited Rhodes, two only have indicated the precise spot upon which they surmised the Mausoleum to have been built,—Captain Spratt, who made a plan of the town when surveying the coast for the Admiralty; and Ross, a German architect.

According to the description of Vitruvius, it stood in a broad way at the centre of the town. Both these sites have a central situation; and, from these being the only large level platforms perceptible in the centre of the town, they seemed likely to afford ground for the hypothesis. Mr. Newton explored Spratt's platform first, and found nothing but Byzantine walls, probably those of a monastery. Ross's platform was afterwards excavated: it turned out to be the site of the Temple of Mars. Mr. Newton then began to dig in a field belonging to Hadji Captain, where a fine statue of a female had been found. In this field were found the foundations of a Roman villa, and several mosaic pavements of rather coarse workmanship. These were carefully raised, packed, and put on board ship, preservation having been first taken to photograph them all while *in situ*—a most difficult operation, as you may imagine, as a scaffold had to be erected, and the camera arranged with the lens downward. This operation was, however, successfully concluded by the two photographers of the expedition, Corporals Spackman and Macarty.

During the excavations of the villa Mr. Newton, in exploring the neighbourhood, discovered some remains of columns and other fragments of a fine Ionic building, built into the walls of houses and vineyards, on a spot mentioned many years ago by Professor Donaldson as the probable site of the Mausoleum. Excavations were commenced here on January 1st, 1859, and in the course of a few days Mr. Newton had the satisfaction of ascertaining that he had attained the object of his search—the site of the Mausoleum,—for fragments of

friezes were soon brought to light, corresponding in style and in dimensions with those which had been removed from the castle of Budrüm, which was known from records to have been built out of the ruins of the Mausoleum; and shortly afterwards parts of two colossal heads were discovered, and then numerous pyramid steps, which proved without doubt that these were the ruins of the building described by Pliny as having been surmounted by a pyramid of twenty-four steps, crowned by a quadriga.

There were several obstacles to the rapid progress of the works. One of these was the difficulty of purchasing the houses and gardens that covered the site. These had to be purchased one by one, and were only parted with by their proprietors on condition that the excavation should be filled up, so that they could build anew on the same sites. The natural cupidity of the Turks was excited; they imagine all Englishmen to be mad; but they considered it an incredible degree of insanity for men to spend thousands of piastres and so much time and labour simply for the sake of a few *eski tashler* (old stones), even though they might be *yazli tashler* (inscribed stones), or *marrowfat tashler* (wonderful sculptured stones). No! we must know of some concealed treasure; and had not they or their friends discovered coins in ancient tombs before now? Were not they themselves in the habit of hurrying their treasure in times of tumult, not knowing what else to do with it?—and as we had not yet discovered this buried treasure, was it not likely that it might be under their own houses? So they asked fabulous prices for their miserable little tenements, hardly better than cowsheds; and it was only by a series of clever negotiations that Mr. Newton was enabled to secure them. Even to the last there were two houses left unthought within the peribolus on the south side; but they were tunnelled under in every direction, without any trace of sculpture being discovered.

At length a sufficient space of ground was excavated to show a quadrangular cutting in the rock, 126 feet by 110, which would give ample space for a building the circumference of which was 431, according to Pliny, to stand within it. This area was partly filled with blocks of green rag, laid in regular courses of a foot in depth. This formed the core of the stylobate, which must have been of great height and solidity, for a great part of the ancient castle of Budrüm is built with these courses of green rag, of uniform height, taken from the Mausoleum. Pliny's description of the monument is, no doubt, familiar to you: he gives the total height of the structure, including the quadriga, as 140 feet. He mentions that the *pteron*, or colonnade, was raised to the height of 25 cubits (37½ feet), and that the pyramid was of the same height; so that the stylobate would have been 65 feet in height. I may mention that this high base is not unusual; it occurs at the Ionic monument of Xanthus, and in other tombs of this class.

We found the order to be fine Ionic, resembling in proportions the temple of Minerva at Priene, and that its height came out about the same as that given by Pliny—viz., 37½ feet. The pyramid steps formed on the north side and near the peribolus wall (which they had struck in falling, and made to bulge outwards), were of two dimensions, as to the treads, viz., 1 foot 9 inches, and 1 foot 5 inches, the riser being uniformly 11½ inches. One step was found with a 9-inch tread.

The chariot was by Pythis, the frieze by Scopas, Timotheus, Lechares, and Bryaxis, the first sculptors of their day. In addition to these fine sculptures were found some magnificent lions, an equestrian figure, two seated figures, and heads and pieces of several others, all in good style.

I will not now go into the question of the restoration. This, as you know, has been a *questio vexata* for a long period. It would be unfair to criticise the various restorations that were put forth (before we had any data to go upon) based upon Pliny's description, which it is so difficult to reconcile. I may mention that the whole question mainly depends upon whether the 63 feet given by Pliny as the length of the sides, in contradistinction to the fronts, refers to the cella, or to the *pteron* or colonnade. Connt Caylus was one of the first to make a restoration, and his conception of it was unlike anything that has subsequently appeared. This was followed by those of Texier, who supposed it to have been circular, those of Bosse, Professor Cockerell, and Mr. Watkins Lloyd. In Mr. Falkener's "Museum of Classical Antiquities" will be found a complete report of these various restorations which are all to a certain extent to be reconciled with Pliny.

I may mention that the mode of restoration proposed by Mr. Fergusson (in the *Builder*),

explains a passage in Pliny before lost sight of, in which he says that the pyramid contracts in the form of a goal, which would give it a curvilinear form. In Mr. Newton's hook on the "Expedition," I hope to be able to put forth a restoration in which most of the points are met: at present I am waiting to hear the result of the collation of the various manuscripts of Pliny which is being done by Mr. Newton's direction.

Besides the Doric colonnade, which stood in front of the temple of Mars, there is nothing of the ancient city remaining above ground but the theatre and the city walls. The theatre is situated, as is almost universally the case, on the side of a hill, so placed that the spectators might, between the performances, gaze upon nature's own scenery, painted in her most brilliant colours. Opposite them, at a distance of twenty miles, could faintly be distinguished the promontory of Cnidus; a little nearer, the jagged peaks of the Cos mountain called Prion, from its saw-like appearance; while the magnificent panorama of the city lay immediately beneath them, the palace of Mausolus and the temple of Venus occupying the two horns on each side of the bay, and the magnificent sepulchre of Mausolus rising in the centre to the height of 140 feet, of Parian marble, brilliant with gold and colours, and surmounted by the four-horse chariot containing the colossal statue of the departed monarch.

In October, 1857, as the excavations did not require his immediate presence, Mr. Newton took advantage of the return of the *Supply* to Malta to visit the temple of Apollo at Branchida, the modern Greek name of which is Gerouta, near the ancient city of Miletus. He was induced to make this excursion for the purpose of endeavouring to find certain statues that lined the sacred way approaching this celebrated temple, which was the seat of one of the greatest oracles of antiquity. There is a vignette in the "Ionian Antiquities" showing a group of these figures, and from this it was evident that they were of an archaic style, of Egyptian character, and therefore valuable to the historian of art as the connecting link between Egyptian and Greek art. He found eight seated statues of regal personsages in their original positions, but hurried up to the neck: most of the heads had been knocked off. Upon digging round the figures, inscriptions of an interesting sort were found, some of them in the boustrophedon or earliest character known—that is to say, running from right to left and then from left to right, as an ox ploughs; hence the name; in addition to which he discovered a lion and a sphinx, and on the former the name of Thales, the Greek philosopher, who flourished in the year 560 B.C., in the neighbouring city of Miletus. The temple had been so thoroughly illustrated by the Dilettanti Society that it offered nothing new. Upon it being represented to the Government that these eight figures were worthy of transportation to England, money was liberally granted for the purpose, and some months afterwards the *Supply* again touched at Branchida, and by the efforts of the crew these large sculptured blocks were dragged down to the shore, and safely shipped. They are now in the Cnidus gallery of the Museum.

In the summer of 1857 Lieutenant Smith, taking with him a photographer and some Turks, made an excursion to the ruins of a temple at Lagina, which was not known to any former traveller, a city a little north of Stratonicæ, and was known to Pococke under the name of Chitua. We found amidst the thick underwood several fine friezes of Roman temples, of which photographs were taken: the peribolus gateway was standing, but the rest of the structure, which was of the Corinthian order, was in ruins. The friezes were unfortunately too far from the coast for removal, being four or five days' journey by an impracticable road—that is to say, impracticable for sledges.

Lieutenant Smith also explored the shores of the Gulf of Keramo, and visited the city of that name, which had been identified by the surveyor of the Admiralty. He found there a city of the first class, that is, one that had not been built upon after Roman times.

In November, 1857, I started for the purpose of exploring the island of Cos, taking with me a photographer (Corporal Spackman) and two Turks. The island had been visited by Colonel Leake and by Rosse; but it was thought that there might be sculpture or architectural remains that had escaped their notice.

In the well of Hippocrates, about four miles from the city of Cos, is an example of horizontal arched vaulting, the only one I know of besides that of the treasury of Athens. This well is in the

side of a hill, about 20 feet beneath the ground, and is approached by a subterranean passage: it is about 10 feet in diameter, and 18 feet high: the vault is of beehive form.

At Pylia we found the Charmyleion, a monument of the kind called Heroön, consisting of an oblong chamber, with an arched roof, niches for the dead being at the sides. The Ionic ornaments of the façade were found in the façade of a neighbouring church. We visited the site of Astypalœa and Halasarna, which possess but few fragments of buildings. We brought back copies of many inscriptions inedited.

In December Mr. Newton and myself, accompanied by a body of marines, were landed on the barren peninsula, at the extremity of which is situated the city of Cnidus: this peninsula, 120 miles long, by from 3 to 4 miles broad, is bounded on the sides by the Gulf of Doris and Keramo. A high mountainous ridge, with one or two breaks in it, runs the whole length of the peninsula. At the extreme point are the ruins of a city built on the side of a mountain. The forms of the temple, theatre, and other public buildings, can be accurately distinguished, and are shown with great exactness in the map published in the second volume of the "Ionian Antiquities," and in the excellent survey by Captain Graves.

The Triopian promontory, about a mile long by a quarter of a mile broad, is joined to the main land, near the middle of its length, by a narrow sandy isthmus. Its natural harbours were formed in this manner: massive walls and piers were erected round them, which still remain. As there were no houses, however, within six miles of the city, the marines were employed for some time after our landing, in erecting the Crimean huts, for the accommodation of the expedition, which had been sent out from Malta on board the *Supply*.

In a short time a little settlement arose, formed of huts arranged in a quadrangle: a pier was constructed for the embarkation of antiquities; a tank was sunk for the preservation of water, which was scarce; and by Christmas-day everything was ready for the commencement of excavations. Our first trial was at the celebrated temple of Venus. The architecture of the temple (which is thoroughly illustrated in the "Ionian Antiquities") was found to be, though elaborate, late and of Roman character. Beneath the foundations we found fragments of cornices, which induced us to suppose that there had been an earlier temple in a purer style; but we found neither inscriptions nor sculpture.

The vestibule of the theatre next engaged our attention. Here we found Corinthian capitals, bases, and several fragments of thin marble, showing that the interior had been veneered after the manner of the Palace of Mausolus, as mentioned by Vitruvius.

The first important discovery was the tomb of Lykæthius on the Triopian promontory. This had been a Roman tomb, also Corinthian, with two columns in *antis*. The vault had been circular. Three sarcophagi of late workmanship were found *in situ*, and a statue of Demeter that had been in a niche at the side. Some valuable inscriptions were found that had lined the walls.

The finding of a statue figure on a terrace near the city walls induced Mr. Newton to dig in the vicinity, and he found that on this terrace had been a *temenos*, or sacred inclosure for internets, dedicated to Demeter. Here was brought to light a fine head of Proserpine, a small Venus, hundreds of lamps of terra-cotta, and also fragments of fine sculpture.

Before coming to Cnidus Mr. Newton had heard of a lion upon some promontory near. I had also received information from a shepherd that upon the top of a hill was a figure like a demon. When the weather became favourable for exploring, I went in search of this demon, taking with me two sappers. On the second day of our search, upon the top of a promontory not easy of access, I had the good fortune to come upon a magnificent lion, lying on his side in hollow ground. He measured 10 feet long and 6 feet to the top of his head, being represented in a recumbent posture. As soon as this discovery was made known to Mr. Newton, he directed an encampment to be formed on the spot. Lieut. Smith set the sappers to work to construct a zigzag road (for the cliff upon which the lion stood was some 200 feet above the level of the sea) for the purpose of embarking it; and in a few weeks' time the monster was hauled up by means of shears and powerful wind, put into a strong oak case, dragged down the ramp by 120 Turks, at the rate of about 100 yards a day, and at last shipped by the sailors amidst the united rejoicing of Turks and Englishmen.

While this was being done the tomb upon which the lion formerly rested was carefully removed. That portion which remained standing was a core of petrified beech, a stone common to that country—circular in the interior, of the diameter of 17 feet 6 inches, and externally forming a square of 40 feet. In the thickness of the walls were eleven recesses for the reception of bodies, and a low entrance.

The casing, which was of a local marble, had been detached and overthrown, and the stones separated for the sake of the metal crumps. The tomb had been surrounded by engaged columns of the Doric order, resting upon a stylobate. Above this had been a pyramid of steps, and, to crown all, a high plinth, surmounted by the lion. The whole must have formed a conspicuous landmark for mariners, and probably was the original Cnidian lion which we find on the coins of the city, and was, no doubt, one of the most imposing monuments of the country. The work had never been quite completed, as the lions' heads on the cornice were left in block, and the columns unfinished, as at Rhamnis and Delos. There was, however, sufficient *matériel* to enable me to make a restoration of the tomb. Other discoveries of sculptures were subsequently made.

In conclusion, I may say to the student of art, who to an appreciation of antiquities unites a love of exploration and something of the spirit of adventure, that there is no country that will so well repay the toil of travel as Asia Minor: there he will find that which will compensate for the dangers of an excursion amongst lawless people—and these are not few—and for the inconveniences of a hot climate, and these are many. In the course of every day's journey he will meet with, perhaps an inscription, perhaps a ruined temple, or perhaps a decayed city, abounding with ruins of theatres, temples, palaces. Here he may pitch his tent in the centre of some vast theatre, and for days find interest in exploring and measuring the ruins; or he may be still more fortunate and discover among the brushwood, or half buried in the ground, some wonderful work of art, a frieze, or a statue of Praxiteles, or some of his pupils. This may be the case even in a place so much exposed and so frequently visited as Cnidus. One day Mr. Newton and myself were walking in the outskirts of the city, and near the outer wall we observed a piece of white marble protruding. The surface had been broken off, but on removing a little of the earth we discovered folds of drapery: the Turks were summoned to dig, and in a short time a fine colossal seated figure was disinterred, which is now in the British Museum. Should the traveller not be so fortunate as to bring to light any fine sculpture, he may still be lucky enough to discover some city site, which was unknown before, from inscriptions or coins to identify it; thus adding considerably to our historical knowledge. He may bring home drawings of ancient remains that have never been represented by the architectural draftsman.

Not one of the ancient cities of Asia has yet been properly explored, and those that have been visited have, with few exceptions, not been illustrated; so that the field of labour is vast, the difficulties not great to an enthusiastic man, and the reward and satisfaction so great as only to be appreciated by those who have experienced it.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The closing ordinary general meeting of the Royal Institute of British Architects was held on Monday evening last, at the house in Conduit-street; the President, C. R. Cockerell, Esq., in the chair.

Mr. Lewis (honorary secretary) read a letter from Mr. Quarm, clerk of the works at the new palace of Westminster, acknowledging the vote of thanks which had been passed to the men who had assisted at the funeral in Westminster Abbey of the late Sir Charles Barry.

Mr. Lewis also read the draft of a memorial from the council and members of the Institute to the dean and chapter of Worcester Cathedral, praying them not to demolish the famous Guesten Hall; which is one of the finest examples remaining of the building of the Decorated period.

Mr. James Bell (honorary secretary) having read a list of donations,

The President, in moving that the thanks of the Institute be awarded to the donors, announced that a special general meeting would be held on Monday next, to consider the proposal of the council as to architectural examinations. He was sure that all present would agree with him that this was a subject of great importance to the profession; for if there was anything which could add

more to its respectability and status, it would be the institution of the proposed examinations. He hoped, therefore, that there would be a full attendance of members, so that the subject might be fully discussed.

Mr. Bell next read a paper forwarded by Sir Gardner Wilkinson "On the use of Granite." This will be found on the present page.

Thanks having been voted to Sir Gardner Wilkinson for the paper,

Mr. Digby Wyatt read a paper on "Illuminated Manuscripts as Illustrative of the History of the Arts of Design," the commencement of which we print elsewhere.

At the conclusion,—  
Mr. Burgess observed that some time since he had met in Theophilus a recipe for dyeing the ivory knobs of bishops' croziers, and he had made an experiment in order to see whether the materials would do for colouring vellum. The principal substance was rose madder; and he found on steeping the vellum in it for about a week that it produced a most beautiful and brilliant colour. He saw no reason why the service books in our abbey churches should not be illuminated. It seemed to him that if a memorial of a good and distinguished person were required, it would be far better to produce a magnificent illuminated volume than an ugly bronze statue, which in a few years would become as black as a sweep. Just fancy what a magnificent Book of Common Prayer might be produced for Westminster Abbey if Mr. Dyce and Mr. Herbert were commissioned to illustrate it.

Mr. Wyatt observed that the gorgeous purple colour found in ancient manuscripts was produced from madder. The Greeks had a plant which grew near Athens, which they called *fulvum*, and which they used for illuminating purposes. This plant was mentioned by Theophilus.

Mr. Burgess said Theophilus called the substance madder.

Mr. Wyatt observed that the ancient scribes covered the surface of their paintings with albumen, or the white of eggs, to preserve them from the action of the atmosphere.

Mr. Lewis said he had followed the recipes left by Theophilus for producing the gold effects, but that he had not succeeded to his satisfaction. He would be glad to know whether Mr. Wyatt had, in the course of his research, been able to throw any light upon this portion of the subject.

Mr. Wyatt replied that there were many treatises on the art of illuminating, which contained particulars about the preparation of the gold process, but he was free to confess that he had not been able to make any of them work. He believed that white of egg mixed with plaster of Paris, as used by the ancient Italian illuminators, was the best groundwork for gold.

Mr. Burgess said he had no doubt but that the problem could be solved, if the demand for illuminated books were revived. He believed the ancients had two ways of laying the foundation for thin gold—a gesso ground and an opaque ground. In the gilding of picture-frames, a ground of whitening and size was used, then burnishing gold size mixed with common size, and then a wash of water. The best success which he had met with was to take common burnishing gold and apply until a raised surface was obtained; then rub down with a brush, and afterwards apply shell gold or gold powder. Some years ago a man named Hewitt, who worked at the British Museum, was enabled to produce a very fine gold burnish, which he made a great mystery of. He said it consisted of three vegetable extracts, but the mark being rather wide, he contrived to keep the secret to himself.

Mr. Reynolds Rowe (Cambridge) said that perhaps a clue might be afforded to the wonderful excellence of the ancient illuminated manuscripts, by the fact that they were not executed by contract.

Mr. Wyatt said that, unfortunately for the force of Mr. Rowe's argument, there was abundant evidence to prove that many of the manuscripts were executed by contract. In the rolls of York Minster there were several entries showing how a certain accomplished scribe had contracted to execute illuminations for all the Psalms, with azure and vermilion, at 5s. 6d. each.

On the motion of Mr. Kerr, a vote of thanks was unanimously awarded to Mr. Wyatt for his paper.

The President expressed a hope that the paper would be published, in order that it might become of practical service to the members of the Institute as architects, and assist them to get rid of the white and grey surfaces so apparent in the interior and exterior of modern buildings. He

had himself seen that day a beautiful work which wanted nothing but the pencil of the artist to make it perfect. Strangers conversant with Continental buildings were surprised that we had not made more way in this peculiar style of decorative art.

The Right Hon. the Earl de Grey and Ripon was, on ballot, elected an honorary fellow. The following gentlemen were elected Fellows: Mr. Edward Middleton Barry, Associate, of 1, Old Palace-yard; Mr. George Low, Associate, of 10, Basinghall-street, City; Mr. Thomas E. Knightley, Associate, of 25, Cannon-street, City; Mr. Octavius Hansard, Associate, of 11, Argyll-place, Regent-street; Mr. Frederick H. Pownall, Associate, of 15, Gower-street, Bedford-square; and Mr. C. F. Reeks, Associate, of 12, Middle Scotland-yard. Mr. Louis De Ville, of 36, Great Ormond-street, and Mr. Thomas Tod Mardon, of 6, Great James-street, Bedford-row, were elected Associates.

#### ON THE USE OF GRANITE.

As the question of using granite for building and monumental purposes has been much discussed, I beg to offer a few remarks connected with it, and to notice a fact which shows at bow early a period the ancient Egyptians had watched the effect of atmospheric and other influences on stone, and how wisely they profited by the lessons taught them by experience. They had learnt that earth, abounding with nitre, from its attracting moisture, had the effect of decomposing granite, but that in the dry climate of Upper Egypt the stone remained for ages unaltered when raised above all contact with the ground. When, therefore, there was a possibility of its being exposed to damp, they based an obelisk, or other granite monument, on limestone substrations; and these last are found to the present day perfectly preserved, while the granite above them gives signs of decay in proportion to its contact with the earth subsequently accumulated about it. I am speaking of Upper Egypt, visited only four or five times in a year by a shower of rain; for in the Delta granite remains have been affected in a far greater degree than in the Thebaid. Nitre abounds there, and it is remarkable that the obelisks at Alexandria have suffered least on the sides next the sea.

The Egyptians seldom used granite as a building stone, except for a small sanctuary in some sandstone temple; and in the later times of the Ptolemies one or two temples were built entirely of granite. But in the pure Egyptian period that stone was chiefly confined to the external and internal casing of walls, to obelisks, doorways, monolithic shrines, sarcophagi, statues, small columns, and monuments of limited size, and was sometimes employed for roofing a chamber in a tomb.

The durability of granite varies according to its quality. The felspar is the first of its component parts which decompose, and its greater or less aptitude for decay depends on the nature of the base of which the felspar consists. Egypt produces a great variety of granite, and the primitive ranges in the desert, east of the Nile, about 35 miles from the Red Sea, supplied the Romans with numerous hitherto unknown kinds, as well as with porphyry, which they quarried so extensively in that district; but the granite of the ancient Egyptians came from the quarries of Syene, in the valley of the Nile, and from these they obtained what was used for their monuments. It is from this locality that the name of "Syenite" has been applied to a certain kind of granite; it is, however, far from being all of the same nature, and a small portion of the stone found there is really what we now call "Syenite."

Already, at the early period of the third and fourth dynasties, between twelve and thirteen centuries before the Christian era, the Egyptians extensively employed granite for various purposes. They had learnt to cut it with such skill, that the joints of the blocks were fitted with the utmost precision. Deep grooves were formed in the hard stone with evident facility; and it must have been known to them for a long period before the erection of the oldest monuments that remain—the Pyramids of Memphis, where granite was introduced in a manner which could only result from long experience. Again, in the time of the first Osirtasen, about 2050 B.C., granite obelisks were erected at Heliopolis, and in the Fyöom, and other granite monuments were raised in the same reign at Thebes; from which we find that even then the Egyptians had learnt how the damp earth acted on granite when buried beneath it; and this interesting question subsequently sug-

gests itself—how long before that time must the stone have been used, to enable them to obtain from experience that important hint which led them to place granite on limestone substractions?

I have already had occasion to offer some remarks on the mode of treating granite surfaces, which has been so ably detailed by Mr. Bell, at the meeting of the Society of Arts (March 14); and I have stated that the Egyptians adopted the broad character of ornamentation in sculpturing granite very judiciously advocated by him. I will, therefore, only add, that other good examples of such treatment may be found in early crosses of Cornwall, Devonshire, and other localities in this country; where what was design (rather hastily called the Bunie knot,—a design of entwined basket-work, common also in Italy, and in other countries,—the large scroll pattern also frequently met with on the same monuments, and numerous massive ornaments in relieved intaglio, cut in the thickness of the stone, are instances of a style of decorative sculpture admirably suited to granite.

GARDNER WILKINSON.

#### CONSTRUCTION OF BREAKWATERS.

INSTITUTION OF CIVIL ENGINEERS.

ON May 22nd the paper read was, "On Breakwaters," by Mr. Michael Scott.

This communication was in continuation of a former paper, read in December, 1858. It consisted of two parts,—the first being an account of the completion of the Blyth breakwater; the second, a description of a new kind of breakwater.

It was stated that, since the date of the former paper, the breakwater at Blyth had been completed with entire success, notwithstanding a cross current of 3½ miles an hour. Having been exposed to the violent storm of October last, without sustaining the least injury, it was claimed that experience had afforded a complete answer to the objections made, during the previous discussion, to this kind of breakwater, which consisted of timber-frames, deposited in deep water, planked and filled with stone.

The cost of the breakwater, including the round end and the light-house, was stated to have been 117. per lineal foot. Four years' experience had shown that properly cross-tied timber was not touched by the worm.

The new kind of breakwater was a modification of the wave screen described in the former paper. Although similar in principle, it differed in the materials of which it was constructed, and it was applicable to deep water. It was proposed to deposit a bank of rubble stone, up to the depth, below low water, at which stones began to be disturbed by the action of the waves. Upon this bank would be built a face wall, up to the low water mark, and behind this wall long counterforts, the upper surface of which would rise from low water at an inclination of say 2 to 1, and extending back for a distance dependent upon the extent of the slope rendered necessary by the magnitude of the waves. These counterforts would be so far apart from one another as could be conveniently spanned by iron girders, suppose 20 feet; and the whole of the sloping surface would be converted into a sort of gridiron by girders laid from counterfort to counterfort at distances of about 18 inches apart. Supposing such a breakwater to be exposed to a heavy sea, whether the waves were breaking or not, the water would be projected up the slope, and would gradually drop through on its passage.

The paper "On the Method of Computing the Strains and Deflections of Continuous Beams, under various Conditions of Load," &c., by Mr. J. M. Heppel, was stated to be of so purely mathematical a character as to be unsuited for reading. It would be published in the Minutes of the Proceedings.

#### OUR ARCHITECTURAL ANTIQUITIES.

THE GUESTEN HALL, WORCESTER.

It is to be hoped that the stir that has been made may serve to save this valuable relic of the Middle Ages from the destruction threatened by the Dean and Chapter of Worcester, or the Ecclesiastical Commissioners. We early protested against the threatened vandalism, and since then other metropolitan papers have taken up the matter. The Society of Antiquaries have sent a memorial to the Dean and Chapter, showing reasons for its preservation. The Institute of Architects (as elsewhere mentioned) have also sent one, signed by the president, vice-presidents, council, and many of the members; and the same course has been pursued by several other bodies. It is perfectly preposterous that any such inter-

position should be necessary. The last statement, which we owe to Mr. A. B. Hope, is to the effect that the contemplated proceedings, which have so justly caused apprehension, are to be limited to clearing out the modern partitions and fittings which now clog the building; and that no order has been given to destroy the old work.

That gentleman adds,—"The satisfaction which this assurance would have created is, however, greatly mitigated by one of my informants having added the expression of his fears that the building, thus relieved of the cross walls which now keep it up, may come down with a run."

Let us hope soon to hear that proper professional advice has been taken, and that this interesting structure will be put into a state to withstand the operations of time for many years to come, and be appropriated to some fitting and useful purpose.

We have received several letters on the subject, and give part of one which refers to the general question of the preservation of our architectural antiquities.

It seems to me very desirable that some measure of a permanent character should be taken, in order to save buildings of architectural and archeological interest from the hands of such ruthless spoilers. This might be effected by a joint action of all the British societies. I would, in the first place, propose a central committee in London, at whose office the name of every society throughout the country should be registered. Each society thus registered should either elect a special sub-committee attached to its own body, for the preservation of objects of interest, or should act as a body in this capacity. When any such object is threatened with destruction, decay, or dilapidation, it should be the province of the local sub-committee to report the facts concisely to the central committee, with the best means that appear evident to the sub-committee for its preservation. The central committee should then print a short statement of the facts, and send it to every local society registered on its books, with a request that the members would take such measures, and hand in such subscriptions, as they might be able to obtain. By this means, I am convinced, money might be raised, and antiquities, otherwise doomed for want of sufficient local funds to purchase or repair them, might be saved. It would also be a means of spreading widely a knowledge of such remains that otherwise would have only a local fame. Such an organization would have saved the noble gateway recently destroyed in York; it might now be in operation to save the Guesten Hall, and it would in all such cases give unity and force to protests against vandalism, that are now weak and ineffectual by their want of a common centre. E. W. C.

#### THAMES EMBANKMENT COMMITTEE.

The committee continues its sittings. On the 15th, Sir Joseph Paxton in the chair,—

Mr. G. P. Bidder said that he was President of the Institution of Civil Engineers, and had turned his attention to the question of the embankment of the river Thames, and to the subject of the construction of a low-level sewer running in the direction of the Strand and Fleet-street. The plan now before the committee contemplated to obviate the difficulties of such a construction, and at the same time by an embankment of the river to improve the access from the West-end to the City. The proposed embankment would leave New Westminster-bridge on the level, and proceed to Whitehall place on a low level, so as not to interfere with the mansion residences on Richmond-terrace and Privy-gardens. It would so proceed until it approached Hungerford-bridge, which was about to be converted into a railway bridge, which it would pass under, and then rise at an easy gradient with an embankment 5 feet above Trinity high-water mark to the level of Waterloo-bridge. Thence it would proceed to Blackfriars on a level, and on to Southwark-bridge, where it would end. At Hungerford it was proposed to construct a dock of five acres for the accommodation of the existing traffic there in the hay and straw trade, and along the line of route the plan was so designed as not to interfere with the premises and wharfs on the northern bank of the river. On the embankment, besides the roadway and foot-pavement, it was proposed to construct a double tramway for omnibuses drawn by horses to run between Westminster and Southwark bridges. The time that would be required for the construction of the works would be between three and four years. He considered that the Metropolitan Board of Works might fairly contribute towards the work 250,000*l.* on behalf of the metropolis, for the accommodation it would give to the con-

struction of the low-level sewer and a roadway 100 feet in width. If the low level is carried out the estimate was 50,000*l.*, but there would be loss occasioned by persons being obliged to close their shops for months together. It was believed the total liabilities for the construction of this sewer would not be far short of 240,000*l.* The circumstances on the south side of the Thames were entirely different, as they would not require a roadway there. He estimated the cost of the works contemplated on the north bank between Westminster and Southwark bridges, including the construction of the embankment-wall, the dock, and roadway on arches, as shown in the plan exhibited, but irrespective of compensation, at 1,500,000*l.*

On the 19th instant, Mr. Gisborne, civil engineer, was examined. He stated that he had executed works on the River Shannon to the extent of 800,000*l.*, and had conducted other extensive works in connection with embankments and other works in which the foundations had to be made under water. He had also paid considerable attention to the subject of the embankment of the Thames, and had submitted plans to the Government. He proposed to create a quay-wall from Westminster-bridge to St. Paul's-wharf. Under the quay-wall there would be tidal basins with numerous entrances, having headways varying from 13 feet to 18 feet. There would be then a roadway of 70 feet, and an esplanade of 20 feet wide, raised on iron columns and supported upon an iron viaduct. The roadway would be narrowed from Hungerford to Paul's-wharf, along which, except in front of Somerset House and the Temple Gardens, houses, shops, and warehouses, would be built, and would increase remuneration, as he would subsequently show. He had intended also to construct a railway from Hungerford to London-bridge, but he confessed he had been obliged to abandon it in consequence of the amount of compensation that would be required. The roadway would be carried on from Paul's-wharf to Fishmongers' hall. The estimates for the works on the north side was 953,869*l.*, to this he added 100,000*l.* for compensation to persons for temporary losses during the progress of the works, and adding to this 10 per cent. for contingencies, raised the total estimate for the north side works to 1,281,000*l.* On the south side he proposed to carry out works on the same principle, by the construction of a quay wall, with tidal basins inside. The total estimate for both sides of the river was 1,900,000*l.* By this plan, and by railway foundations above the high-water mark, there would be obtained 315,000 superficial feet which could be sold or let out for building purposes; on the south side there would be obtained 499,500 superficial feet, making 814,500 superficial feet. He had valued that land at 1*l.* per foot, representing 814,500*l.* In addition to this, he should have 400 cedar wharfs on the Middlesex side, for stowing coals, straw, and other commodities, and 300 similar cedar wharfs on the Surrey side; and these he calculated would be worth 750,500*l.*, so that the total calculated remuneration was 1,564,000*l.*, leaving about 336,000*l.* to be provided.

Captain Morgau was next called, and informed the committee that he had formerly been superintendent of the London Docks, and gave evidence with respect to his experience of the effect of narrowing the river with regard to the tidal supply of water to those docks. He considered that an embankment was prejudicial to the navigation of the river.

#### UNHEALTHY HOUSES.

Sir.—Perceiving a paragraph in the *Builder* of last week, cautioning the public as to the ill drainage of dwelling-houses in the event of a sudden change of the weather, will you permit me to ask what steps it is advisable for me to take under the following circumstances:—

I have hired a cottage for a term; have a family of six children (delicate). I find, now that I have got in, the drains are in a horrid condition; the stench is intolerable; the rats running about like bees; not a drop of water, except rain-water; my liberal landlord refuses to lay out a fraction, or to release me from the house, adding, that if I (as I have threatened) refuse to pay the rent, he will immediately distrain. I am a working man with a large family, and limited income, and took the cottage for the benefit of country air for my children, at serious inconvenience to myself. If your correspondents can throw out any suggestion how to act, I shall feel extremely obliged. Are there no sanitary inspectors?

Ealing.

T. P. M.

THE MARBLES OF TUSCANY AND MODENA, AND THOSE OF THE BRITISH ISLES.

A PAPER was read, on 23rd May, at the Society of Arts, by Mr. W. P. Jervis, F.G.S., "On the History, Geological and Geographical Distribution, and Commercial Bearings of the Marbles of Tuscany and Modena, and of the Boracic Acid Lagoons of the Maremme."

The salient points treated of in reference to marble related to a proposition for tramroads connected with the quarries at Carrara, Serravezza, and Massa,—the quarrying by cave workings, instead of allowing the stone to be continually exposed to the atmosphere,—the absurd practice of the late Medesene Government of taxing the marbles,—and the small quantity of marble which we consume in England, where it could be so advantageously employed for domestic architectural purposes, especially for internal decoration.

Besides the geological, topographical, historical, mineralogical, and other varied and interesting information afforded in the paper, it contained statistical and other practical and useful details, some of which we may here quote.

I have been unable (said Mr. Jervis) to find the statistics of the production of the late Duchesse of Modena in any publication issued in that state. The *Annuario Economico Statistico dell' Italia*, Torino, 1853, gives little more satisfactory information. It is there stated that the exports of marble from Carrara, from 1837 to 1846, were valued at 370,341*l.* The total produce in 1847, including that for home consumption, was estimated as worth 66,139*l.* At the same period, 2,258 persons were employed directly or indirectly in the marble trade. Through the kindness of Sig. Fabriciotti, a gentleman who owns extensive quarries, I am enabled to publish more particulars than have probably been yet set before the English public. That gentleman has made out a table, which, though not official, may be considered as pretty accurate.

The paper gave rise to a practical and interesting discussion, of which we must endeavour to give an abstract.

Mr. John Bell said there could hardly be a more interesting subject for discussion than that of the marbles used in art, amongst which, perhaps, the white marbles would be the most interesting, because the statues of old and of the present day were usually made from them. Marbles were, however, found with great variety of colour, and in that way, no doubt, they would be extremely interesting as regarded their use in the decoration of public buildings, &c., which opened a field that perhaps had not been of late sufficiently worked. He believed it was contemplated that a great deal of the interior decoration of St. Paul's should be executed, if the funds admitted of it, in various-coloured marbles, some of the best specimens of which were now to be seen in the apartments of the surveyor, Mr. Penrose, in the Chapter-house. The observations of Mr. Jervis, with respect to these marbles, were very valuable. There were, however, numerous descriptions of marbles, both from Scotland and Ireland, which were of very beautiful colour, which had been worked for a short time, and then, for some reason, laid aside. There were also some fine white marbles obtained in this country, but whether they were sufficiently white throughout for statuary purposes he did not know. The white marbles of Scotland and Donegal were very beautiful. No description of white marble, however, equalled the Parian, which had been principally found in the island of Paros; but he believed that the whole yield of it had been completely exhausted. A similar description of marble had been found in the neighbouring island of Naxos. The beauty of Parian marble consisted in this—that it had exactly the same amount of transparency that there was in the human flesh, which made it so suitable for statuary. The Carrara marble was of a different character—it was not nearly so beautiful as the Parian for the purposes of sculpture. It was called lunar marble, from its moonlight colour. Mr. Jervis had alluded to the manner in which the blocks of marble were sent rolling down the sides of the hills at Carrara and Serravezza. It was no doubt highly desirable that a better mode of bringing down the marble should be adopted. He believed the blocks were, in the first instance, blasted with gunpowder, which shook the marble very much, and then the rolling down the steep declivities of the mountains tended to increase the "shakes" throughout the block, and deteriorated the quality of the marble for the purposes of art.

Professor Tennant said he had brought with him an old diagram of brecciated marbles, com-

posed of broken fragments, of which chimney-pieces were often made. Another form was that of the conglomerated marbles, which were extensively used some years ago for decorative purposes. Many specimens of them were to be found at Hampton Court, and other of the older palaces in this country. He was sorry Mr. Jervis had not given them a little more information with regard to other materials which were found in the country of which he had principally treated. Amongst other substances might be mentioned alabaster and serpentine. The serpentine was the "green marble" of Italy, and was at the present time used there to an enormous extent. These compact marbles were useful for many purposes, although they were not adapted for external work in this country, owing to the influence of our climate. He would particularly refer those interested in this subject to the house No. 76, Strand, the interior of which was some few years ago fitted up at great expense in various marbles. It was now occupied as a penny newsroom, and it would well repay a visit to inspect the beautiful marbles which were let in to the walls, although at the same time they would have presented to them the fact of the perishable nature of those Continental marbles under the influence of the London atmosphere. Professor Tennant proceeded to call attention to a serpentine material, which was to be obtained by thousands of tons in Galway—a fact he believed not generally known. In the model-room of the Society's house there was to be found, in a window-seat, a remarkably fine collection of British marbles. They had been roughly used, but if they were polished they would form one of the oldest and best collections of British marbles that could be met with. Few countries afforded better specimens of marble than the British Islands. They might be placed as "No. 2" in the series of countries which afforded marbles. In Tuscany, however, these materials might be obtained at comparatively small cost if proper machinery were introduced for the working of the quarries on a large scale.

Mr. Jervis remarked that the marbles of this country generally partook of the character of limestones. All British marbles might be called either marbles or limestones. With regard to the marbles of Italy it was different. All the specimens on the table from Carrara had a more or less crystalline structure, and had lost their original texture. In illustration of this he might state that in the marble districts of England the *debris* produced by the action of the weather was in the form of a kind of mud. Near Bristol the roads in rainy weather were covered with a close, compact mud, which adhered very tightly to the clothes. On the other hand, in going through Carrara, he had noticed that the *debris* was of a different character. The crystalline particles were separated from each other by the weather, and the result was calcareous sand, in particles of considerable size.

Mr. C. H. Smith said he would offer a few remarks of a practical nature. Many years ago he read a paper before this society, "On Marbles, and their adaptation to ornamental purposes." At that time he had endeavoured to discover some record amongst ancient authorities which would satisfy him that Carrara marble was to be found amongst some of our antiquities. He had, however, hitherto failed to satisfy himself that there were any antiquities now remaining of Carrara marble. In this country no building of Carrara marble had stood even a couple of centuries. The cornices and capitals of the Pantheon at Rome were of white marble, but he very much doubted whether they were from Carrara, and a great portion of St. Peter's was built of Travertine, which remained very white up to the present day. They knew very well that in this country Carrara marble would not last for any great length of time, and it was scarcely possible to find a specimen 150 years old, unless it had been preserved by repeated painting. The statue of Queen Anne, in St. Paul's Churchyard, had suffered from the weather, and it had been necessary to replace some portions. Since that it had been frequently painted, and might possibly last for many years longer. He admitted, however, that in warmer climates the Carrara marble might be more durable. There was a specimen which was within reach of the inspection of all—the statue of Her Majesty in the Royal Exchange. That was going very fast, and the angular portions might be easily broken off with the thumb and finger. The same might be said of the statue of Charles II., which was placed in a niche in the ambulatory of the same building. Another important material was the dove marble, which contained one or two per cent. of carbonaceous matter. In his opinion this colouring matter

diffused through the mass made it more durable. A specimen of that marble was afforded by the tomb erected about thirty years ago by Sir Francis Chantrey to the memory of David Watts, in St. John's-wood burying-ground. That, even, was already in a state of decay. Another specimen of perishing marble was to be found in the Marble Arch, at the end of Oxford-street. With regard to the marble of Porto Venere, mentioned in the paper, it had this disadvantage, that it was apt to split under the action of the hammer. With reference to the sawing of the marble abroad, the material was of that extremely brittle nature that it should be transported in larger blocks to its destination, as, when sawn into slabs, it was extremely liable to split. It could be sawn in this country so cheaply, that it could never in the long run answer the purpose of the merchant to import it already sawn. He had no hesitation in saying that Parian marble was infinitely superior to the Carrara in standing the weather in this country. The only specimens which had been exposed were fragments at the British Museum, which had stood out of doors. Carrara marble became disintegrated all through the mass, but the action of the atmosphere upon Parian marble only decomposed the surface, as was shown by the Elgin marbles. In cases where the object was durability, as in the instance of monuments and tombs in cemeteries, he should prefer many descriptions of stone to marble.

The Chairman congratulated the Society upon the interesting paper which had been presented to them that evening, and also upon the practical character of the discussion which had arisen upon it. He was persuaded, from conversations he had had with Mr. Jervis, that he had not communicated one tenth part of the information he possessed on this subject. He would advert for a moment to the disintegration of the stones alluded to, which was so important in an economic point of view. In connection with all these facts, observations were easily made in the laboratory upon the comparative durability of stones. Those who had burnt various descriptions of limestones knew the different way in which the fire acted upon them. Carrara marble, if heated in a fire, crumbled to pieces; that disintegration took place to which Mr. Smith had alluded. The particles of Carrara marble were held together by so slight a tie that the heat of the fire destroyed their cohesion. In other kinds of marble the cohesive power, about which we knew so little, was infinitely greater. The Chairman concluded by proposing a vote of thanks to Mr. Jervis for his excellent paper. The vote of thanks was then passed.

The *Journal of the Society of Arts*, of the 1st of June, we may here add, contains a supplementary letter answering objections raised by Mr. C. H. Smith, and corroborating Mr. Bell's remark regarding the use of Carrara marble, as proved by the name of the port whence it was shipped, viz. Luna. The letter alluded to also contains the prices of marbles at Serravezza.

THE "BUILDER'S" LAW NOTES.

*Alteration of Footway.*—There was a footway across a brook, by means of fourteen stepping-stones. The surveyors of the highways of the parish reduced the number of the stepping-stones to eight, increased their height, and placed flagstones on the top of them, forming a kind of bridge for the public convenience, whereby the traffic on the footway was increased to the annoyance of the owner of the adjoining land. He caused the flagstones to be removed, and was convicted before the magistrates on an information by the surveyors under the Highway Act. Having appealed to the Court of Queen's Bench, that court set aside the conviction, on the ground that the surveyor was guilty of a trespass in putting down the flags. It was an unauthorized enlargement of the public right by making the way a species of bridge.—*Sutcliffe v. The Surveyors of Sowerby.*

*Pawnbrokers.—Loss of Pledge by Neglect.*—A pawnbroker placed a gold watch (a pledge) with other valuable property in a strong room which was left at night without any guard. No person slept on the premises. The house was entered at night, the room broken open, and the watch with other property stolen. In an action against the pawnbroker he was adjudged by the magistrate to pay the pawner the full value of the watch, and this decision was confirmed by the Court of Queen's Bench on appeal; it being held that to leave unguarded premises containing so much valuable property was a "neglect" within the meaning of the Pawnbrokers' Act.—*Healing (appellant) v. Cathrell (respondent).*



#### THE OXFORD UNIVERSITY MUSEUM.

OXFORD is celebrating its great Commemoration Festival, and is running over with life. There have been concerts, and speeches, and exercises: all the buildings have been examined, and the adjoining localities visited. That we may be *appropos*, we give some additional illustrations of the University Museum, namely, a view in the court, showing chiefly the ironwork of the roof and its supports, and one of the windows. In previous volumes will be found a plan of the whole, external views, and examples of the carved capitals and corbels, together with descriptive particulars.\* The museum was built, as our readers know, under the superintendence of Messrs. Deane & Woodward.

The ornamental portion of the roof is of wrought-iron, and was executed by Mr. Skidmore. In the spandrels it takes the shape of interwoven branches, with leaf and flower, of chestnut, sycamore, palm, oak, and other trees, while in the capitals of the columns and elsewhere are seen the passion-flower, water-lily, ivy, holly, and other plants, effectively wrought. The amount of the contract for the ironwork of the roof, including the cast-iron pillars, was 5,000*l*.

Mr. Munro has completed six of the statues, to be placed on corbels against the piers of the cloister around the court, namely Galileo, Leibnitz, and Newton, commissioned for presentation by her Majesty the Queen; Sir Humphrey Davy, by the Marquis of Lothian; James Watt, by Mr. Boulton; and Hippocrates, by Mr. Ruskin.

**LORD BACON RIGHTED.**—We are glad to hear that Mr. Murray will shortly publish "Francis Bacon, Lord Chancellor of England," by Mr. Hepworth Dixon, being an inquiry into his life and character based on letters and documents hitherto unpublished. This work, though new in form and in material, will contain the substance of the very remarkable and interesting articles on the subject which appeared in the *Athenæum* in January last.

\* See Vol. XIII. pp. 294, 318, 319. Vol. XVII. pp. 252, 253, 401, 408.

#### THE VOICE OF A TOWN.

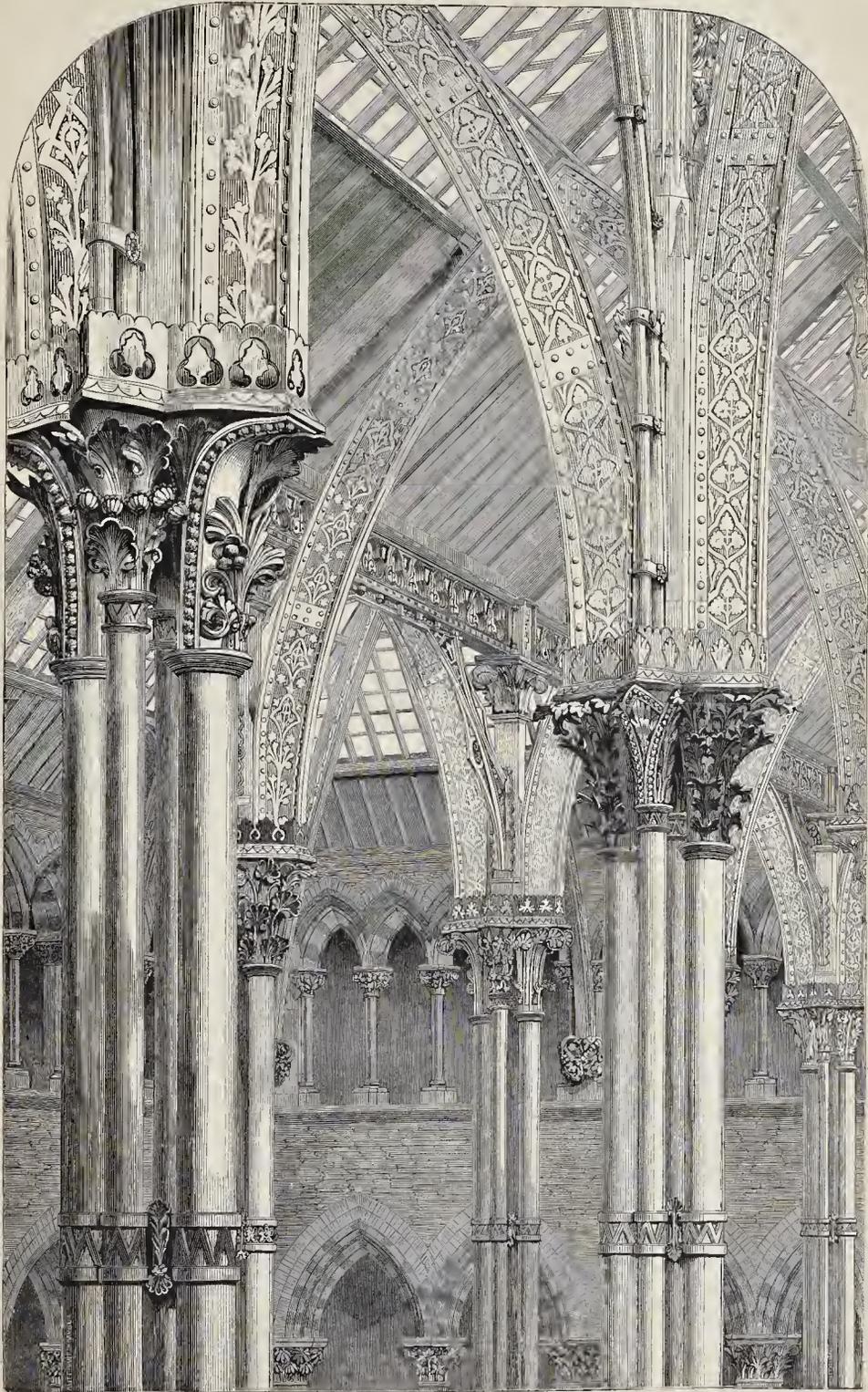
WE once spoke of the voices of old buildings. The thoughtful wayfarer in this great city cannot fail to be impressed with the varied and peculiar sounds which form one of the peculiarities of this teeming city, and which mingle together and produce a voice singularly impressive. It may be heard with solemn effect sounding in the dome of St. Paul's, and less loudly, though distinct, in still weather, in quiet nooks in the suburbs. When the varied materials which compose this mighty voice are considered, the mind becomes bewildered in the contemplation of what for more than 2,000 years has been constantly increasing, and now includes the mingled tones of nearly 3,000,000 of people. What rolling of carriages, what clattering of heavily-harnessed horses, aid in the huzzah! The measured tread of a detachment of police, the marching and counter-marching of soldiers, the footsteps of thousands, the hum of schools, the unceasing rattle of steam-engines, and the roar of furnaces, are amongst the details! Many evil voices are raised, but there is also a corrective agency at work, for preachers in churches and chapels, professors, and lecturers, are busy; and missionaries, who in certain districts are as greatly needed as they are in the Sandwich Islands, zealously labour, while lawgivers, judges, and magistrates, who dispense laws, and the crowd of council exercise their important functions.

The mallet of the sculptor: the more homely but useful working of the stonemason; the hammering of the carpenter, and the chipping of the bricklayer; even the quick tapping of the coffin-maker, all play their part in the city voices. Music and minstrelsy; the hoarse voice of street traders are there; in banks and counting-houses the chinking of gold adds a low but important sound. Go where you may, additions are made to the voice. Ten or twelve thousand machines of the half-starved Spitalfields silk weavers give a peculiar note. Bells toll, others ring joyful peals, and some send forth old-fashioned tunes; so great, however, is the roar of the city, that these cannot be heard when more than a few yards distant.

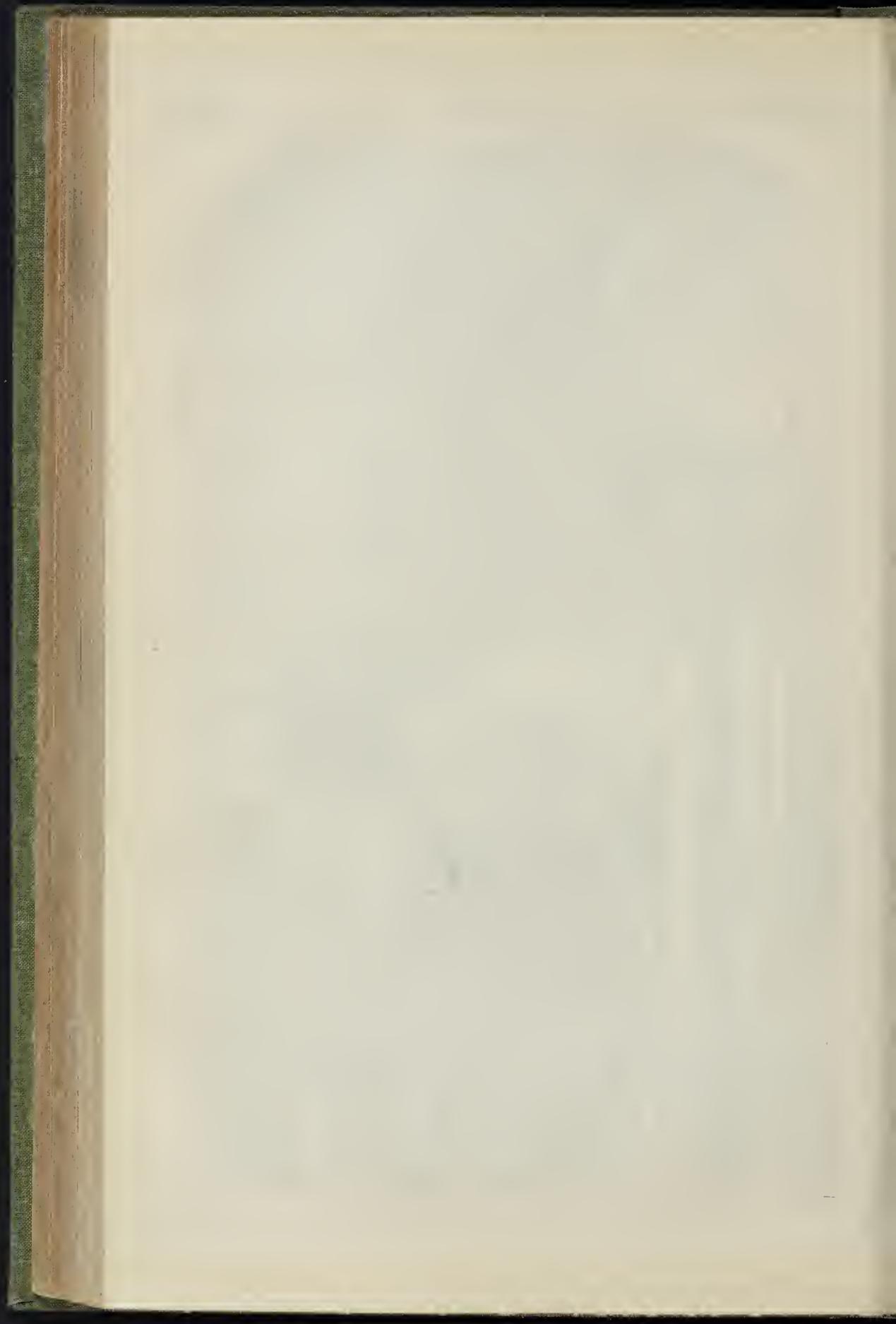
Memory goes back to many city sounds which contribute towards the general whole: the peculiar and rambling voice of madness; the compressed moan of suffering in hospitals; the lamentations for those who every hour die in this vast hive. There are, however, more pleasant suggestions in it. The language of most civilized nations and the music of sunny lands may be detected. In a street in Bloomsbury, a few hours ago, we heard the peculiar note of the Italian bag-pipe. Soon a group of shepherds of the Abruzzi came in sight, performing the dance of their native district. Singular was the contrast with all around: dusky black hats, trimmed with scarlet ribbons, glittering silver crosses and other ornaments; closely-fitting coats of sheepskin, with the hair turned outwards; knee breeches of bright glossy green, like the breast of the peacock; goatskin wallets and water-bottles; the legs covered with leathern sandals; the primitive bag-pipe, formed of goatskin, together with swarthy countenances and coal-black hair, presented a curious picture, the more remarkable from the circumstance that the costume has remained unchanged for more than a thousand years. The old Romans, whose effigies are in the Museum hard by, have listened to the same piping; and so the past is wedded to the present; and a note of sound, one component of the mighty voice of London, suggests a long train of thought, and makes the world populous with the dead.

#### THE PUBLIC PARKS, NEW YORK, U. S.

MR. CALVERT VAUX, formerly of London, now architect to the public parks at New York, in a private letter says that "the park is quite a popular affair already, 40,000 or 50,000 people visiting it every fine Sunday, even in cool weather. We have fortunately secured another half-million pounds for it this last winter. It has already cost one half million; but this has resulted to a considerable extent from the streets all round being at inconvenient levels, and from the great quantity of rock everywhere. The park is 2½ miles long, and half a mile wide."



THE OXFORD UNIVERSITY MUSEUM; VIEW IN THE COURT.



CHURCH-BUILDING NEWS.

**Ipswich.**—The foundation-stone of Burlington Chapel has just been laid. The new chapel, according to our authority, the *Suffolk Chronicle*, will be identified with no particular sect. It is to be called Burlington Chapel, simply because it will stand in Burlington-road. A few years ago, this part of the town was the domain of market-gardeners. Now it is studded with houses and villas, and the builder is still superseding the gardener. The new edifice will be Italian in character, and built with red brick, with stone and white brick dressings. The external dimensions are 76 feet by 45 feet, and it is estimated to seat 360 persons, exclusive of galleries, which will not be erected at present. The plans also include school-rooms and vestries. The architect is Mr. Ribbans, the builder, Mr. Hunt, of Freston, whose tender was 1,059*l.*, and who has engaged to complete his contract by October next.

**Wivenhoe (Colchester).**—The wood-carving of the restored church, described on 16th June, was executed by Mr. Polley, of Wivenhoe, and Mr. Radburn, of William-street, Regent's-park.

**Loughton (Essex).**—The first stone of the new Baptist chapel was laid on Thursday, 7th instant, by Sir S. M. Peto, Bart., M.P. It is intended to accommodate about 350 persons. There are no galleries at present, but provision is made for them, should the increasing population require their introduction. The plan is a parallelogram, with curved approaches by twenty-one steps at the sides, which take you to the floor of the chapel, beneath which are school-rooms. The style is Roman Doric, on a rusticated base. The total cost of erection is to be 1,950*l.* The architect is Mr. William D'Oyley; the builder, Mr. Martin Page.

**Wallingford (Berks).**—The foundation stones of the Episcopal and Nonconformist chapels, in connection with the new cemetery, at Wallingford, have been laid by the mayor. The plans and designs, selected by the Board in competition, were prepared by Messrs. Woodman & Poulton, architects, Reading. The style adopted by them is the Early Decorated Gothic. Messrs. Orton & Child, of Reading, are the builders, and the estimated cost of the works, which they have undertaken to complete in six months, is a little under 2,000*l.*

**Bristol.**—The foundation stone of a new Congregational church has been laid at Redland-park. The edifice will be erected on the north side of the nursery-ground which lies to the right of White Ladies'-road. The architecture will be in the Early English style, and will be simple in design. The material used is to be blue lias, with freestone dressings; and, by way of variety, a deep red sandstone will be introduced. The church will consist of a nave, and north and south aisles, with a transeptal recess in the north aisle, in which will be placed a Scandinavian organ. The length of the nave will be 73 feet, and the width, with the aisles, 48 feet, besides small transeptal projections to the aisle. The nave is to be 26 feet 8 inches wide, and 50 feet in height. The edifice will be lighted by a clerestory round the aisles. Sitting accommodation will be provided for 520, and it is intended at some future time to add an end gallery. The pillars in the nave will be octagonal in form, and of blue Pennant stone, with carved freestone capitals. The tower, which will be 16 feet square, and which, with the spire (of slate), is to be 141 feet in height, is intended to be placed at the west end of the south aisle. The estimated cost of the whole, including the purchase of ground and all extras, is 4,200*l.* The architects are Messrs. Fripp & Ponton, of Bristol; mason, R. Wilkens; carpenter, D. Jones; plasterer, C. Hill; plumber, H. B. Osborne.

**Barbourne (Worcester).**—A new church is to be erected at Barbourne, near the Crown Inn, on the Droitwich road. The edifice is to be in the Early English style, and will accommodate about 500 persons. It will have a chancel, nave, aisles, vestry, entrance-porch, and tower. The entire length is 125 feet; and from the ground to the top of the pinnacle on tower, 120 feet. The east and west windows will be of three and four-light trifoliated lancets, with quatrefoils and tracery, the masonry of grey Aylevie stone, and the windows in the side walls will be combed lancets: there is to be also a range of clerestory lights, deeply recessed. Four pointed arches divide the aisles from the nave. The porch is on the southern side, opening into the aisle. Minton's tiles will be used in the chancel. The walls are to be constructed of Hadley stone, presented, according to the *Worcester Herald*, by Mr. T. G. Curtler. The church is to be covered in by the 1st of next May,

and the whole work completed by the 1st of August, 1861.

**Holmer (Hereford).**—The ancient church of Holmer, one mile and a half north of the city of Hereford, on the Leominster road, has been restored. The work of restoration has been executed from the designs and under the superintendance of Mr. J. H. Evans, of Hereford, architect. The chancel not being under the control of the parish, that part has not been touched. The expense of the improvements has been almost wholly met by voluntary contributions. The school cost 480*l.*, of which 208*l.* was a grant; and the cost of the restoration of the church is about 330*l.*, of which only 50*l.* has been supplied by a church-rate. Exclusive of the chancel, accommodation has been thus provided for 223 persons in the nave, and 50 in the gallery; total, 273. The woodwork has been executed by Mr. Mason; the stonework by Messrs. David & Philip Pritchard; the stone carrying by Mr. P. Pritchard; and the colouring by Messrs. Savory & Son.

STAINED GLASS.

**Chester.**—A stained-glass window has been lately fixed in St. Peter's Church, Chester. It is the gift of the Rev. John Watson, the rector. The window is divided into four compartments, each containing a group illustrating the following subjects:—The Miracle of our Saviour at the Marriage Feast; Feeding the Multitude; the Woman taken in Adultery; Martha and Mary. They are fixed in a geometric form, surrounded with ornamental scroll work, of the Early English period. The rector, according to the *Chester Chronicle*, has fixed upon subjects for the same side of the church, illustrating the entire life of our Saviour. The window just fixed has been executed by Messrs. J. A. Forrest & Co., of Liverpool, the same firm who executed the window in the church at Chester Castle.

**Ripon.**—There has been inserted in the third large Perpendicular window, on the south aisle of the nave of Ripon Cathedral, a window of stained glass, "to the memory of the Hon. Caroline, wife of Charles Thomas Longley, successively Bishop of Ripon and Durham, who died in 1858." The window was purchased by subscription. There are three large figures, representing Faith, Hope, and Charity—the last of which occupies the centre light. Messrs. Hardman, of Birmingham, were the artists.

CURIOSITIES OF LEARNED SOCIETIES.

In the rooms of the different societies in the metropolis there are matters of curious interest, which, although well known to members and their friends, are not visible to the masses of the community. For instance, in the apartments of the Royal Academy, there are the diploma pictures of the Academicians since the foundation of that institution. Some of these are certainly not worthy of the masters, but, taking them as a whole, they present many characteristics which repay study. In the rooms of the Society of Antiquaries there are many rare objects, which are seen but by few. At the Royal Society, in Burlington House, there are some choice matters, which have a world-wide interest. There are, for instance, the sun-dial cut in stone by Sir Isaac Newton's own hands, and the first reflecting telescope, which was also fashioned by the skilful hands of the great philosopher. The electrical machine of Dr. Priestley, of Birmingham, has been recently added. The mace presented to the Society by King Charles I. was long supposed to be the mace of the House of Commons ("the bauble"), which Oliver Cromwell ordered to be taken away. There is a fine collection of portraits.

THE PRESENT HIGH PRICE OF PROVISIONS.

THE present prices press very heavily on the workman. Great meetings on the subject have been held at Bristol and elsewhere. Many have blamed the dealers, both wholesale and retail, for causing the present extraordinary increase in the price of butcher's meat, and recommended that we should go back to plans which were once resorted to for the purpose of preventing "forestalling" or the trimming of the markets. It is clear, however, that in these days of competition, provisions will find their true market value, and that such proceedings would be of no avail. The lambs have perished this season in consequence of the inclemency of the weather, and cattle have died in vast numbers for want of fodder and from disease caused by the flooding of the land. In short,

the demand for butcher's meat is greater than the supply. For some time past, even in good seasons, this evil has been apparently on the increase. The subject, therefore, requires careful consideration how to obtain increased supplies from abroad, and also how best to increase and economize the quantity produced at home. The population is constantly increasing, and in times of prosperity great quantities of animal food are consumed. It is reported, too, that from one cause and another the English stock is falling short. Amongst the reasons given for this is the practice of killing animals at an early age for the market, and so preventing the proper extent of breeding. This is worthy of thought. An endeavour should be made to save as much as possible. At present, one-third of the nutritious portions of animal food used by the families of the working classes is wasted; while, in the kitchens of the rich, a great saving might be made, which would be of the greatest advantage to the poor, if rightly applied.

TO ASCERTAIN WEIGHT OF LEAD, &c.

"ONE of the Profession" asks (p. 355) for a means of ascertaining the weight of lead, glass, &c., without weighing them in scales. The following tables will assist him in doing so, the only instrument required being a pair of callipers.

As the same method can be applied to materials of all kinds, I will give the formula for logarithm calculation.

Taking the specific gravity of lead = 11.35, Weight of cubic foot of water = 62.5 lbs., Weight of cubic foot of lead = 709.4 lbs. =  $w$ ,  $t$  = thickness of lead in parts of an inch,  $n$  = number of lbs. in a square foot of lead of thickness  $t$ .

Then,  $w : n :: 12 : t$ ;

or,  $t = \frac{12 \times n}{w}$ , taking the logarithm of both sides,

we have  $\log. t = \log. 12 - \log. w + \log. n$ , which gives the value of  $t$  for every value of  $n$ .

No. of lbs. in square foot of lead,	Thickness of lead, parts of 1 in.
4 lbs. ....	.008, rather more than $\frac{1}{16}$ in.
5 lbs. ....	.065, " " $\frac{1}{16}$ in.
6 lbs. ....	.10, " " $\frac{1}{16}$ in.
7 lbs. ....	.12, nearly $\frac{1}{8}$ in.
8 lbs. ....	.15, " $\frac{1}{8}$ in.
9 lbs. ....	.15, between $\frac{1}{8}$ in. and $\frac{1}{4}$ in.

The thickness of glass can be calculated in the same way. Taking the specific gravity of crown glass at 2.52 (plate and other glasses have a higher specific gravity)—

No. of oz. in square foot of glass,	Thickness of glass, parts of 1 in.
13 oz. ....	.062, or $\frac{1}{16}$ in.
16 oz. ....	.076, nearly $\frac{1}{8}$ in.
21 oz. ....	.1, or $\frac{1}{10}$ in.
26 oz. ....	.124, or $\frac{1}{8}$ in.
32 oz. ....	.15, rather more than $\frac{1}{8}$ in.

E. WYNDHAM TARN.

M. T. Gerard, of Paris, has sent us a sketch of a small instrument in use there, to ascertain the weight of lead, which indicates the half-tenth of a millimetre.

THE LABOUR MARKET IN THE PROVINCES.

MARRIAGE still continues in a very unsettled state. The *Chester* joiners have struck for an advance of 2*s.* a week, except those of late receiving 1*l.* 5*s.*, who demand 1*s.* advance.

The *Gloucester* horse-nail makers are on strike for an advance of 3*d.* per 1,000. An advance had been already made a few months since. The wages of good and steady workmen, it appears, were 2*s.* throughout the year.

At *Hereford* there is a partial strike amongst the masons and bricklayers, for a reduction of hours from 10 to 10, and from five o'clock to four on Saturdays.

At *Leeds*, a strike of Joiners for an advance of 2*s.* a week has just terminated, by the masters agreeing to the demand. The stonemasons, however, have given notice that they will strike work on 2d July, unless certain concessions are made to them. They want the hour for commencing work on Monday mornings to be altered from six o'clock to seven. They also object to sub-contracts, and make certain propositions in reference to the erection of sheds and piece-work.

The *Bradford* dispute remains somewhat in the same position as when last alluded to. The largest employers are without workmen, 250 masons having now left their employ. The operative masons' committee allege that nearly all the men who turned out have got work either in town or elsewhere; but the local *Observer* states that the largest and most important works there are still deserted. The associated employers have resolved to offer the men an advance of 1*s.* per week on the present wages of 2*s.* and 3*s.* per week, and a reduction of two hours' labour on Saturday, in place of the terms sought, viz., a reduction in the time from 57 to 54 hours per week. The operatives' committee, however, reply that they will be content with nothing less than a reduction of one hour per day and the same wages. At the



Books Received.

*Things not generally known familiarly Explained. Curiosities of Science. Second Series. A Book for Old and Young.* By JOHN TIMBS, F.S.A. London: Kent & Co. Paternoster-row. 1860.

THIS is certainly one of the most curious and interesting of all the many curious and interesting books of that great book-producer, Mr. Timbs. Moreover, there is less of mere extract, and more of judicious and skilful compilation in it than in some of those which have preceded it from the same indefatigable source. We shall avail ourselves of its curiosities (chiefly chemical) on this occasion to an extent rather unusual with us in dealing with mere curiosities in our crowded and professional pages; but the interest of such a subject as the curiosities of science will, we hope, excuse us with those of our readers who grudge the space thus filched from subjects more immediately practical or professional.

Floating bricks must have been a curiosity of science not by any means out of our way.

"Bricks which floated on water are mentioned by Posidonius, Strabo, and Vitruvius Pollio, as having been made of an aluminous earth found in Spain, for building, on account of their lightness. Pliny also mentions a pumice-like earth possessing these properties. In 1791, Giovanni Fabroni formed floating bricks from a silicious earth, found at Santafiora, in Tuscany; they were also such bad conductors of heat that they might be held by one end in the hand while the other end was red hot; and similar bricks have been made from the silicious earth dug on the borders of the Spree, at Berlin; whereas floating bricks were hitherto thought to be 'wonders of the ancients.'"

Malleable glass is another curiosity of science quite in our way; although, doubtless, the glaziers would demur to its introduction into practical existence and utility, at least for window-panes:—

"Malleable glass was made in old Rome; and in the reign of Theodosius a Roman artist had, according to Pliny, his house demolished,—according to other writers he was beheaded,—for making glass malleable. The idea of discovering the secret was only ranked second to that of the philosopher's stone among alchemists; but in 1845, there is stated to have been discovered at St. Etienne, in France, the means of rendering glass as malleable when cold as when first drawn from the pot. The substance, silicon, is combined with various other substances, and can be obtained opaque or transparent as crystal; it is described as very ductile and malleable, neither air nor acids acting on it."

Mr. Timbs should have mentioned here, while speaking of the alchemists, that the agent wherewith they professed to transmute metals into silver was the very same substance wherewith they professed to transmute glass into malleable glass. It would have also been worth while to say, for behoof of those who do not know the fact, and as another curiosity of science, that silicon, wherewith the modern malleable glass is alleged to be made, constitutes the very basis and essential element of all ordinary glass itself, only stripped of its oxydous or vitrifying nature. It is very much to be doubted, however, whether malleable glass has as yet been made in recent times,—if indeed it was ever made at all.

While on this subject, and especially considering the contention of the alchemists with malleable glass, the formation of which involves the very principle of transmutation, although glass is known to be compound, while metals are as yet by chemists treated as (though not believed to be) elementary,—we may here remark that one of the most curious and interesting portions of Mr. Timbs's new hook is that which treats of alchemy, with which (historically speaking) he displays no inconsiderable acquaintance. He also quotes Faraday, Liebig, Draper, and other modern chemists, in favour of the principle of transmutation, and would have materially enhanced this curiosity of science, had he also quoted Davy on the subject. There is one little inconsistency, however, which we cannot help here drawing his attention to. On page 8 he says,—"Yet, although the existence of the Stone was regarded for centuries as an established truth, no one possessed it; each adept only maintaining that it was in the possession of another." This, we are quite aware, is the usual hackneyed modern opinion on this curious subject, like that other totally mistaken idea as to the much misrepresented alchemists, that they were all visionaries in search of a transmuting agent, whereas, unless they were the most unaccountable and extraordinary liars in existence, many of them—indeed, all of them entitled to be called alchemists—already possessed it. However that may be,—that each adept did not merely maintain that it was in possession of another, as Mr. Timbs remarks, he himself affords more than sufficient evidence within the next few pages. Thus, on page 10, we are told that Pope John XXII. "professed and described the art of transmuting metals, and boasted that he had made two hundred

ingots of gold, each weighing a hundred pounds;" and on page 11 we are informed that Sir George Ripley "pretended to have discovered the secret." The question here, of course, is not whether these and other alchemists alluded to really did transmute the metals,—a question we do not mean to take the trouble to enter into,—it is merely a question of whether alchemists really never alleged that they themselves had transmuted metals. It is curious, in the midst of all the historical knowledge on this subject displayed in the volume before us, that the evidence of Helvetius in favour of transmutation—evidence which those inclined to disbelieve in its possibility rightly regard as the toughest of all to tear up—does not appear to have come under the author's notice. Moreover, Helvetius was also one of those who expressly declared that he had himself transmuted metal into gold. But enough of this very equivocal and (at least at present) by no means practical subject.

There is another stock curiosity of modern science, however, having reference to the old chemists, and to very erroneous modern ideas as to their ignorance, which our eye has just caught sight of in the vicinity of Mr. Timbs's alchemical region, and to which it may be worth while for a moment to advert.

On the subject of "The Great Discoveries of [modern] Chemistry," it is stated, on the authority of Dr. Neil, that—

"A century ago no person on earth knew that there existed in nature the substance which, since Dr. Priestley's discovery of it in 1774, has been named oxygen."

Now, before showing the error of this, we would wish to make one or two preliminary remarks. The substance which has been named oxygen is that appreciable, and even weighable, though invisible agent which, for example, combines with metals in the fire, and reduces them to oxides, calces, or glasses. It is, by the way too, another and cognate error, in modern scientific conceit, that "a century ago" no one knew that the calces of metals were anything but the elementary and indecomposable bases of metallic substances themselves. All old chemists, it is alleged, supposed the metals to be composed elementarily of such calces, and of another substance which gave them metallic lustre, and which the fire only drove off in calcining the metal.

How nicely, then, does the following little quotation, which we take from Van Helmont's work "Concerning the Macrocosm, or Great World," dispose of both of these vain-boasting and most erroneous "curiosities" of modern science:—

"When we turn 100lbs. of lead into minium, or red lead, we find that the said 100lbs. are augmented 10lbs. viz. when the calx of lead is ground to powder, and afterwards exposed to a small fire, the lead borrows part of its weight from the fire in which it was calcined, and part from the water in which it was ground; and each of these two severally, and both of them jointly, do help to turn the case melting lead to glass; because THE FIRE is naturally and easily reduced to a body in lead, by which means it also turns all other things into glass. But, when the lead is exposed to a greater heat in a strong fire, it is forced to leave it, vitrifying part behind, viz. the aforementioned 10lbs., which from the fire and water were separated to it, and, consequently, turns to a metal as it was before."—P. 109 of English translation, of 1661, from the High Dutch, by "A Hollander."

The ignorance of our forefathers constitutes a stereotyped and very generally credited curiosity of science in our own conceited and fast generation; but there are still more recondite curiosities of science, as we thus see, into which a little deeper investigation and insight into its actual truths, ancient and modern, could speedily initiate us, would we only take the trouble.

We had marked for extract or comment various other of the many interesting and suggestive *bon-hous* presented to us by Mr. Timbs in the present curious little volume; but our space is exhausted, and all we can further do is strongly to recommend the work itself to the leisure moments of our professional and other readers, as one sure to repay tenfold both the cost and the trouble.

VARIORUM.

"Notes on North Italy and the Seat of War, in 1859," by the Rev. G. T. Hoare is the title of a brochure published by Aylott & Son, containing the substance of letters written last year in the vicinity of the scenes they describe.—"Shall Gothic Architecture be denied fair play?" heralds in some thoughts suggested by reading a pamphlet entitled, "Remarks on a National Style, in reference to the proposed Foreign Office." Like that to which it replies, it is issued by Messrs. Bell & Daldy. It is coolly and clearly written, but we do not find that it brings much that is new into the discussion. The writer quotes mainly from Mr. Scott's Academy lectures.

Miscellanea.

FEMALE SCHOOL OF ART.—The distribution prizes and rewards to the students of the Female School of Art and Design took place at the South Kensington Museum, on the 14th instant, under the presidency of Mr. Radgrave, R.A. (in the absence of Earl Granville, the Lord President of the Council). A large number of visitors were present, the majority being ladies. The chairman, in addressing the company, remarked that the school might be considered a great success; and the mode in which the prizes were awarded contributed in some respect to promote that success. A new phase, however, was now arriving in its career. The Government had hitherto provided a home and residence for the institution, and it was now thought advisable to place it on the same footing as other schools, and make it self-supporting. Subscriptions were, therefore, being raised to build a school for the purpose, and a committee were making the most active exertions to accomplish that object. The Royal Academy had responded by a gift of 50*l.*, and he believed there was every desire to support the institution, if its objects were only properly brought under the notice of the public. The largest number of medals awarded by the committee of this school was thirty, and there were now to be twenty-six recipients, whilst in the preceding year there were twenty-five. The winners of national medallions were not quite so numerous as last year. They were then four: they are now only two. The present was the last occasion on which they would assemble under the auspices of the Government; and on Thursday, the 21st of June, a *conversazione* would be held in the Museum for the purpose of raising a fund for erecting the building for the Female School of Art. The prizes were then awarded.

THE DRINKING FOUNTAIN MOVEMENT.—A drinking-fountain has been presented by Mr. Alderman Fisher, of Sheffield, to the Free Library there. It consists of a polished white marble basin, with mouldings, and with rim enriched with wreaths of flowers deeply incised. The back also is of white marble, the design being a carved shell surmounted by an arch of raised conventional flowers. The water spouts from the rolled head of a young fern leaf, also somewhat conventionally treated, and the whole is set in a frame of polished Aberdeen granite. The design was furnished by Mr. Godfrey Sykes, once a pupil of the local school of art, and it has been carved by Mr. T. Fidler, at present a pupil in the same school.

DRINKING FOUNTAIN, HYDE-PARK CORNER.—The drinking-fountain in front of St. George's Hospital, already alluded to, is completed, and has been in use during the last week. It is of stone, and has an Italian *Lavabo* character. The top is of pedimental form, surmounted by three small vases. There is a flat semi-circular-headed sinking in the face of the erection, and within this, against the back, is a group of burlesques, in bronze, proceeding out of a mass of rock-work. From the leaves of the rushes, in two places, the water runs, and is received in a large marble shell. Below there is a dog-trough. The design is ascribed to Mr. Westmacott, R.A.

MONUMENTAL.—The municipal council of Brest voted the erection of an equestrian statue of the Emperor Napoleon III., in the public square of that town, but in reply to an announcement of that intention the Minister of the Interior received a letter from the Emperor, to be transmitted to the mayor of Brest, in which his majesty points attention to the fact that in general equestrian statues are only erected to sovereigns after their death, and that it was, in fact, proper that such popular homage should not have the appearance of a transitory flattery, but be a permanent impression of gratitude. "If the erection of an equestrian statue at Bordeaux, two years ago, was permitted," adds the Emperor, "it was because I was ignorant of the design, and it was done without my sanction or authorization."—At Novogorod, in Russia, a monument is about to be erected to commemorate the thousandth anniversary of the existence of Russia as a state. The construction of the pedestal at an expense of 75,000 roubles has already been contracted for, and the monument, in cast-iron, and which had been designed by M. Mitjeshine, is to cost 230,000 roubles. In addition to that sum the government is to supply the metal, of which 4,000 poods (the pood is nearly 3*½*lb.) will be required.

SOUTH KENSINGTON MUSEUM.—On Tuesday last, on the motion of Mr. Lowe, a select committee of the House of Commons was appointed "to inquire and report concerning the South Kensington Museum."



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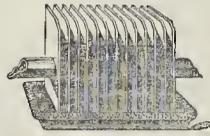
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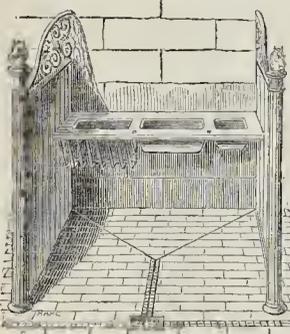


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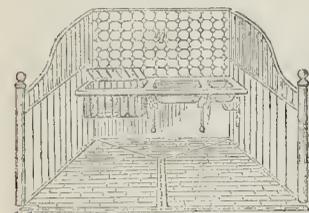
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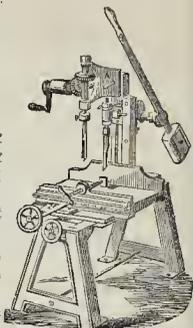
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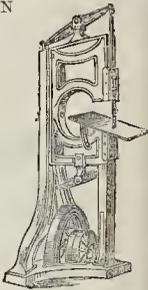
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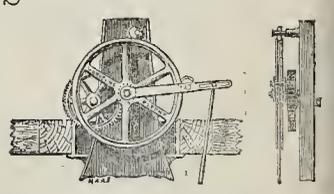
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# The Builder.

VOL. XVIII.—No. 908.

*Society for Improving  
the Condition of the  
Labouring Classes.*

HERE was a review, the other day, as important in its way as that which took place in the Park on Saturday last,—a review of some of the means which are being used to fight the demons of dirt, and disease, and crime. Lord Shaftesbury and a number of gentlemen interested in improving the dwellings of the industrious classes, assembled in the model houses in Streatham-street, Bloomsbury, for the purpose of inspecting these and some of the other buildings which have been provided by the Society for Improving the Condition of the Labouring



Classes, and which buildings have shown one way in which health and life can be preserved. These houses, which are good in their structure and arrangement, have been already noticed in our pages. It is satisfactory to find that the rooms are fully occupied, and that the general health of the forty-eight families who live there is excellent. In the number of years during which this establishment has been open, terrible fevers, that from time to time rage around, have been unknown. The very small number of deaths, of even young children, is remarkable, and shows, in comparison with other places, the extent to which human life might be saved, not only in the metropolis, but also in most of the large towns in the provinces.

One advantage of such gatherings is, that men of influence have the opportunity of seeing the working of useful experiments; and many persons interested in these undertakings hear suggestions which are likely to be useful as the result of practical experience. Finding all well in Streatham-street, and that notwithstanding the great cost of the site and building, the structure returns a moderate profit, the party went to the lodging-house for single men in George-street, close by. Some had curious recollections of the state of the place, eighteen or twenty years ago, when all around was bad. When we look at the churches, schools, and other institutions, which have been reared on the site of buildings disgraceful to a civilized country, it is encouraging. Others glanced at the little specimen of the Rookery which still remains; but even that is wholesome in comparison with its former condition.

In this lodging-house there is room for 104 single men. It has separate sleeping-places; a large reading-room, and provision for cooking. The rent here is 2s. 6d. a week. Although the general plan of this place is sufficiently satisfactory, and since a former visit much improvement has been made by painting and plastering, still it seems to us that the management might, in some respects, be mended. It is well, as far as possible, for those who have the conduct of such establishments to show kindly dispositions towards the lodgers. We heard complaints of the want of attention to the cleanliness of the kitchen. One of the tenants, indeed, asserts that it has not been washed since he first became an occupant, two years

and a half ago, and says in the course of his letter,—“I hope that you will endeavour to get this state of things remedied. It is of no use to speak to parties in authority here. In fact, I can compare the management of this place to nothing better than what would result if you were to put one of the old style of waggons to drive and look after a locomotive engine.” Let us hope that he overstates the case.

From George-street they went to Charles-street, Drury-lane, a locality which has a vicious population. Here the Society have a house similar in construction to those round about it, which has been altered, drained, and ventilated, for the purpose of providing a lodging for eighty-two single men. From time to time, during some years past, we have taken opportunities of looking in here, and have always noticed the apparent excellence of the management, and the prosperity of the house. In a money point of view, it now clears about 10 per cent. per annum on all charges. There is a library here from which any lodger can borrow books. There is also a club formed for the supply of newspapers and other periodicals.\* The rent here is 4d. a night, and those who occupy their place for a week have the Sunday night's occupancy without charge; so that the cost of this home, in which no pestilential illness has occurred, and where men can preserve their self-respect, is only 2s. a week. The condition of some of the houses near is abominable; and, when we hear that the police have the power of removing obnoxious matters from the immediate neighbourhood of all common lodging-houses, at the cost of the proprietor or tenant of the premises, it seems strange that more has not been done in that direction.

Omitting for the time to look in at Wylde-court, and another lodging-house in Drury-lane, we proceeded to Gray's-inn-lane. Some of the party glanced first at the dismal dens in Charlotte's-buildings; sad was their state, and marvellous the contrast between them and the places which had been previously visited. *Between four and five o'clock in the afternoon in many of the houses there was not a drop of water.* No wonder that the public-houses flourish, and that filth, dirt, and disease are joint inhabitants.

With sorrow for such a state of things, the visitors gladly moved to Tyndall's-buildings, where the houses have been put in order by the Society. Our readers will recollect the state of this court some years ago. It was as bad, if not worse, than Charlotte's-buildings, close by: it was more dangerous for a stranger to enter within the precincts than to traverse Africa: policemen went in bodies of five or six, and were even then exposed to brickbats and other missiles: in some instances a *single room* was occupied by between thirty and forty men, women, and children; and in every hole and corner festered a mass of neglected and troublesome human life.

Many of the underground apartments were below the level of the sewer which ran near. We have no statistics that afford the means of calculating the extent of slaughter which by this means alone has been brought about, or the result would startle. Wisely was an enactment of Parliament made to prevent the occupation of underground places which were unprovided with a certain amount of open area and other requirements. It was so contrived as to be nearly inoperative; but a clause in the Bill now before Parliament for amending the Metropolis Local Management Act will, it may be hoped, put it on a different footing, and lead to good results. In Tyndall's-buildings the cellars became the receptacles for vast masses of refuse; and, when the Society came into possession of this property, the quantity of filth found which had been left to poison the crowds living above was astonishing. We illustrated

\* The library of this and other of the Society's houses might, with great advantage, be added to by presents of books. In some of the lodging places which have been opened by private enterprise, the proprietors, with a view towards encouraging a taste for reading, agree that, provided a certain amount is subscribed by a company of the lodgers, they will double that amount, and at the end of each year bind the serials into volumes, and place them in the library for general use.

the then condition of this place, and are glad to notice that the general improvement has verified our predictions. In many of the houses the diseases arising from sanitary neglect have disappeared; and those advantages and means of decency to which we have before referred have led to a marked change in the manners and appearance of the people.

Having recently mentioned this place, it is only necessary to say that in Baldwin's-gardens, not far off, there is an excellent school on the National principle, where children may be educated at 2d. per week, and that the Ragged School in Fox-court is doing its work. Both these, in such a neighbourhood, deserve, indeed demand, assistance.

There is a lodging-house for forty single men, and it is worth while to mention that although the lodgers are migratory, seldom remaining more than a week, still the apartments are usually occupied.

At the Thanksgiving-buildings, in Portpool-lane, the washhouses are constantly used, and afford a good profit on the money expended. Could not the ventilation of these washhouses be improved? Apartments are here provided for single females. This arrangement, as regards profit, has not been successful: it seems, however, to be becoming better appreciated than it was formerly. The houses for families here, which let at 5s. 6d., 4s. 6d., and 3s. 6d. a-week, are nearly all occupied.

The Society of which we are speaking have done good service by testing schemes which have from time to time been suggested for rearing and adapting various kinds of dwellings for the use of the large classes of the community who are now so ill provided for in this respect. There are nine establishments belonging to them in various parts of the metropolis, which are in this way adapted to the purposes mentioned, and which are most valuable in showing the working of these matters, and suggesting in what manner and to what extent they may be successfully imitated either by public bodies or private individuals. Besides those already mentioned, we must speak of the chambers, No. 76, Hatton-garden, which have been provided for men. Some time since this large dwelling was set apart for the reception of females who were obliged to wait in London on their way to the emigrant ships. The plan, however, did not succeed, and then the place was opened as a lodging-house for single men.

Hatton-garden, once almost as famous as the gardens of the Bishop of Ely close by, was, two centuries or so ago, occupied by wealthy people, whose dwellings still remain in excellent condition. The tide of fashion has moved westward, and now the houses are mainly occupied by jewellers, goldsmiths, and extensive dealers in different kinds of merchandise.

The entrance to the chambers is kept clean and covered with drugging. At the side is the superintendent's apartment, well furnished: the walls are decorated with prints, and there are also books and other matters which give to this part of the premises an air of comfort and elevation. Beyond, on the ground-floor, there is a large reading-room, looking to a garden, which is, under the circumstances, well cared for by Mr. Mitchell, the superintendent. One cannot but note the advantages, in some respects, which old houses of this description have over certain others of recent construction. They have an appearance which is generally preferred to that produced by whitewash and bare walls, which, wholesome as they are, are associated by many with the idea of barracks or workhouses. Below are kitchens, where the lodgers have convenience for cooking their food. In one part are cupboards, each numbered in correspondence with the apartment occupied by the lodger. By this arrangement each man, or company of men, may prepare food at a moderate cost, and save any portion which remains. The upper floors of the house have been fitted up for sleeping. Each room, both at back and front, is divided into a certain number of spaces, which are partitioned off at the height of about 7 or 8 feet, leaving a passage along the centre. These apartments let at 3s. 6d., 3s., and 2s. 6d. a week each, according to position. The bed-rooms near the windows, and

which are in some little points better furnished than the others, are at the first price, and the bed-places which are at 2s. 6d. a week are smaller in space, and situated at the top of the house.

The door of each of the little apartments referred to is numbered, and is quite private. An arrangement has been made for ventilation,—that important provision to ensure health and the proper duration of life. The bedrooms are to the right and the left hand of the staircase. Conveniently placed on each landing there are wash-hand basins supplied with water. Some will note with satisfaction the care which has been taken to place geraniums, mignonette, and other flowering plants, in the windows; these little matters cause no great expense, and are a source of much pleasure.

The accommodation provided here is for fifty-four lodgers; and it is satisfactory to learn that, notwithstanding many and rapid changes, the average number of lodgers is about fifty. About two years ago the average number of lodgers was not more than twenty-eight, but under the present management the demand for these chambers has been constantly increasing: one person recommends another, and so, notwithstanding that this establishment is not very generally known, the number of lodgers is kept up. Men have applied here directly on their arrival from Australia and America, recommended by friends. Amongst the lodgers there are several persons of education and most likely slender means, who are regular in their visits. Night after night and month after month they come to Hatton-garden, probably from long distances. These persons pay their rent, and, excepting a civil greeting in passing, form no particular acquaintance with their neighbours. They may be engaged in some important but ill-paid branches of scientific or literary inquiry: no one asks; obscurity, if desired, is one of the advantages of the metropolis.

This establishment only needs to be better known in order to insure increased demand for its accommodation, and to encourage the opening of others in proper situations, not only in London but also in the larger provincial towns.

There is a scarcity of water here on the Sunday and Monday, a very general complaint elsewhere. Notwithstanding all that has been said on this point, the want of water is still an evil to which large numbers of the poor in various districts of the metropolis are exposed, particularly on Sundays, when they need rather an extra supply of this necessary of life, for the purposes of personal cleanliness, and for cooking what in many instances is the only meal which the workman has the opportunity of sharing comfortably with his family. On the Saturday afternoon and evening, in these homes where notions of decency are preserved, the floors are scrubbed, the stairs washed, and frequently articles of clothing have to be prepared for Sunday use: this, when several families occupy one house, causes on the Saturday an extraordinary demand for water.

In some courts, which team with life, and where upon the whole a considerable amount of rental is collected, no butts or other reservoirs are provided for the reception of the water. A small pipe may be seen, and to this old and young rush, at the hours at which the water is expected to be turned on, for a supply: here the water runs for perhaps twenty minutes, or may be less. It is clear that this is quite insufficient, even if the water were turned on both morning and evening. There are closets to be flushed, or drains to be kept clean. Under such circumstances, if water be taken into the dwelling by those who are fortunate enough to obtain sufficient, it is spoiled in the polluted atmosphere.

On this point a question naturally arises, if it be legal for landlords who let premises to great masses of the poor, to do so without providing proper means for a plentiful supply of water and receptacles for its proper storage. If the law be clear on this point, whose duty is it to see that it is properly carried out? If it be the duty of the parish authorities to do this,

it matters not to whom such property belongs; but, without favour to persons, the regulations which exist, and on which life and health depend, should be strictly carried out. If the authority of the parish is not sufficient, does the matter come within the province of the police? If so, let them be instructed to carry what is so necessary into effect. It should be at once set at rest; and, if necessary, fresh powers be obtained from Parliament.

We are no advocates for labour on Sunday; but, as thousands of the poor are at present situated, a Sunday supply of water is an absolute necessity. At present, in many instances, as our readers know, the water is turned on during the Saturday afternoon, and not again until late on the following Monday: for forty-eight hours, in conditions such as we have described, are the people, whose shortcomings in points of order and cleanliness are with justice complained of, left without a fresh supply of water.

We learn that in spite of all the care of the Society for Improving the Dwellings of the Industrious Classes, there have been complaints as to water in Strentham-street, Tyndall-buildings, Hatton-garden, and elsewhere. It may, therefore, be readily understood, if in places like these, where neither pains nor expense has been spared to make good provision, there is a deficiency, how great it must be in places where little attention is paid to the tenants beyond getting the rent.

The Metropolitan Association for Improving the Dwellings of the Industrious Classes have built eight houses for families and dwellings for single men in Mile-end and Soho. From the report delivered at a recent meeting, we learn that the whole population of this property of the Society amounts to 2,186; and in this number forty-five deaths have occurred during the year. This is at the rate of about 20½ in each 1,000,—rather in excess of what might have been expected, but still a great improvement on the result in all London.

In some of these houses persons with large families of young children, and some in indifferent circumstances, have been glad to find a shelter; and it is amongst these that a large per centage of deaths takes place. There are, moreover, unsatisfactory circumstances to which attention might be directed. The construction of some of the staircases of those buildings to which we refer is not good, and they should be carefully ventilated. Too many sets of apartments open into one staircase; and that peculiar unwholesome taint which is to be found in the barracks of the soldiers in the Tower of London and elsewhere may be noticed. Dr. Southwood Smith remarked that in the buildings for families in Nelson-square, Bermondsey, the deaths had been so excessive that inquiry should be made into the causes. Not only should the condition of this and other houses, upon the working of which the more general advancement of sanitary science so much depends, be ascertained, but the state of the surrounding neighbourhood, should be carefully examined. Are there cow-houses or other damaging agencies which pollute the air? The schools to which the children go should also be examined. The comparative death-rates of the several houses should be taken in proportion to the population, and causes arrived at as clearly as possible, accounting for the difference. This cannot be too carefully done for the public satisfaction by societies who have not only large interests at stake on their own account, but also on that of the community at large.

The amount of profit realized on the whole of the buildings is not quite satisfactory. On this point it would be well to make very distinct accounts; for in connection with some of these structures accidental expenses have been incurred which prevent the possibility of a fair return, and thus others who would invest in this way are discouraged without cause.

The Society for Improving the Condition of the Labouring Classes, who led us to take this walk and make these observations, have shown that decent and healthful accommodation may be provided for the labouring and poorer classes, and a fair return ensured for the money expended.

#### THE DAY INDUSTRIAL SCHOOL, TICHBOURNE COURT, HOLBORN.

The following speaks for itself:—

"About a year ago you were good enough to allow us a space in your paper to make known the plan of the Day Industrial School we then expected in a short time to be able to form. As you yourself are aware, such a plan has to some extent been realized, and we are now engaged in the very arduous work of endeavouring, by every means in our power to develop and fully to carry out that plan. We have begun with about a dozen boys, to whom we give food and industrial and intellectual occupation. The principal work in which they are engaged is fancy box and paper bag making; but in order that our institution may flourish, we must have a ready sale for our stock. Will you allow me, therefore, to appeal to your readers to give us encouragement in that way? If they will only visit our school, and let us have the benefit of their kindly suggestions and criticisms we shall be obliged; but if to this they add their influence to obtain a sale for our work, we shall be extremely grateful. As regards the paper bags, some grocers in the neighbourhood have kindly promised occasional orders; but what we want is a permanent demand for supply, and this can be obtained if only some energetic friends will interest themselves in the matter. I add no more.—B. A. HESWOOD."

We do sincerely hope that some of our readers will go to Tichbourne-court (it is near Great Turret-street) and judge for themselves. Those who want paper bags, for example, may as well order them there, and will thus do good without any extra expenditure of money. It is surely a wise thing to save boys from the temptation of the streets, to give them good training, and so, it may be hoped, manufacture honest, happy fellow-citizens out of what might have been transformed into thievish, miserable creatures,—a pest to society. We take low ground, and say nothing of a higher question.

#### ILLUMINATED MANUSCRIPTS AS ILLUSTRATIVE OF THE HISTORY OF THE ARTS OF DESIGN.\*

Mr. Westwood, in articles recently published in the *Archæological Journal*, has avowed himself as clearly of opinion that a scriptorium, or school for the production and multiplication of illuminated books, was established by St. Augustine at Canterbury, almost immediately subsequent to his arrival in this country; and he cites various MSS. in which the combination of the Irish or earliest Anglo-Saxon style with features evidently derived from classical antiquity, through both Greek and Latin MSS., is plainly to be recognized. In these, the writing, the initial letters, and the interlaced ornaments—lacertine and simply decorative—are altogether Anglo-Irish, or, in other words Early Anglo-Saxon, while the figures and pictorial features are evidently copied from classical models; from their imitation of which there is little doubt the Saxon scribes ultimately acquired that free manner of sketching to which we shall presently have occasion to allude, as distinguishing the second class of Anglo-Saxon illumination.

The most notable illustration which I am acquainted with of this combination occurs in the Cottonian Psalter, known as *Vespasian, A. 1*, the principal illustration in which consists of an arcade, formed of an arch and pilasters, entirely ornamented with the tessellation, the spirals, and the red dots of the Illyrian scribes, and within which King David is represented as seated and playing on the lyre, surrounded by attendants rejoicing and blowing horns and trumpets. The framework is outlined in the hard, sharp-peg style of a scribe, while the subject is executed in body colours with a free brush, with considerable attention to light, shade, and effect, and a total absence of the hard outline which bounds all the figures in such volumes as the Book of Kells and the Gospels of St. Chad.

Of all the series of MSS. known to have been brought to England by St. Augustine, the books of the Gospels are the only ones the existence of which at the present time may be considered as probable. Fragments of a set of the Gospels are preserved in the Library of Corpus Christi College, at Cambridge, the illuminations in which are of the highest possible interest. The most important of them represents St. Luke, in perfectly classical costume, seated under a triumphal arch, supported by four marbled columns, and ornamented just as we might suppose a similar architectural monu-

\* By Mr. M. Digby Wyatt. See page 391, ante.

ment would be, by a mosaic worker of the time of Gregory the Great, hung to, or placed against, the two outside columns supporting this arch, are two square pictures, enclosed with the plain Roman red frame which I have described as a common feature in the more simple style of classical illumination. No ornament recalls the Celtic style in any degree; and there is every reason to believe, from the internal evidence afforded by the MSS. itself, that it may have been executed at Rome and brought to this country by St. Augustine.

In this case tradition coincides admirably with artistic probability. The above, and another fragment preserved among the Hatton MSS. in the Bodleian Library, at Oxford, embellished with no other illumination than the contrast of red and black ink, and a few ornaments about some of the initial letters, contain entries in Saxon, written certainly not less than 1,000 years ago, connecting them with the library of the Abbey of St. Augustine, at Canterbury; and, furthermore, they correspond with a description given by a monk of that monastery, who, writing in the reign of Henry V., dwells upon the "primitie librorum totius Anglie Anglicane," preserved in that library, as the very Book of Gospels, in the version of St. Jerome, brought to England by St. Augustine.

Considerable interest is attached to the question of the probable nature of the illustrations to the Book of Psalms, brought hither by the Roman missionary, in consequence of the existence of a set of illuminations, such as we may conceive to have been copied from a classical original, not altogether unlike certain well-known Latin MSS., constituting one of the earliest and most ably designed series of illustrations, carried out unquestionably by Saxon scribes, and executed in that which I have alluded to as the second Anglo-Saxon manner. It was the manner, in fact, of scribes giving up purely conventional ornament, and taking to imitative art.

The finest specimen of this transition style is exhibited in the Psalter one belonging to Sir Robert Cotton, and now preserved in the public library at Utrecht. In this volume the text is written in Roman rustic capitals, and in narrow columns, three in a page, both evidences of considerable antiquity; such, in fact, as would certainly place the MS. amongst those of the sixth or seventh century. At the same time it contains several features common to Anglo-Saxon scribes during the seventh and eighth centuries. The principal illuminations are executed in pen and ink, without the application of colour at all. The architectural forms, the costume in style, the details, are completely Roman. The figures are drawn with great spirit and expression, but with rather a weak and fluttering outline. Mr. Westwood, who has examined this Utrecht Psalter more carefully than any other Englishman, observes that the subjects are treated identically in this and no less than four well-known Saxon MSS. The classical nature of all the details, and the great popularity of this set of illustrations, justify the belief that they must have been copied from some classical specimen held in high estimation,—from just such a MS., in short, as would have been one of the Psalters brought to this country by St. Augustine.

There can be little doubt that several other Anglo-Saxon MSS., which have much puzzled students, owing their apparent anomaly to the fact of their having been frequently copied by scribes, at various periods, from early classical originals. Such, for example, as the celebrated MS. of Cicero's translation of the astronomical poem of Aratus (Harl. MS. No. 617), the miniatures in which Mr. Otley considered so thoroughly ancient in every respect, that he was induced to ascribe the origin of the MS. to the second or third century. More recent students are, however, clearly of opinion that in this case the MS. was executed at no earlier date than the ninth century, and that it is a copy from some classical model of the age to which Mr. Otley desired to ascribe the transcript.

There can be very little doubt that to this habit of copying works of classical antiquity, introduced probably into this country mainly through the foreign monks, who rapidly followed in the wake of St. Augustine, must be ascribed much of that graphic dexterity which characterizes the Saxon MSS. from the commencement of the ninth century to the Norman Conquest.

The third style of Anglo-Saxon illumination is that in which the interlacings, and some of the ornaments of the Hispano-British school of scribes, are retained, and combined with original illustrations of current contemporary scenes, such as sports, pastimes, incidents of the chase, and agricultural pursuits. Among these, one of the most

interesting is the Saxon calendar, preserved in the Cottonian Library (Tiberius, B. 5); and even in this many classical features are to be recognized.

The fourth and final style is that which we may believe to have been founded, or, at any rate, greatly encouraged, under St. Ethelwold, at the monastery of Mew Minster, or Hyde Abbey, near Winchester. In this style gold was very freely introduced; and, indeed, the charter of King Edgar to the same monastery, granted in the year 969, is written entirely in gold.

The most magnificent specimen of this school is unquestionably the celebrated benedictional of St. Ethelwold, in the library of the Duke of Devonshire, engraved *in extenso* in the twenty-fourth volume of the *Archæologia*. In the figure subjects, as well as in the ornamental portions of this volume, great and striking originality is to be recognized, and it is especially distinguished by a delicate harmony of colour, and tenderness of shading, superior to that of any other production of Anglo-Saxon art with which I am acquainted. In this MS., and in others,—such as the Gospels of King Canute, the two Gospels preserved at Rouen, the Cottonian Psalter (Tiberius, C. 6), the Hyde Abbey Book, late in the Stowe Library, and the Gospels at Trinity College, Cambridge,—the text is generally enclosed within a rich framework, formed by wide and solid bars of gold, about and over which twine and break elegantly-shaded masses of conventional foliage.

I have dwelt in some detail upon these British manuscripts, because they are unquestionably of the highest national interest. To the architect they are of very great importance, since they afford him almost the only completion of the picture, of which some faint traces are presented to him in the scanty existing remains of Anglo-Saxon structures.

Mr. Thomas Wright, in a most interesting article in the first volume of the "Archæological Journal," has dwelt upon the valuable illustrations of the details of Anglo-Saxon architecture which are contained in illuminated manuscripts; more especially in those of the end of the tenth and the beginning of the eleventh century. In one of these especially (Cotton MS., Claudius, B. 4), a fine copy of Ælfric's translation of the "Pentateuch," he has carefully examined the various pictures, which contain a great mass of architectural detail. Among the most frequently recurring features are arcades, carried upon columns, and the arches occasionally surmounted by pinnacles. The triangular-headed doorways, and halber-shaped columns, are frequently represented. The doors are shown with iron-work of an ornamental description, and the capitals of the columns are not infrequently covered with foliage of graceful forms. "Polychromy," says Mr. Wright, "is observable in all the architectural subjects throughout the manuscript. The arches, and even the moldings and different parts of the columns, are painted of various hues. The colours most frequent are yellow and blue. It may, perhaps, be doubted how far we may depend on the strict truth of the colours employed by the early artists, for in some instances they seem to be extremely fanciful. I have met with pictures in which men's hair was painted of a bright blue, but it is not impossible that at some period it may have been the custom to stain the hair of that colour. However, be the colours true or not, these drawings appear to establish the fact that the Anglo-Saxon buildings were painted in this variegated manner." As the general result of his comparison, Mr. Wright finds that almost all those structural features which ecclesiologists have recognized as Anglo-Saxon, in contradistinction to Norman, are represented, rudely perhaps, but not inaccurately, in the manuscript in question.

In respect to the point so much mooted of late,—the date of Waltham Abbey,—Mr. Wright observed, in another Anglo-Saxon MS.—the Prudentius of the British Museum (Cotton MS., Titus, D. 4), written apparently about the middle of the eleventh century,—two rows of columns, of which the shafts are ornamented in precisely the same style as some of those which still remain in Waltham Abbey. On this and on other grounds he is inclined to recognize in the existing remains the real church of Harold, or, at any rate, a considerable portion of it. He thus sums up the nature of the evidence as to Saxon architecture to be derived from Saxon MSS.: "We have, then, in the MS. under consideration a series of architectural drawings, which are pure Saxon, and of the date of which there can be no doubt. They present a number of characteristics which are probably to distinguish a peculiar style, which sufficiently was the general style of Anglo-Saxon

buildings. It is certain that the old artists produced nothing on parchment which was not modelled on what really existed before their eyes. I would add that, although illuminated MSS. became more numerous after the Conquest, I never met with one of later date exhibiting any of the peculiar characters mentioned above. We find a similar style on parts of existing buildings, which are evidently of a very early date, and which, therefore, as it appears to me, we are justified in attributing to the same age as the MS.; in the same way that we should ascribe an unknown effigy to the age in which its costume is found to prevail in similar illuminations."

If the character of Anglo-Saxon architecture and sculpture agreed with the representations of both given in the benedictional of Ethelwold,—as I have every reason to believe it did,—it must have been both massive and elaborate in the highest degree; and there is no reason to suppose that a people who were capable of drawing so well as they assuredly could, should have limited their productions in the sister arts to the rude and clumsy, long and short, and other similar work, which we are in the habit of supposing characterized all their principal productions.

While the progress in the art of illumination to which I have thus called your attention was made in the extreme west of Europe, but little novelty was introduced in the studios of Byzantium. The brilliancy and harmony of colour which were first developed in the age of Justinian, were never subsequently surpassed. That agreeable composition in figure subjects, which remained as the last relic of antique art, became gradually lost sight of, and in weak action and attenuated forms the saintly personages of the principal Byzantine MSS. degenerated at last into complete mannerism. In technical excellence, however, Greece long retained its superiority, and that which had been at first an art of uncertain result, finally became a well-regulated process of manufacture. Occasionally, and more particularly about the era of the Norman Conquest, figure subjects of great excellence were executed at Byzantium, both in marble, in metal, in ivory, and in painting on wooden tablets, and illuminated MSS.

The advance towards excellence which should have followed after the introduction of so many original Oriental features into Greek illumination of the age of Justinian, was cruelly interrupted by the iconoclastic troubles. Under Leo the Isaurian, A.D. 726, multitudes of skillful workmen and artists were forced to take refuge in the monastic establishments of all Europe. Their settlement in the convent of Sta. Maria in Cosmedino, at Rome, led to the foundation in that capital of the famous *Scuola Greeca*, and gave a vast impetus to the execution of mosaic work and the production of pictorial embellishments, both on walls, on panels, and in books. On the cessation of those persecutions in the middle of the ninth century a revival appears to have taken place in Greek art, no doubt coincident with the return to their native country of many of the descendants of those who had been exiled in the early stages of the persecution. Under Basil the Macedonian, A.D. 975, and indeed until about the year 1200, many beautiful ornaments were painted upon gold grounds, and lessons of no mean degree of beauty in ornament were set to the Russian, Syrian, and Armenian illuminators, who always closely followed the precedents communicated to them from Byzantium.

Contemporary with the development of the Irish school of illumination there prevailed in Central Europe a style of considerable rudeness, compounded of the ornamental features affected by the Irish and Anglo-Saxon scribes, the traditions of ancient art still prevailing in some of the principal ancient Roman settlements, and an odd sort of originality which may be perhaps best designated as *Frankish*. In this concrete style the comparatively few books illuminated for the magnates of the Merovingian dynasty were executed, and it was to convert that comparatively barbaric style into something better corresponding with his accumulated dignities that Charlemagne enlisted in his services the best artists that he could procure in Italy and elsewhere, and engaged our own much-honoured Alcuin to take charge of a scriptorium which he founded at Aix-la-Chapelle, and more especially that in the Abbey of St. Martin, at Tours. It was in that "Paradise," as the Saxon sage describes it in one of his letters, that all the latter years of his life were dedicated to the superintendence of correct and beautiful transcripts of the Holy Scriptures, and other precious books for the honour and satisfaction of his friend and affectionate patron; and certain it is that the

books produced under his auspices are among the most precious monuments of calligraphy still existing.

Among the most important of these are the Gospels of St. Medard de Soissons,—so called because believed to have been presented by Charlemagne to that abbey, and now probably the greatest lion of the Bibliothèque Impériale at Paris. This magnificent volume exhibits just what might have been expected from the condition of the art of illumination at the period; that is, a style of grand initial letters and complicated ornaments of an interlacing kind peculiarly Saxon, combined with a series of figure-subjects painted with a free brush in body colour, and completely in the antique style. One can, therefore, readily believe that in the execution of the *ornament* and *calligraphy* generally, the most skilful Anglo-Saxon artists were employed, while for the execution of the *figure-subjects* the talents of painters learned in all the arts of Byzantium and the traditions of ancient Rome were enlisted.

In addition to the Gospels of St. Medard, among the magnificent volumes produced for Charlemagne may be enumerated an Evangelarium, long preserved in the Abbey of St. Servin, in Toulouse, and ultimately presented to Napoleon I. on the baptism of the King of Rome. From contemporary entries this appears to have been completed after eight years' labour in the year 781, by the scribe Godescalc. In the same list we must include the Vienna Psalter, written for Pope Adrian, and the Gospels of the Library of the Arsenal at Paris, formerly belonging to the Abbey of St. Martin des Champs, the forms of which are principally Saxon, although the colouring, which is mainly restricted to gold, purple, white, and a little very brilliant vermilion, are on a purer and more elegant scale than is usual in contemporaneous productions. That which is known as the Codex Aureus we preserve in England in the Harleian collection. A somewhat similar volume was found upon the knees of the emperor on opening his tomb at Aix-la-Chapelle; and last, not least, as the production of his era, if not completed in his life-time, we may reckon the celebrated Bible known as that of San Calisto, preserved in the Benedictine monastery of that Saint at Rome. This is by far the most magnificent illuminated volume I have ever seen. It contains no less than 339 pages, and is one blaze of gold and colour from the first page to the last. It is no less in size than 16 inches high by 13 inches wide. The large initial letters are quite Saxon in form; the borders, of which there are endless and beautiful varieties, are more strictly classical in character than is usual in Caroline MSS., and the pictures are in an indeterminate style between Greek, Latin, and original Frankish; in that style which, under the descendants of Charlemagne, grew into the peculiar type of twelfth-century work—the progenitor of the pure Gothic of the thirteenth.

Time will not permit my dwelling upon the chief monuments of this transition. I cannot, however, pass over the Bible of Louis le Debonnaire, his Gospels, and the Sacramentaire de Metz, which differ in some degree, although they correspond in general magnificence, with those executed for Charlemagne. The Bible of Louis le Debonnaire is, however, in that Frankish and semi-barbaric style on which Alcuin and others improved.

The MSS. written for the grandsons of Charlemagne are very remarkable for their splendour and curiosity. Thus the Gospels of Lothaire were written and decorated at the Abbey of St. Martin, at Tours, as were also the two celebrated Bibles executed for his brother Charles the Bald,—the one known as the Bible of St. Denis, and the other as that presented to the monarch by Count Vivien, abbot of St. Martin. In these, as in the MSS. executed during the lifetime of Charlemagne, the ornament is unquestionably characteristic of the Hispano-Saxon school, intermixed with both painting and ornament derived from classical models.

The scriptorium founded under Alcuin at the Abbey of St. Martin, at Tours, was speedily rivalled by corresponding establishments in other localities; and thus from the Abbeys of St. Martial, at Limoges; from Metz, Mans, St. Majour in Provence; Rennes, St. Germain, and St. Denis, at Paris, issued, from the age of Charlemagne to the thirteenth century, an uninterrupted series of highly illuminated volumes, a sufficient number of which remain to enable us to trace the progressive development of that expressive and original style which attained its greatest power in the early part of the thirteenth century.

Many Byzantine features were brought into

French illumination through the schools of St. Martial and other abbeys of Limoges, and all illumination produced in the south of France shared in the impulse which French architecture received from its adoption of many of the peculiarities of Eastern origination. It was at Paris, however, as we might readily suppose, that the most rapid change from mannerism to originality was effected. Thus, at St. Germain and St. Denis were produced, during the first half and middle of the eleventh century, two volumes, still existing in the Imperial Library of France, which distinctly show the germination of Gothic. The St. Germain "Mysteries of the Life of Christ" are illustrated by many original and very spirited outline compositions, some of which are slightly coloured; while the missal of St. Denis displays that peculiar grace and *noblesse* in the action and expression of the figures, together with that soft elegance in foliated ornament which for several centuries remained dominant excellencies in the best French illuminations.

It is but just to mention the reaction which took place upon Anglo-Saxon and English illumination through the improvements imported into the art under Charlemagne and his successors, and more especially through the original vigour displayed in these already most characteristic Gothic compositions. In fact, we have every reason to believe that, distracted by the invasion and final ascendancy of the Danes, and ultimately by the descent of the Normans, Saxon illumination almost entirely died out in the country in which it had been propagated. So shortly after the Norman Conquest as the year 1091, Ingulphus, in alluding to the fire which destroyed the noble library of his abbey at Croyland, states that the juniors in his monastery were unable to decipher the Saxon character, that letter having been, as he says, "for a long while despised and neglected by reason of the Normans, and now known only to a few of the more aged."

The accession of the French nation which acquired power in England afforded by no means good specimens of the lettered Frank; and under its auspices the development of a new style, to take the place of the extinguished Saxon, was undoubtedly but tardy. With the accession of the Plantagenets, however, in 1154, and especially through the marriage of Henry II. with Eleanor of Guienne, the best French influence was allowed to acquire a marked predominance in English illumination: and for nearly 100 years from that date the progress of style in England and France was parallel and almost identical. And here it is but fair to the Dominicans and Franciscans to recognize the extent of the influence exercised by those monastic orders in consolidating the Gothic elements which took the place of the gradually disappearing Romanesque features.

As the styles of architecture varied in England and France,—agreeing in leading particulars, but each acquiring for itself a set of distinctive characteristics,—so did the art of illumination. In the purely Gothic work, such as prevailed from 1250 to 1400, extreme *finesse* in execution, tenderness of colour, gentleness of expression, piquancy of ornament, and elegance of composition, may be regarded as almost invariable attributes of French productions. In England, on the other hand, the style was not so harmonious but more vigorous, the colouring was fuller and deeper, the action of the figures more intense, the power of expression more concentrated, and reaching occasionally in its energy almost to caricature, the sense of humour always freely developed, and a more generally active sentiment of life impressed upon design, not only in figure subjects, but in ornament. In the latter, monkeys and other animals, dragons, and comic incidents, are very frequently intermingled with graceful foliage and heraldic embellishments. In fact it is to the credit of both countries that, with so much that is excellent in common, they should still have displayed such free and distinctive features as marked the works of each respectively. About the year 1400, in both countries the mechanical reproduction of the accredited types and leading incidents of Scripture and of Catholic faith began to be abandoned; and, mainly from the necessity of giving to the historical personages introduced in secular romances and chronicles individual force and vigour, an attention to portraiture and a transcription of characteristic traits of active life are freely developed.

Considering how few traces of the art of painting, as exhibited either in panel pictures or in mural embellishments, remain to attest the condition of the arts in England and France in the thirteenth, fourteenth, and fifteenth centuries, it is impossible for the student of Gothic art to over-

estimate the extreme interest which attaches to the chronological series of specimens of the painter's art which may be examined in the great metropolitan libraries of either country. It is very fortunate for our reputation that we are enabled through so large a series of volumes as still exist, to trace such distinctive and national characteristics as enable us to assert without fear of error that so far as graphic dexterity is concerned, the English artificers were fully competent to execute all the artistic productions which have as yet been found upon our soil. That foreigners were freely employed there can be no doubt, but that the works which were executed by them could not have been executed by Englishmen, no one can with safety assert, who has traced with any considerable care the gradual development of English art through a series of English illuminated MSS.

The most perfect production of the English school in all respects is, so far as I have been able to discover, the celebrated book known as Queen Mary's Psalter. It appears to have been executed about the year 1320, for a member of the Willoughby family. It contains 320 leaves, and is filled throughout with illuminations, which Professor Waagen deliberately regards as the refection of a larger school of painting. "Upon the whole," he states, "I am acquainted with no miniatures, either Netherlandish, German, or French, of this time,—by no means so favourable to art as the thirteenth century,—which can compare in artistic value with the pictures executed by the best hand in this MS. The artist here displays equally in subjects which require a strict architectonic disposition as in those admitting a freer arrangement, a most correct feeling for the disposition of subjects in a given space. The motives are not only true and animated, but very free, and frequently uncommonly graceful, and in the heads the moral expression is very rightly indicated. The proportions are slender, the drawing of the nude (the period considered) unusually good, and the hands especially of excellent action. In the draperies, it is true, the Gothic, somewhat conventional manner predominates, though treated with refinement and excellent taste." The docteur recognizes what must, I think, strike any unprejudiced observer, the coincidence of the lightness and freedom with which these designs are expressed with that which may be remarked in both the second and fourth style of Anglo-Saxon miniatures.

The impulse given by the Emperor Charlemagne to French illumination, found a rival at a later date in the school instituted in Germany, under the auspices of the Emperor Henry II. (1092—1026), of which many interesting examples are to be met with in the libraries of Bamberg and Munich. Shortly previous to the accession of that monarch, St. Ulrich, Bishop of Augsburg, who died in the year 973, had paved the way for this improvement, by himself decorating several copies of the Gospels with miniatures, in which Byzantine influence is apparent, and with ornaments already exhibiting a very good taste. One of these is preserved at Munich, and another in the Harleian Collection, No. 2970. It is, in fact, in the full development of that ornament which we generally know as Romanesque, and which was of a nature far more complicated than that commonly recognized in this country as Norman, that the greatest amount of originality, and the highest perfection was attained in German illumination. The artists of Germany early converted these Romanesque forms, at first highly conventional, into a quaint reproduction of the more natural features of growing and convoluted foliage, and introduced those crinkled ornaments the mannerism of which subsequently, in their more completely Mediaeval specimens, proved a considerable stumbling-block to their arriving at the graceful elegance attained in the best specimens of French and English illumination. Their miniatures, in later examples, reflect the peculiar angularities of the Early German school of painting, and through the influence which they exerted upon the Flemish masters, they tended in no small degree to popularize that greatly increasing spirit of naturalism in art which, during the fifteenth century, displaced the pure Gothic, and more ideal elements of the preceding century.

The improvements in pictorial art introduced by the school of Van Eyck proved a fruitful source of excellencies for Flemish illumination, which, under the patronage of Philip the Bold, Duke of Burgundy, arrived at the highest pitch of perfection, and exerted no slight influence upon the miniature painters and illuminists of England and France. In those countries Jean, Duc

de Berri, brother of Charles V., and the Duke of Bedford entered into a keen competition with the great Burgundian. Of the library of the former his Psalter, his two Prayer-books, and his copy of the "*Merveilles du Monde*," in the Imperial Library at Paris, and of the latter the celebrated Bedford Missal, in the British Museum (mainly, no doubt, the production of Flemish artists), still exist to attest the perfection attained at this period.

Whether the increasing popularity of the art of illumination in Western Europe induced all those artists who had preserved any of the traditions of ancient art to quit Italy and to take service under more liberal patrons than they could find in that country, or whether the frightful internal convulsions which distracted that soil gave the death-blow to the art in the capital of Christendom, certain it is that little or nothing remains to testify the proficiency of the Italian scribes in this branch of art from the ninth to the end of the twelfth century.

At the commencement of the thirteenth century, however, some few Italian specimens are to be found, and by the beginning of the fourteenth we meet in the writings of Dante with a commemoration of the talents of Oderigi, the contemporary of Cimabue, and of those of his pupil and successor, Franco of Bologna, who was contemporaneous with Giotto. Vasari bears testimony to the talent of Franco, with whose works he appears to have been well acquainted.

I might of course multiply the names of the successors of these distinguished artists to a great extent, and, if time permitted, dwell on the skill of those distinguished masters by whom the splendid series of choral books were executed which still remain at Sienna, Ferrara, Perugia, and elsewhere, to attest the rare merits of these brilliant illuminators. But from the revival of painting in Italy pictures, both on *tavola* and in fresco, so greatly abound, and are so well known, that I cannot but feel that, however interesting a specification of their peculiarities and merits might be, enough exists in more important monuments than illuminated books to illustrate the history of Italian art.

The same remark applies with equal cogency to those exceptional artists who in the various countries of Europe continued to practise, and some of them with extraordinary success, the art of illumination as a luxury, long after the invention of printing and the popularization of painting had ceased to render their works labours of necessity. There are, however, among these Italian masters, three whose merits were so transcendent, that no sketch, however slight, of the history of illumination, could approach completeness without a passing allusion to their exquisite productions.

For the great families of Italy,—the truly princely patrons,—such as the Sforzas, the D'Estes, the Medici, the Gonzagas, the Strozzi, and the Visconti,—the best artists were constantly employed in decorating both written and printed volumes, in which portraiture is freely introduced, and picturesque and historical subjects are represented with great vivacity, and attention to costume and local truth.

Among these artists, at the end of the fifteenth and during the first half of the sixteenth century, no one was more celebrated and excellent than Girolamo dai Libri. Vasari's description of the talents of this celebrated Veronese gives so lively a picture of the then popular style, that I am tempted to translate it:—

"Girolamo executed flowers so naturally and beautifully, and with so much care, as to appear real to the beholder. In like manner he imitated little canoes and other precious stones and jewels, cut in intaglio, so that nothing like them, or so minute, was ever seen. Among his smallest figures, such as he represented on gems or canoes, some might be observed no larger than little ants, and yet in all of them might be made out every limb and muscle, in a manner which to be believed must needs be seen."

This extreme delicacy of individual imitation was not confined to Italy, but found most zealous votaries in France, Spain, England, and Flanders. In France especially, the artists employed upon the celebrated "*Hours of Anne of Brittany*," carried to extreme perfection this almost microscopic style of miniature painting.

Among the principal claims of Girolamo to our respect must ever be regarded the fact of his having been the instructor of the still more celebrated Julio Clovio, who was born in 1498 and is believed to have died in 1578. Adopting in his ornaments the general characteristics of Girolamo's compositions, which he worked out in tenderer colour, and in his figure-subjects with a

miniature Michelangelesque pose and drawing, Julio Clovio excelled for Clement VII., and his successor Paul III., a series of masterpieces, such as it would be impossible to even indicate in such a paper as the present. Fortunately we possess in this metropolis two fine specimens of his skill, one in the Soane and the other in the British Museum,—both tolerably accessible. Others are, I believe, in various private hands, but I am happy in being able to produce for your inspection this evening two copies made from the miniatures in the Soane Museum of the greatest possible accuracy and beauty. They were prepared under the superintendence of Mr. Owen Jones, and have been reproduced in chromo-lithography with the utmost perfection that process is capable of attaining in his and Mr. Noel Humphreys's splendid work on illuminated books.

Julio's successor in the office of illuminator to the Papal chamber was an artist of not quite as great strength and brilliancy as his predecessor, but one who was endowed with a keener sense of elegance and harmony. Apollonius de Bonfratellis de Capranica surrounded subjects usually taken from the incidents recorded in the Holy Scriptures, with borders of the most glowing colours, in which are introduced compartments, with small figures touched with extraordinary delicacy and skill. I have never seen any more glowing and brilliant specimens of late Italian decoration, such as might be most fittingly introduced in combination with good Italian architecture, than are exhibited in the elegant compositions of this master. Many beautiful specimens of his works were brought to this country in the year 1825, by the Abbate Celotti, from whom they passed into the collection of the late Mr. Rogers. Apollonius does not appear to have worked later than 1572. After the cessation of his labours, however, the Apostolic Chamber appears by no means to have relinquished the employment of an official illuminator, as elegant illuminations continued to be produced down to certainly within a few years of the commencement of the eighteenth century.

I have now run over, at what you will, I fear, some too great a length, although at the same time far too rapidly for the interest of the subject, the principal historical characteristics of the art of illumination; enlarging upon its features at those epochs upon which additional light is most needed for the illustration of the history of art, and condensing my theme into extreme tenuity at those periods in which more important monuments are sufficiently abundant to require but little collateral illustration from subsidiary arts. It remains, therefore, for me only now to touch upon the practical lessons which must, I believe, follow as inevitable sequences from the historical incidents I have endeavoured to indicate.

The most obvious of these is the coincidence with, and proper subjection to, the major arts, of those which must always be regarded as minor. The miniature ornament of every period reflects on a diminished scale, and frequently in a highly concentrated form, the leading spirit which pervades the greater revolutions of monumental art. Owing to the licence which the diminished scale afforded, the imagination of the artist in these works was restricted by none of those material impediments which, in the execution of the major monuments of art, protracted the realization of the changing fashions of the day, frequently until long after the period when the original impulse may have been communicated to the art in which those variations were possibly but transient fluctuations.

Thus it is that in these relics of the past may frequently be traced artistic impulses destined to find no other embodiment than the form in which they are presented to us in the pages of a MS. The copiousness, then, of such documentary illustrations of the invention of remote periods is one of the most valuable features of the teaching they should convey to us. No revival now-a-days of any historical style by the architect can be satisfactory which is not based upon a knowledge, not of the purely architectural features of the period alone, but of the condition and characteristics of all those decorative details which distinguished it as a living reality from the effete and denuded relic which may now only present itself for our information. Thus even the Saxon and Romanesque styles of architecture may, through the architect's careful attention to the decorative features exhibited to us in the pages of ancient illuminated books, be revived, not in their rude and structural nudity, but as glowing with those colours, and decorated with those forms, which we may observe as peculiarly affected in the ornamental and pictorial embellishments of the best artists of the days when those styles were

the only ones popularly adopted. And not only are the beautiful ornaments and decorative features of illuminated MSS. valuable as supplying us with correct information as to the system of embellishment regarded by the best artists of each period as harmonizing most perfectly with the structural styles prevalent in their days; but in the measure of their permanent beauty they are no less valuable to us as indications of what is excellent for all time.

Thus, then, they may be used, either as enabling us to restore the most brilliant features of the historic styles with an accuracy to be acquired from no other sources of information, or they may be regarded as providing us with materials for that more extended system of eclectic selection which must afford the only basis of perfection and originality in any styles which we may desire now or hereafter to originate; and the origination and perfection of which we may desire to bequeath to succeeding generations, as testimonies that, in the nineteenth century, there lived men as capable of the creation of beauty as any whose happiest inventions are to be found in the pages of these ancient and most precious volumes.

Throughout the delivery of his paper Mr. Digby Wyatt made frequent reference to a large collection of drawings and engravings which had been arranged on the walls of the meeting-room, as far as possible, chronologically. Among them we observed, in addition to Mr. Wyatt's own diagrams, specially prepared, many exquisite illustrations produced by Mr. Owen Jones and Mr. Noel Humphreys, and a series of no less than 100, lately drawn and lithographed in fac-simile of the originals, by Mr. W. R. Tymms, for a work on the eve of completion by Messrs. Day & Son.]

ARCHITECTURAL EXAMINATIONS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL meeting of the Institute was held on Monday evening last, to consider certain propositions on this subject which had been submitted by the council. The meeting was confined to members of the Institute, and we content ourselves with giving an outline only of the proceedings. The first proposition, being as follows, was moved and seconded:—

"Proposition 1.—That it is desirable to afford an opportunity for a voluntary professional examination to the present Associates, and to the future Fellows and Associates of the Royal Institute of British Architects. That an elementary examination be therefore established for the Students and Associates of this Institute under the age of twenty-five years; and a higher examination in the theory and practice of the profession for Associates above that age, and for future Fellows."

An amendment, to omit all after the word "examination" (making the resolution simply:—"That it is desirable to afford an opportunity for a voluntary professional examination"), was carried.

It was further resolved that the discussion should be resumed on Monday evening next. Thanks were voted to the council for bringing the question forward, and to the president, Mr. Cockerell, R.A., for his conduct in the chair.

LAMBETH SCHOOL OF ART, VAUXHALL.

EXTENSIVE schools are about to be built for the populous district of St. Mary-the-Less, Lambeth, on a site formerly part of Vauxhall Gardens, and in connection with these a building is to be erected exclusively devoted to art education. On Wednesday last, H.R.H. the Prince of Wales worthily commenced his public career, so to speak, by laying the first stone of it, amidst the loud plaudits of a large and distinguished assemblage. The committee, in their address, which was read by the Rev. Robert Gregory, said:—

"The special avocations of multitudes in this part of the metropolis render a knowledge of design of great importance for the efficient discharge of their callings in life. Engineers, painters, joiners, and other mechanics, by learning to draw, achieve a success in their several employments which would otherwise be denied them, and thus their zeal for the cultivation of their natural talent is artfully increased by a conscious accession of power, and by a sensible addition to those material comforts which they win for themselves. And thus self-interest has urged them to study, while the self-discipline thus acquired, it may fairly be hoped, adds stability to their general character, and so becomes a valuable element in their moral education. The success which has attended the efforts of the committee furnishes evidence of the truth of the principles upon which they have acted. Each year that their school has existed it has grown in number and efficiency. Commencing with a few pupils, who found ample accommodation in a corner of a room lent for their use, they now find themselves unable suitably to provide for all to enjoy the advantages they offer; while they have refrained from publishing more widely the existence of their school, lest more students presented themselves than could be received. They now muster 120 pupils in their classes, and the fees paid by those students, with the usual help afforded by the Department of Science and Art, suffice for the maintenance of the school, so that no subscriptions have been

received during the last few years for defraying its current expenses. Nor have the results been less marked and satisfactory in other respects. Students of great natural ability have been found who, but for the assistance afforded by this school, would never have had the opportunity of cultivating the special talent which they had been endowed. A potter, for example, who had no instruction in drawing till he entered the school, last year gained a national medal for designing and executing a most beautiful piece of pottery ware, and by general competition this year the school has obtained twelve medals and twenty-nine prizes—strong evidence that its success is not confined to the number of students it collects within its walls.

His Royal Highness made a reply in a frank, manly way, and indeed comported himself throughout in a manner to win golden opinions from all. Mr. Pearson is the architect: the buildings will be erected in the style of the thirteenth century.

Funds are still needed: the Rev. G. W. Herbert is acting as honorary secretary.

#### THE ARCHITECTURAL ASSOCIATION.

The closing meeting of the session 1859-60 was held in the Rooms, Conduit-street, Hanover-square, on Friday evening, June 22; the president, Mr. J. W. Peaufold, in the chair.

The Society proceeded to elect by ballot the officers and committee for next year. At the conclusion, Mr. Capes (secretary) announced that the following gentlemen had been elected to fill the respective offices:—President—Mr. Thomas Roger Smith; vice-president—Mr. A. W. Blomfield, M.A.; honorary treasurer—Mr. Arthur Smith; honorary solicitor—Mr. Francis Truett; auditors—Messrs. W. C. Sams, S. C. Rogers; registrar—Mr. S. C. Capes; censors—Messrs. C. H. F. Lewis, R. O. Harris; honorary secretaries—Messrs. Arthur Smith, E. Winbridge; committee—Messrs. B. A. C. Herring; J. A. Bunker; T. Blashill; C. H. F. Lewis; W. Gritten, jun.; H. A. Reeves; G. B. New; W. Tain; A. Walters; R. O. Harris.

The president declared these gentlemen duly elected, and assured the Society that, in resigning office, he was not resigning therewith the interest which he had ever taken in the society.

Mr. Billings moved a vote of thanks to the president for the hearty aid he had given to the Association during his year of office. Though the scanty attendance sometimes rendered his position rather discouraging, he was ever at his post.

Mr. S. C. Capes seconded the motion, and the vote of thanks was carried.

Mr. H. A. Reeves proposed, and Mr. S. C. Capes seconded, a vote of thanks to the honorary secretaries, for the faithful manner in which they had discharged the responsible duties of their office.

Mr. Herring returned thanks on the part of the secretaries, and the Society separated for the session.

#### THE ARCHITECTURAL MUSEUM.

The committee of the Architectural Museum have determined not to hold a *conversazione* this year. In this decision they have been chiefly influenced by the results of former meetings, which, whilst most successful in point of numbers, have partly, from this circumstance, entailed upon the institution very heavy expenses without realizing any adequate increase in the means of providing for them.

The offers of prizes to artist-workmen have, however, been extended; and, we understand, meetings of a less costly nature will take the place of *conversazioni* during the ensuing lecture season. It is much to be desired that practical use should be made of the collection to a greater extent than is at present the case, and we are anxiously looking to see it take a more complete shape, and approximate to our much-desired National Gallery of Architecture.

#### LONDON FORTIFIED.

In the king's collection in the British Museum there is a series of very curious maps and plans; and, as they show us the progress of London and the growth of the suburbs, they are of considerable value. Amongst these is a plan of the City and suburbs of London, as fortified by order of Parliament in the years 1642 and 1643. This is copied from Hollar's Map of England, in six sheets, and traced from the remains of all steps of the works, by Cromwell Mortimer, M.D., Secretary of the Royal Society. This work seems to have been undertaken in 1746, and at that time considerable traces of these fortifications were visible.

With care, the line of the great ditch and embankment referred to may be distinctly traced, and it is worth while to compare the extent of the

line with the more ancient defences of the City. A reference to the map shows that there was:—

1. A bulwark and a half on the hill at the north end of Gravel-lane.
2. A hornwork near the windmill in the Whitechapel-road.
3. A redoubt, with two flanks, near Brick-lane.
4. A redoubt, with four flanks, in Haekney-road, Shoreditch.
5. A redoubt, with four flanks, in Kingsland-road, Shoreditch.

Islington seems to have been very strongly defended; at

6. A battery and breastwork, at Mountmill.
7. A battery and breastwork at St. John's-street end.

8. A small redoubt near Islington Pound.
9. A very large fort, with four half bulwarks, at the New River Upper Pond. (This seems to have stood not far from the White Conduit, and was still in existence in Dr. Mortimer's time.)

10. A battery and breastwork at the hill east of Black Mary's Hole.

11. Two batteries and a breastwork at South Hampton, now Bedford House. This, says Dr. Mortimer, is complete to this day in the Duke of Bedford's gardens. Here were mounted fifteen pieces of cannon. This would be on the site of Southampton-street, Bloomsbury-square.

12. A redoubt, with two flanks, near St. Giles's pound.
13. A small fort at the east end of the Tyburn-road.

14. A large fort, with four half bulwarks, across the road at Wardour-street.
15. A small bulwark at a place called Oliver's Mount.

16. A large fort, with four bulwarks, Hyde-park-corner.
17. A small redoubt and battery on Constitution-hill.

18. A court of guard at Chelsea turnpike.
19. A battery and breastwork in Tothill-fields. On the other side of the Thames, was

20. A quadrat fort, with four bulwarks, at Vauxhall. This was still in being in 1746.

21. A fort, with four bulwarks, at the "Dog and Duck," in St. George's-fields. This was also in existence.

22. A large fort, with four bulwarks, near the end of Blackman-street.
23. A redoubt, with four flanks, near the Lock Hospital, in Kent street. From this the line took a direction towards the north-east, and formed a correspondence with the line leading from Gravel-lane to the Thames.

We believe that all traces of this fortification have now disappeared.

Glance at the present map of London and consider, if a similar defence should be needed now, how gigantic must be the work.

#### SEWAGE APPLICATION EXPERIMENT AT CARLISLE.

THE application of town sewage to agricultural land is a question of the utmost importance. Many attempts have been made to use sewage as manure; and, unfortunately, there have been failures, as at Croydon, at Rugby, at Leicester, and at some other places. Some of the attempts seem to show that sewage refuse cannot be solidified by any known chemical or other process, so as to make a profitably saleable manure. The Leicester case has proved a costly failure. An expensive plant of steam-engines and cast-iron pipes, to raise sewage for the purpose of showering it over land, will not pay. Land naturally fitted to receive sewage, or properly drained, will use up large volumes; and, therefore, the apparatus and means of application must be cheap and simple to work; the mode of application must be surface and contour irrigation. The crops should be grass, and, as much as possible, this should be cut for stall feeding. The sewage should be strained or filtered by the cheapest possible process, to prevent seeds of weeds being carried over the land. Artificial grasses (Italian rye grass) thrive well, and use up vast volumes of sewage. The objects to be attained are to get rid of a nuisance from towns (sewage), and to prevent it becoming a nuisance to the country by fouling streams and rivers. Extravagant expectations as to profits may be discarded. Town populations may reasonably, in many cases, be expected to pay farmers at first for taking the sewage, and then, if it uses justify any charge, such value may be settled subsequently.

At Carlisle Mr. McDougall has rented about 100 statute acres of meadow land, having a gravelly or sandy subsoil. The main outlet-sewer of Carlisle

bounds this land, and the corporation allow sewage to be pumped without charge. The fluid sewage is disinfected by McDougall's powder or fluid, and is raised about 17 feet by a nominally four-horse steam-engine and Gwynne's pump. The engine is high-pressure, and can be worked higher power. This small engine lifts not less than 500,000 gallons of sewage in twelve hours. About fifty acres of land are laid out at present for irrigation, and readily absorb this volume of fluid without, as we are told, causing any perceptible nuisance. The ordinary grasses have, in this case, been irrigated, and the crops have proved exceedingly heavy. No one who has seen them doubts as to the pecuniary benefits being ample. The land, with rent and rates, costs about 47. per statute acre, and the annual working expenses are expected not to exceed 350*l*. The capital involved is not, so far, large, and any attempt to make town sewage agriculturally useful must be economical. Something may be learned at Carlisle which will be socially and agriculturally useful for other towns. The city of Carlisle, as our readers are aware, was sewered by Mr. Robert Rawlinson, and provision was made at the time the sewers were constructed to enable the sewage to be taken for agricultural use so soon as any one would come forward and apply it. If the works had not been designed and executed in such manner the present works of irrigation would not have been undertaken. All town sewers should be laid out and executed with a view to the ultimate application of the sewage. The right man and the right mode will come presently.

#### NEW PUBLIC BATHS IN HULME, MANCHESTER.

THE baths for the Manchester and Salford Baths and Laundries Company, in the township of Hulme, are so far completed, that the chief portion was opened to the public on the 20th of June. The building fronts into Leaf-street, the frontage to this street being 114 feet, and the depth of the plot 117 feet 6 inches. The whole has been constructed from designs by Mr. Worthington, architect, John Dalton-street, the style being described as after the Venetian school of Lombard architecture, combining the local material of brick and Yorkshire stone, as the marble and Lombard brick were commonly united. The erection comprises two large swimming-baths, a great number of private baths, for men and women; Turkish baths; and a public washhouse, in which the washing can be performed either by hand or by machines. Each swimming-bath is 75 feet long and 25 feet wide; the dimensions of each room to the walls being 82 feet 5 inches by 41 feet. The depth of water will be 3 feet at one end, and 6 feet at the other, and from the floor of the lowest part to the apex of the roof is 35 feet. Around the first-class bath there are forty dressing closets, with suitable requisites; and round the second-class, sixty stalls, all numbered. A gallery above each swimming-bath is supported on either side by nine iron columns, and in the gallery of each bath there are twenty-two private baths for hot, cold, or tepid water. The charges are the same as for the swimming-baths, 6*d*. and 2*d*., the difference being for the superiority of the accommodation and fittings. The roofs over the swimming-baths, &c., are divided, lengthwise, into ten bays, formed with semicircular ribs, and a continuous line of glass along the sides. At each end there is a group of three semicircular-headed windows, which, along with sashes at the sides, subserve the purpose of ventilation. There is also a ventilating trunk formed along the summit of the roof, through which the heated air is drawn by four archimedean ventilators.

The washers, when within their entrance, pass through a folding and ironing room 13 feet 6 inches by 13 feet, then reach the washhouse, which is 60 feet long and 23 feet wide. It is loftier than either of the other establishments of the company, and much more complete in its fittings and appointments. There are twenty tubs for washers, divided into four groups of five each; in addition, there are twelve tubs in connection with the machine washing department. This includes four of the patent machines by Stott, Bellwood, and Findlow, with two bydros, which answer the purpose of wringing by rapid centrifugal motion. These are all worked by steam power. The drying-chamber is divided into two compartments, and fitted up with thirty-two clothes-horses: each has upon it a number corresponding with a particular washing-frame. The horses are moveable upon wheels into the heated chamber, and are then under the control of the matron, and opened at stated times—perhaps at every half-

hour. The vapour expelled from the clothing is carried upward through funnels, and is effectually prevented from becoming diffused in the wash-house. Over every washtub there is also an arrangement for taking off the vapour by a down-draught; but, to clear the room of what may arise in it, there are on the roof four of Mr. Muir's four-point ventilators. The vapour collected from this department of the building is passed off up the tall shaft or chimney in connection with the boiler furnace. This shaft, which is 7 feet square, rises 112 feet from the ground level. There is a smoke flue up the centre, formed of boiler plate, gradually diminishing in thickness from 3-8ths to 3-16ths of an inch. Surrounding this, and between it and the outer brickwork, is the vapour shaft. The boilers, tanks, engine, and ramification of pipes, have been furnished by Messrs. W. & J. Galloway, of Knott Mill; and the plain and ornamental iron work connected with the building was executed by Messrs. Edward T. Bellhouse & Co., of Eagle Foundry, for the general contractor, Mr. Niell, Strangeways. Mr. Thomas Drinkwater was clerk of the works. The cost of the Baths will be nearly 12,000*l.*

There is now nearly completed, near the baths at Mayfield, for the company, from Mr. Worthington's plans, a building for a penny bath, specially intended for boys and lads, the depth of the water being nowhere more than 4 feet.

THAMES EMBANKMENT.

At a meeting of the committee on Tuesday, Sir Joseph Paxton in the chair,—

Mr. Henry Addington Bird was called, and, in answer to questions put by the chairman, thus described his plan: He proposed a commencement at Westminster-bridge, on the north side of the river, which would terminate very near Southwark-bridge, at Queenhithe docks, and would leave the average width of the river about 700 feet. A portion of the embankment would be solid, and a portion would contain floating docks. From Whitehall-place to Chatham-place, Blackfriars, he proposed to carry, on the embankment, a carriage road 50 feet in width, supported on iron columns, and the roadway would have direct connections with Surrey-street, Norfolk-street, and Arundel-street, Strand. He further proposed to construct a railway from the Victoria Station, Piccadilly, which, coming under a tunnel, would join the road near to Manchester-buildings, Westminster, and would proceed inside the embankment to Queenhithe. The length of the railway would be about two and a half miles. To carry out his plan for the embankment of the river, he did not contemplate any application whatever to the Government for pecuniary contributions, as he believed that ample funds would arise from the sale and leasing of land which would be reclaimed by the embankment, and by eminent capitalists, who had expressed their readiness to contribute if the plan was adopted and sanctioned by the committee. The wharfingers on the banks of the river had approved of his plan. The estimate for the construction of the railway was 221,000*l.*, and for the embankment, roads, and other works, 512,000*l.*, making a total of 733,000*l.*

Mr. Page was next called, and stated that, formerly, he had been the resident engineer of the Thames Tunnel, and was now the engineer and designer of the New Westminster-bridge, and also of the Victoria-bridge. He had considered the subject of the embankment of the Thames, and had prepared plans with that object. His plan was to commence with an embankment beginning half-way between Southwark and Blackfriars on the Middlesex side of the river, and terminating opposite Lambeth Palace, at the end of Millbank-street. On the south side of the river he proposed to commence an embankment opposite Queenhithe Dock, and terminate it between Lambeth Palace and Vauxhall-bridge. From Blackfriars-bridge to Waterloo-bridge there would be a carriage-way 50 feet wide, but the rest of the embankment would be devoted to a promenade for foot-passengers only. On the south side the embankment in front of Lambeth Palace would also be applied only to a promenade. His object had been to encroach as little as possible upon the river, and to adopt an economical mode of construction. His estimate of the entire works from Westminster to Blackfriars-bridge was 360,000*l.* This included the construction of the roadway and the docks behind the embankment. His plan could be made self-supporting by appropriating part of the embanked land between the embankment and the present shore, and by giving additional wharfs next to the embankment itself. Another source of rendering the plan self-sustain-

ing would be by constructing an omnibus tramway on the embankment, like those in Liverpool and on the Champs Elysées, at Paris, and letting the privilege of using the tramway at a rent, from which a large annual revenue would undoubtedly arise, though the fare might be fixed as low as one penny each passenger.

PUBLIC BUILDINGS IN THE PROVINCES.

**Croydon.**—The new public hall, Croydon, has been inaugurated. The building is situated on the north side of George-street, on a site at the angle of the Wellesley-road. There are five or six class and other rooms for the use of the members of the local literary and scientific institution. The chief feature in the structure, however, is the assembly or lecture room. The original estimate for the building was 3,000*l.*, independent of the ground (which is let on ground-rent), the directors having liberty to purchase the same at a future time. The builder's contract amounted to 2,655*l.*, and the expenses of the building will exceed by about 300*l.* the amount of the subscribed capital. The number of 1*l.* shares already taken by the Literary and Scientific Institution is 900, 100 of which were presented by Dr. Westall. The institution anticipate increasing their shares to 1,000. The hall was built by Messrs. Jackson & Shaw, builders, Westminster; and the designs, plans, &c., were furnished by Mr. Belcher.

**Aylesbury.**—An appeal, emanating from a meeting of the governors of the county infirmary, held lately, has been put forth, explaining the necessity of a new infirmary, the present one being quite inadequate. It is proposed to erect one near the same site, capable of accommodating fifty in-patients, for which the sum of at least 8,000*l.* will be required; 3,500*l.* (including 1,311*l.* specially set apart for building purposes) will be appropriated out of the capital of the infirmary. It is proposed to raise subscriptions to make up the total required for the commencement of the new building by the 1st of March 1861.

**Stockport.**—At a recent meeting of the Town Council, the Manorial Tolls Committee recommended, for covering the market hall, the plan of Mr. Henry Lloyd, of Bristol, which, exclusive of the cost of paving, levelling, and fitting up the stalls, &c., would involve an outlay of about 5,000*l.* Mr. Alderman Williamson proposed that the subject be referred to the next meeting. There were seven plans or designs sent in, but that recommended by the committee was the most expensive. The estimates for one of them, where the pillars are left open, were 3,310*l.*, but if enclosed in glass would be 600*l.* more. Another was 3,190*l.*; but with the tower, which was intended for floral exhibitions, the figure would be increased by 550*l.*, making the gross estimate about 5,000*l.*, independent of the fitting up and paving. Then there were others more moderate in the cost, namely, 2,500*l.*, 2,805*l.*, 2,500*l.*, 2,520*l.*, and 2,800*l.*, of course all differing essentially in their plans. The elevation of the plans varied from 16 to 20 feet. Roofs of corrugated iron or zinc had already been condemned in the market hall. Mr. Lloyd's plan was a roof of wood, covered with slate; and the others were iron and glass. A month, at least, ought to be allowed for the consideration of these particular designs, before calling upon the members of the council to vote upon which ought to be adopted. The motion was agreed to, and it was understood that all the plans and specifications would be exhibited in the committee-room, for the general inspection of the public.

SCOTLAND.

**Jedburgh.**—The foundation stone of the new corn exchange has been laid at Jedburgh. The site, says the *Border Advertiser*, is close upon the spot where one of the principal gates of the town was hung in the days when the burghers had so often to defend it with their formidable "staves" against the assaults of the English invaders. The company is incorporated under the Joint Stock Companies Act, with limited liability. The capital subscribed is 2,500*l.* The building, which was designed by Mr. Bell, architect, Glasgow, is in the old Scotch style of architecture, with cross-stepped gable and corbelled parapet. The Exchange Hall is placed behind the front building, and, when completed, will measure 70 feet by 36 feet within the walls. The contractors are Messrs. R. Turnbull, Nisbet, for the mason work; J. Thomson, Jedburgh, for joiner work; G. Charters, Kalemouth, plumber and slater work; and A. Smith, Jedburgh, plasterer.

**Glasgow.**—The estimates for the Town-hall buildings have been taken by Messrs. A. Hbertson

& Son, and their estimate, which includes plastering and plumbing work, is 2,368*l.* The plans have been designed by Mr. Lessells, architect, Edinburgh, and show a very plain front elevation of two stories, which is to be built of freestone. The estimate for the Corn Exchange has been given to Messrs. Stirling, at 786*l.* The latter building, which is expected to be finished by the 1st October, will also have a plain front. The length of the Exchange hall is 59 feet by 30 feet, and it is 22 feet in height to the tie-joints. It is to be lighted entirely from the roof.

**Alloa.**—At a recent meeting of the trustees of Alloa Harbour, the tenders for executing the excavations, masonry, and iron floating gate, of a wet dock for Alloa were examined. There were, it is said, seven estimates, all approximating within 200*l.* of each other, the probable cost being altogether somewhere about 7,000*l.* The trustees are said to be so satisfied with the estimates they have of the cost, and the practicability of the scheme, that there is almost a certainty that the undertaking will be immediately proceeded with.

PORTUGUESE RAILWAYS.

The group conceded to the Royal Portuguese Railway Company is composed of two lines, leading from Lisbon, on one side, to Badajos, and on the other to Coimbra and Oporto the second city in Portugal. These two lines have been carefully surveyed under the immediate direction of Mr. Wattier, engineer of the French corps of ponts and chaussées, and their total length is 480 kilometres; viz., in common to both lines, 110 kil.; from the junction to the frontiers of Spain, 153 kil.; the Oporto line, 217 kil. The concession is made for ninety-nine years, according to a public adjudication, which took place September 14, 1859, between the Government and D. Jose de Salamanca, and was ratified by a law on the 6th of May. Land is to be purchased, and works of art constructed, for a double line; but the earthworks are to be made for single line only at present.

By the sixth article of the statutes, the cost of construction, &c., of the railway, over and above the subvention granted by the Portuguese railways, is fixed at a lumped sum of 122,500*l.* per kilometre; wherein are comprised fixed and rolling stock, stations, workshops, tools, purchase of land, electric-telegraphs, and other accessories, all to be handed over in working order.

As to the state of the works, surveys have been completed for continuing the line from Ponte d'Assoca to Santarem, and the works commenced on many points: the foundations of the bridge over the Assoca are terminated, and the piers, constructed in England, are to arrive this month. The gauge of the line has been altered from 1.47 m. to 1.67 m., which is adapted on all Spanish railways. At Lisbon the quay is being prolonged to enable vessels to tie closer, and discharge or take in heavy cargoes with greater facility. From Santarem to the Spanish frontier the detailed surveys have been completed, and most of them approved of by Government. The large bridge over the Tagus has been wholly contracted for by an English firm, and 3,500 men are now employed on earthworks. The Lisbon and Oporto line (217 kil. total) joins with the above line at or near Ponte da Vedra. Between Oporto and Coimbra (110 kil.) the earthworks are contracted for to a considerable extent.

ONE OF MR. GYE'S FEATHERS.

In our number for December 15, 1855,\* we gave some particulars of a scheme proposed by Mr. Frederiek Gye, in 1842, for connecting different parts of the metropolis by means of a gigantic glass and iron arcade. It foreshadowed to some extent "Crystal Palaces," and included "an extensive flower market, constructed entirely of glass," such as the projector has since carried out, though not in connection with his proposed aid to metropolitan communication. Amongst other matters in that proposal, Mr. Gye put forth a plan for conveying letters and parcels inside tubes, by atmospheric propulsion, in the same manner as Mr. Vallance had proposed to propel passengers some years before at Brighton,—with this difference, that one suggestion was feasible, the other not. In one of our recent numbers, it will have been seen that a company has been formed for the construction of pneumatic tubes for the conveyance of despatches and parcels, including the mail bags of the Post-office; and it is but fair to give Mr. Gye the credit of this application of the exhausting idea.

\* Vol. xiii. p. 693.

## REST FOR THE WEARY.

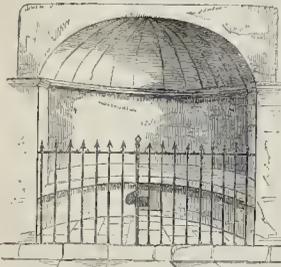


In these days there are few chances of rest in this great city: hurry, hustle, and drive, are the order of the day. Mourning coaches and hearses go at the rate of old stage coaches: goods waggons thunder along at the rate of seven or eight miles an hour: the man who walks, however swift and strong of limb, cannot keep pace with the times: old-fashioned persons who, like slow coaches, are pushed to one side, gravely shake their heads and wonder what will come of it. Once upon a time, city men, at about meridian, would take an hour or so for rest, and then the stuffy chop-houses and other places of substantial refreshment were thronged. Now, the same class of men rush into places gay, truly, with many decorations, but without sitting accommodation: here relay after relay of hungry men are supplied with various viands with a rapidity which is bewildering—no time for speech; and scarcely has the busy citizen passed in at one door than he rushes out *refreshed* at the other. In every street, in every office and place of business, the cry seems to be, move on.

Marvellous is the high pressure which is put on in this metropolis, while the size of the mighty engine is hourly increasing: the general machinery is becoming more rapid in its evolutions: steam and electricity are busy; and the fuel, in the shape of growing millions of people is working with a power which should tell upon the world. The operation is very consuming; men grow old before their time, and many become faint at the beginning of the race.

In summer's heat and winter's cold, the whirl still goes on; and it is to be feared that in the tumult we are liable to overlook many things which are duties. True, in these railway days we have new drinking-fountains from which threads of water dribble, but in the olden times there were also fountains erected at the cost of noble-minded individuals, from which copious streams rushed for the benefit of man and beast.

Provision was also made for the resting of the weary, and here and there, in places which did not interfere with the traffic, seats were provided and stands on which those with heavy loads might place their burden while they breathed. Some of these seats are in alcoves formed in the walls of churches, and in central places near thronged markets.



These are now locked up. Even the posts are spiked, and railed ways, which might afford the chance of a seat, bristle like the battlements of a prison. This is one of the oversights of the time. On many sites seats might be placed at little cost, and with great convenience. And might not the basements of street statues be fashioned without destroying the beauty and harmony of form, so that tired women and children might rest? We like to see living figures grouped closely with monumental sculpture. We made this suggestion long ago; and in Edinburgh, as we are told, it is about to be acted on. It is to be hoped that the want may be supplied elsewhere; and that even in the midst of the life-flood of London

we may see little harbours of refuge, similar to those of slower days, above which might be inscribed



## PHOTOGRAPHY AT THE BRITISH AND SOUTH KENSINGTON MUSEUMS.

It ought to be generally known that, at the last-named place, photographs of most of the objects there exhibited can be purchased at a small cost. This is a great advantage: many visitors, particularly those from the country, like, for educational and other purposes, to have representations of particular objects. Few have time to make careful sketches, and the photographs answer a most useful purpose. A similar plan might be adopted, with great advantage, at the British Museum.

We are told that, at the British Museum, there is an admirable photographic room and apparatus, and that formerly photographs were made of the various antiquities, which could be purchased at a moderate rate. It seems that the "negatives" have been sent to Brompton; and, on inquiry, persons will find a list of such objects in the British Museum as can be there had in photography. It would be an advantage, however, if persons who visit the British Museum could be supplied on the spot at a moderate rate with photographs of the examples of antiquity and art which crowd those galleries. Such an arrangement would be often the means of saving the time of artists; and, if they were well known that the public could be supplied with these, a very large demand would follow.

## FAVERSHAM ALMSHOUSES.

The trustees of the Faversham Public Charities are empowered by the Court of Chancery to expend a sum not exceeding 11,000*l.* from Henry Wright's Charity in erecting, on some eligible site within the town of Faversham, thirty suitable almshouses, containing accommodation for thirty poor persons, with a chapel adjoining.

There are twenty-five almshouses of the respective foundations of Wright, Napleton, and Mendild, scattered in various parts of the town, many of which are inconveniently situated and in a dilapidated state. These are to be sold as soon as the new ones shall be erected and fit for habitation, and the inmates will be removed to the new houses. The trustees have chosen part of Napleton's Orchard, containing 2 a. 0 r. 19 p., as the site, and they lately issued a general invitation to architects to submit for their approval designs for the new buildings. Accordingly, on the 31st of May last forty-five sets of designs were sent to the trustees, the greater number of which were of considerable merit. The trustees, after giving them consideration, and feeling their inability to come to a satisfactory conclusion without the assistance of an architect, called to their assistance Mr. Benjamin Ferrey, to examine the various plans.

The names of the competitors were concealed from the referee, and he was requested to point out which six designs he considered the most suitable for the trustees to make their selection from; but, after a conference with him, it was arranged that he should only explain which four he considered best. This he had no difficulty in doing. The trustees met him on the 21st instant, and heard his explanation of the merits of each of the four designs which he had selected, namely, a design marked "W. H.," which proved to be by Messrs. Hooker & Wheeler, of Brentley, Kent; a design marked "Invicta A.," by Mr. R. P. Pope, of Bedford-row, Gray's-inn-road; a design marked "B.," by Mr. William Webbe, of Victoria-street, Pimlico; and a design marked "N. S. A.," by Messrs. Newman & Billing, of Tooley-street, Southwark. After some discussion the trustees resolved to confine their selection to one of two out of the

four designs recommended by Mr. Ferrey, and they ultimately chose that submitted by Messrs. Hooker & Wheeler, and were then informed by Mr. Ferrey that he entirely concurred in their choice. Mr. Hooker designed the gardener's lodge in the recreation ground at Faversham, which has recently been completed under his superintendance. The whole of the designs were on the 21st, 22nd, and 23rd June thrown open to general inspection in the public rooms, an admission fee of sixpence being charged, to defray the expenses attending the exhibition.

## THE ISLINGTON REFORMATORY AND RAGGED SCHOOL.

DURING several years past this establishment, in Bryan-street, Caledonian-road, with very humble means and appearance, has been productive of much good. Within the last three years ninety-six boys have been admitted, thirty of whom have been placed in respectable situations, and are now honestly endeavouring to earn their own living.

The readers of the *Builder* need not be at this time told of the great necessity which exists for reformatories and ragged schools, and the advantages which result from them when properly managed. In Bryan-street the accommodation is not sufficient for the demand which there is in this district for the shelter of young boys, who are in the way of becoming hardened criminals. The building at present in use is a rough shed-like erection, which has an uncomfortable and somewhat dilapidated appearance, and it is not large enough for the proper accommodation of the 33 boys who are inmates of the Reformatory, and the 200 children who regularly attend the Ragged School, who are receiving useful and religious instruction.

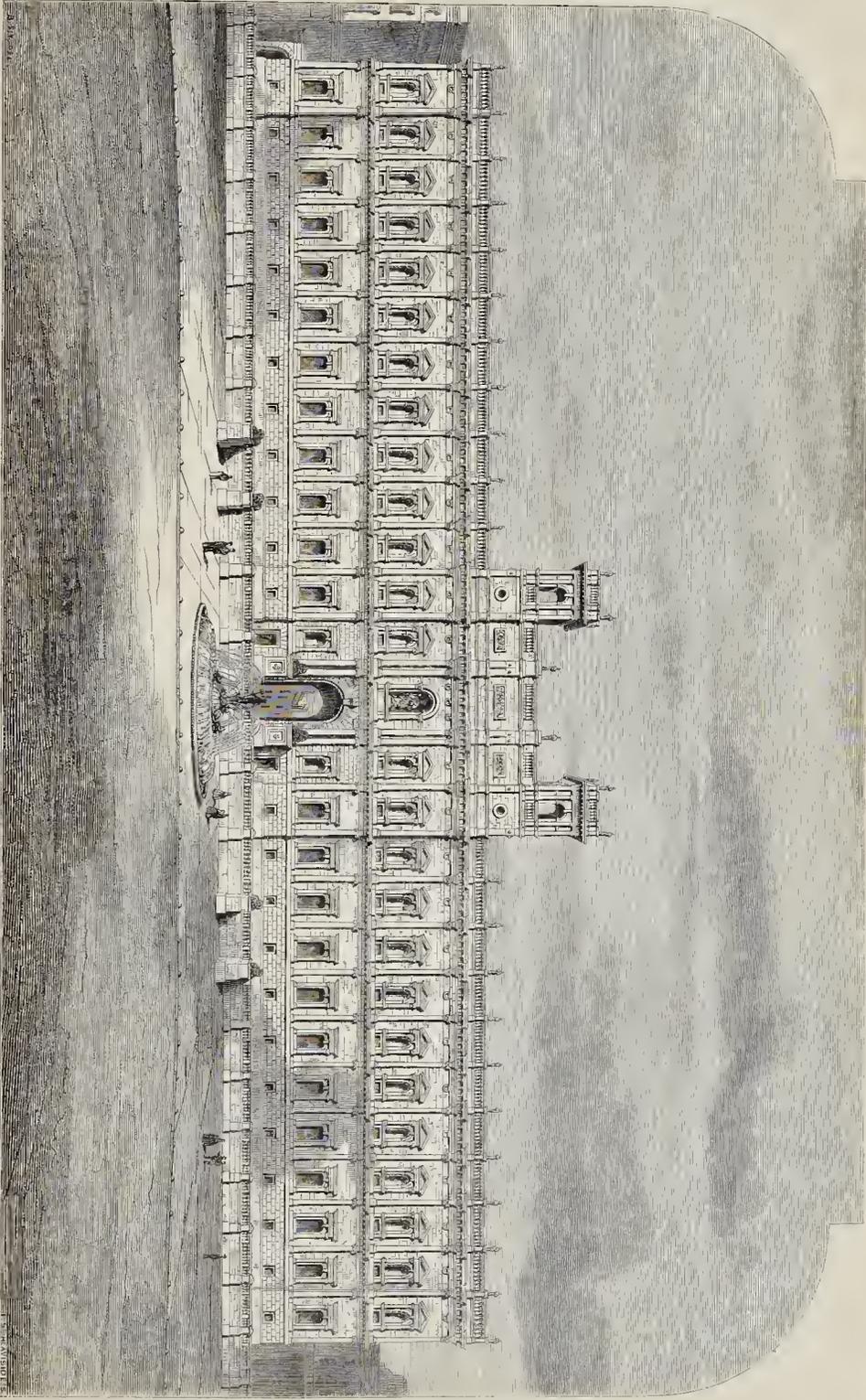
It is proposed by the committee to make a very urgent appeal to the inhabitants of the Islington district, and other friends of these valuable institutions, for the purpose of raising means to erect a plain but suitable structure, of such dimensions, that room may be found for 100 inmates in the Reformatory, and for 400 children in the Ragged School. Already 200*l.* have been collected for this purpose, but much more is needed before they can venture to commence operations. Here is a good work in which aid is needed.

## DESIGN FOR NATIONAL GALLERY AND ROYAL ACADEMY BY THE LATE SIR CHARLES BARRY.

In the notices we have given of our lamented countryman, mention is made of a design for the National Gallery, prepared by Sir Charles Barry, at the desire of Sir Edward Cust, to show the effect of a loftier building than that which was proposed, being of the same cubical capacity and expense. An etching was made of this design for private circulation, and from that we have made the accompanying engraving. A similar etching was made of the building proposed, and afterwards carried out, by Mr. Wilkins, and the two were privately circulated, in order, as it appears from a MS. note on the copy which has come into our hands, "that a feeling might be thereby created in the public mind sufficiently decisive and unanimous to induce the Government to require of Mr. Wilkins another design for a loftier structure than that which he at present proposes, and on such a plan as would ensure an uninterrupted view of St. Martin's Church from Pall-mall East, and, further, a direct communication with Castle-street." In Barry's plan the building was set back to show the whole of St. Martin's portico, and the central opening in the façade led to Castle-street.

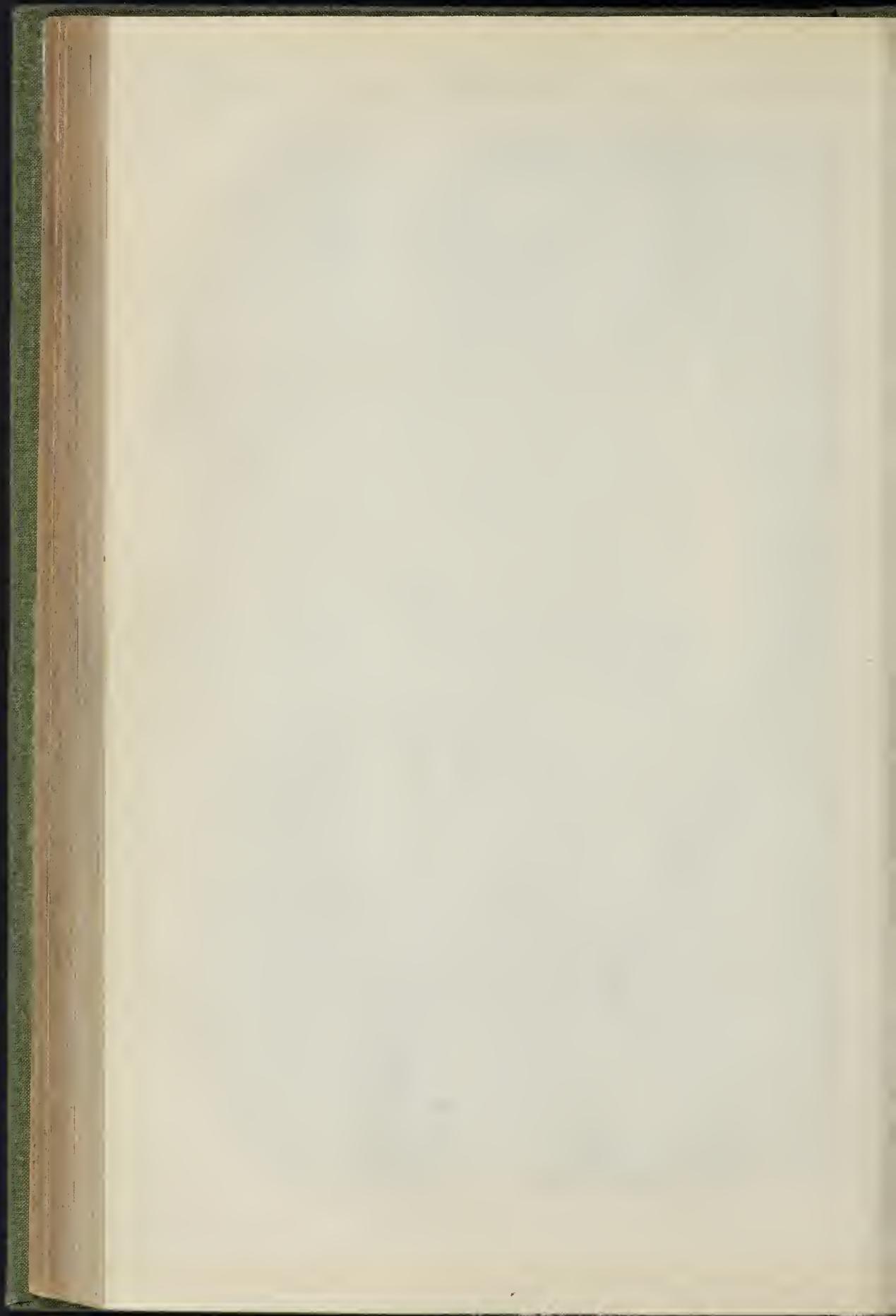
We may add that Sir Charles was engaged on the subject of our National Gallery up to the day of his death, and his matured ideas (which differed considerably from those previously entertained by him) are only expressed by some small sketches. The improvement of the existing structure was an ever-present idea with him, and he was very anxious to see something in Trafalgar-square worthy of its fine position.

THE LEAD TRADE.—From the annual statistics of imports and exports of metals it appears that in 1859 we imported 23,620 tons of pig and sheet lead; 2,100 tons of lead ore; 1 ton red lead; and 162 tons of white lead. During the same period we exported, of British lead ore, 197 tons; pig and rolled lead, 18,414 tons; shot, 2,157 tons; red lead, 2,641 tons; white lead, 3,624 tons; and of foreign lead ore, 1094 tons; pig and sheet lead, 403 tons; and white lead, 52 tons.



DESIGN FOR THE NATIONAL GALLERY: BY THE LATE SIR CHARLES LANE.

W. & A. KILGOUR, LONDON.



THE ORPHEONISTES IN THE CRISTAL PALACE.

The Orpheonistes, between two and three thousand in number, duly arrived, as was anticipated, and in their performances have given extreme pleasure to all who heard them without extravagant anticipations. Anything more charming of their kind than *Les Enfants de Paris*, *La Re traite*, or the *Chant du Bivouac*, we never listened to. These singers possess a rare appreciation of the value of light and shade,—of piano and forte, and produce some marvellous effects in consequence. We are glad to hear that an additional performance will be given on, this, Saturday, and we advise such of our readers as love singing not to lose the opportunity of hearing the orpheonistes. Considering the large body of Frenchmen whom they represent, as many as 200,000, it is stated, spread all over France, we should be glad to hear of some compliment to them on the part of the Court. Is there any reason why the Queen should not honour them with her presence on Saturday? The courtesy would not be lost on our impulsive neighbours. At present little, if anything, has been done for them, notwithstanding the advertisement of an imposing committee, but it is to be hoped their visit may yet be made agreeable to them.

We may mention that the great orchestra has received some fresh decorations. In panels running round the back of it is fixed the name of each department of France in which the members of the musical societies are resident. Between each name is a large gilt eagle, surmounted with tricoloured flags, the intermediate spaces being filled in with tricoloured escutcheons or shields. Wreaths of evergreens and flowers, and groups of palm trees and exotic shrubs occupy the lower portion of the back of the orchestra, interspersed with which are busts of celebrated men of France.

In front of the organ some slight emblematic devices are placed: and the banners of the various societies help to produce an effect of a pleasing character.

SCHOOL-BUILDING NEWS.

*Sherborne.*—The first stone of the new building for King's School, according to the *Sherborne Journal*, was advertised to take place on June 26th. The new building, now commenced, is to stand at the east side of the quadrangle, of which the church forms the south, and the school-room, chapel, &c., the west. It is to provide a school-house, and accommodation for the boys who are boarded therein, and will be connected with the opposite side of the court by a covered cloister. The Earl of Shaftesbury was to lay the stone. The architect is Mr. Wm. Slater.

*Worcester.*—A new school has been erected at Whitlington, near this city, by Messrs. Hemming & Son, from the design and under the superintendence of Mr. Perkins, the architect to the Dean and Chapter of Worcester. The site is nearly opposite the Swan Inn. The style is Early Pointed. The walls are of parti-coloured brick, with Bath stone dressings, and the roof is covered with different coloured tiles in pattern. The plan contains a school-room to accommodate sixty children, a class-room, and a porch. The school-room has an internal area of 36 feet 6 inches by 17 feet, and the roof is open-timbered. Externally the height to the top of the wall is 11 feet 6 inches, and about 40 feet to the top of the ridge. The room is lighted by a large three-light window at each end, and by a two-light window in the wall beneath the turret. The class-room has an internal area of 12 feet by 10 feet, and the porch 7 feet by 7 feet. Mr. G. Rogers, of College-yard, has presented the committee with a window in stained glass for the east end; Mr. Doe, of High-street, giving the central subject, which is Christ blessing little Children.

*Wednesbury.*—The foundation-stone of St. James's Schools, Wednesbury, has been laid on a plot of ground contiguous to the present building. The present schools, which have been erected about fifteen years, were constructed to accommodate 250 scholars, but are now crowded with about 400 children. The estimated cost of the new building is 1,400*l.*, of which 1,200*l.*, including the Government grant of about 600*l.*, have already been collected. In the erection of a portion of the present school will be added to the new building, and the existing Infant Schools will be converted into a dwelling for the master and mistress. The architect is Mr. J. H. Palmer, and the builder Mr. B. Stevenson, both of Wednesbury.

*Oughtibridge (Sheffield).*—The total cost of the schools here, lately noticed, will be 1,400*l.*

*Kirkburn.*—A school for 130 children is about to be erected at Kirkburn, near Driffield. The building, comprising a school-room, master's residence, class-room, &c., will be of red brick, with Mexbro' stone dressings in the Tudor style, with bell-tower. Mr. R. G. Smith, of Hull, is the architect. The cost of the building will be 750*l.*; and Messrs. Simpson & Malone, of Hull, are the contractors.

*Scarborough.*—National schools have just been completed at Scarborough. They are of Gothic design, built with white bricks of a mellow tone, relieved with stone dressings to the windows, &c., and with red, brown, and white bricks disposed in bands around the building, and in relieving arches over the stone heads to the windows. The boys' school-room has an open timbered roof, with arched ribs. The schools are provided with desk and form accommodation for about 600 children, with separate class-rooms for each school. There is a large infants' school on the ground floor, over which is a residence for the master and mistress. Stone staircases lead to the upper floor. Between the boarding of the upper floor and the ceiling below it, the space is sound-boarded and plugged with mortar, to prevent the transmission of sound. The boys' and girls' schools are each upwards of 62 feet long, with a transept; and the infants' school about 50 feet by 45 feet. Mr. Kirby, of Scarborough, is the chief contractor for the works. The architect is Mr. Ewan Christian, who in 1849 restored the old parish church of St. Mary, Scarborough. Mr. W. H. Espenpet, one of his clerks of works, has had the direction of the building operations.

HOUSE BUILDING OPERATIONS IN THE NORTH OF ENGLAND ABOUT FORTY YEARS AGO.

EVEN to a casual observer it is obvious how much the neatness of the manner of executing this important branch of industry has increased during the last forty years. At the time stated, even in large towns, the erection of houses in the district mentioned was of somewhat rare occurrence, and the work was executed in a leisurely way, which contrasts in a remarkable manner with the rapidity with which it is now done. Doubtless, however, the work was more substantial, and both bricks and mortar were of a better description than are now generally used. On the laying of the first rafter of the roof it was celebrated by flying colours from the chimneys, and a supper, generally supplied by the proprietor, called "The raising supper."

Then works were but seldom carried out on such an extensive scale as at present, and there were a greater number of masters, who were men in comfortable but unassuming circumstances, who followed the trades of stonemason, bricklayer, carpenter, joiner, plasterer, slater, painter, &c. All were kept remarkably distinct, particularly in the towns. It was the almost universal custom for the masters to meet the men at some public-house, for settlement on the pay-night,—a practice which led to much evil and irregularity.

Then but few Irish labourers had begun to fill the office of hodman, and several women were engaged in filling the duties which are now performed by so many thousands of workers from the sister country. Singular to relate, the employment of women, in such masculine and to them degrading work, did not seem to attract much general notice or objection. But then, in other ways, females were engaged in other unlit labour, such as the grinding with large boulder stones, sand, and carrying it for sale on their backs for long distances. Women were also to be seen regularly carrying the sheep and quarters of oxen from the shambles to the market-place. To the rising generation in England this will rightly be considered brutal and degrading toil.

When observing the manner in which old buildings are removed in the metropolis, it seems strange to look back to the manner in which this operation was performed formerly: now that every brick of a worn-out dwelling is numbered and valued; doors, windows, staircases, flooring, and, in fact, every part, is appointed to fresh uses, showing the truth of the adage, that "In old things there are new." The waste which formerly took place seems surprising. Great walls were demolished with hattering-rams, and by gangs of men tagging with ropes; the scene more resembling the demolition of a city by hostile invaders, than the orderly proceedings which are now observed on these occasions.

Fresh inventions are constantly coming into use. In great works, steam and hydraulic cranes and

railroads, at a great height, are prepared for raising materials, and it may be noted that contrivances are being brought into operation for lifting bricks, &c., which would seem to render the uncomfortable-looking operation of ladder climbing, with heavy loads, unnecessary; and it may be before long that the Irish labourers, incessantly climbing and descending with the load, may, like the female labourers above referred to, be requiescences of the past: they will, however, find employment for their energies in more useful ways, both to themselves and the community.

VIATOR.

CIVIL AND MILITARY BARRACK BUILDERS.

SIR,—Permit me to offer a few remarks on Mr. Sidney Herbert's statement in the House of Commons a week ago, to the effect that the barracks constructed by the Royal Engineers were much cheaper than those designed by civilians, giving as examples the barracks at Devonport, built by the Engineers for 70*l.* per man; at Preston, 80*l.*; Gloucester, 91*l.*; Aldershot, 51*l.*; and Berwick, 61*l.*; whereas the civil designs would have cost 141*l.*, 200*l.*, and 212*l.* per man.

Now, I presume that Mr. Herbert alluded to the designs called for at the recommendation of the Barrack Committee of 1855, when civil architects were invited to compete.

The instructions issued on that occasion, it was easy to perceive, were got up at the suggestion of parties who did not want the civilians to meddle in the construction of barracks; and, consequently, the profession were led into the belief that the Government required something after the manner of a palace, instead of the barn-looking buildings called barracks, for they were to have enclosed passages, and parades, and goodness knows what, all covered with glass, which, of course could not be constructed for anything like the cost of a simple barrack.

Therefore they were never executed, and the public have been persuaded how much cheaper than the civilians the Engineers can do the work.

I venture to state, however, that these civilian designs which were to cost 141*l.*, 200*l.*, and 212*l.* per man, would not have been carried out by the Engineers for twice these sums.

The facts quoted by Mr. Herbert are sufficient to condemn the whole system; for, leaving Aldershot out of the question, which are wooden huts of the most miserable description, and more like sieves than barracks, the lowest cost per man for which the Engineers execute barracks is 61*l.*; and as there are usually ten or twelve men in a room, each room costs the country at least from 600*l.* to 700*l.*

I question if a royal palace could not be built at this rate; and yet these buildings are of the plainest and meanest description, badly constructed, and in defiance of all architectural rules. The whole thing is monstrous. CIVILIS.

THE LINCOLN DIOCESAN ARCHITECTURAL SOCIETY.

THE visit of the Lincoln Diocesan Architectural Society to Workop has taken place, and is said to have been a very successful one.

The dinner took place in the Corn Exchange. The Rev. H. Gray read a paper on "Bolsover Castle," and Mr. Trollope followed with one on "Monastic Walls and Gate-houses."

The proceedings of the next day commenced with a public breakfast at the Lion Hotel, the headquarters of the society, to which many gentlemen sat down; and the excursionists left shortly after ten o'clock, occupying twelve carriages, which were speedily joined by many others. On leaving the town, in a westerly direction, the party entered Derbysire, and in the course of two or three minutes passed into Yorkshire, to the west of Shireoaks. The first stoppage was at Thorpe Salvin, a village about six miles from Workop, where half an hour was spent in inspecting the Norman church. Near this place is the Anston stone quarry, which furnished the materials for the Houses of Parliament. The visitors then proceeded to Loughton-en-le-Morthen, where they partook of luncheon at the inn, and then walked as far as the village church. A visit was next paid to the cartwork at Loughton, where the Rev. E. Trollope read a short paper on this remarkable work. The journey was shortly afterwards resumed, and the pleasant grounds of Roche Abbey were reached, where a paper was read respecting its interesting ruins, in which about an hour was spent, when the party proceeded to Carlton, in Lindrick, where half a dozen

Thames had manors and halls during the Saxon period. After visiting the church and other points of interest, they proceeded to Workshop, where dinner was held in the Corn Exchange. About 150 members and friends were present. Afterwards the company adjourned to the Museum, on which the Rev. E. Trollope lectured.

From the paper on Roche Abbey, as reported at length in the *Dorchester Gazette* (though without the name of the author), we take the following extract:—

"If you examine carefully the surface of the walls, you will notice three things. 1. That they have everywhere been plastered over, that false joints have been painted in black, and that the mouldings have been painted of an orange colour. This may be best seen in the south transept. 2. You will notice that upon the face of each stone the mark of the mason who cut it may still be discovered. These marks to me seem to possess more than an ordinary interest. Each stone, with its monogram, is a memorial tablet to an individual, who assisted in the building of the abbey, in the latter part of the twelfth century. More than thirty different masons' marks have been found on these stones. Yet seven hundred years ago this band of masons cut the stones, and the mason's monuments more durable than painted glass or polished marble! Where are the richly sculptured and painted epithets of the founders of the abbey?—Maud, Countess of Cambridge, and others? Broken, lost, and nameless! The poor mason's tablet has outlived them all! But there is, I am sorry to say, still one more thing noticeable on these elegantly carved stones, and I do not bring this subject before the present company, thinking it applies in any way to them, but in hopes, should any reporter be present, that he will give publicity to what I am about to say. I allude to the vice and vulgar practice of cutting names. What pleasure can there be in hacking the fair surface of these walls, and obtruding upon the eye of the stranger names as unknown as they are uncareful for? What gratification can be derived from 'Jinks, Leicester'—whose name and address are carved in full, younger—what satisfaction can it be to him to write his name there, when every intelligent person who sees it comes to the conclusion that he must be a vulgar and silly snob, with taste as execrable as his carving?"

COMPETITION.

*York and Ripon Diocesan Schools.*—Various designs were submitted in competition for the York and Ripon Diocesan Female Training Schools. From these the building committee have selected one by Messrs. J. B. & W. Atkinson, of York, architects, for adoption.

THE NINE HOURS' MOVEMENT.

Sir,—Considering the very able manner in which this subject was treated (during the great struggle of last year) in your valuable Journal, and by several very eminent writers in the daily press, it is doubtful whether any thing new remains to be said or written: the momentous interests at stake, however, induce me to offer one or two suggestions which you may possibly consider worthy a place in your next issue.

It is admitted on all hands that the value of labour, like other marketable commodities, is regulated by the law of supply and demand. If the latter exceeds the former, labour will be dear; if the former exceed the latter it will be cheap. It is clear, therefore, that, unless the promoters of this movement are in a position to prove that at the present time the building operatives are fully employed, their proposal is at least ill-timed, and cannot be looked upon with favour.

It is true that the leaders say their demand is for a shortening of the hours of labour, or more strictly shortening the length of the working day by reducing the number of hours from ten to nine; and this boon they ask at the hands of the master-builders, not because ten hours' manual labour is too severe a tax on their physical powers, but because they have now no opportunity for mental improvement.

If this were the sum total of their demand, there would, I apprehend, be no practical difficulty in the case; and if it be proved that the number of unemployed artisans form ordinarily a fifth of the whole, as is probably the case, their proposal would be a reasonable one,—perhaps, indeed, none better could be made.

When, however, the workmen say to their employers, shorten our day by one hour, but give us the same wage as at present, it is peculiarly characteristic the movement otherwise than as one for an increase of wages.

My object in writing, however, is not to discuss the propriety of the movement, but, assuming for the nonce that it is rational, to suggest a compromise. London mechanics command usually 5s. 6d. per day of ten hours, or a trifle more than 54d. per hour; they ask 5s. 6d. for nine hours, or a trifle more than 74d. per hour. Let the master-builders agree on and after, say Midsummer day, or any other early date that may be agreed on, to cease paying workmen by the day, and thereafter to pay mechanics 7d. and labourers 6d. per hour during the working day to be ten hours during the summer months, and eight during the winter.

I have long been of opinion, however, that the present system of payment to artisans, especially as opposed to equity, expediency, and sound policy; inasmuch as he who is lazy and incompetent obtains the same wage per day as he who is industrious, ingenious, and skilled. The obvious remedy for this state of things would be to employ workmen by the job or piece in lieu of by the day in all cases where it is practicable; and it would be so as to nearly the whole of the work prepared at the bench, as well as the greater portion of the fixing of new work, alterations, repairs, and exceptional new work, most of course be paid for according to the time occupied, and, as I would suggest, by the length.

The advantages of this reform would be manifold and obvious: the employer would have ample opportunity of classifying his workmen, and thus every man would be paid according to his merit. Such a time would be more satisfactory than the present system, both to the employer and employed: none, indeed, could complain except it be the first class of workmen referred to, viz. the idle and incompetent; but in the interest of these I do not write,

except to advise them henceforth to emulate their competitors, whose condition would doubtless be benefited by the change. WILLIAM EDWARDS.

BUILDERS' ACTIONS.

PENALTIES FOR TIME.

*Thornhill & Son v. Neale.*—*Count of Common Pleas, Westminster.*—This was an action by a builder (Acted June 22nd) to recover 1,173*l.* The plaintiff pleaded that the buildings were to be completed by contract within a given time, and that the plaintiff had not finished them in that time, and had incurred 7*l.* as penalties by way of liquidated damages, which he claimed to set off. The plaintiff replied that the defendant had, after the contract, required certain alterations and additions to be made in the buildings, and that by reason thereof it was impossible, as the defendant knew, to finish the buildings in the stipulated time. There was a demurrer to this replication.

Mr. James Grant appeared for the plaintiff, and Sergeant Kinglake for the defendant.

The Court held that the replication was good, and that the plaintiff was entitled to recover; and that there had, by the subsequent agreement as to the alterations in the buildings, been a waiver of the original contract as to the time when the buildings were to be completed.

Judgment for the plaintiff.

"LIGHT AND AIR."

*Court of Common Pleas, Westminster.*—On the 21st day of the court was occupied during a great portion of the day in trying the question whether the new building in the course of erection for a hotel at the corner of Berkeley-street and Piccadilly materially obstructed the light and air to which the plaintiff, the occupier of a neighbouring house, was entitled by a lease.

The table of the court was covered with models and plans of the most elaborate and expensive description, and the trial seemed likely to last for a considerable time.

Mr. Bovill, who acted as the advocate for a series of witnesses, who proved distinctly that his property was greatly deteriorated in value.

At the close of his case, however, the jury said that they had no objection to the new buildings (having a view of the premises) that the new buildings were not detrimental to his light or air.

Mr. Chambers, Q.C., was therefore not called on to give evidence, and a verdict was entered for the defendant.

The learned judge observed that one view was better than fifty witnesses, who, having given their opinion in favour of the plaintiff, would be met by fifty other witnesses who would give theirs for the defendant.—Verdict for the defendant.

DECISIONS UNDER METROPOLITAN BUILDINGS ACT.

*Woods Buildings.*—At the Westminster Police-court Mr. P. B. Simpson, of Cremorne Gardens, appeared before Mr. Arnold to a summons taken out by Mr. Samuel Beachcroft, surveyor of the district of Chelsea, for that he being the builder engaged in erecting buildings situate in Cremorne Gardens, neglected to give him, the said surveyor, two days' notice before such building was commenced, contrary to the statute, by which neglect he had rendered himself liable to a penalty of 20*l.*

Mr. Alfred Williams, clerk to Mr. Beachcroft, proved that the building was a polygon, about 108 feet in diameter, and at each angle nooks were let into the ground 4 feet, varying from 34 to 26 feet in height. At the top of the building there was to be a cupola, and the roof was to be covered with asphalted felt. In the centre of the structure was a railway, the form, about 6 feet from the ground, and the public were admitted to it by an inclined ascent.

Mr. Rawle, on the part of the owner, said he was prepared to show that the structure in question did not come within the interpretation of the word "building," as contemplated by the Act, as this, after being erected, could speedily be removed, and be placed in another position. It was a structure that was easily removable, and, he considered, not such a one as was contemplated by the Act as a building, any more than could a dancing booth, or any large tent for the exhibition of shows at a fair. After a long argument,

Mr. Arnold observed that it was a case of some importance, and that before he gave his decision he should take an opportunity of going to the Gardens, and seeing the "building" in question.

On the 26th inst. Mr. Arnold gave his judgment. He said he was of opinion that this case must be decided upon the same principles as had influenced his decision in the case of the Marionette Theatre at Cremorne in 1857, as it fell within the rule then laid down that the word "building" meant something of a permanent structure, permanent, at least, as regarded its component parts. In some respects, however, this case differed from that of the Marionette Theatre, inasmuch as this structure was somewhat of a more permanent character, as it was supported on piles or uprights fixed in the ground, all the other parts being screwed or fastened in by plates. The piles, however, remained as scaffolding poles by aid of chains of iron, it was not necessary to dig away the soil. He had been at great pains to examine the building at Cremorne Gardens, which was called the Stereorama, and the conclusion he had come to most certainly was that the theatre had the most great appearance of solidity and permanency, and much more resembled a building, than the present structure, and consequently came much more within the Act, for it had pits and galleries, and was capable of holding several hundred persons at once, while the Stereorama had no seats, and, although a large structure, would only accommodate a few spectators at once. He, then, his decision as to the Marionette Theatre, was correct—and he must say he entertained some doubt as to whether it was—that decision must govern the present case. The same difficulty presented itself as in the case of the theatre, viz. a structure made of wood and canvas was a building, it must, to comply with the Act, be pulled down and rebuilt with brick, or, to put the matter strictly, a building of wood and canvas must be made of brick. It was not necessary to repeat that the Act was most explicit: it was quite as intelligible to lawyers as it was to laymen, and of all laymen he certainly believed it was least intelligible to builders themselves. The decision, however, he had come to was, that

this was not a building, and the summons must, therefore, be dismissed. Mr. Arnold amongst them, seem bent on increasing the difficulties to which he alludes. It a building in which the public are to assemble be built with brick walls and proper arrangements, it comes within the control of the district surveyor and the Building Act: if it be put together of wood, and be, possibly, in every respect of the most dangerous character, the provisions of the Act are not to apply, and the lives of the public must be left to chance.

THE "BUILDERS'" LAW NOTES.

*Bill of Exchange.*—An action was brought on a bill of exchange drawn by the plaintiff and accepted by the defendant, payable to "the treasurer for the time being of the Commercial Travellers' Benevolent Institution." It was held by the Court of Common Pleas, on argument, that the bill was bad for uncertainty, for that it must be at the time of drawing clearly ascertainable who is the payee under the instrument.—*Tates v. Nash.*

*Misrepresentation.*—A house-agent induced a person to buy the goodwill of a certain public house on a misrepresentation of the "takings" of the house. The purchaser, finding himself deceived, sued the vendor, without notice to the agent, for the deceit; but failed, as he could not show that the mis-statements of the agent had been authorized. He then sued the house-agent, and obtained a verdict for the loss sustained by the re-sale of the goodwill, and a sum for personal loss and inconvenience, and also the costs of the unsuccessful action. The last part was struck out on argument before the full court, as the action was not directly caused by the house-agent, but might have been avoided if he had got notice.—*Richardson v. Dunn.*

*Lands' Clauses Act.*—A railway company sought to take a house to which were attached a shrubbery and several gardens, separated by walls, but having a connecting path through them. It was held that the term "house" meant all that would pass under the ordinary conveyance of a house, and that the company were bound to take with the house the shrubbery and gardens.—*Hewson v. The Great Western Railway Company.*

*Building Society.*—A dispute between a member who denied his liability under the covenants in his mortgage deed to pay subscriptions and fines was held not to be a matter in dispute within the meaning of the rule of the society that required all disputes between the members and the society to be referred to arbitration.—*Farmer v. Giles.*

*Half-Notes.*—A person sent half-notes to pay an account for a third party, but before sending the second halves he found, by altered circumstances, that he was not the party who ought to pay the account. It was held, in an action by him for the first halves, that he was entitled to them; for that, until payment was complete, property in the note remained with the sender.—*Smith v. Munday.*

CHURCH-BUILDING NEWS.

*Lincoln.*—The work of restoring and renovating the west front of Lincoln Cathedral, according to the local *Chronicle*, proceeds satisfactorily. The Early English porch has been recently opened out. The columns, which are of Purbeck marble, in places where they have not been exposed, are in a good state of preservation, and to the touch are smooth and polished.

*Long Sutton.*—Sutton Church has been restored. The restoration is of a plain character, with little ornament. The clustered pillars built in moulded brick, owing to the damaged state in which they were discovered when stripped of stucco, have been again covered with a coat of cement. The chief work has been expended on the chancel, which has been restored entirely by the Vicar and Lay Improvers of Long Sutton. Here the architect, finding no structural character worth preservation, has given the building the architectural character of the tower. A lofty roof has been erected, and three decorated windows have been inserted. The interior has been furnished with plain oak stalls, and the eastern end raised and paved with Milton's encaustic tiles, relieved by white marble slabs. A large gallery which obscured the lofty arch has been swept south aisle, previously boarded off as a vestry, has been thrown open to the church. Five new windows, designed to correspond with the few remaining old windows, have been inserted. The entire area of the church has been resented in stained pine. The gable of the porch has been rebuilt, and a small vestry has been erected on

the north side of the chancel. The restoration of the chancel is from the design of Mr. Wm. Smith, of London. The woodwork has been principally executed by Mr. B. Ballerban, of Wisbech, who has presented the carved oak lectern; and the stowwork of the chancel, including the credence table, is by Mr. Lawrie, of Downham. The remainder of the work has been executed by Messrs. Warwick, mason, and R. Carbut, builder, Long Sutton; and by Messrs. Cunningham & Harrison, carpenters, Luton. The total expense will not exceed 750l.

**Little Cawthorpe (Louth).**—A new church has been erected and opened here. It is built entirely of brick of light colour, striped horizontally, with black externally and with red in the interior. Its roof and spire are covered with slate. The east window is of stained glass, the centre light of which contains a medallion representing the Crucifixion, and another smaller one at the apex of the window gives an emblematic representation of the Trinity. Mr. J. R. Withers, of London, has been the architect, and his designs have been carried out by Mr. C. Clark, builder, of Louth.

**Ipswich.**—The foundation stone of a new Wesleyan chapel has been laid in Museum-street. Mr. William Pretty headed the subscription list with 1,000l. The new chapel will seat about 1,050 persons, the inside dimensions being 76 feet by 46 feet. The width is divided into three spans by timber arches carried upon iron columns, the centre arch being 40 feet high from the floor, and the side arches over the galleries 25 feet in height. The front towards Museum-street will be faced with Kentish rag-stone and Caen stone dressings, the details of the windows and other decorative portions being of the early Geometric style of English Gothic. The centre entrance will be through an open arcade of three arches, 15 feet high, and on each side are stone staircases, which lead to the galleries. In the rear of the chapel will be six class-rooms and a school-room above (level with and communicating with the galleries) capable of seating 300 adults. Mr. John Wright has undertaken the contract for the whole work, at 2,000l., from designs prepared by Mr. Frederick Barnes, architect. The other tenders received were from Mr. Luff, 2,200l.; Messrs. Warswick & Morphey, 2,240l.; and Mr. Gibbons, 2,549l. 10s.

**Colchester.**—The north aisle of All Saints' Church is to undergo a complete restoration internally. The façade consists of six bays, five of which contain large three-light perpendicular windows. The whole is crowned with an embossed battlement, in which red brick is to give way to flint panelling. There are three enemies to contend with here,—the decay of nature, Puritan zeal, and the "taste" of the "good old times." The nave and chancel were restored in 1854. The architect is Mr. Henry W. Hayward, and the contractor Mr. W. Bremer.

**Uppingham (Rutland).**—The estimated cost of restoring and re-opening the church of St. Peter and St. Paul, Uppingham, is about 4,000l., of which upwards of 3,000l. have been promised. It is proposed to remove all the ill-arranged galleries and pews, widen the north aisle, lengthen the nave one arch, provide new roofs and seats for the whole building, and thoroughly repair the tower and spire. The architect is Mr. Henry Parsons, of London, who restored Riddington church.

**Banbury (Oxon).**—The buildings in connection with the Banbury cemetery are now completed. The grounds in which they are erected are in extent about five acres. The chapels are detached, and are in every respect peculiarly similar, containing a *porte cochère*, or covered way, a nave, and a chancel. The elevations assume the style of the twelfth century. The sides of the nave are gabled, having triplet windows, by which means the effect of transepts is gained. The carving is a copy of the natural foliage and flowers found in the cemetery grounds. The interior is paved with ornamental tiles. A bell turret is provided to each chapel upon the west gable. The lodge for the sexton is built upon a raised and sloped terrace. This building is of the same style as the chapels, but built entirely of brick. The contractors are Messrs. Orchard, of Banbury; and the architect is Mr. C. H. Edwards, London.

**Preston (Ladbury).**—The ancient fabric of the church in this small place being in a dilapidated condition, its restoration and enlargement were resolved on. The chancel has accordingly been restored, and fitted for the occasion with stalls. An aisle has been added to the church on the south side of the nave with a lean-to roof, the arches and columns belonging to the Early English period. The whole has been re-seated with

oak open benches. The font, of Early English character, is the gift of the labourers and children of the parish. Mr. Huggall was the architect employed.

**Newport.**—We are asked to mention that the Maiden's window, at Newport, was both designed and executed by Messrs. Lavers & Barrard.

**Devizes.**—The parish church of Beechingstoke, in Devizes, which is in a dilapidated state, is about to undergo restoration, consisting of new open roofs to nave and chancel, entire reseating, new pulpit, font, and screen to chancel, new bell turret, and sundry door and window restorations. The chancel will be restored by the rector. The works are to be carried out under the superintendence of Mr. S. B. Gabriel, architect, of Bristol.

**Cheltenham.**—The tender of Mr. J. Acock, of Cheltenham, for the erection of St. Mark's Church, in this town, for 2,880l., has been accepted. Mr. Acock's tender was about 20l. under one sent in by Mr. Darby. The contract binds Mr. Acock to complete the erection within twelve months, and he has commenced operations.

**Cardiff.**—The foundation-stone of St. Andrew's Church, Cardiff, has been laid. This is the sixth new church for Cardiff and its suburbs. The new site is in Windsor-street, Crockerbottom. The architects selected to prepare the plans, &c. are Messrs. Pritchard and Seddon, of Llandaff. Mr. T. Williams, of Canton, is the builder. The church will consist of a nave 80 feet by 32 feet, with narrow aisles on either side, a west porch, and a chancel, with vestry and heating chambers on either side. The chancel will be 36 feet by 18 feet. The height of the edifice to the ridge of the roof will be 63 feet. The east window will be the largest in the town: it will be lighted with five lights with tracery on the head, and will be 53 feet high. The church will accommodate 583 persons in all, and a large portion of the sittings will be free. It has been so arranged that the whole of the congregation will be accommodated in the area of the nave, the aisles being merely passages to the pews. By this means the seats will occupy all the best parts of the church, and their occupants will not be incommoded by pillars, as is usually the case. The church will be lighted by clerestory windows above the aisle roofs. The building will be so arranged as to permit of a tower and spire being added. The architecture will be of a simple type, of geometrical decorative Gothic. The walls will be built of Newbridge sandstone in courses, relieved by pebbles and bands of other stones.

**Birmingham.**—A new congregational chapel is about to be erected at the junction of John-street with the Moseley-road, Balsall-heatb. The plan of the edifice is in the form of a parallelogram, being 42 feet 6 inches wide and 77 feet long on the ground-floor. A gallery is placed over the principal entrance: there are also side galleries, containing three tiers of seats, extending the whole length of the building. The accommodation provided is for 870 adults and 150 children. Two vestries, with offices, are arranged at the rear of the chapel. The principal feature in the front elevation is a double central entrance, the arches being supported by circular Bath-stone columns, with carved and foliated caps, over which is a range of double lancet windows, extending the whole length of the principal front: there is also, at either angle, a turret, 70 feet high, which contains a staircase leading to the gallery. The style adopted is Early Pointed in character; the materials for the facings being red bricks, with Bath-stone dressings, and blue and white bricks and tiles worked in bands, patterns, and arches. The roof will be covered with slates. The whole of the seats are to be open, of deal, stained and varnished. The work is about to be carried out under the superintendence of Mr. Edward Holmes, of this town, architect, by Mr. Charles Jones, whose estimate has been accepted for the work. The entire expense to be incurred will amount to upwards of 3,000l. (including a sum of about 560l. for the land).

**Wigan.**—For the restoration of the Parish Church tower, the amount of subscriptions already promised is upwards of 700l. The plan proposed to be carried out has been prepared by Mr. Paley, of Lancaster, architect.

"CLASSIC OR GOTHIC?"—Mr. F. R. Wilson has published photographs of his drawings under this title, which are exhibited in Conduit-street, and were described by us at some length in our notice of the Architectural Exhibition. The photographer is Mr. F. Ordish, of Brompton.

RECENT PATENTS CONNECTED WITH BUILDING.\*

**MATERIALS FOR BRICKS, &c.**—*W. Blinkhorn*, Sutton, near St. Helen's, Lancashire. Dated 19th November, 1859.—According to this invention, which is entitled "The novel application of certain materials to the manufacture of bricks, quarries, or tiles, to be employed principally in the construction of furnaces as 'fire-bricks,'" the material to be employed chiefly is the waste sand from grinding plate-glass, either alone or in combination with clay, lime, or oxide of iron, or mixed with a small quantity of pulverized quartz. The material for tiles is chiefly "spent gypsum," from the polishing of plate-glass, either alone or in combination with the above-named materials.

**MOULDING AND PRESSING BRICKS.**—*W. E. Neoston*, Chancery-lane, London. A Communication. Dated 21st November, 1859.—This invention consists chiefly of a mode of moulding and pressing bricks, whereby a concave form or surface is given to one of their sides for the reception of cement or mortar. In carrying out this invention an annular rim or concave moulding surface is employed in such a way that the bricks are moulded by the pressure of a rotating wheel or roller mounted inside the concave moulding surface, and made to press the bricks towards the circumference, the finished bricks being pressed out of the moulds and discharged in a direction towards the axis of the said concave moulding surface, that is, towards the inside or concave part of the moulding wheel.

**MOULDING HOLLOW BRICKS, &c.**—*J. Howard*, Fenchurch-street, London. Dated 3rd November, 1859.—The object of this invention is to mould hollow bricks and other hollow articles with a closed end by pressing them through a die by means of a moving plunger. It is proposed to admit air to the interior of the moulded hollow article, or to the inner face of the closed end thereof, just prior to its starting from the die.

**PLASTIC COMPOSITIONS TO BE EMPLOYED FOR BUILDING AND DECORATING PURPOSES, AND IN LIEU OF MARBLE, &c.**—*R. A. Brooman*, Fleet-street, London. A Communication. Dated 31st October, 1859.—From the similarity of these compositions to marble the inventors style them "similimable." To manufacture similimable intended to remain white, take sulphate of potash about 14 oz.; river water, 16 quarts; gum arabic, 2 lb.; purified cement, 20 lb.; marble or alabaster powder or dust, 20 lb.; and treat as follows:—First mixture: Dissolve over a slow fire, stirring all the time, 14 oz. of sulphate of potash in 16 quarts of water: after fusion dissolve 2 lb. of gum arabic. Second mixture: Stir together 20 lb. of purified cement, 20 lb. of marble or alabaster dust, and 5 lb. of lime, slacked sufficiently to cause it to crumble into powder. Pour into a mortar of marble, porcelain, or other suitable material, a part of the first and a part of the second mixture, and stir with a wooden or bone spatula until the ingredient assumes the state of thick paste; then beat with a pestle until the mass becomes elastic, which will be ascertained by the composition not adhering to the pestle. To make mouldings or castings, grease the mould, and apply a first layer of about one-third of an inch in thickness of the composition produced as aforesaid; this first layer is backed by another formed by boiling, for about three or four hours over a brisk fire, hemp, tow, or other filamentous substances, cut small in the "first mixture" of gum and sulphate of potash. The product is mixed with the "second mixture" in a mortar and well beaten with a pestle until the filamentous parts are divided through the mass, and the whole reduced to a paste. Thus, it is said, a composition of great solidity and impermeability is produced, lighter than, and taking an equal polish to, marble, and resisting the action of frost better than marble.

**"VENTILATORS."**—*G. Wemyss*, Springwood Park, Roxburgh, N.B.—A Communication. Dated 3rd November, 1859.—There is fitted up in the wall of the room to be ventilated, and by preference near the ceiling, an adjustable "gridiron" valve or slide, the face of which is flush with the inner face of the wall. This valve governs a passage into a metal chamber, which is fitted into a hole in the thickness of the wall directly behind the valve. This metal chamber is double the external section or division, being solid and close, excepting where the adjustable door or valve opens into it from the apartment, and where a tubular thoroughfare opens from it on the opposite side to connect the apartment with the external atmosphere. The inner section of the chamber has a solid end next to the valvular pas-

\* From the Engineer.

sage, but it is perforated or slotted all round, so that the vitiated air, as it enters from the room, first of all strikes against the solid end, and is then diffused along and over it, passing in between the two sections or divisions of the chambers. From this space the vitiated air passes into the interior of the inner section of the chamber through the openings in the sides, and it flows off therefrom through the end opposite to the solid end, and the valvular entrance of the external section or chamber, thus escaping into the tube before mentioned, and passing off into the atmosphere. The air does not, however, pass at once into the atmosphere, but it flows into a second duplex chamber built in the external face of the wall. It is the same as the duplex chamber in the apartment, except that its outer end or face is covered by a shield-piece open all round for the passage outwards of the vitiated air.

IMPROVEMENTS IN MACHINERY FOR GRINDING AND POLISHING SHEETS OF PLATE AND OTHER GLASS.—*G. T. Bousfield*. A Communication. Dated 5th November, 1859.—To grind plates of glass to an even thickness, the plates are placed on a carriage which slides on an inclined frame, and above the centre of the frame a grinding cylinder is supported, so that it can be brought nearer to or farther from the frame, to regulate the thickness to which the glass shall be ground. The grinding cylinder is caused to revolve rapidly by a pulley on its axis being driven by a driving band, and the cylinder is so supported that, in addition to its being caused to revolve, an endway motion may be imparted to it by a disc on the axis of the cylinder working in a grooved can on an axis to which motion is given from the axis of the grinding cylinder. A hopper, containing sand and water, or other grinding material, is placed above the grinding cylinder, to supply grinding material.

### Books Received.

*Ancient Armour and Weapons in Europe from the Iron Period of the Northern Nations to the end of the Seventeenth Century.* By JOHN HEWITT, Member of the Archaeological Institute of Great Britain. Three Vols. Oxford and London: John H. & James Parker.

The first volume of this work, bringing the subject down to the end of the thirteenth century, was published in 1855. The second and third volumes, continuing it to the end of the seventeenth century, are just now issued. To describe them more closely, however, it must be mentioned that the second volume deals with the fourteenth century alone, and the third, called a supplement, gives a series of examples of armour and weapons belonging to the fifteenth, sixteenth, and seventeenth centuries, with which latter armour-bearing terminated. These are three very handsome volumes, profusely illustrated from contemporary monuments, and will be found very useful by painters, sculptors, stage-artists, and others. To the advanced student of ancient armour, to those seeking to clear up doubtful or disputed points, we are disposed to think the book will be less satisfactory. We should say, at starting, that we have a quarrel with Mr. Hewitt, as author, on two grounds,—his treatment of the late Sir Samuel Meyrick, and his defence, on a previous occasion, of forgeries purchased for the Tower. A great debt is owing to Meyrick, who was the pioneer in the elucidation of ancient armour and weapons. All that has been done since has been founded on his previous labours, and but for these the book now before us would not have been written. Of this debt, however, there is not the smallest acknowledgment; in fact, we do not observe that the name of Meyrick is in the book. There is a living English writer, too, on the subject, whose researches deserved acknowledgment, but have not found it.

In some cases, where Mr. Hewitt differs from his predecessors, it is done without conclusive argument. For example, the term *palet* or *ronnel* has been applied, on the suggestion of Meyrick, to the junction of the cuirass and the armpit armour. Mr. Hewitt views the *palet* only as a helmet, and says "the *palet* (*pelliers*) appears from its name to have been originally of leather; but the word, like the cuirass, became extended to the analogous defence of iron." There is no doubt that *palet* was a cant name for a man's skull. See *Minor's Poems* (fourteenth century).—"I'll knock thy *palet*." Much later, indeed, the crown of the head was called the *palet*, though the term is now obsolete. Nevertheless, the plates in question used for the armpits may have

been called *palets*, for *paleta* and *palettus*, in Du Cange, mean everything in the world, and something besides;—a measure for corn, a pell or hammer, a staff shod with iron, a lever to raise machines, a ring, a round (orbicular) object (why not a plate?), &c. It would seem moreover, quite as a natural assumption on our author's part to call them *gouchelets* or *gussets*, unless he has better authority from it than the one quotation he gives, an extract from the "History of Charles VII." by Malchou de Coucy, who says, speaking of a contest in 1416: "L'Anglais frappa de sa lance le dit Louis tout dedans et au travers, scavoir, adoussons du bras et au vis de son harnois, par faults et manque d'y avoir un crescent ou *gouchelet*,"—through not having a crescent or *gusset*,—but this is by no means conclusive. The writer may mean to say, because he had neither a crescent (of plate), nor *gusset* (of chainmail). *Gusset* is certainly not a good word to apply to the circular or oval-shaped plates of metal of which we are speaking.

In the use of the word "halberet," again, it is quite clear that it simply means "light-body armour—the corslet?" However, not to pursue a disagreeable path, and to let Mr. Hewitt speak for himself, and give a sample of his style, we will extract part of what he says of *cannon*:—

"The date of the first appearance of cannon in the field has long been a subject of dispute, and probably will long remain so. The plain of Cressy still continues a scene of contest between opposing archeologists. The chief arguments brought forward by those who maintain that the English employed cannon at this place in 1346, are, the passage in the 'Chroniques de St. Denis,' that of Villain, the 'Froissart,' and the statement already noticed of this chronicler, that the English were 'used to carry cannon with their armies.' On the other side it is objected that in the numerous manuscripts of Froissart, where he has treated with such particularity and at such length, and from the testimony of those who took part in the fight, the various incidents of the day (and of the previous march, also), not a word appears about guns or gunners; but the word *cannon* is distinctly attributed to the English archers. The passage in the 'Grandes Chroniques' runs thus:—'L'Esqueuils Anglois getterent trois canons dont il advint que le sieur Genevois archibailleur, qui estoit en premier front, tourment le dos et laissèrent le traire, al ne seot on si ce fait treason non.' Villain writes:—'E ordna il re d'inghilterra i sus arcei, che n'avea grande quantite au per le carra, e tali di sotto con bombardie che acetano pallotte di ferro con fuoco, per imparare e disorsari i cavalli de Franceschi.' The transcript of Froissart's 'Chronicles' preserved in the Library of Amiens contains this passage:—'Et li Angles desputerent aucuns canons qui's avoient en la bataille pour esbaluz li Genevois.'"

The anonymous compilation of this portion of the 'Grandes Chroniques,' and the distance of Villain from the scene of action, are not circumstances to add weight to the evidence of the volumes in question; and both writers may be pardoned for seeking to refer the disaster that befel their countrymen to the employment of some new and terrible instrument of destruction. The unique copy of Froissart at Amiens does not seem entitled to much attention. It can scarcely be an early manuscript, or we should have had transcripts containing the same words; and, if late, its authority vanishes altogether.

In 1382, however, we obtain more reliable evidence of the employment of field guns. The men of Ghent, marching to the attack of their adversaries of Bruges, 'chargèrent environ deux cents chars de canon et d'artillerie: ils leur leur port on a hill, suffered the troops of the count to begin the attack, and the Ghenters to get the advantage of the sun, and plied the Bruggens with their guns: 'Sitôt que ceux de Bruges outrent la voix de ceux de Gand et les canons desloperent, et que ils les virent venir de front pour eux assaillir, ayement, ils jetèrent leurs batons jus et tourment le dos.'"

At the combat of the Pont-de-Comines in the same year, 'y avoit aucuns qui jetoient de *bombardes portatives*, et qui traioient grands quartiaux ennemis de fer, et les faisoient voler outre le pont jusques à la ville de Comines.'"

Philip von Arteveld directs his men assembled on the Mont d'Or, when the attack shall begin, to ply their bombards, cannon, and crossbows, in order to intimidate the enemy. And we further learn that these cannons and bombards cast forth "gros carreaux empennés d'alraïn."

That hand-guns were invented, though but rarely appearing, in this century seems very probable from several contemporary evidences."

The "gonne" of that day was a very different thing from the Whitworth of ours, which does its dreadful work at five miles' distance.

*Observations to accompany the Map of the Shadow Path thrown by the total Eclipse of the Sun, on the 15th July, 1860, across the North-eastern part of Spain.* By CHARLES VIGNOLES, F.R.S., M.R.I.A., and C.E. &c. London: Longman & Co., 1860.

This elaborate work is dedicated to the Astronomer Royal by the author, who, well known as an engineer, is himself a fellow of the Astronomical Society. The map was prepared, in the first instance, solely for private circulation among scientific men; but Mr. Vignoles was led by the very great number of inquiries made to it to think that a more extended circulation might be acceptable.

The accompanying "Observations" though confined to what is relevant to the subject, contain much useful and interesting general information as to Spain, the state of its roads, railways, and

general means of conveyance and accommodation as well as its physical aspect and peculiarities. The roads on the map have been laid down from the official map of the carriage roads of Spain, published by the Board of Public Roads at Madrid, and from the best local maps, especially those of Navarre and the Basque Provinces. As for the railways, which are numerous, but mostly only in course of construction, Mr. Vignoles must be in a position to give the best information to the Spanish Government and its national maps in place of receiving any from them, inasmuch as he is the engineer of many of them himself. The prospect of conveyance through the country to an Englishman, however, is by no means enticing, according to the author, and seems to require the actuating spirit of the enthusiastic astronomer to enhance its somewhat negative attractions. He must also be prepared to pay well for ill accommodation, especially if he show that he is in a hurry, and must secure his retreat before-hand, as the *malles postes* and diligences to the coast are sure to be all engaged, sometimes for weeks, previously to starting: so are the post-horses in summer, and very few relays are kept. It is not in every town, either, that a wheeled carriage can be hired: these vehicles are generally like a small omnibus, and ought not to have less than three horses or mules. As for riding horses these can more readily be had; but the traveller must beware of riding mules. Not a very brilliant picture this, however picturesque and primitive. There are spirited and enterprising Englishmen, nevertheless, whom such minor difficulties will perhaps only stimulate the more to take the trip on this interesting occasion.

Astronomical instruments will be admitted free of duty, as liberally intimated by the Spanish Government.

One of the chief objects of attention at the eclipse, as remarked by Mr. Vignoles, will be those roseate and cloud-like protuberances which surround the disc of the moon at the moment of total solar eclipse. In an appendix, some interesting remarks, by various astronomers, are given, on these as well as other points.

Opinions differ as to whether these rose or flame-coloured and fantastically-shaped masses are connected with the moon or with the sun. "To admit the possibility of their being solar mountains," says Dr. Lardner, "we must suppose their height to amount to nearly a twentieth part of the sun's diameter, that is, to 44,000 miles." But a more feasible idea seems to be that they are clouds in a solar atmosphere. "There appear to us, however, to be well-grounded objections even to this hypothesis. Thus the Rev. W. R. Dawes remarks, in reference to one mass, of a rich carmine hue except where partially hidden by a flocculent intervening substance, that, to his astonishment, "this marvellous object continued visible [round the moon's disc, that is] for about five seconds after the sun began to appear; and Mr. R. Stephenson observed that "the largest of the three prominences presented the appearance, at one moment, of an irregular solid mass standing out from the moon, and visible only on one side; that is, one side was in shadow, and the illuminated side resembled a rose-coloured sickle."

Were these extraordinary Auroras of the nature of clouds in a solar atmosphere, how could one side of any of them be in shadow? Their deep and vivid colours, too, would rather seem to militate in favour of the idea that they did not exist in the midst of, or within or beyond, the pure white light of the sun, but nearer to the eye, and were more analogous to our own clouds, tinted by the solar light transmitted first from the sun to them, as intervening surfaces, and next from them to us. It comes, therefore, to be a question, whether it be possible that they can be clouds in a lunar atmosphere. Mr. Dunkin, in his observations, seemed to have the idea that, at all events, they were connected with the moon. But then the moon is believed to have little or no atmosphere: here is the difficulty, which doubtless goes further than anything else towards preventing astronomers from conceiving this curious auroral display to be a lunar one.

As an endeavour was made on a previous occasion in our columns (by J. E. Dove), to obviate this great difficulty; and as the subject unquestionably involves one of the most interesting and curious of all the phenomena witnessed or to be witnessed in every total solar eclipse, and ought, as Mr. Vignoles remarks, to have particular attention given to it on the forthcoming occasion, perhaps we may be excused for reproducing a portion of what was said in the *Builder*, in 1856, on this very singular question, in a paragraph on a "Centrifugal Theory of the Moon," originating in a

previous one on "The [negative] State of Architecture on the Lunar Surface."—

"If the moon really have an atmosphere with vaporous clouds and other aqueous forms, all centrifugized to its exterior hemisphere under the influence of the revolving or centrifugal force, as it must act on, and *oblongate*, a sphere such as it is, always presenting, as it does, one and the same face or hemisphere away from the centre of its revolution,—can it be that the earth is never so situated in relation to that hemisphere, that atmosphere, and these clouds,—thus for ever, doubtless, placed beyond the straight line of our visible presence, that, at all events, by some refraction or refraction of light from the latter, as they float in the lunar atmosphere, these lunar clouds may, at least for a moment or so, become distinctly and actually visible to the earth's inhabitants? In such a case as that of a total eclipse of the sun, for example, by the intervention of the moon between it and the earth, ought not some of the lunar clouds to appear by refraction, as coloured streaks, above and around the black disc of the moon, and amid the ring of solar light thus left? Now, what else can those auroral or flame-hued, roseate, fantastic, and heretofore unaccountable streaks be, which, in fact, do appear, above and around the black lunar disc, in the midst of the solar total eclipse, and which have hitherto excited so much astonishment and unrewarded curiosity amongst astronomers of all nations? Can these ruddy streaks be anything else than auroral cloud-refractions from the lunar atmosphere, seen above and around the horizon of the higher side of the lunar ball, in a way similar to those false (yet true) appearances or simulacra of ships and towns, above the earth's own horizon, by refraction, while yet in reality completely beyond or below that horizon above which they thus appear?"

In concluding our notice of Mr. Vignoles's handsome volume and elaborate map, we may remark that it is an interesting sign of the times that so many of our people are likely to go abroad, on this strictly scientific occasion, as to warrant the publication of an expensive work such as this is.

BOOKS OF TABLES.

*The Universal Table Book.* By M. D. KAVANAH. Cornish, 297, Holborn, W.C.  
*Cottman's Builder's Tables.* Cottman, Fording-bridge, 1860.

THESE are both useful little books of their kind. The Universal Table Book is prepared and intended for the use of colleges and public schools, engineers, and mechanics, counting-houses, and tradesmen, and indeed for everybody. It contains a variety of tables, besides those of multiplication, weights and measures of many kinds, interest tables, foreign money tables, &c. Of Cottman's Builder's Tables, we need not restate the contents: they are well known among our readers, and it is not the first time we have had occasion to refer to them.

LEGAL HANDY-BOOKS.

SEVERAL of the shilling Handy-books, by Dr. J. W. Smith, Barrister-at-Law, published by E. Wilson, of the Royal Exchange, have been before noticed in our columns; but they now form a series applicable to many phases of life, social and commercial, and appear to be exceedingly useful and clear of perplexing terms. In the series are Handy-Books of the law of master and servant, husband and wife, partnerships, bills, and all sorts of notes and I. O. U.'s; banking, and commercial and social affairs generally.

VARIORUM.

"ENGLISH HISTORY. By Henry Tuce, M.A., and James Gilbert" (Kent & Co., Paternoster-row), is an extension of a little book titled "Outlines of English History," which was favourably noticed by us at the time of its appearance, and of which, it now appears, no less than 170,000 copies were sold. The more extended volume contains very copious notices of the customs, manners, dress, arts, commerce, &c., of the different periods, and is altogether a very able condensation of the history of England. True it has been accused of a Roman Catholic leaning; but, so far as we have been able to discover,—and we cannot pretend to have perused the whole,—there is little which would seem to justify such a charge. The Reformation we notice, is once referred to under inverted commas as the "Reformation," but this is in close connection with the personal doings of Henry VIII. The title "Defender of the Faith," too, which her Majesty and her Protestant predecessors have maintained, and which Mr. Shell, of the Mint, a Roman Catholic, tried to blot out of our coin, is spoken of as having been conferred by Pope Leo X., and this, though briefly done, may be supposed, by suspicious and straitened people, to be done in such a way as to imply or show a Popish leaning. But the statement is simply a fact, both as regards Henry and as regards Queen Victoria, although the title has been continued by the Protestant sovereigns in a sense different from that intended by Pope Leo. The extended work seems so far as we have seen of it, to be a worthy and judicious successor to the

smaller one.—"An Account of the Chorleywood Association for the Improvement of the Labouring Classes," has been published by Messrs. Longman & Co. We are glad to observe, from this little pamphlet, that so useful and commendable an Association is making progress in its chief objects, which are, as our readers may remember, the encouragement of habits of order and of self-management, of economy and saving, of education or the use of the mind, of healthy recreation, and of mutual goodwill and respect between all classes. It affords an example to the gentlemen and residents generally of our rural districts, showing what they may do in one special way for the good of their kind.

Miscellaneous.

"THE CLUB."—In these days the term club usually implies a magnificent stone building in Pall-mall or St. James'-street, by Smirke or Barry. But there still remain one or two of the old houseless clubs with which our grandfathers were familiar. Amongst others, there is one which so far transcends all others, both in antiquity and in old associations, that it has all along maintained the name of "The Club" *par excellence*. To it Dr. Johnson, Boswell, and the other wits and literati of his day belonged, and it has retained an apostolical succession of great names down to the present day. It is very small and select, and a single black ball excludes. A year or two since it numbered amongst its members Hallam and Macaulay, and they were among the constant attendants at its dinners, which take place twice a month during the Parliamentary season. "The Club," however, though unknown to fame, still holds its assemblies, and embraces most of the representative men of the age, such as Mr. Stirling, Professor Owen, Dean Milman, &c. The custody of the books and archives of the club rests with the secretary, Dr. Milman, the venerable Dean of St. Paul's, who takes great pride and pleasure in showing to literary friends the valuable collection of autographs which these books contain. Some of the signatures bear evident token of having been written after dinner, and there is a tremulousness about Boszy's signature which is most characteristic of the man.—*Court News.*

MONUMENTAL.—The memorial, subscribed for, of the late Mr. Richard Sandford, surgeon, has just been erected in the grounds of the Wolverhampton cemetery. It consists of an obelisk of white veined Sicilian marble, upon a pedestal of the same material, the whole resting upon granite steps. The only ornament is a chaplet on one side of the obelisk. Mr. Bidlake furnished the design, which has been executed by Mr. Horsman, of Wolverhampton, at a cost of 100*l.*—An address of the acting committee of the Wallace monument, adopted at a meeting held in Glasgow in May last, has been published. Its principal reference is to the state of the funds; and while it appears that a sum of 4,168*l.* has already been collected, it seems that 7,000*l.* will be required to carry out the design of Mr. J. T. Rothead.—Garibaldi, says the Sicilian correspondent of the *Morning Post*, has received from the municipal authorities of Partinico the votation of a statue in marble. With characteristic plainness he replied, "Remember that I am in Sicily to wage war: every expenditure which has not this object is indifferent to me. Give up the statue, and with the money buy arms and ammunition."

DESTRUCTION OF THE BRITANNIA MILL, MOSSEY.—A fire, of a most serious description, has occurred at Mossley, resulting in the total destruction of the very extensive mill belonging to Mr. John Mayall, cotton manufacturer, and involving the loss of about 40,000*l.* Nearly 1,000 people were employed in this mill. In about four hours the whole building was in ruins. The gable end stood within 4 yards of the mill of Mr. George Mayall, and it fell, in its fall carrying away from ten to twenty windows, and strewn the floors with stones. Two portions of the mill which remain standing are fire-proof. One is a piece two stories in height, and contains in its length thirteen windows: the other portion is one story in height, and thirty windows in length. Another portion, which was fireproof, was crushed in by other walls falling, part inward and part outward, upon it. The mill has been erected about ten or twelve years. The fire originated, there is no doubt, in the ground-floor of the loading-room, but whether from a railway truck loaded with cotton, or the sweepings of the mill, is not known. The mill is insured to the extent of about three-fourths of the value, in the West of England, Phoenix, Sun, and Globe offices.

PROPOSED MEMORIAL OF THE LATE AUGUSTUS WELBY PUGIN.—A committee is being formed to do honour to the memory of the late Augustus Welby Pugin, for his services in the promotion of true principles of Mediaeval architecture. In furtherance of this object it is proposed to raise subscriptions, and devote them to the endowment of a fund, to be entitled the "Pugin Travelling Fund," to be awarded to an architectural student, in such manner and at such periods as may hereafter be decided, and to be expended by the recipient, within one year of the time of its allotment, in travelling in the United Kingdom, and in examining and illustrating its Mediaeval architecture, sculpture, and painting.

ART ABROAD.—The *Athenaeum* has several items of information which would come under this head. M. De Keyser, Director of the Academy at Antwerp, is busy with the sketches for the monumental frescoes which are to ornament the walls of the Academy. The principal events of the art-history of Flanders are the subjects for these compositions.—News comes from St. Petersburg that the works for the foundation and the pedestal of the monument for the celebration of Russia's Millennium have been begun at Novgorod. The pedestal will be erected at an expense of 75,000 silver roubles: the artist, M. Mikeschin, receives 120,000 silver roubles. The galvanoplastic cast, in the manufactory of Messrs. Nikols & Plinke, will amount to the further cost of 110,000 silver roubles. Government furnishes the bronze. M. Mikeschin's design, which was favoured with the prize, makes in its total the effect of a bell. It consists of a cylinder-like foundation, which stands on several steps, and the lower part of which is surrounded by six flat gable-shaped stones, each of them cut out at the bottom in two semi-circles. Every stone rests on two short columns, and in the middle, on a console. Between these stones, low, square, long-drawn panels are formed for the basso-reliefs. On this foundation lies a colossal globe, almost of the same diameter as that of the cylinder on which it rests. On this globe rises the cross—an allegorical figure, representing Russia, kneeling before it: an angel hands the chalice to this figure. On the edge of the cylinder, with their back to the globe, in lively attitudes, stand the figures of Peter the Great, Rurik, &c. These figures reach up to half the height of the globe. At their feet, partly kneeling, partly lying, we see different figures, mythological and allegorical, representing subjected nations, and so on.—One of the oldest and most remarkable architectural monuments of all Suabia is now offered for sale: we mean the old Castle of Meersburg, on the Lake of Constance, "the origin of which, together with its 'Belvédère,' or Donjon, the so-called Dagobert's tower, reaches up to the seventh century, for the King of the Franks, Dagobert the First, is said to have erected the lower out of large boulders in 630-638, as a protection for the haven—an early lighthouse."

THE FEMALE SCHOOL OF ART, GOWER-STREET. A conversation was held on Thursday last, at the South Kensington Museum, the object being to raise funds for erecting a Female School of Art, and securing the permanency of that excellent institution, which for some years has been established in Gower-street. There was an assemblage of ladies and gentlemen to the number of at least 1,500. The picture galleries, brilliantly lighted, were thrown open to the visitors, and several magnificent works of art were lent to the management. The Queen lent the Koh-i-noor diamond, which has been recut since 1851, and now sparkles with fifty-fold brilliancy; the members of the Fine Arts Club, ancient and modern jewellery; Mr. Hope, his blue diamond; the Duke of Devonshire, a group of cameos; Mr. Dresden, a large diamond and other gems; Mr. Waterton, ancient rings. Mr. Hancock, Messrs. Hunt & Roskell, and others, were also contributors. There was music at intervals by the band of the Hertfordshire Militia. The Earl of Shaftesbury presided in the lecture theatre of the museum, and Mr. Westmacott, Mr. Redgrave, Mr. Donaldson, the Rev. Mr. Bailey, and other gentlemen delivered addresses explanatory of the position of the school, and illustrative of the large amount of good which it has already effected by educating young ladies in works of art, and enabling those on whom the hand of affliction has fallen to find self-sustaining employment. The lease of the present school is nearly expired, and there will be required, to secure another site and building, about 2,000*l.* About 600*l.* have been already subscribed, the pupils contributing a fair proportion,—over 70*l.*; and to the public the committee look with confidence for the remainder.

**EFFECT OF SEA-WATER ON TIMBER.**—Sir,—Perhaps some of your correspondents will be good enough to say what effect is produced on timber by sea-water (portions totally immersed, and portions exposed to the frequent washings and spray, wet and dry), used in staging and scaffolding for marine works temporarily, timber so exposed to salt water being afterwards used for building purposes. Persons living on the coast who buy timber at sales of wrecked vessels, and cut it up for farm and building uses, assert that it is as good as new fir (?), and a farmer told me that the oak "lasted till he was tired of it."—BANGOR.

**RAILWAY ROUTE FROM MANCHESTER TO MILFORD.**—A prospectus has been issued, under, it is said, influential Manchester and other auspices, of a "Manchester and Milford Railway Company," with a capital of 555,000*l.*, in 55,000 shares of 10*l.* each (deposit 1*l.* per share), and limited responsibility. In reference to one important recommendation, namely, coast defence, the prospectus says "the proposed railway completes the western coast line from Glasgow to the extreme point of Pembrokeshire, making all the great garrisons of the manufacturing districts of the kingdom available for concentration on any point of the undefended parts of the coast of Wales."

**MUSIC FOR THE MILLION.**—"The Music Publishing Company (Limited)" is being established, with a capital of 25,000*l.*, in 1*l.* shares, and a ready-made business in the City, for the sale of music of all kinds at very low prices. They have already issued a catalogue of many items, in which 3d. a sheet is the general price, although, it is said, "printed on better paper than the best of the dear music, by the improved process which won the large medal at the Great Exhibition." The whole of the musical works published by the company are said to be suitable for school use, and for school prizes, as well as for family practice. The offices of the company are at 19, St. Peter's-hill, St. Paul's, E.C.

**NEW BRONZE COINAGE.**—The first contract for the execution of a portion of the new bronze coinage has just been taken by James Watt & Co., of Sobo, near Birmingham, and it is said that the quantity contracted for amounts to between 1,700 and 1,800 tons, or something like 250 or 300 millions of pence, halfpence, and farthings.

**ANOTHER PARK PROPOSED FOR HALIFAX.**—Shrogs-wood estate, near Lee-bridge, is proposed as a second park for Halifax, and a design, the execution of which will cost 2,000*l.*, has been prepared by Mr. Gay, of the Underlife Cemetery, for laying it out into carriage drives and walks, with cricket-grounds, bowling-green, and archery-stands.

**FREE READING-ROOM AND LIBRARY.**—The foundation-stone of a free reading-room, lecture-room, and library, for Garston (Liverpool), has been laid. It is intended to erect a building in the mixed style of architecture. The site was given by Mr. George Heald, and it will be constructed so as to accommodate from 400 to 500 persons. The building will contain a reading-room, a lecture-room, and a library; and a cottage for the keeper of the place will be erected in close contiguity. The cost is estimated at about 1,000*l.* Messrs. Hay, of Liverpool, are the architects; and Mr. John Jones, of Aigburth, is the builder.

**O'CONNELL AND ARCHITECTURE.**—The *Times* says,—Mr. Daniel O'Connell, of Derrynane Abbey, grandson of "The Liberator," after having completed his course of study under Mr. Hanson, the architect, and improved his observation by inspecting the best specimens of church architecture in classic lands, has determined to commence his profession in Dublin as an architect.

**NEW GARDENS** now afford a pleasant ramble. The large masses of rhododendrons, and other American plants, on each side of the grand promenade, are in perfection, being in full flower. The conservatory, or Australian house, too, is very attractive.

**THE DATES OF STREETS AND BUILDINGS.**—Many houses of various dates—some of them in no way remarkable for external appearance,—the time, and some short circumstances connected with their erection, attract a certain amount of attention from the wayfarer; and, as time rolls on, the value of those dates becomes the greater. Why, therefore, should this good old-fashioned custom be so little thought of in these modern days? It should be considered that, in due course, the present reign, and all connected with it, will become antiquities, when the marks which record the structures of Queen Victoria's times will be looked upon with as much interest as those of Queen Elizabeth's now are by us.

**UNSAFE BOG ON SOUTH COAST RAILWAY.**—A correspondent, "G. R. L.," states that he lately drew the attention of the chairman of the South Coast line of railway to a boggy piece of ground on the line between Steyning and Henfield, which has given much trouble, and is considered to be still unsafe. Piles for the line were driven 60 or 70 feet down, it is said, without finding a firm bottom, and "G. R. L." has suggested that some such tubes as those of the Menai-bridge, or pontoons, should be laid, on which to run the line; and a lining of prepared planks laid to float the line. In various instances, in the intersection of the country by railways, bogs were safely crossed, after much trouble and many failures, by means of floats of brushwood, peat or turf, and timber, on which the ground-soil of the line was laid, after immense quantities of earth and stones had been swallowed up without filling the bog, and even, in some cases, after the line itself had been repeatedly absorbed. Chat Moss, the great morass on the Liverpool and Manchester line is a case in point.

**PROPOSED SICILIAN MOSAICS FOR ST. PAUL'S.**—It is suggested by Mr. Penrose that many may be glad of a way being pointed out of doing something by which we may benefit the citizens of Palermo at a time when, by their noble conduct, they have won all our sympathy, and when, owing to the cruel destruction of so much of their property by the Neapolitans, any encouragement to their arts and manufactures will be peculiarly valuable. He says,—"The Dean and Chapter of St. Paul's, it is well known, are earnestly engaged in making the cathedral as useful and as perfect as they can, and would be willing, if funds were available, to decorate its walls, &c., with the rich and durable ornament of mosaic work. A fair commencement could be made with about 500*l.* in hand. The cost of the material would be about half the whole expense of the finished work. There is a manufactory of the material at Palermo, where it has been largely used in the restoration of the Dnomo of Monreale after a destructive fire some years ago. As there can be but few of your readers who do not sympathize with the Sicilians, who have such peculiar claims upon us and are now dreadfully impoverished by oppression, should any be disposed to encourage the beautiful art for which I am pleading, and will intrust me with subscriptions for that purpose, I will undertake that the requisite proportion of such money shall be immediately laid out at Palermo in the purchase of the material, and the work here forwarded as rapidly as it will admit of."

TENDERS

For the London-bridge Railway Terminus Hotel. Mr. Henry Currey, architect. Quantities supplied by Mr. J. H. Stroudwick:—

Myers	.....	£139,159 17 0
Moxon	.....	127,500 0 0
Holland & Hemman	.....	122,829 0 0
Dowds	.....	116,377 0 0

For the erection of new buildings in Brick-lane, Spital-fields, for Mr. E. Zuccani. Mr. J. Stridey, architect:—

Lucas	.....	£1,636 0 0
P'Anson	.....	11,512 0 0
Mansfield, Jun.	.....	11,439 0 0
Health	.....	11,157 0 0
Piper	.....	11,174 0 0
Ashby & Horner	.....	11,155 0 0
Little	.....	11,152 0 0
Corder	.....	11,145 0 0
Ashby & Sons	.....	10,741 0 0

For a pair of semi-detached houses at Sydenham, Kent. Mr. George Low, architect:—

Porter	.....	£2,800 0 0
Wood & Son	.....	2,768 0 0
George	.....	2,682 0 0
McLennan & Bird	.....	2,653 0 0
F. Adams & Co.	.....	2,591 0 0
Riley	.....	2,579 0 0
Allen & Co.	.....	2,561 0 0
Todd, Jun.	.....	2,550 0 0
Rutkin, Jun.	.....	2,495 0 0
Amos	.....	2,379 0 0
Dennett	.....	2,350 0 0
Humphreys & Loxford (accepted)	.....	2,295 0 0

For the erection of a warehouse and drying-shed, Market-street, Bermondsey, for Mr. George Mathews. Messrs. Porters & Markham, architects. Quantities supplied:—

J. J. & F. Coleman	.....	£2,705 0 0
Marland & Son	.....	2,405 0 0
Wells	.....	2,398 0 0
Wells (accepted)	.....	2,253 0 0

For rebuilding drying-shed, Market-street, Bermondsey, for Mr. George Mathews. Messrs. Porters & Markham, architects. Quantities supplied:—

Marland & Son	.....	£1,495 0 0
Wells	.....	1,498 0 0
Wells (accepted)	.....	1,351 0 0

Alternative estimates, substituting ironwork in lieu of brick piers for upper stories:—

Marland & Son	.....	£1,753 0 0
Wells	.....	1,698 0 0
Wells	.....	1,676 0 0

For Whitby Union Workhouse, North Riding of Yorkshire. Messrs. J. B. & W. Atkinson, architects, York. Quantities supplied by Mr. B. Wornard, surveyor, York:—

For the entire Works.		
Liafoot	.....	£5,086 18 0
Langdale	.....	4,180 0 0

Masonry, Brickwork, and Carpenter and Joiner's Work.

Rawling	.....	£2,315 0 0
Langdale	.....	3,197 0 0

Masonry and Brickwork.

Keswick	.....	£2,550 0 0
Liafoot	.....	2,400 0 0
Shafte	.....	2,400 0 0
Reed	.....	2,333 0 0

Plastering.

Bolton	.....	£298 0 0
Croft & Co.	.....	290 0 0
Rawling	.....	284 0 0
Meckinan	.....	250 0 0
Lugham & Co.	.....	249 10 0
Cook	.....	229 10 6
Bolton	.....	220 0 0

Carpenter and Joiner's Work.

Bellaby	.....	£1,385 0 0
Holmes	.....	1,150 0 0

Slating.

Cattley & Sons	.....	£350 0 0
Ellis	.....	319 0 0
Sanderson	.....	317 17 0
T. Overend	.....	303 0 0
J. Overend	.....	290 0 0

Plumbing and Glazing.

Smith	.....	£499 0 0
Varrill	.....	455 5 0
Brown & Sons	.....	445 0 0
Dickinson	.....	390 0 0

Painting.

Readman	.....	£111 0 7
Beadnell	.....	164 0 0
Beadnell	.....	95 10 0

TENDERS ACCEPTED.

Masonry, Brickwork, and Carpenter and Joiner's Work.

Langdale	.....	£3,197 0 0
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Plastering.

Bolton	.....	216 0 0
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Slating.

J. Overend	.....	290 0 0
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Plumbing and Glazing.

Brown & Sons	.....	400 0 0
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Painting.

Beadnell	.....	95 10 0
Beadnell	.....	£4,199 10 0

For the first pair of semi-detached villas on the Winchester-road estate, Basingstoke, Hants, of the Basingstoke and Eastport Building Company. Mr. Greenway, architect. Quantities supplied by Mr. Green:—

Dadden	.....	£1,371 0 0
Nichols	.....	1,445 0 0
Evans, Brothers	.....	1,418 0 0
Mathews	.....	1,330 15 0
Edgar	.....	1,228 10 0
Thorne (accepted)	.....	1,178 5 0

For certain brick and pipe sewers, upwards of one mile in length, about to be constructed for the Local Board of the borough of Boston. Mr. W. H. Wheeler, surveyor:—

Wilkinson	.....	£1,372 0 0
Booth & Sons	.....	1,359 0 0
Barwell	.....	1,245 0 0
Baker	.....	1,197 0 0
Freeman (afterwards withdrawn)	.....	847 15 0

For alteration of and addition to a villa at Pamflete, in the county of Devon. Mr. William Henry Reid, architect:—

T. May	.....	£1,300 0 0
J. Clarke	.....	1,260 0 0
J. Matcham	.....	1,210 0 0
J. Marshall	.....	1,116 0 0
Gully & Co. (accepted)	.....	940 0 0

For repairs, painting, decorating, &c. St. Barnabas Church, St. Luke's. Mr. J. Hamman, architect:—

General Repairs		
J. Porter	.....	£658
Wills	.....	477
Elston	.....	295
G. Porter	.....	290
Hocken	.....	232
Hartman & Sandon	.....	225
Heeps	.....	205
Mears	.....	212
Turner & Son	.....	133
Munday (accepted)	.....	393
Total	.....	£916

For certain additions and alterations for Mr. James Nash, at his house, Heron's Nest, Forest Side, Chingford, Essex. Mr. J. H. Rowley, architect:—

Brake	.....	£949 10 0
Humphreys	.....	735 0 0
Sewell	.....	694 0 0
Barker	.....	683 10 0
Goodman	.....	600 0 0

For alterations and additions to the Parsonage House, Westhall, near Hallswood. Quantities not supplied. Mr. George Glover, architect, Lowestoft:—

Cole	.....	£297 18 0
Artis & Marsden	.....	519 10 0
Darby & Bull	.....	510 0 0
Smith & Mortimer	.....	345 0 0

For building a new toll-house at Sherborne, Dorset, for the Commissioners of the turnpike. Messrs. Haggatt & Pocklington, architects:—

Guppy	.....	£175 0 0
G. Cradock	.....	173 0 0
Williams	.....	170 10 0
J. Cradock	.....	170 0 0
Evans	.....	134 10 0
England (accepted)	.....	122 5 6

# The Builder.

VOL. XVIII.—No. 909.

*The British Association, at Oxford.—Efforts to Raise the Condition of the Working Classes.*



THE meeting of the British Association for the Advancement of Science, just ended, has been productive of the usual amount of matter professionally important to us, and of much that would be interesting to all our readers. To some of the questions we can do little more than refer,—as those of the Antiquity of the Human Race, which could not have found a more appropriate place for discussion, than the university where science seems to have at length succeeded in obtaining *status* as a pursuit

side by side with theology and classical learning. We shall give notes of some of the papers on the subjects that more immediately concern us, and reference to others which may perhaps be published in the Transactions of the Association.

The selection of Oxford this year, as the meeting place, was altogether a happy one; and will do much to confirm the tendency observable in the University, of late years, towards several objects. The Museum is now so far progressed to completion that it was opened for the *conversations*; and it is one of the most considerable efforts the University has made in a similar number of years by building,—though collections and libraries, even such as are devoted specially to science, the University possessed (as well as works of art), no less than institutions of a different character. Architectural art is forcing its way through the antiquarianism or reproduction still somewhat prevalent in new buildings of the colleges; and the commencement of an effort to promote the work of education amongst classes beyond the precincts of the University, has been made. Persons qualified to judge, say that opposition to what is called the spirit of the age does not exist, unless with undergraduates. Whatever the branch of pursuit, Oxford now offers educational advantages, the amount of which must surprise one who visits the libraries and collections for the first time; and though the nature of the stone has prevented the preservation of much that would have been now interesting in the details of architecture, abundance of this is left, as well as a beauty of "old patrician trees," of shaded walks by water-side, and of lawns and gardens, which no other place in the world possesses combined with and enhancing so large an amount of architectural beauty, and enhanced by so much as there is of antiquarian interest, or associations with the place. To the true architect, the relics of work of his art in Oxford are by no means confined to the buildings of Medieval origin. Inigo Jones is represented there, as by manuscript notes to books preserved in the library of Worcester College, and by gateways (though not the best of his works, but amongst the most interesting) in the Botanic Garden; Wren is identified with the University, almost as much as with London; and, besides his buildings, five volumes of his drawings are preserved; whilst the Radcliffe Library, by

Gibbs, is a fine work, decoratively considered, as well as structurally,—the vestibule forming the lower story is one of the best pieces of domical vaulting in existence. Much has been said, both of the distant effect of Oxford, and of the principal street as a lesson of street-architecture. In both cases, the reference is justified, and might still afford hints,—in the former case, towards elucidation of the question of effect from forms of two very different styles, occurring in the same field of view; and in the latter, in many ways, towards the production of what is wanted in London. The present entrance to Oxford from the railway, however, is disappointing; and only on entering from the opposite side, or over the bridge by Magdalen College, does the stranger realize the beauty of the combined architecture and foliage, of the curving street, and of the groups and succession of buildings. The important part in this effect, played by Queen's College, a building good in masses, but somewhat plain in details, is worthy of attention; as also is the value of the clear atmosphere generally, and of the not smoke-enslaved stone of a considerable number of the buildings. It is not difficult to understand why, in attention paid to architecture, the art alone, or what is most valuable, is not now appreciated as deserved. Though this art-subject is enticing; and though there is much in Museum building structurally, and in the other new buildings decoratively, that might at another time be spoken of with advantage, it was the object with which we commenced, to chronicle some of the proceedings of the Association. To that subject, therefore, we return.

The chair was taken, in the Sheldonian Theatre, by the Prince Consort, on Wednesday in last week, when he briefly addressed the meeting, and resigned the presidency to Lord Wrottesley. The address of the new president related chiefly to the science in which he has become eminent; but noticed the progress made in some other branches of inquiry. In 1814, when Lord Wrottesley's residence in the University commenced, science was represented by the geologists chiefly, as Buckland, Broderip, the two Conybeares, and Kidd; though there were chemical lectures by the last of those named, and some on experimental philosophy by Rigaud. The Radcliffe Observatory was inactive. After 1818, the mathematical branches of study improved, and others were not neglected; and in 1839 a good appointment was made to the office of Radcliffe Observer. The progress continued till at length a sum approaching to 100,000*l.* had been expended on the New Museum. The president then adverted to the repeal of the statute which enforced attendance on two courses of lectures, and to the rejection of a proposal that the undergraduate, after passing his first two classical examinations, should be permitted to select his own line of study, both which decisions he did not approve of. After alluding to the Middle Class Examinations, he passed to the subject of astronomy. Treating of this, he showed the respective advantages of the labour undertaken in observatories, public and private, and noticed the speculations on the nature of comets and of the sun, and the existence of an interplanetary ether. He also spoke of the management of the Parliamentary grant to the Royal Society, as an example, and of the importance of such aid to investigation. He then passed to a notice of the principal results of research in the science of chemistry, especially regarding the processes of substitution, or displacement of one element or organic group by another more or less analogous; and he mentioned some practical applications, as those in the dyes extracted from aniline for the colour known as mauve and others. These processes, we may mention, were subsequently referred to in the chemical section, as well as investigations also referred to by the president, on the nature of ozone. Respecting the antiquity of man, the opinion originally published by M. Boucher de Perthes in 1847, relative to the remains in the valley of the Somme, had been confirmed since last year. Flint implements found were as ancient as a mass of gravel which filled the lower parts of

the valley between Abbeville and Amiens. The gravel is an ancient fluvial alluvium, by no means confined to the lowest depressions; and changes in the physical geography, comprising both the filling up with sediment and drift, and the partial re-excavation of the valley, must have followed since old river beds were at some former periods the receptacles of the worked flints. The old alluvium, whether at higher or lower levels, consists not only of the gravel with the worked flints, but also of superimposed beds of sand and loam, in which are many fresh-water and land shells of species now existing; but with the shells, are found bones of extinct animals. The same bones are found sometimes in the gravel. After some further statements, respecting discovery of bones elsewhere, elucidatory of the same subject, and a reference to the progress of physiology, the address concluded with an eloquent peroration.

The most interesting subject in the address just mentioned, was referred to in papers in the geological, the zoological and botanical, and the geographical and ethnological sections. One of these papers, by Dr. James Hunt, in the section last-named, led to a most animated discussion. So far as we have been able to ascertain, none of the proceedings in the sections are properly reported. The loss through the omission is very great; as the discussions often supply matter as valuable as that of the paper, and sometimes what is necessary to correction of statements contained in it. As it is impossible to be in two places at once, or even to ascertain exactly when papers are to be read, we have ourselves to regret the loss of much that we should have been disposed to publish.

In the Mathematical and Physical Section, amongst the papers read were the following:—"On the Trisection of an Angle by Plane Geometry," by Mr. Patrick Cody; "On the Principles of the Solar Camera," and "On the Means of Increasing the Angle of Binoocular Instruments, in order to obtain a Stereoscopic Effect in proportion to their Magnifying Power," by Mr. Claudet; "On some Optical Illusions connected with the Inversion of Perspective," by Sir David Brewster; "On his own Perception of Colours," by Dr. Gladstone; "On an Instrument for exhibiting any Mixture of the Spectrum," and "On the Results of Bernoulli's Theory of Gases, as applied to their internal Friction, their Diffusion, and their conductivity for Heat," by Professor Maxwell; "Experiments and Conclusions on Binoocular Vision," &c., by Professor W. B. Rogers; "On a new Geometrical Method for establishing the Theory of Conic Sections," and "On an Improved Instrument for describing Spirals, invented by Henry Johnson," by the Rev. Dr. Booth; "On a new Analyzing Prism," by Professor Jellett; "Further Researches regarding the Laws of Chromatic Dispersion," by Mr. Mungo Ponton; "On the Chromoscope," by Mr. John Smith, of Perth; "Description of a New Reflecting Instrument for Angular Measurements; and of another for Measuring Actual Distances," by Mr. Patrick Adie; and "On the Tripletty of Sound," by the Rev. S. Earnshaw.

In the Chemical Section, amongst the papers read were the following:—"On the Deodorization of Sewage," by Dr. Bird,—which did not place the subject in a more advanced position, whilst the discussion showed a concurrence of unfavourable views of the immediate prospects; "On Ozone," as before referred to, by Dr. Andrews; and "On the Causes of Fire in Turkey-red Stoves," by Dr. W. Wallace.

In the Geological Section, the vicinity of Oxford was described by Professor Phillips; the Blenheim iron ore, and the formations below the Great Oolite at Stonesfield, were treated of by Mr. Hull; and a new map of the neighbourhood was exhibited by Sir R. I. Murchison. The geology of Cambridge was explained by Professor Sedgwick. We cannot, however, find space even for the names of the majority of the interesting papers in this section. We may mention that there was one "On the Course of the Thames from Lechlade to Windsor, as ruled by the geological formations over which it passes," by the Rev. J. C. Clutterbuck.

In the Zoological and Botanical Section, we may refer to several papers on the Teredo, and the mischief caused by it to timber in water; and a vote of money was announced at the concluding meeting of the Association, for the prosecution of research on this important subject. In this section there were several papers on the views of Mr. Darwin and others, that the progression of organisms is determined by law of which we may mention one by Professor Draper, which treated of the intellectual development of Europe.

In the Geographical Section, Mr. John Crawford read a paper disputing the Aryan, or Indo-Germanic Theory of Races; and there were other papers on analogous subjects,—as one by Dr. Robert Knox, "On the Origin of the Arts, and the Influence of Race in their Development." A paper was read before the conclusion of the meeting, by the Rev. Professor Graves, "On the Arrangement of the Forts and Dwelling-places of the Ancient Irish;" and an account of the progress of the works of the Isthmus of Suez Canal, by Mr. Daniel A. Lange. In the same section, Mr. Thomas Wright had given an account of the Excavations at Wroxeter, bringing up the particulars to the latest discoveries.

The papers in the two remaining sections,—those of "Economic Science and Statistics," and "Mechanical Science,"—were some of them of great value or interest; and these we shall notice more minutely. Passing over a paper by Mr. Edwin Chadwick, C.B., "On the Physiological as well as Psychological Limit to Mental Labour,"—a subject, however, of great moment,—we come to one by Mr. Henry Roberts, F.S.A., "Notes on various Efforts to improve the Domiciliary condition of the Labouring Classes." It had for its object to remove the impression operating against the erection in larger number, of buildings of the improved character,—namely, one to the effect that they cannot be pecuniarily remunerative. Reasons were adduced for the failure which had occurred in some places; and facts were given tending to show there had been a considerable number of cases of success. It appeared that the Metropolitan Association for Improving the Dwellings of the Industrious Classes, from six buildings in different parts of the metropolis, accommodating 395 families, had received, after deducting all current expenses and repairs, a net return of 3½ per cent. on the outlay. On two lodging-houses, one of them new, the return had involved a considerable loss, either because the buildings were too large, or in some other way not adapted to the class of men frequenting the neighbourhood. A similar result had been experienced at Marselles, through choice of a site outside the town—too far from the men's daily occupation; whilst, at Leeds and Liverpool, buildings on a smaller scale, better placed, had required to be extended. Passing to a consideration of the undertakings of the Society for Improving the Condition of the Labouring Classes, although the accounts did not afford the same facility as in the other case for ascertaining the pecuniary return on the investment, the author showed that from the Dagnigge Wells, Streatan-street, and George-street buildings, the return collectively, after deduction of ½ per cent. for repairs, was 4½ per cent. net. The return for the Streatan-street building, it should be stated, was higher than for the other two; that is, it amounted to 5 per cent. net. The rents were fixed below those usually paid for similar accommodation. The new buildings in Portpool-lane were considered to be of so experimental a character, that their results formed no criterion, "excepting as a caution against providing largely in one building for single women." The rooms so provided at Portpool-lane had not been fully occupied; and "more stringent regulations with regard to the hours of closing, and more constant supervision than in the men's lodging-houses, proved to be indispensable." We trust this comparative ill-success will not induce the society to lose sight of the fact that residences for single women are really more required in London than for single men.

In his calculation of the return on the first-named piles, Mr. Roberts explained, 4 per

cent. interest was taken on the cost of the land. In the case of the two lodging-houses, old buildings and leasehold, one in Charles-street and the other in King-street, the return left, after deducting per centage on repairs, was 15 per cent. Repairs in the above calculations are taken as averaging ½ per cent. only on new buildings; 2 per cent. is required on old buildings.

In the case of three old courts put into a good sanitary state with suitable fittings, the lodging-houses included, the return had been much less satisfactory. In 1855, it was, after deducting 1½ per cent., about 1¼ per cent. only; whilst in the past year, the receipts had diminished considerably; and even the actual benefit resulting otherwise, was not that supposed,—as a considerable portion of the previous tenants had been ejected, not only to reduce the number to a due limit, but to secure a more eligible class. However, from the figures, it would appear that whilst old buildings may be dealt with, for men's lodging-houses, with a fair prospect (though results will depend on the manner in which the work is done), courts and old buildings for families in the metropolis will not yield a satisfactory return after provision made for repairs, and for a sinking-fund to pay off the capital—which there should be, especially in the case of leasehold property. It was, however, stated that the Hastings Cottage Improvement Society during the past three years, had succeeded in getting a return of 6 per cent. It forms the main part of that Society's principle, to disturb existing occupants as little as possible. There is a reserve fund of 1 per cent. per annum.

The sanitary and moral results of the operations of the two London societies, need not be here recapitulated. The point required to be got at, is the reason for any ill success which there has been in the financial returns, and in the extent to which the example has been followed by speculators, or by philanthropists who would gladly select the form of investment in buildings of the kind referred, were they assured of a moderate return. The sanitary and moral effects, taking them as a mere drop in the ocean of the extent and vast population of London, the author did not consider were unimportant, or when compared with those in Paris, obtained by a Government subvention of 10,000,000 francs. For description of what had been done in the British metropolis, the author referred to his paper "On the Improvement of the Dwellings of the Labouring Classes," given in the "Transactions of the National Association for the Promotion of Social Science," for 1858.

Still, facts remained to be stated regarding financial success in London. At Shadwell, close to the line of the Blackwall Railway, some miserable dwellings came into the possession of a gentleman, Mr. W. E. Hilliard, of Gray's-inn, who thereupon decided to endeavour to improve his own property, and also by example the immediate neighbourhood. The old dwellings were replaced by a street, with dwellings on Mr. Roberts's plan, as exhibited in 1851 in the Prince Consort's Model Houses. There are twenty-eight blocks, each of four residences—112 families in all being provided for. The cost of each block was 487*l.*; and, after allowing for ground-rent and all charges, the authority of the owner was given that they continued to "pay upwards of 6 per cent. and, in fact, nearly 7 per cent., as a net return on the investment;" whilst the same competent judge spoke of the facts as of "perhaps more consequence," that the houses were "almost constantly let," and were "appreciated by the tenants"—who, "as a rule," were "pretty stationary, and not migratory, as that class frequently are."

Thus, as in the last-named case, we have an outlay (of 14,000*l.*) on new buildings, containing 448 rooms, kitchens included, yielding 6 to 7 per cent.; whilst the cost of putting into sanitary condition the three old courts before alluded to, which contain 275 rooms and a lodging house with forty beds, had been upwards of 7,000*l.*; and, in that instance, the return on outlay has been 1½ per cent., after deducting 1½ per cent. for repairs, but making no allowance for sinking fund.

The Windsor Royal Society, with 9,000*l.* invested, now pays 4 per cent.: at Liverpool the Frederick-street dwellings, for twenty-three families, pay 4½ per cent.; and the Association at Brighton gets a fair return. Not fewer than twenty societies have been established in provincial towns, the results to occupants being in every case beneficial; and, whilst the financial results have varied so far as to show the necessity of competent skill in planning, and watchful supervision, they are yet valuable. One instance from Scotland,—that of the Pilgrim Model Buildings, near Leith-walk, Edinburgh,—was added by Mr. Roberts. There are forty-four dwellings in three blocks, with access on both sides, the upper floor tenements approached from one side, and the ground-floor from the other. By economy the cost was only 4,052*l.* 15*s.* 9*d.*, or about 92*l.* per house. The rent of the whole is 303*l.* 19*s.*, or varying from 6*l.* 5*s.* to 9*l.* 15*s.*, per house, one-half of them not exceeding 6*l.* 6*s.* per house. The rents were purposely made low. After deduction of all expenses, namely, fee duty, 22*l.* 14*s.* 10*d.*; insurance, 5*l.* 12*s.* 6*d.*; rates and taxes, 13*l.* 11*s.* 2*d.*; repairs, 13*l.* 4*s.* 7*d.*; management, 21*l.* 6*s.* 3*d.*; and paying a dividend of 5 per cent. (less income-tax), a balance of 30*l.* 13*s.* 1*d.* was last year added to the sinking fund, from which sundry expenses, as painting and papering, are defrayed, this fund now amounting to nearly 200*l.* The demand for the tenements is generally six times the supply. Besides these instances, allusion was made to what had been done through enlarged views of self-interest by many large proprietors and companies, and to the possible development of the machinery of Building Societies. Improvement in the metropolis, the author urged, as we have often should be consequent upon demolition for new streets, and should be enforced. A standing order of the House of Lords for the investigation of such cases, he said, had become a dead letter. The Legislature should interfere in the case of all tenements let at low rents, as in the lodging-houses; though such a power exists in the City.

In the discussion which followed the reading, Mr. Edwin Chadwick contended that results of improvement were even more favourable to the object of the author of the paper than would be supposed from what had been stated. He did not, however, we thought, add much to the argument to be addressed to capitalists, and in favour of good planning and internal arrangement of tenements; though he adduced the facts of the gain by sanitary measures in towns. Reference being made to the branch of the subject connected with cottages in agricultural districts, Mr. C. H. Bracebridge described some cottages which he had built at Atherstone, Warwickshire, each containing equal to three bed-rooms, and which had cost, exclusive of closets at the back, but inclusive of a common wash-house and dust-bin to a group of five houses, as well as pathway, 81*l.* 6*s.* a cottage. The object of low cost, and the provision of the third bed-room, were attained by placing the bed-room in the roof—together, or nearly so. The roof being constructed with queen-posts, the room was got in the space between the "queens." The area in the clear, covered by each house, was 21 feet by 13 feet; the room on the ground floor was 13 feet square; and the space for stairs and other features of the plan, 13 feet by 8 feet, including the partition. The room in the roof, which ran from end to end, was of adequate height; and it cost about 6*l.* of the amount named as that for the whole cottage. This room was not, it was true, a very good one; and it had to be reached by some kind of ladder: nevertheless, it served the purpose, and it had an advantage over a better room—as it could not so well be let. Water supply, except that from the roof, is not included in the amount named.

Subsequently in the same section, a paper, by Mr. H. J. Ker Porter, M.R.I.A., was read, entitled "Hints on the best Plan of Cottage for Agricultural Labourers." It was useful as showing the disposition on the part of tenants in certain districts, to pay a moderately increased rent for dwellings, better built, and provided with means of ventilation. Having remarked that in the cottages of farm labourers, besides the defective drainage and ventilation,

the evil of cold air was felt,—as from construction of the walls, in some cases, of "wattle and dah," or wickerwork, covered with untempered mortar,—the framework of which was always giving way, so that doors and windows could not be kept water-tight,—the author said he had had thatched roofs of such buildings underpinned, with brick walls, in which new doors and windows were added, at a cost of from 10*l.* to 12*l.* a cottage, for which alteration the occupiers were willing to have 5 per cent. on the outlay added to their rent. In some new cottages, of which Mr. Porter showed drawings, ventilation was secured, he said, by a 4-inch square opening, near the ceiling of each apartment, connected with a flue of the same size, carried to the gable of the house for egress; or several of such flues might be connected together. On an estate in Ireland, where this arrangement was adopted, immunity from fever had been shown in contrast with the cases which had occurred in neighbouring dwellings. In the new dwellings, for defective lead-lights, or iron casements, sashes, swivel-hung, were substituted, formed,—the outer part of the sash of wood, and the inner divisions of 3/4-inch hoop iron, cut half through at the intersections. Thus, with strength, there was the advantage of being able to add to, or take from, the outer sides of the sash, to make them fit tightly. After the erection of one cottage, on an estate in the county of Huntingdon, so many tenants were desirous of the benefit of like improvements, that several more cottages on the same plan were to be built; and the five per cent. on the outlay, additional rent, would be paid by the labourers,—who were only glad to settle where they could find constant employment and comfortable and healthy dwellings. The money in this case was advanced by the Land Improvement Society, the repayment being spread over twenty-one years; so that the proprietor of the estate, who was only tenant for life, had not to debar himself from making other improvements for benefit of his tenants. We must leave the completion of our notice till next week.

THE PARIS ART EXHIBITION OF 1861.

The following is the official programme of the Paris Art Exhibition of 1861, announced on the 23rd instant, by the Count de Nieuwerkerke, Inspector-General of the Imperial Museums:—

REGULATIONS.  
CHAPTER I.

Deposit of Works of Art.

Art. 1.—The exhibition of the works of living artists, to be held from the 1st May to the 1st July, 1861, will be open to the productions of French and foreign artists.

Art. 2.—The following works are to be admitted:—

1. Paintings, comprising also drawings, water-colours, pastels, miniatures, enamels, or on porcelain.
2. Sculpture and medallions.
3. Engravings.
4. Lithographs.
5. Architecture.

Each artist is only permitted to exhibit four works in each of the above classes.

Art. 3.—The works not to be admitted are:—Copies, excepting those reproducing a work in a different style, on enamel, in porcelain, or by the altered design. Works already having been exhibited at preceding exhibitions in Paris. Pictures or other objects without frames. Productions of a deceased artist, unless the demise took place since the opening of the last *salon*. Anonymous works. Sculptures in unshaped clay. Painted windows (stained glass).

Art. 4.—Each frame is not allowed to contain more than one subject for the jury to decide upon unless there are several pieces which form an *ensemble*. Miniature painters can alone group their objects in the same frame.

Art. 5.—Works in round, oval, or polygonal frames, must be adjusted into gilt ones of a square form.

Art. 6.—If several works be sent by the same artist they must be all presented at the same time.

Art. 7.—All works to be delivered at the Exhibition building at the expense of the artist.

Art. 8.—Each artist, in delivering, or causing

to be delivered any work of art, must, at the same time remit, or cause to be remitted a notice, signed by him, containing his name, Christian name, place of nativity, the names of his masters, and the enumeration of rewards already obtained. Those who cannot accompany their works must send some person authorized under their handwriting.

Art. 9.—Each of the five classes of works mentioned in Art. 2 must be specified in a separate notice.

Art. 10.—An appendix to the catalogue will be devoted to works of painting and sculpture executed, since the last Exhibition, in public monuments, and which, by their fixed position in the decoration of these monuments, cannot figure in the gallery of 1861. Artists, on depositing at the bureau of the catalogue the indications of these works, should accompany their declarations by official vouchers attesting the order given for the works, and the date of delivery.

Art. 11.—No work having been registered for exhibition is allowed to be retouched.

Art. 12.—No work is allowed to be reproduced without special permission of the artist.

Art. 13.—No work can be removed before the closing of the exhibition without special permission.

Art. 14.—All works must be deposited from the 20th of March to the 1st of April, at six o'clock in the evening. Beyond this time no work will be received. No indulgence of time will be allowed by the administration.

CHAPTER II.

The Jury of Admission.

Art. 1.—The jury will be composed of the four first sections of the Academy of Fine Arts, to whom will be joined the free members of the Academy.

Art. 2.—Each work, whatever be its nature, will be judged by the whole of the jury.

Art. 3.—The director-general of the Imperial Museum will be president of the jury.

Art. 4.—The decisions will be according to the absolute majority of the votes of the members present. In case of equal votes the work is decided to be admitted.

Art. 5.—The works received without examination will be those of artists decorated for their works, or having obtained a 1st class medal in the annual exhibition, or a 2nd class medal at the Universal exhibition.

CHAPTER III.

The Jury of Rewards.

Art. 1.—The same jury which pronounces the admission of the several works is to decide upon the merits of those worthy to receive the medals or honourable mention.

Art. 2.—The medals are of three classes: 1st value, 1,500 fr.; 2nd value, 500 fr.; 3rd value, 250 fr.

Art. 3.—The awards of the jury cannot be over-ruled.

For Painting.

Three medals of first class; six medals of second class; and twelve medals of third class.

For Sculpture.

Two medals of first class; four medals of second class; and six medals of third class.

For Engraving and Lithography.

One medal of the first class; two medals of the second class; and four medals of the third class.

For Architecture.

One medal of the first class; two medals of the second class; and three medals of the third class.

Art. 4.—A medal of honour, value 4,000 francs, can be awarded to the artist who distinguishes himself pre-eminently by a brilliant work of merit.

Art. 5.—The rewards will be distributed with all due solemnity at a meeting held for the occasion.

The sums received for admission and other purposes will be devoted to the purchase of some of the exhibited works.

Admission on week days one franc. On Sundays the public are admitted free.

COMPETITION: PUBLIC ROOMS, KIRK-CUBRIGN.—The committee appointed to carry into execution the erection of public rooms in this town, in connection with the Institute, have awarded their premium of 20*l.* for the best plan of a building suitable for such a purpose to Messrs. Haig & Son, of Glasgow.

AN ARTIST'S IMPRESSIONS OF THE ESCORIAL.

RICH as Spain is in architectural monuments, in the Alhambra of Granada; the Mesquita of Cordova; the cathedrals of Seville, Burgos, and Cuena; the noble Roman remains, as the aqueducts of Segovia and Merida; there is none that in magnitude and importance exceeds the Escorial; and it is wanting only in that romance with which a more remote antiquity invests great works, to render it of equal interest.

That the intention of erecting it in the form of a gridiron, in honour to its titular saint, Lawrence, controlled or influenced its plan, I believe to be an idle remark, devoid of foundation, which has gained credence by being frequently repeated, especially by the writers of published travels and guide-books, from Swinbourne to Ford. The latter, enlarging upon it, says:—"Bigoted indeed was Philip when he could sacrifice the opportunity of building a perfect palace to the idle legend of a gridiron; and poor Herrera, forced to lower his genius to a plan worthy of the breakfast club or Cobbett's Register, was indeed the real unartyr."

The plan of the building bears no resemblance to the symbolical gridiron with which the saint is represented in the statues and pictures which form the architectural decorations, and which were placed under the inspection of the architect himself. The general plan and arrangement bear unmistakable evidence of the influence of the Moorish taste in architecture, however different or even opposed in its development and detail, like the Alhambra in its arrangement of *patios*, as well as in the absence of architectural features, and almost baldness of the exterior. The quadrilateral intersections of the building forming the *patios* have given rise to the surmise that it was erected in the form of a gridiron; but I believe that the present form would have been adopted had it been dedicated to any other saint than St. Lawrence; nor can I imagine one more appropriate to the climate and to the object for which it was erected—that of a convent palace.

The north facade, in which is the principal entrance, presents more architectural features than the others, which are indeed almost devoid of them; but it is in the interior that the artist has lavished his genius, not in ornament or richness, for its style is of the utmost severity (the order Doric), but in giving that impression of dignity and grandeur which is derived from beauty of proportion allied with majestic simplicity.

Upon entering the principal porch we pass an open vestibule supported by Doric columns, and are immediately in the fine court, the *Patio de los Reyes*, the side of which in front is elevated by a few steps, for it forms the facade to the church—one of the noblest monuments of architecture of the modern world. Upon entering the vestibule we have a view of the church in its full extent, it being separated by an open archway and massive grating only. The vestibule, which is somewhat low, is remarkable for its flat roof, which is constructed, not by means of beams, but with solid blocks of granite, upon the principle of an arch reduced to its minimum of curvature. For the lateral pressure, which must be enormous, I am not aware of the provision, which is of course concealed in the walls.

The view of the interior of the church, from the vestibule, moved to enthusiasm even the cynical genius of Ford, who exclaims that,—“as seen from under this sombre grotto-like arch, it is the triumph of architecture, it takes away the breath of the beholder from its majestic simplicity.”

The situation and arrangement of the *coro* I consider a masterpiece of art: it is placed above the vestibule, thus not enumbering the principal nave, as in the cathedrals of Seville and Toledo, and indeed in most cathedrals; impeding the view of the high altar and impairing the impression of their vastness. The effect of its arrangement in respect to acoustics is admirable, the intonation of the service being perceived from whence it comes, its elevation being sufficient to hide from view the stalls. The *coro* above the vestibule forms part of the body of the church, and parallel with it are galleries running round the church, and widening in the opposite side to the *coro* (by the high altar) into the *ante-coro*, from which the views of the church are remarkable for their grandeur and varied architectural effects, which recall strongly the impression of the upper galleries of the Coliseum at Rome. From these galleries open several noble rooms, as the *sacristia*, &c. The cloisters are in accordance in style with the church: the arched doorways communicating between them enforce attention, notwithstanding their freedom from all

ornament and their severe simplicity, from the beauty of their lines.

In the works of no architect is the impress of the genius of the individual more apparent than in those of Herrera, not only in the whole—in which he has known how to impart to the Roman architecture, in his sacred buildings, that solemnity which is considered as exclusively belonging to the Gothic (as may also be seen in the portion of the cathedral of Valladolid executed by him) and which is not apparent in the same degree in St. Peter's, Sta. Maria Maggiore, and other churches of Roman architecture,—but the portions of his work bear his distinctive mark. It is, therefore, to be regretted, as he completed the Escorial, that any subsequent additions to or alterations in it were made. Some of these, as the grand staircase and the Pantheon, or burial vault of the sovereigns, although fine in themselves, are not in harmony of style with the original building. The former was by Castello, though Herrera has shown his power in designing a staircase in the beautiful though smaller one of the Lonja, at Seville. The creation of the Pantheon, or the burial-vault of the sovereigns, is more objectionable, as more florid in its style, and replacing the appropriate one designed by Herrera. I consider, also, the effect of the church inspired by the frescoes, subsequently added, of Luca Giordano, who has painted the vaulted roofs of the *ante-coros*, which are conspicuous from the church. His style was peculiarly that of the decline of art, with its rapid redundancy and all its vices, and is especially out of place here, which is not the case with those decorative portions, the frescoes of Romulo Cincinato and L. Cangiari, in the *Coro Allo*, and the pictures at the altars by El Mudo, which were placed under the architect's inspection, who, having completed his work, superintended its appropriate decoration, and even himself designed the bronze tabernacle of the high altar,—“a glorious work of art”—now no longer existing.

When we consider how many of the greatest works of modern times, as the Palace of Whitehall, the Cathedral of Cologne, the Duomo of Florence, have never been carried to completion,—that St. Peter's occupied for more than a century a succession of Popes,—it is worthy of admiration that this—one of the most vast of architectural works—was commenced and finished in twenty-one years by a prince who at the same time was enriching Spain, in various parts, with noble structures. Its magnitude is such that it does not appear dwarfed by the Sierra, in the midst of whose wilds it is placed, and with whose sombre aspect it is in perfect harmony. Its gloomy and austere character, which has been objected to as a fault, is surely its crowning merit. It was a *covered* palace, and even the parts for royal residence were subordinated to the predominant and religious feeling. Its almost Cyclopean simplicity is certainly more in unison with its object than in the Pitt Palace at Florence, which included no sacred element in the object of its erection. That it embodies most vividly in outward and visible forms the austere and ascetic feeling of religion which circumstances long continued to produce, though now passed away, with which the sovereign, and, indeed, his subjects, were equally imbued, is a triumph of art; for surely architecture assumes its highest rank as a fine art in attaining the power of embodying a feeling and expressing powerfully a sentiment, in which respect the Escorial may with justice be termed “a romance in stone and mortar.”

Madrid.

F. Y. HERLSTOSE.

#### CONDITION OF LONDON HOUSES.

CAREFUL personal inquiry shows, not only in the metropolis but throughout the provinces, that the enactments which have been made during recent years in connection with common lodging-houses have worked well. These places, in days not far back, were in many instances “rude-montions” of the most terrible description, in which vice was encouraged, and pestilential diseases which destroyed a large amount of life were generated. The profits of some of them were enormous, and it is a fact, that certain persons let houses of a description which were not fit for human occupation,—where drainage or ventilation, or cleanliness or decency was uncareful for,—where both sexes were huddled together, and immorality prevailed.

In years to come, inquirers into sanitary conditions will look with wonder at some of the pictures of such houses which have been preserved. Sometimes a single room was made to contain a larger population than a house of the ordinary

size built for the use of the middle-classes should contain.

The Earl of Shaftesbury, who has seen the ill condition of London with his own eyes, not long since introduced a bill into the House of Lords, for the purpose of extending the provisions of the enactments in connection with the common lodging-houses. This, however, was not carried, amid the expression, “that an Englishman's house was his castle.”

Amongst the relics of the feudal times, we have seen English castles, moated and otherwise, which must have been most pestilential; but these scarcely bear comparison with some of the modern castles of the poor in this country in these intelligent days, which are beyond the reach of the law, but where absolute need exists for attention and change. We have lately made inquiry in connection with some of those castles in which the poor dwellers would be glad of assistance, for the salvation of their own and children's health.

In a street to the west of the Caledonian-road, Islington, there has been a considerable amount of death and ill health. The houses, although they have been erected since the laws in connection with metropolitan dwellings should have made imperfect drainage impossible, have been poisoned by stoppages, and this in cases where they are let in tenements and the population is dense. Take a sample of some of them in this respect. Each contains two kitchens below the surface, and six rooms above. In one of those places the population is as follows.—Three in the kitchens; nine in the parlours; four in the first-floor front; four in the back; five in the second-floor front; three in the back. Total, twenty-eight.

In the dwelling adjoining there are thirty persons.

In three houses we have a population of *seventy-six men, women, and children*; and many dwellings in which respectable working-men who have families of children are obliged to dwell, will be found to contain a far larger population in proportion than this.

While considering this important question, it is worth while to glance at the amount of rent which is paid by lodgers in those situations.

The rent of these houses we would put at an average of 25*l.* a year, and about 6*l.* taxes (31*l.*):—The kitchens let for 4*s.* 6*d.* a week; the parlours for 5*s.*; front room, first-floor, 3*s.*; back room, 2*s.*; front room, second floor, 3*s.*; back room, 1*s.* 6*d.*; total, 19*s.* This makes 49*l.* 8*s.* a year, and leaves a profit on such a house, beyond the actual rent, taxes, and rates, of 18*l.* 8*s.*

In such places the struggling classes pay, as is shown by the above statement, a sum which should be sufficient for decent and wholesome accommodation. The rent of tenements of this kind is generally safe; in fact, the risk is more frequently to those who occupy the premises, owing to neglect of the sub-landlord to pay the rent and taxes, the amount of which they have actually received. This, however, is not a part of the subject to which we would particularly refer: we are speaking of the danger of overcrowding houses which are at present not adapted to such purposes.

We have lately looked at premises in several other parts of the metropolis, and find the overcrowding even worse than in the cases alluded to. In one house, where every room is let to separate families, we found, by the statement of the landlord, that forty-five persons lodged there, and it is probable that the fair average is upwards of fifty, who sleep nightly in spaces altogether insufficient for the preservation of health. It will be said by some who have thought on this matter, that it is only by letting, in the manner in which the dwellings in the metropolitan district are now let that the rent can be kept within the means of thousands of families, and that to interfere with the overcrowding would have the effect of raising the prices of the homes of those who, having large families, have the greater need of cheapness. There is truth in this; but for the protection of young life—for the sake of enabling workers to preserve that stamina and degree of health which would allow them, by means of increased earnings, to pay a little extra rent, and for other important considerations, such a state of things should not exist. In the houses which have been mentioned in Islington, and it is the same in many other instances, the drains were partially choked; children became sickly; measles and whooping-cough visited in their most dangerous forms. In such cases the doctor and undertaker are often knocking at the doors. Nor is this to be wondered at. The rooms occupied as shown, are not provided with the necessary means of ventilation; the staircases are in the same way

neglected, and the atmosphere when the windows are closed at night, is very bad. In such houses some are aware of the danger of this, but being on friendly terms with the landlord, do not like to complain; others may be a little in arrear; but the chief part are careless. It is therefore a necessity for the wellbeing of all, that facilities should be given for the sanitary inspection of all houses which are let into more than a certain number of tenements. This duty need not be made unpleasant to persons dwelling in such situations; in fact, we feel assured that supervision in this way would be agreeable to a large majority.

All houses let in tenements should be in the first instance inspected by competent men, who should give a certificate that the drainage is sufficient,—that provision is made for a proper water-supply,—that closets and drains are trapped,—the rooms, staircases, &c., ventilated; and from time to time with great regularity the premises should be examined, and any derangement reported upon and remedied.

Having seen the condition of vast masses in the metropolis, and in some large towns, we are convinced that the greatest benefit would be conferred on thousands by such a provision as that alluded to,—that hundreds of lives might be in each year saved, and that the condition of a large body of our working population would be materially improved.

#### THE FIRST MAKER OF EARTHENWARE SEWER AND DRAIN PIPES.

ORIGINALITY is very difficult to establish in this our day; and it will be still more difficult to be original in succeeding ages. Printing, libraries, and the Patent Office will show that the human mind reasons in a circle; that “necessity” is truly “the mother of invention;” and that many inventions have been many times invented. A thing may, however, be as old as the hills, and yet to an inventor it may be new; but this cannot make it original to the world. The inventor can only complain that “the ancients had stolen his ideas.” Certain persons claim to have invented (about 1814) earthenware pipes for town sewerage and house drainage purposes, when on inquiry it appears that earthenware socket-pipes have been made in Lambeth at a much earlier date.

The sanitary inquiries and reports up to “The General Report on the Sanitary Condition of the Labouring Population of Great Britain, 1842,” in which Mr. Edwin Chadwick performed so important a part, had laid bare the terrible neglect under which the mass of our people existed; and whoever will read these reports carefully will find that most of the sanitary improvements which have since taken place had been indicated. John Roe, engineer to the Finsbury district, had demonstrated that sewers should have circular inverts and regular forms; and about this time ordered earthenware socket-pipes, for the purpose of using them as sewers and drains. Pipes were ordered from two makers simultaneously, “without letting either know that the other was employed;” so that it is quite clear neither of these gentlemen can claim priority of invention; especially as we find, by the previous testimony, that earthenware socket-pipes had been made in Lambeth for fifty years, within personal knowledge, and probably for upwards of a century. Mr. Rawlinson, in several of his sanitary reports, gives instances of the use of earthenware pipes in towns for the conveyance of water. At Longton, near Stoke-upon-Trent, earthenware pipes were made of hinc marl, others of brown earthenware, and some of China clay. They were termed “pitcher-pipes,” and were made by hand, 2 inches in diameter, and in 2-foot lengths. They

\* “My father from his own observation, knows that socketed pipes have been made at Lambeth for the last fifty years. He has no doubt they have been made here for a century past. Will within the last fourteen years they were chiefly used for the conveyance of rain-water. They were considered a good substitute for leaden pipes till iron were made so cheap.—HENRY DOUGLASS.”

Mr. Roe (Mr. 17, 1860) thus writes to Mr. Chadwick: “At the time alluded to in your letter (1842, I directed one of my clerks of works (Mr. Needworth) to ask two of the stoneware manufacturers each to make me a 2-foot length of 9-inch socket-pipe of stoneware, without letting either know that the other was employed, as I wished to see how their prices would agree over this new adaptation of stoneware. One of these manufacturers was Mr. Northern; the other was Mr. Davy. The two specimens arrived at the Holborn and Finsbury Sewers Office, in Hutton-gard (I believe) on the same day, and remained there until after the amalgamation of the Commission of Sewers.—JOHN ROE.”

The Etrurians used brick sewers with circular inverts; and John Howard, the prison philanthropist, in his great work, recommends egg-shaped sewers as better than those square on section. Pipes of glass have been made and tried, both in France and in England, but failed.

broke and burst in use, although they had been proved capable of resisting a much higher pressure singly. At Sunderland earthenware-pipes were made from  $\frac{1}{2}$  up to 5 inches internal diameter, and 54 inches in length, each pipe.

These pipes were squeezed through what is called in the potteries a *dad*, an inverted cast-iron cone, with a bore in the centre. This *dad* was fixed at the bottom of a cylinder; and, when filled with tempered clay, a piston was screwed down, and forced the clay through in the shape of a pipe. A man below received it on a wooden mauldril, and a boy cut it off with a wire to the fixed length. These pipes bore an internal pressure up to 350 lbs. on the square inch, but although they would bear a constant heavy pressure, in use they burst by the shutting of a cock, splitting longitudinally. The joints were made with cast-iron faucets. Roman cement, sulphur, and flannel soaked in tallow; as also oakum soaked in white-lead and tallow, were used for jointing. The pipes did not give way at the joints. Such earthenware pipes were used at Lyme Regis Waterworks, in 1821, and at Bishop Wearmouth, 1824-25. The early water companies used wood, stone, and earthenware, but cast-iron superseded every other material at present for waterworks mains.

The Assyrians used earthenware pipes for drains. Mr. Layard has found them in the foundations of ancient Babylon. They were used by the Egyptians and by the Hindus; and no doubt by the Chinese in the remotest periods. Etruscans, Greeks, and Romans also used them; and Vitruvius describes them fully. The Easterns make and use earthenware pipes to this day. Mr. Rawlinson saw some British workmen laying a line of earthenware aqueduct pipes to the hospital at Kulali, on the Bosphorus, the joints made with a cement composed principally of lime. These pipes were of modern make, and about the same form, dimensions, and general appearance as hand-made English earthenware pipes.

The annual make and use of earthenware pipes in England at present is enormous—upwards of 12 miles per week, or more than 600 miles per annum; the least diameter 4 inches, and up to 36 inches; but, as a rule, 15 and 18 inches are about the largest diameters used to any great extent.

Several towns in England have been entirely sewered with earthenware pipes, and in most towns they are used as tributaries from branch streets where brick sewers are used as mains. Many thousands of houses are drained with earthenware pipes, from such houses as Alnwick Castle down to the single labourer's cottage.

If no modern can claim to have invented earthenware pipes, many can now claim to be users of them. Mr. Edwin Chadwick was one of the earliest to enforce a their use, as better and more economical than brick drains.

"Pitcher-pipes," "pot-pipes," "earthenware-pipes," are used, and will be used, for draining purposes, to an extent not before seen in the world. Macaulay's New Zealander will be able to stock the museums of the new world with dug-up specimens of earthenware pipes from our ruined towns and from our fields long after every surface vestige of our civilization has perished and passed away.

#### ARCHITECTURAL EXAMINATIONS PROPOSED BY THE INSTITUTE.

AN adjourned meeting of members of the Institute, on the subject of Architectural Examinations, was held on Monday evening last, the president, Mr. Cockerell, R.A., in the chair. A resolution to establish two examinations, open to members of the Institute, was moved by Mr. George Morgan, and seconded by Mr. Ferrey. Upon this an amendment to the effect, that the examinations should be open to all British subjects, was moved by Mr. J. W. Papworth, and seconded by Mr. Hansard. A second amendment, to appoint a sub-committee to inquire and report, was moved by Mr. Wigginton, and seconded by Mr. Hanson. Ultimately, however, it was resolved to adjourn the consideration of the question until the second Monday in November next, the Council, meanwhile, to ascertain the opinion of provincial Architectural Societies.

Readers of the *Builder* do not require to be told our views on "the diploma question." The difficulties in the way of properly carrying out examinations in respect of art are very great, and the advantages that would result in this particular case very doubtful. In Prussia, as our readers have been told, the system has made red-tapists instead of architects, and men are crammed with a variety of useless knowledge to the extinction of vigorous thought and active art-exercise. The

course of study at any particular period, the fashion of the day, the opinions held, may be wrong ones. Make the adoption of these a necessity on the part of all who would obtain the right to practise, and you lengthen the existence of error and greatly obstruct the advance of improvement. The longer we think on the subject, the less inclined we are to agree with those who insist that no one should be allowed to practise as an architect who had not passed a prescribed scholastic examination and obtained a diploma.

What is now proposed by the council of the Institute of British Architects, however, is another thing. The rising members of the profession ask for an opportunity to show that they have properly studied their profession and may be safely trusted by the public, and the Institute, we are disposed to think, will do right if they afford them the desired opportunity. A more complete and thorough education for the architect is needed, and the institution of these examinations will tend materially to bring this about. We shall have plenty of time to go more fully into the matter.

#### DEPUTATION ON CITY OF LONDON CHURCHES.

A DEPUTATION of the Council of the Royal Institute of British Architects, consisting of the President, Mr. C. R. Cockerell, R.A., Mr. J. Bell, Hon. Sec., Mr. Penrose, Hon. Sec. for Foreign Correspondence, and Mr. Roumieu, waited by appointment on the 3rd inst. on the Bishop of London, to confer with his lordship on the best means of securing the finest of the City churches, especially those built by Sir Christopher Wren, from danger of demolition under the proposed Union of Benefices Bill. The deputation pointed out the objects which they had chiefly in view, namely, the preservation of all the towers which form so remarkable an ornament to the City; and also that a list of churches should be appended to the Bill, and which should be specially protected by some additional safeguard, the list to be settled after due reflection and advice; but the following would be among the most conspicuous:—St. Stephen's, Walbrook; St. Clement's Danes; St. Bride's; St. Lawrence, Jewry; Christchurch, Newgate-street; St. Andrew's, Holborn; St. Martin's, Ludgate-hill; St. Switbin's, Cannon-street; St. Anthony's, Watling-street; St. Mary's Abchurch; St. Antholin's; St. Michael's, Cornhill; St. Mildred's, &c.

The deputation was very courteously received by his lordship, who pointed out the way most likely to conduce to the objects contemplated by the council.

#### ON SCULPTURE.\*

It is not my intention to give you anything like a history of the art of Sculpture, nor to enter upon the controversy that has lately raged between those who have advanced diverse views upon the subject of our sister art. My engagements have allowed me but few hours to prepare this paper: the treatment I can give to the subject must, therefore, be more suggestive than complete. My attempt will be to put before you the subject in something like chronological order, bringing forward, in illustration of each epoch, certain examples which will afford the students of the Association an opportunity of obtaining a good general idea of the subject, by comparing one example with another; and for this purpose I propose bringing before you a valuable series of copies of Ancient Sculpture in Ivory, published by the Arundel Society. It will thus be seen at the onset, that I shall contribute nothing to the sculpture controversy; but though I advance nothing original, I trust the subject may be clothed with somewhat of new interest, owing to the instructive series of illustrations to which I shall have to call your attention, for in them we may examine, somewhat in detail, the peculiar style of each period, from the earliest ages of Christianity, enabling us to arrive at general criteria, by which the works of various centuries may be assigned, both as to date and country, in the same manner as a piece of moulded stone will generally give us, within a few years, the date at which it was wrought.

I will not waste the short time allotted to my subject by any attempt to elucidate the much controverted questions referring to the origin, and the exact date of the origin, of Sculpture as a fine art; but, I think, the more we inquire, the more fully satisfied shall we be, that its origin

dates beyond all written records, and that the Greeks were quite moderns in the art, compared with those nations who practised it in the ages which preceded them. Instead of Daxalus introducing the art into Greece, it is pretty clear he was simply an improver on what had gone before; no doubt, by adding life to the expression of the features, and animation to the limbs of his statues, he made a great advance on his predecessors; but, although the ancient writers speak of his works as possessed of divine expression, we may rest satisfied that, though good for some fourteen centuries before our era, they could not compare with the works of later schools. His was, no doubt, a great epoch in the history of ancient sculpture; but, as all the examples of that and other contemporary Schools have perished, we have, unfortunately, no means of comparing the relative excellence of each, in their varied phases. Rome became the great art-treasure house of the civilized world, from the spoils of Greece and Etruria, but she was robbed of her accumulated spoils by Byzantium, who, in turn, was despoiled of her treasures, which were irrevocably lost, in the various sacks and conflagrations to which she was subjected; aided, too, by the zeal of Constantine, in destroying all traces of the ancient worship; not, however, in either case, before accomplishing their mission by perpetuating the art, and founding separate schools, the influence of which was felt throughout the Middle Ages.

It will be instructive at the outset to advert to the various materials and modes of working adopted at each period by the ancients. In the most ancient times it is probable that the impressions of form were presented to the eye by the softer and more plastic materials, and that the modeller in *clay*—at first a potter, modelling objects for his art,—at length became so adept, that he ventured upon reliefs, and, eventually, figures. We see in the Greek and later Etruscan pottery what exquisite forms of art the material was susceptible of, and it seems very natural that a high development of this art should lead to subsequent excellence in works in various stages of relief. Numerous proofs of the excellence of the potter's art are to be seen in the terra-cottas in our own and foreign museums: at Rome, statues of the gods larger than life, and at Naples, life-size figures recumbent on Etruscan sarcophagi, show how nearly the art approached that of sculpture. Alabaster or gypsum was much used by nations even more ancient than the Greeks. The art of forming reliefs in *stucco* was also practised by the Romans.

It may incidentally be noted that the ancient terra-cottas and figures in pottery are for the most part highly coloured, from which was probably derived the custom, which at all events was partially practised by the ancients, of colouring statues worked in marble and other hard materials. Great dexterity was shown in the formation of figures in *bronze* and *brass*, sometimes by casting and soldering on the locks of hair and other projecting details; at other times, by hammering and embossing for works in gold and silver.\* Brass figures were frequently covered with gilding, remains of which can now be seen on the celebrated horses at Venice. The ancients do not seem to have understood the tempering of *iron*, so as to use it for art purposes. Carved figures in *wood* were used both in the temples and for private objects, the favourite wood being cedar, which had the reputation of being incorruptible. Ebony, citron, cypress, vine, olive, and other woods were also used. But the substance most prized by the ancients was undoubtedly the *marble* or marble, from its shining and polished surface. The marble from Paros was the favourite among the Greeks, but in later times coloured marbles were much used. Other kinds of marble in great repute were Carrara, which resembled fine sugar; Pentelic, which was veined and streaky; and Hymettian, the Nero-Antico, a favourite marble for statues of Isis, Rosso-Antico, and Porphyry. Calcareous tufa was also used, especially for Etruscan sarcophagi.

The Egyptians showed marvellous dexterity in working the harder materials, such as porphyry, granite, basalt, and syenite.

The Romans worked occasionally in these harder materials, frequently inlaying portions with various coloured marbles, and even with metals: busts and figures executed in this manner do not accord with our modern notions of refinement, and have a disagreeable harsh appearance, but the practice among the ancients seems to prove their love of colour, and it is natural to suppose that this *polylitic* process of sculpture originated from the

\* From a paper by Mr. Norton, mentioned previously; see p. 295.

\* This process was termed Torcetic art, and was employed for shields and armour.

use in the antique examples of actual painting and gilding, originally with vivid colours, and afterwards with softer tones: this is called *polychrome sculpture*. I think, on comparison of the two processes, the latter would unquestionably be more in accordance with refined taste. Another favourite practice was coating the surface of the marble with wax, which gave the surface a soft and slightly coloured gloss. The draperies, the hair, and portions of ornament were also painted, but apparently only for the purpose of relief, for I do not consider the practice of entirely covering the surface of sculpture with bright positive colours as anything short of a libel on the taste of the ancients. In modern times Canova and our own Gibson have adopted the same method of rubbing the surfaces of marble with wax and of partial polychrome, as far as I have had opportunities of judging, with perfect success.

The last process to which I shall refer is that of carving in ivory; and, as my examples are all in that material, I will devote a little closer attention to it. When the art of the Torians, or metal-workers, was combined in ancient times with carving in ivory, we come to a process which is called *chryselephantine sculpture*, which was much practised in antiquity, and is undoubtedly the most important development of carving in ivory. The ancients procured elephants' teeth from India and Africa of great size, and by a process of splitting and hewing we are assured that they could obtain plates of ivory from 12 inches to 20 inches in breadth. The colossal figures executed in this manner appear to have been covered with these plates of ivory, joined with isinglass, over a rough internal model made of wood, and iron bars for support. Pausanias mentions that the teeth of the hippopotamus were also used for ivory; and the northern nations of Europe are known to have used the tusk of the walrus, from which drinking horns of immense size were made, the surfaces being sculptured with hunting and other scenes. The most celebrated example of the "chryselephantine" method was the colossal statue of Minerva, in the Parthenon, by Phidias, which was about 39 feet in height, and an equally celebrated statue of Jupiter, in his temple at Olympia. The cost of such works is described to have been fabulous, and it is clear that the labour and expense of execution must have precluded their frequent repetition. We thus find that ivory came at length to be used solely for objects of cabinet size, such as diptychs, triptychs, situlas, devotional tablets, statuettes, and generally to mobiliary works.\* It is supposed that the ancients

\* As these diptychs form our principal illustrations, it will be well to understand correctly their object and uses. The word diptych is derived from two Greek words signifying "I fold twice;" when, therefore, more than two leaves are employed for these tablets, they become either "tritychs" or "polytychs," as we now say. They were formed sometimes in wood, but more frequently in ivory; the leaves hinged together in the manner of doors, so as to expose the sculptured sides, and to protect the interior of the tablets, which were prepared with a surface of wax, on which memoranda were written. They were also called "pugillares" from their extreme portability; they were strapped round and sealed with wax, and this appeared to be the most mode of conveying the most secret despatches. The diptychs form a most interesting series in the study of ancient art, and many elaborate treatises have illustrated them. They were divided into two grand classes, secular and ecclesiastical; the former were called "diptycha consularia," and the latter "diptycha ecclesiastica." The consuls in the time of the Roman emperors were in the habit of presenting to their friends and acquaintances, as a memento of their appointments to office, and it is even said as presents to the principal voters who were instrumental in their elevation—a practice differing somewhat from our modern notions of electoral matters. The exterior faces of these tablets were elaborately carved in low relief, usually with a figure of the consul in his robes of office, and illustrations of the Ctesian games to which he had probably contributed to pay the expense. Besides proving to us that high dignities were anciently not to be enjoyed without expense, these diptychs afford valuable records of costume and customs, and are the more so, as the inscribed name of the consul frequently furnishes the exact date of the carving. The second class, or ecclesiastical diptychs, were universally introduced in the Church, from the period when the Roman empire became Christian; they were used for various purposes, and were first presented by the consuls to the Church as votive offerings to the altar, and subsequently were used for inscribing the names of converts, great benefactors, the saints canonized by the Church, and of the faithful generally. The subjects of the carving were generally scriptural; but instances occur in which ancient consular diptychs were converted into ecclesiastical ones, by slightly altering the figures and inscriptions. It is worthy of remark that the carved side is the reverse of the consular diptych, the carving being on the inside, and the letters as folding over for protection. In later periods these diptychs were multiplied to such an extent that both clergy and laity seem to have been universally possessed of them. They were made smaller in size for portability and economy of cost. Their introduction on the altars of churches probably gave rise to the "retable" and "reered," or ornamental back to the altar, in the first instance portable, and afterwards in the fourteenth and fifteenth centuries developed into the magnificent specimens we see in foreign churches, in which the "plaques" of ivory form panels inclosed within borders, surrounded by elaborate canopies.

had a method of softening the ivory, which would render the process of elaborate carving and occasional undercutting less remarkable, but this has been doubted by some authors.

Having thus briefly described the materials used in sculpture at various epochs of the art, I will commence my series of illustrations, and describe to you various examples from the Greek period through the Roman, Byzantine, and Medieval, down to the time of the Renaissance. The Arruel cast will furnish examples of almost every century from the second to the sixteenth, whilst the photographs taken from original works at Rome, Florence, and elsewhere, will illustrate the works of Greece and Rome. The work of d'Agincourt will be of great assistance in filling up gaps and affording additional illustrations.

*Jewish.*—Of the ancient nations whose art had a separate existence to that of Greece and Rome I have no illustrations to offer, but we need go no further than the Bible to prove that the art of sculpture had reached great perfection amongst the Phœnicians, Tyrians, and Sidonians. We read, too, of gilded images of gods existing at Babylon, carved in gold, in silver, and in wood, and the ample description of the building of the Temple of Solomon by the Jews, containing incidental art references, seems to show that at that period (1,000 years before the Christian era) the sculptor's art was not then in its infancy.

*Egyptian.*—Of Egyptian sculpture we have numerous and fine examples in our own museum; and in these we trace an intimate connection between architectural and sculptural arts, and even with the literature of the nation, in the symbolic forms, images of men and beasts, but more especially in the hieroglyphic enrichments with which the surfaces of the architectural members are elaborately covered. In their sculptured figures, besides the colossal grandeur of their size, there is a dignified composure which seems never broken, and it is impossible for us to contemplate them without a feeling of awe, ignorant though we be of their symbolic and mystic meaning. This applies even more remarkably to the animal than to the human forms, for we know that particular animals were held in the highest esteem by the Egyptians. There is, however, great conventionalism and want of variety, as well as an absence of life, tending to prove that their artists were compelled to obey rigidly certain types and established proportions which precluded originality, and that the study of anatomy was restricted by law. This is especially observable in their temple sculptures, but when warlike and domestic scenes are attempted there is an air of greater originality. Their reliefs generally rise very slightly from a sunk or depressed surface.

The marvellous head of the so-called young Memnon is, perhaps, the finest example we have; and although it has the usual characteristic, thick lips, projecting eyes, and rounded nose, it still possesses great dignity and beauty.

*Etruscan.*—The art of Etruria is preserved to us more particularly in the cinerary urns or the tombs: both these and their sculptures have a close resemblance to the early and stiff character of the Greek school, particularly that of Egina. Their sculptures were usually in terracotta, sometimes of stone and bronze, and show signs of having been painted; remains are also found in the tombs, proving their excellence in working the more valuable metals. The heads frequently possess great beauty, but the draperies and actions of the figures are far inferior to the best works of Greece, the attitudes being exaggerated, and the drawing generally affected and unnatural, but possessing at the same time masculine power, and, though stiff, still showing a bold independent treatment, which distinguishes the school of Etruria from that of Greece: in lieu of the grace of the latter, we find violent muscular, almost contorted action, combined with much delicacy of execution.

*Greek.*—Greek sculpture may be divided into numerous periods; but, as it is my object to describe more in detail the works of the less known ages after the Christian era, I shall say but little on this head. The archaic was the most ancient period of Greek sculpture, and I will illustrate it with the example of the temple of Jupiter Olympius, at Agrigento, which has been so well described by Professor Cockerell. The giants, or "Atlantes" which support the cutabular, and attached to the walls of the cella of this temple, form an interesting example of the archaic manner of the Greeks, and are not unlike the works of Etruscan sculpture. The manner in which they subserve the architectural forms is very interesting, and their hold angular and energetic treatment seems to suit them ad-

mirationly for the object in view, which was to support a superincumbent weight. Their height was 25 feet, and they were constructed with stones having parallel courses with the walls of the cella, and the joints of the alternate courses show vertical joints, and thus form a part of the construction of the cella. You will notice the peculiar character of the heads, with the half-closed eyes, long and prominent nose, and hair arranged in uniform curls. Although these sculptures are supposed to be only about four centuries B.C., consequently not anterior to the Parthenon sculptures, still we see in them a much earlier treatment, proving that the ancient manner was practised later in Sicily than in Greece. The next great period was that of Phidias, when the art made a wonderful advance, and during which the grandest works the world ever saw were executed. The early stiff forms were rejected, and the rigid and inelegant actions of the archaic period became refined; and, instead of the dryness and hardness of their treatment, we find in the works of Phidias the most perfect expression of the human form—graceful and flowing lines taking the place of severe and architectural forms of the early period. The casts exhibited of the Theseus and Iliuss from the Parthenon afford, perhaps, the most perfect example of this style, the originals of which are to be seen in our own Museum. The first has lost portions of the legs, arms, and nose: the size of the original is 5 feet 8 inches by 4 feet in height, and has been called by other authors Hercules: the figure is half reclined upon a rock, covered with drapery and the lion's skin. The wonderful development of the anatomy is to be remarked, and thus is combined the most perfect scientific knowledge and truthfulness of nature, with the highest ideal of beauty. The Iliuss is a figure equally beautiful, from the opposite or western pediment of the Parthenon: it is half-reclined like the Theseus, to suit the raking lines of the pediment: the figure possesses great truthfulness and animation.

The next great period or development was during the age of Praxiteles, who introduced a more sensuous style, and Greek sculpture lost much of its sublime character, but exhibited the utmost technical skill in drawing, especially of figures in the nude. The photographs give illustrations of some of the finest works of this period. 1. The Pythian Apollo, which was found in the fifteenth century, near the ruins of the villa of Nero, at Antium. 2. The Venus of the Capitol, found in the eleventh century, and the exquisitely refined statue of the same goddess, in the Tribune at Florence, which is, probably, of the age last mentioned, and is an instance of the departure from the rigid grandeur of the earlier forms, and displaying the most fascinating and graceful harmony of lines and purity of expression. The Dancing Faun is another marvellous specimen of Greek art at its perfection, differing from the last instance in its muscular development and elasticity of movement: the entire figure seems in action; but there is nothing unnatural or distorted, and the physical quality seems subordinated to that of ideal refinement. 4. A beautiful example of the best period, illustrating the peculiar mode of draping the female figure, is shown in the statue of Pudicitia, or "Modesty," from the Vatican: this figure possesses wonderful grace and dignity, and the folds of the drapery are arranged in broad masses, and have the appearance of being modelled from drapery wetted and applied closely to the body, showing the form beneath. Another photograph shows that marvellous example of refinement and dexterity of execution the group of "Laocoon," found in the ruins of the Baths of Titus. Technical difficulties of execution have evidently been sought for, and it is impossible to imagine anything more perfect than the drawing and anatomical perfections of this work: at the same time the sentiment of the subject is so well preserved that the spectator is agonized at the sufferings of the father and his sons. This perfect work of ancient art throws into the shade the performances of Michelangelo, which appear stiff and cold in comparison.

*Roman.*—From the decline of Greece, Rome became the great cultivator of the art; and, as the Grecian sculptors found an asylum at Rome, and as the chief works were transferred from Greece as the spoils of war, it is natural that the early works of the Roman school partake of a Grecian character, and supplanted the earlier style which was founded upon the Etruscan. Sculpture now became much more generalized in its adaptations: equestrian statues and public works of every kind gratified their taste for splendour. The base of the column of Antonine, representing the Apotheosis of Antoninus and Faustina, is an illustration of their

sculpture, in which we trace much of the Greek feeling, whilst the marvellous sculptures in the column of Trajan show an entirely new application of the art, and illustrate the fertility of their invention; but the art became gradually debased, and degenerated into luxurious and capricious forms. The busts and portrait statues of the emperors form an important class at this time, and we find numerous illustrations of historical events.

Many works were executed in the time of the Antonines, but after that became gradually debased, an illustration of which may be seen in the sculptures on the arch of Constantine, which are executed in a rude and clumsy style, and we finally lose all traces of distinctive Roman art in the works of the Byzantine sculptors. In many of the earlier Christian monuments, traces are to be found of the Roman manner, in the catacombs and sarcophagi of the first ages of Christianity.

I draw your attention especially to the sarcophagi of Bassus and of Probus, both executed in the fourth century, and in which the reliefs containing Old Testament subjects might be taken for debased Roman works.

The Ivories will now come to our aid in illustrating the subsequent development of sculpture throughout the early periods of the Christian era, illustrations of which are scarcely to be found in any other material, they thus become doubly valuable.

THE GREY SANDSTONE OF THE FOREST OF DEAN.

The Forest of Dean stone is less known, perhaps, than it deserves to be. A report on the quarries has been recently made by two gentlemen of Coleford,—Mr. Atkinson, engineer, and Mr. Terrett, builder,—from which we take the following particulars:—

The stone is generally grey or blue in colour, and lies in three series, each of a different degree of hardness, and each applied to peculiar and distinct purposes; but the quality of the stone differs in the various localities from which it is derived. The upper series is generally from 20 to 30 feet thick, the second 40 to 70, then a thin vein of clay from 3 to 7 feet intervenes between. The third series is proved to 130 feet, but how much deeper it may be is unknown; hence, where the three series are found, as in the centre of Birch-hill, the supply of stone seems inexhaustible.

The upper series consists of a soft, easily-worked stone, of various degrees of hardness, suited for the manufacture of gravestones, sinks, troughs, gravestones, flagging, sills, and wall coping; all of which can, in the best quarries, be got any size possible of carriage through the arches of the Severn and Wye tramways.

The prices of gravestones at the quarries are about 2d. per inch diameter up to 3 feet high, and up to 7 feet from 10s. to 5l. each; flagging, 2d. to 2½d. per foot super.; sinks, 1s. 3d. per foot super.; troughs, 6d. per gallon of 231 cubic inches to the gallon; gravestones, 6d. per foot super.

The second series consists of a grey stone, of harder character than the first, and the third than the second; and the third species of stone is of a blue colour, and a closer, finer grit, and both series run in blocks, of any size possible to be removed. The stone is admirably adapted for dock and railway purposes, and, being easily worked, and capable of being sawed and planed by machinery, to builders and statuarists. It has been used in the construction of Cardiff, Newport, Gloucester, and Swansea Docks; South Wales and Western Valleys Railway; Gloucester and Berkeley Canal; Polly Bridge, Oxford; Cardiff Castle; and National and Provincial Bank, Marlborough; and part of Llandaff colleges; assize courts; interior of St. John's and Exeter Colleges; and Taylor and Randolph's Buildings, Oxford; Easton Castle and Whitley Court, Worcester; Langton House, &c. &c.

As regards its quality for building, if placed on its proper bed, it does not scale, is not affected by the weather, and instances of its durability may be seen at Newland, Staunton, and Mitcheldean Churches, in which the outlines and carving of the oldest pinnacles, and the letters cut on the oldest gravestones, are as sharp and defined as when first worked, some 400 years ago; but it must be observed that only the stone raised in certain localities and from the best quarries is likely to possess these qualities, generally so unusual in sandstone.

The price of blocks at the quarry is 7d. or 8d. per cubic foot, if scappled or picked; and about 7s. per ton if rough. The texture under which quarries are held is peculiar.

By ancient custom, any person born within the hundred of St. Brivels, and who has worked a year and a day under ground, or in quarrying, is called a free miner, and each free miner has a right to make application to the Crown to grant him a gale of land for a quarry in perpetuity, which, when awarded, becomes his freehold, subject to an acknowledgment to the Crown of 3s. 4d. per annum each grant.

In 1 & 2 Victoria, as the Forest of Dean became more accessible, and facilities of traffic increased, rendering the property more valuable, an Act was passed for regulating the opening and working of these quarries, and a commission was issued to ascertain and confirm the title of those claiming quarries. The quarries granted since the award are leasehold, and subject to a rent.

Each gale or grant is twenty yards in length, and of course quarries increase in value according to the number of lengths lying together. Five and a half lengths (Messrs. Grindell & Co.'s, at Lydbrook) is the largest grant ever made together and at the same time; but at Birch-hill they have, in addition to their own grants, acquired by purchase several lengths lying together, which, together with the superior quality of the stone, renders these quarries undoubtedly the finest in the Forest of Dean.

The principal localities whence the best stone is raised, but yet differing very much in value and quality, are:—1. Birch Hill. 2. Bislade and Bishcald. 3. Dark Hill. 4. Lydbrook (Barnedgre). 5. Knockley Lumpy. 6. Gosty Kuall. 7. Morgan's Cote. 8. Merry Hole. And the principal quarry proprietors are Messrs. Grindell & Co., Messrs. Trotter & Thomas, and Mr. Townsend.

SURVEYOR OF BRIDGES FOR THE COUNTY OF SURREY.

The election of the surveyor of bridges and public works for the county of Surrey took place at the general quarter session, on Tuesday last, and resulted in the appointment of Mr. C. H. Howell, of Guildford, and of the Norwich Union Insurance Office, London. Upon the death of Mr. Lapidge, the late surveyor to the county, Messrs. Charles Barry, Currey, Hesketh, Jarvis, Howell, Field, Ashdown, P'Anson, Lett, and other members of the profession announced themselves as candidates for the office. The contest finally lay between Messrs. Hesketh, Howell, and P'Anson, and upon the votes being taken, the numbers were found to be,—for Mr. Howell, 43; for Mr. Hesketh, 19; for Mr. P'Anson, 16.

THE WORKING OF NEW SEWERS.

ANY information as to the working of new sewers in our towns must be useful. We may, therefore, note from the *Nottingham Journal*, that during a recent severe thunder-storm, in Worksop, by the new arrangements, flooding in the streets, which has hitherto been common there, was prevented. "The sewers were for the first time brought fairly into action, and performed their work in such a manner as to reflect credit on all concerned. Mr. Rawlinson is the engineer of these sewerage works, which have been carried out under the superintendence of Mr. Landsborough, surveyor to the local board."

The outlet sewer is an earthenware pipe, 15 inches in diameter, and about three-quarters of a mile in length, having flood-water overflows in the low ground. Earthenware-pipes have been used, for the most part, throughout the town. The estimated cost was 6,000l., and the whole of the works, we are told, will be completed within this sum.

There are manholes at numerous points, to enable the sewers to be examined and permanent means for ventilation, with charcoal disinfecting screens. The sewers can be flushed at several points.

DESIGNS FOR LABOURERS' COTTAGES.

At the beginning of the present year, as well as often previously, we inserted letters and observations touching the want of properly arranged cottages for the labouring classes, with especial reference to cost, and the necessity for three bedrooms, and on the last occasion said that we proposed engraving some plans and particulars. We partly carry out this intention in our present number, giving—

Plans and elevation of double cottages, erected at Parndon, near Harlow, Essex, under the superintendence of Mr. C. H. Cooke, for Captain Slark;

Plans, section, and elevation of double cottages,

with flat roof, designed by Mr. N. E. Stevens, in connection with the Society for Improving the Condition of the Labouring Classes;

Plans for double cottages, by Mr. C. W. Strickland, in connection with the Yorkshire Agricultural Society; and

Plans, elevation, and section of cheap double cottage, by Mr. H. Barnes, referred to in a letter in our journal for March 17th of this year.\*

All the drawings are made to the same scale, so that the accommodation afforded may be readily compared.

The cottages at Parndon (three pairs of them, fronting to the railway), are built of white Cambridge bricks (brought thirty miles), with red brick dressings and quoins, doors and windows, overhanging roof, stained timber where visible, and red brick chimney-stacks. The cost of the six cottages, inclusive of gates, was 507l. 10s., or 84l. 11s. 6d. per cottage,—certainly a small cost considering the appearance presented. The necessary is at the end of garden, one to each cottage. We append the architect's specification in full. The plan has many good points. An objection may be justly raised to the position of the fire-places, in the outer walls, by which heat is wasted.

A specification and bill of quantities of Mr. Stevens's design, are printed, and may be obtained at the offices of the Society for Improving the Condition of the Labouring Classes in Exeter Hall. We do not understand that any cottages exactly in accordance with these plans have been constructed, but Messrs. Dove, Brothers, of Islington say,—

"We shall be happy to erect cottages in the county of Herts, agreeably to these plans (with flat roof) for the sum of 170l. per pair, if built within a quarter of a mile of a railway station (with a siding), provided that not less than six pairs be erected in one locality. If only one pair be erected, 5 per cent. should be added, and if two pairs, about 3 per cent. This estimate does not include any local carriage."

The following is the mode given for forming the roofs:—

"Cover the roofs with plain tiles in cement, laid in the following manner:—Baltic fir laths, to be nailed to the joist; the first course of tiles to be bedded in cement on the laths, the other two courses to be then laid each in such a quantity of cement only as shall ensure their firm bed; care to be taken to fill up all interstices with the cement, which can be effected by rubbing the tile well on the cement; the last course of tiles to be left as smooth as practicable, but not to be coated over with cement. The outer edge of the flat roof to project over the face of brickwork 2½ inches all round, and a plain tile to be bedded on the edge so as to form a rim, and stand up above the upper surface not less than 1½ inch, and the tile to be rendered all round with cement, and also the under portion of the flat roof which projects. The flat to be laid with a fall from front and back sufficient to carry off the water, and a space to be left in the rim as an outlet, connected with the iron rain-water pipe by a lip formed with cement.

The cement for the work to be tested, so as to ascertain its qualities, and a greater or less proportion of sand to be mixed with it as shall render it most available for the purposes for which it is to be used."

Careful workmanship, and attention to the foundation, would be requisite, or a roof so constructed would be a constant source of annoyance.

Mr. Strickland's plan is an exceedingly good one, but provides for a larger and more costly building than would be in all cases desirable. They were made with reference to the requirements of a particular competition; and Mr. Strickland himself says, in reply to an inquiry with which we troubled him:—"I think them larger than is either requisite or desirable for the generality of labourers' cottages, especially in parts of England where fuel is dear. But it cannot be too much insisted on, that there is no absolutely best form of cottage or anything else. A great variety is wanted to suit families very variously circumstanced. I hope before long to see another display of plans of other forms, at some meeting of the Yorkshire Agricultural Society, and that it may be as interesting and instructive as the last one was."

In brick-built cottages, hollow walls, with a view to warmth, and dryness, are much to be desired. The walls should be plastered inside. Good drainage and the means of ventilation are of course absolutely necessary.

Of Mr. Barnes's design, the author says,— "I wish to observe that my plan offers no attraction as an ornamental or picturesque object in the landscape; its advantages are simply giving a large available area for a small outlay: as I said before, it must be adapted to local circumstances. In my sketch I have presumed mud walls on stone or brick footings and plinth. These kinds of walls (particularly in clay districts) form warm, dry

\* P. 174.



THE FINLAY ASYLUM, QUEBEC, CANADA, EAST.—MESSRS. STENT & LAVERS, ARCHITECTS.

and durable dwellings. It should be properly worked or finished off with an outside coat of rough-cast. Thatch, in this case, should be the covering material. This, especially in rural districts, will enable timbers of home growth to be employed." The cost of such cottages he places at 70*l*. each.

If the wretched hovels in which thousands of our labourers spend their lives were brought prominently into view, new cottages would be built for very shame.

#### SPECIFICATION.

Of the several artificers' work required to be done, and of the materials to be used in the erection of double cottages for Captain Clark, at Parndon, in the county of Essex, according to the designs and under the superintendence of Mr. Charles H. Cooke, architect.

#### Excavators' Work.

Dig out ground, the necessary depth and width for foundations of the several walls: fill in and well ram round brickwork when built.

Ground beneath sitting-rooms to be levelled 9 inches below floor joists.

Excavate for all drains, &c.

Ground to be properly levelled at completion of works.

#### Bricklayers' Work.

The brickwork to the several walls to be commenced on proper and sufficient footings, and carried up the requisite heights and widths, according to the true and evident intent of the drawings.

All the brickwork throughout to be of the best sound and hard clamp bricks, the external facing to be of picked white bricks, and the dressings to windows, angles, &c., to be of the best burnt blue bricks; every course to be well flushed with mortar, neatly pointed, and the joints struck. Chimney flues to be well pargetted and cored, the chimney stacks to be carried up above roof in good sound red brickwork.

Proper discharging arches to be turned over all door and window openings.

Iron bars, 2½ inches by ½ inch, to be laid over all chimney openings, turned up and down at ends.

Provide and fix two cast iron gratings under the floor of each sitting-room.

Proper trimmer arches to be turned to all fire places.

The scullery, closet, and closet beneath stairs, to be parged with brick, on concrete 4 inches thick.

A cooper to be built up in brickwork, and set therein a good 20-inch galvanized iron copper and furnace complete.

The walls, where described, to be lime-whitened internally, to be worked fair with a neat joint.

Provide 50 feet of stoneware drain pipe to each cottage.

#### Masons' Work.

The steps to entrance and back doors to be hard toolled York stone.

The paving to lobbies to be of brick, on edge, laid in mortar.

Provide and fix plain slate chimney-pieces for sitting and bedrooms, with 1-inch shelf, &c. complete.

Provide a small sink in scullery, 2 feet by 1 foot 9 inches, and 4 inches deep.

Provide front and back hearths of rubbed York.

#### Carpenters' and Joiners' Work.

All the timbers used in these works, not otherwise specified, to be of the best Christiana deal.

The roof to be framed as shown on drawing, with the several scantlings set forth in the following schedule:—hips and ridges, 7 inches by 14 inch; rafters, 4 inches by 2 inches; valley rafters, 8 inches by 14 inch; collars, well spiked to rafters, 4 inches by 2 inches; wall plates, dovetailed at angles and pinned, 4½ inches by 3 inches; battens for slates, 2½ inch by 3 inch; ½-inch eaves boards, 7 inches wide; 1-inch valley boards, 9 inches wide. Provide fitting fillet round the several eaves.

The rafter shown as barge board to be of deal stained, 7 inches deep by 2½ inches; the wall-plates and ridge-pieces are also to be placed on with a larger scantling, 6 inches by 4 inches where showing on the front gable.

The roof over the entrance doorway to be formed with a plate 4 inches by 3 inches, supported by wrought deal brackets let into wall, and rafters 3 inches by 2 inches.

Floors for living rooms, on sleepers 4 inches by 2 inches; bedroom joists 7 inches by 2½ inches; wall-plates 4 inches by 3 inches; and 1 inch floor boards.

All the partitions to be properly framed together, with heads, sills, and uprights, 3 inches by 3 inches; quartering, 3 inches by 2 inches; braces, 3 inches by 3 inches.

The windows in front and back of cottages to have solid and beaded deal frames 4 inches by 3 inches; oak sunk and weathered sills, with 1½-inch casements, to open inwards (one casement to each window), hung to frames with 2½-inch butts, and with a suitable fastening and set-screw bar, the bottom rail to be framed weather-dight.

Provide to same 2-inch beaded lining and moulded top to plastering, and 1-inch wrought and rounded window boards.

The external doors to be of 1-inch deal, ledged and cross braced, with 2-inch wrought, rebated, and chamfered framing, hung to solid rebated, and chamfered, frames, with stock, lock, and fastenings complete.

The internal doors throughout to be of 1-inch deal, ledged and braced, and covered with 2-inch wrought, rebated, and chamfered boarding, hung to wrought, rebated, and beaded linings, with 3-inch butts.

Provide and fix a staircase, having 3-inch yellow deal risers and 1-inch treads, rounded nosings, glued and blocked, and all requisite strings, carriages, &c. complete. Trim out and form bulkhead, to give sufficient headroom to staircase.

Provide and fix in pantry two tiers of 1-inch wrought deal shelves, 12 inches wide, on proper bearers.

#### Smith and Ironmonger.

Provide all necessary air gratings and other ironwork that may be required.

Provide a good 20-inch galvanized-iron copper, with furnace, doors, dampers, complete, as specified.

Provide and fix all round the building 4-inch cast-iron half-round eaves gutter, with stacks of 3-inch cast-iron rain-water piping, with all necessary head-shoes, &c., and properly trapped to drains.

Provide for fixing to stoves only.

#### Slater and Plasterer's Work.

The roofs to be covered with Bangor countess slating, 2½ inches lap, patent-slate ridge; double course of slates round eaves, pointed inside with hair mortar.

Lime to be of the best quality. Sharp, clean, and well-washed sand.

Lath, plaster, float and set the ceilings throughout.

Render, set, and twice colour walls, &c.

Lath, plaster, set partitions.

Skirting to sitting-room and lobby 4½ inches high.

#### Plumber, Painter, and Glazier.

Line the valleys with 5 lb. mill lead, and same for flashings round chimney stacks.

Glaze all windows with seconds crown glass.

The whole of ironwork usually painted to the external doors, frames, and brackets, to be stained and varnished.

#### THE FINLAY ASYLUM, QUEBEC, CANADA, EAST.

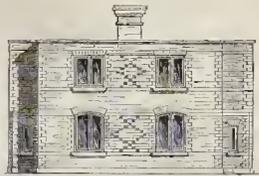
The first stone of the Finlay Asylum, on the Foy Road, Quebec, was laid on the 10th of May. The building, of which we have engraved a view, is about 110 feet in length, by 55 feet in width, and is to be erected in the Gothic style of architecture. It is two stories in height, with basement and sick wards at the rear. It is contemplated, also, to carry up a Chapel at some future period, attached to the edifice.

The building will be constructed in the granite of the district, having cut stone dressings and plinths, with variegated arches over each aperture.

The foundation stone was laid by Mrs. Hamilton, one of the chief supporters of the institution. Messrs. Stent & Lavers are the architects of the building.

Canada is expecting with impatience the promised visit of the Prince of Wales.

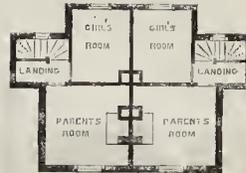
DESIGNS FOR LABOURERS' COTTAGES.



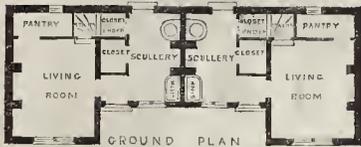
FRONT ELEVATION



CHAMBER PLAN



CHAMBER PLAN



GROUND PLAN

SCALE OF 1/4" = 1 FOOT

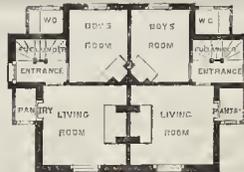
Double Cottage, Parndon, Essex. Mr. C. H. Cooke, Architect.



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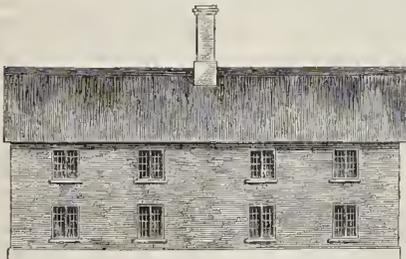


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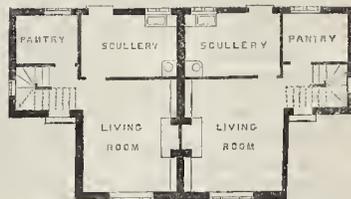


GROUND PLAN

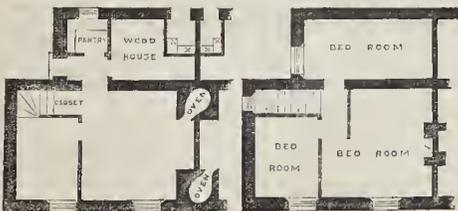
Double Cottage, with Flat Roof. Mr. N. E. Stevens, Architect.



ELEVATION



GROUND PLAN



GROUND PLAN CHAMBER PLAN

SCALE OF 1/4" = 1 FOOT

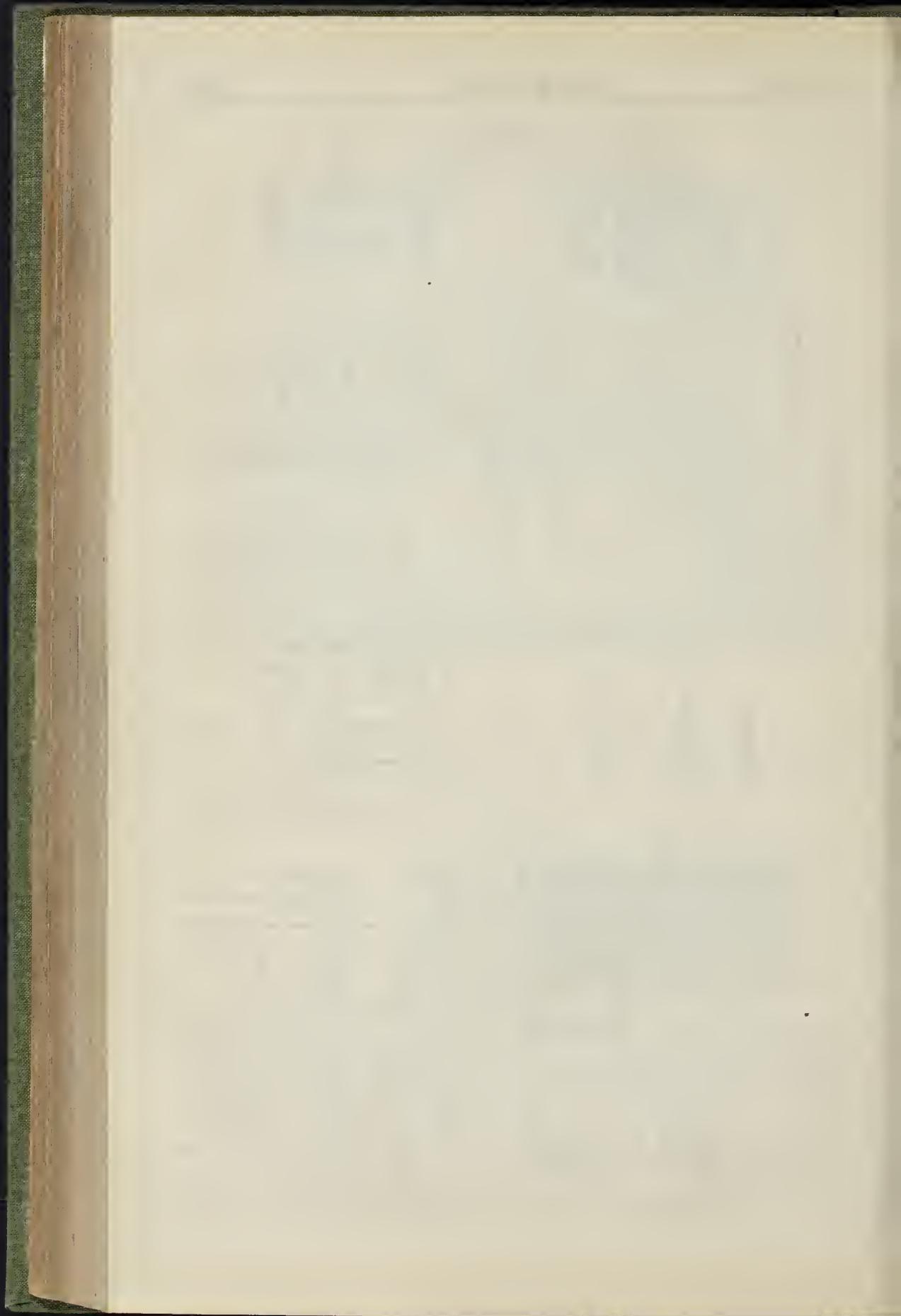
Mr. H. Burnes's Cottages.



CHAMBER PLAN

SCALE OF 1/4" = 1 FOOT

Mr. Strickland's Plan.



THE FRENCH VISIT TO ENGLAND.

The Orphéonistes have performed their pleasing and useful mission, and the army of 3,000, who invaded England with such wondrous harmony, will, by this time, be scattered throughout various districts of France, and many an account of the wonders of London and its Crystal Palace will be reported to old and young in the great neighbouring capital, in the manufacturing towns and cities, and in rural places where the sight of an Englishman is uncommon, and where his peculiarities, till now, were only known by old and unfavourable traditions and by garbled and unjust modern accounts.

We hope that the visit which has just been made will help to remove, to a certain extent, unfavourable and wrong impressions, although nothing could have been worse than the arrangements made for the first reception of the strangers. It was painful to note the preparations made for some of the party in the occupied taverns of the cattle-market: their comfort might have been as great in some of the lairs for sheep and oxen, so appropriately adjacent. And some who sought for lodgings elsewhere, and were willing to pay, fared worse. We have reason to believe, however, that the blame, at all events, did not rest with the Crystal Palace management. The agents were, we understand, French, and were appointed by the Orphéoniste authorities themselves, their society being on this, as on other occasions, bound to make all arrangements, while the members give their own personal exertions as amateur musicians, gratis. So far from the Crystal Palace management being in any way to blame,—unless, indeed, they should have assisted the French agents with their advice and knowledge of London in the outset,—when it was found that the agents, being strangers and without means sufficient at the moment, could not get arrangements made for the accommodation of their constituents as they arrived, the directors of the Crystal Palace, as we are told, at once advanced them a sum of 1,000*l.* to facilitate matters.

The Orphéonistes appeared to be of all grades, from the prosperous country gentleman and the well-to-do manufacturer to the respectable mechanic and art-workman. Some had brought their families, and it was curious to note the physiological peculiarities of those coming from the different parts of the extensive empire of France: in some might be observed the marked features and complexion of the Normans, and in others the more florid and massive forms and fair hair of the German races.

Our great buildings, and, as far as possible, their contents, were critically examined. Gog and Magog held a numerous levy of the guests: the courts of justice were visited; and, according to taste, some wandered into St. Paul's, Westminster Abbey, and the vast new palace for our Parliament. Their criticisms in certain instances might be useful to us.

Trusting that this is but the forerunner of other and even more extensive visits of this kind, to be returned, as this should be, in some well-organized and judicious manner; it would be worth while to consider how the greatest amount of good could be done, and how we could best manage during such friendly invasions to gain the greatest amount of useful information, and promote to the largest extent that mutual acquaintance, and those kindly feelings, which are so likely to obviate the stern and terrible advent of war. It seems to us that, provided proper means were used for the reception of such visitors, who may be considered as ambassadors of peace, harmony, and good fellowship, between one nation and another, it would be an advantage if, on such occasions, a certain number of persons who are skilled in both languages, and well informed on particular points, should volunteer to form committees, and agree to take charge of such of the guests as might wish to visit such institutions as our British Museum, for example, or the Tower, and act according to their discretion in any other way in which they might be best informed. Though as a general rule we are kept hard at work in our busy country, still there are many to whom this task would be a pleasure, while it would be a benefit to others.

We know that on many points our visitors have returned home with improved feelings respecting us; and this advantage has been mutual; for thousands in London have been struck by the kindly spirit and polite and gentlemanly bearing of the amateur musicians; and those who had the opportunity of conversing with some of them will remember with pleasure the enlarged views, in connection with commerce and art, which were ex-

pressed, and the anxiety that only in this way should a struggle take place between us. Unfortunately there are less agreeable feelings amongst classes over the water, and uncertainty in another way; but undoubtedly such a gathering as that which has recently taken place will strengthen the peaceful efforts of the best disposed section of the French nation.

All this good is rendered possible by the modern improvements made in the methods of transit: but for steam-packets and locomotives, so large a body could not have been gathered from the various and distant provinces of France, and brought so readily to our shores.

That a decidedly favourable impression has been produced upon our recent visitors by their reception was very clearly manifested by them on every occasion in which they appeared before the English public, especially on Saturday, when their hearts were opened, and their real feelings betrayed by the genial influence of an English "collation," even though "cold," accompanied as it abundantly was, by the best "palate," of which many of them will doubtless long retain a pleasant remembrance. Indeed, their friendly demonstrations, not only on this, but on all the previous occasions, were certainly far more cordial and unreserved than those of our less demonstrative (but not less warmhearted and friendly) fellow-countrymen: we hope they appreciate the difference of national temperament, and do not ascribe the difference to coldness of feeling on our part, but to its true and only cause—coldness of manner. One of their directors, it is satisfactory to know, has, on their part, thanked "a thousand times" the English nation for the manner in which they have been received; and the response of the whole body, through their chief leader, M. Delaporte, to the address of "the friends of peace" was all that could be desired.

THE LIBRARY OF TRINITY COLLEGE, DUBLIN.

THE old roof of the library, Trinity College, Dublin, was found some time since to be in a state of hopeless decay; and, after receiving various plans for its reconstruction, the result has been the adoption of a design by Messrs. Deane & Woodward, which will give much greater height and importance to the apartment. It had formerly a flat plaster ceiling: it will now be vaulted in the centre. The book accommodation of the library being very limited, and the fact that in forty years the number of books would double, induced the Board to adopt a plan, not only for renewing the roof, but also for increasing the book accommodation. These two points are accomplished very cleverly in the plan decided on. The room is 240 feet long, and the span 44 feet.

The architects have put up a temporary V roof, which enables persons to use the library while the work proceeds. The cost will be about 7,500*l.* Messrs. Cockburn are the contractors.

WORKS IN PARIS.

THE transformation of the flower plantations of the grand avenue of the Champs-Élysées proceeds rapidly. For some days past a considerable number of workmen have been in possession of the square plot of the *Cirque*, where masses of shrubs and flowers are to be placed, as on other portions of this delightful promenade. Meanwhile, the elegant fountain called *Les Quatre Saisons*, having been coppered over, is being put in its place again. The flowers to be planted in the *Carré du Cirque* were recently purchased, by the Municipal Council of Paris, in Holland, and most of them are in full bloom. The rhododendrons, the kalmias, the azalias, and the canus are said to be very fine specimens.

The environs of Paris, as well as the capital, receive fresh improvements. In the park of Vesinet, spontaneously fixed upon by the Parisians as a site for country seats, a second and vast lake has been formed; and the situation, naturally picturesque, has been rendered more so by the earthworks thrown up, to render the grounds more undulating. Water in abundance is to be supplied by powerful steam machinery, which the engineers are putting in place in the buildings near the reservoir. Moreover, the two bridges over the railway, uniting both sides of the park, are finished; so that, henceforward, Vesinet will rank among the most delightful summer residences about Paris.

A new loan is to be raised by the Municipal Council, amounting to 150,000,000 francs, for the further embellishment of Paris, sanitary works, and the construction of new boulevards.

EXHIBITION OF STEAM PLOUGHS IN THE NETHERLANDS.

AN exhibition, open to all the world, of steam ploughs and reaping-machines, is to be held in the Netherlands, from the 5th to the 13th August next, at a place called *Wilhelminapolder*, near Goes, province of Zealand. Prizes will be awarded for the best steam-engines for labouring and turning the ground, so as to replace advantageously horse work and human labour. First prize, 1,200 florins; second prize, a gold medal. For reaping-machines,—First prize, 500 florins; second prize, a gold medal. Competitors should address, for information, to the secretary of the Royal and General Agricultural Society of the Netherlands, at La Haye, stating the nature of the machine and its price. They are to be on the spot (*Wilhelminapolder*) before the 3rd of August. The council of the society furnish at their own cost the necessary men and horses for the experiments, but each exhibitor must have at least one competent person to mind the machine: the council also furnish the use of a building for storing the above in safety. The Government have consented to allow the free importation of the implements, insisting, however, on the provisional payment of the duty as a guarantee of good faith, which will be reimbursed on their return to the original country. Arrangements are to be entered into with the different railway and steamboat companies to have these machines transported at reduced prices, and further particulars will be announced as to this step.

TAUNTON.

THIS ancient and loyal town is not behind its contemporaries in "the march of improvement." Many of the public buildings have been considerably beautified, or re-erected, within a few years. The well-known St. Mary's Tower is rapidly rising under the care of a townsman. St. John's Church, under Mr. Scott, is nearly ready for the roof, and promises well. The Roman Catholics are now in possession of their new church, lately opened. Of civil buildings, there is a new shire-hall recently erected, besides a large hospital, institution, archaeological museum, and many others. The private houses are all full, as well as the mansions in the neighbourhood; and the town, since the introduction of the Public Health Act, has attained a high character for health.

THE HANOIS LIGHTHOUSE, GUERNSEY.

THE *Hanois* are rocks on the west coast of Guernsey. On the *Biscan*, one of these rocks, a lighthouse is about to be erected. The base of tower is 23 feet 7 inches; the height of stonework 90 feet; and the least diameter is 17 feet. There are to be six rooms in it. The works are not to be done by contract. They are to be executed under the guidance of the engineers of the Trinity Corporation, Messrs. Walker, Burgess, and Cooper. The resident engineer is Mr. W. Douglas.

This lighthouse, when erected, will supply a desideratum.

PROPOSED GAS-WORKS FOR BAHIA.—BRAZIL.

WE have before us the prospectus of the Bahia Gas Company (limited), with a capital of 100,000*l.*, in 5,000 shares of 20*l.* each. The following information is gleaned from the prospectus, which may be interesting to our readers:—

"Bahia is a seaport city, the second in size and importance in the empire of Brazil. The population of the city is 180,000. The following statistics are from an official return:—palaces, 4; public establishments, 28; fiscal ditto, 7; hospitals, 9; churches, 58; public institutions for education, 75; manufactories, 74; printing establishments, 13; workshops, 676; alimentary stores and shops, 678; other stores and shops, 660; wharfs, 76; exchange rooms; railway station, 1; private houses paying the government tax, 5,910. The Bahia and San Francisco railway, now in course of formation, will tend greatly to increase the commerce of this city. The first section, viz. that starting from Bahia, will shortly be opened for traffic."

The prospectus gives the following cheering account of the state of the gas-works at Rio de Janeiro:—

"The shares of this company are at a considerable premium, having advanced in value nearly 50 per cent. The profits realized have each year increased, the dividend in 1855 being at the rate of 8*l.* 10s. per cent. on the capital, while the pro-

fits of last year, 1859, allowed of a dividend equal to 16 per cent. In addition to this, 10 per cent. of net profits is carried annually to the reserve fund."

We have in our pages frequently alluded to the progress of the Pernambuco Gas Works, which were completed by Messrs. E. T. Bellhouse & Co., of Manchester, last year. This undertaking is thus alluded to in the prospectus:—

"The Pernambuco Gas concession, with terms nearly similar to those of Bahia, was considered to be so profitable that it was purchased from a company in course of formation in London, and carried out by private enterprise. The demand made for gas by private consumers has been so large, that additional hands and fittings have been written for, to meet the requirements."

The document before us further states, that Messrs. Law & Bount, of London, are the engineers for the company; that the direction of the undertaking will be in London; that the necessary arrangements have been made with the concessionaire, whereby the privilege is secured to the company; that it is probable that a net income of 16 per cent. will be realized on the capital expended; and that the prospects of the undertaking are most favourable.

#### ANNUAL MEETING OF THE SURREY ARCHÆOLOGICAL SOCIETY.

The seventh annual general meeting of this flourishing society took place at Reigate on the 27th ult.; under the presidency of the Hon. W. J. Monson, M.P.

The members of the society assembled in large numbers from different parts of the county at the Merstham railway station, at eleven o'clock in the morning, from whence they proceeded to the parish church, where Mr. Alfred Heales, F.S.A. attended, and gave a sketch of its history, calling the attention of the company to objects of interest.

The company then left for Chipstead Church, where the Rev. P. Aubertin, the rector, described the edifice at great length.

Gatton Church was next visited, and was described by the Rev. J. C. Wynter.

The party then proceeded to Gaston Hall, the seat of Sir Hugh Cairns, which was thrown open to their inspection, and in the new marble hall of which the business of the meeting was transacted. Here the chairman congratulated the meeting upon the fact that the funds of the society were in a very prosperous state, and that the number of members was 606, being an increase of 32 during the last year.

The company afterwards proceeded to Reigate, and visited the parish church, a description of which was given by Mr. W. Hart, F.S.A.

The Priory, the seat of Earl Somers, was the next point of attraction, and the Baron's Cave was visited by a large number of people, both before and after dinner, the passages having been lighted up for the occasion. When the company assembled in the principal passage, Mr. John Lees, of Reigate, made some general remarks upon the caves.

The annual dinner took place at the White Hart Hotel, when about 120 persons sat down, including ladies of the party. A conversation was afterwards held at the Town Hall; and, during the evening, lectures were delivered by the Rev. Mr. Mayhew, of Newdegate, Mr. W. J. Hart, and Mr. Richardson.

#### NEW BUILDINGS FOR THE ROYAL BANK, POSTER PLACE, DUBLIN.

The directors of the Royal Bank have been erecting a cash-office of large dimensions. The new hall measures 84 feet by 56 feet, and 35 feet to the centre of the circular roof. The walls and ceilings are elaborately panelled. The light is admitted through the circular part of the roof, in plate-glass panels surrounded by enriched moldings. The effect is increased by means of corresponding mirrors in similar panels, at each side of the centre between the ornamental ribs spanning the vault. The flooring is of tessellated tiles, extending round each side of the semicircular counters, within which are the departments of the principal officials and their assistants. The peculiarity about the erection is the suspension on iron beams and columns, unusual in size and weight, of the eave of the old buildings facing Poster-place, measuring 56 feet by 10 feet, by 25 feet in height. The architect (Mr. Charles Geoghegan) has had numerous difficulties to surmount, and has been

obliged to resort to a novel method of shoring the superstructure, to which we have before referred. The works have been executed by Messrs. Crowe. Messrs. Courtney & Stephens have supplied the iron beams and columns, under the special direction of Mr. Anderson. The entire counteracting and the desks are from the establishment of Mr. Beakey, and the marble mantel-pieces were furnished by Mr. Manderson. The *Evening Mail* says,—"The building in every part proclaims the hand of an accomplished architect, who has encountered and overcome enormous difficulties, and produced a hall the singular beauty and the admirable arrangements of which cannot fail to arrest the attention of the public on the day of opening."

#### CHURCH-BUILDING NEWS.

**Stamford-hill, Middlesex.**—The foundation-stone of the new district church of St. Ann's, Hanger-lane, Stamford-hill, was laid on Tuesday last, the 3rd instant, in the presence of a large assemblage of the founder's friends and the residents of the district, by Mrs. Newsum, the wife of Fowler Newsum, Esq., of Stamford-hill, at whose sole expense the same, together with a spacious parsonage-house adjoining, are to be built. The design is by Mr. Talbot Bury, architect: it has an apse and transepts, and will seat 600 persons; it will be highly finished, and when completed will cost about 8,000*l.*, and the parsonage 2,000*l.* The contract for both has been taken by Mr. Myers. Two years back, the munificent founder of this church erected in the immediate vicinity a spacious school and some model cottages.

**Wolverhampton.**—The foundation-stone of a new church, dedicated to St. Luke, has been laid at Blakenhall, in the parish of St. John, in this town. This is another of the memorial churches to the late Archbishop Hodson. The site is easy of approach. The style of architecture will be Early English, and the exterior walls will be of dressed bricks, ornamented with coloured brick-work, and stonework. At the south-west corner will be a tower, upon which it is proposed ultimately to place a spire. There will be at the western entrance an arcade, decorated with iron shafts. The interior of the church will consist of nave, aisles, and large chancel, which will also contain aisles. There will be no galleries. The roof will be open-timbered. The extreme length of the edifice within the walls will be 130 feet, and the width 52 feet, but arrangements have been made for future extension, if needful, by means of transepts. The shafts of the pillars on either side of the nave will be of cast-iron, with ornamental wrought-iron capitals. The ends of the pews will also be of decorated iron, while the bodies will consist of stained deal. The church will be capable of accommodating 700 adults and 200 children, mostly free. Mr. G. T. Robinson, of Leamington, is the architect; and Messrs. Lilley, builders, of Measham, have undertaken to complete the church for 2,800*l.* This sum, however, does not include land, fences, architect's commission, &c., which are computed at 1,500*l.*

**Nantwich.**—Nantwich Church restoration approaches completion; the only unfinished part, the chancel, now being restored at the sole expense of the patron of the living, Lord Crew. The work is being carried out under the direction of Mr. Scott. It is satisfactory to find, according to the *Macclesfield Courier*, that, with trifling exceptions, the stone vaulting, with its carved bosses, so long disfigured by thick coatings of plaster, is as perfect as when first chiselled. The canopied stalls of oak, with their quaint carvings, had in many parts been barbarously mutilated, but will be restored. The east window consists of a repetition of small windows of bowing tracery, so combined as to give the whole the appearance of perpendicular work. The large window in the south transept has come out with effect since the stained glass, by Mr. Wailes, has been placed there by Mr. G. F. Wilbraham, in memory of his ancestors.

**Brecon.**—The following tenders for the restoration of Trallong Church have been considered at a vestry meeting:—

Griffiths & Son.....	£ 330	0	0
Hargest & Price.....	510	0	0
Williams & Son.....	450	0	0
Williams (accepted).....	462	0	0

The plans, &c. were prepared by Mr. C. Buckridge, of Oxford, architect. The work is now in progress, and is to be completed by the 1st of December next.

**Manchester.**—The corner-stone of a Methodist free church has been laid at Openshaw, near Manchester. The intended edifice will comprise a

chapel to seat 310 adults, and a school to accommodate from 500 to 400 children. The building will be of brick, with white bands and stone dressings. The architect is Mr. R. M. Smith, of Manchester, and the contractors are Messrs. B. & W. Hoyland, of the adjoining township of Bradford. The cost will exceed 1,000*l.*; towards which amount 550*l.* have been already raised.

**Leeds.**—The foundation-stone of a new Jewish synagogue has been laid in Belgrave-street, Leeds, by Mr. M. Gluckstein, president of the committee of the congregation. The building is to be erected from a design by Messrs. Perkin & Backhouse, of this town, architects; and the contracts for its erection are let as follows:—Bricklayers' work, Messrs. W. Simpson & Son, Leeds; joiners' work, Messrs. Terry & Hill, Leeds; slaters' work, Mr. W. Pycock, Leeds; plumbers' work, Mr. T. Bedford; painters' work, Mr. E. Fearnside. The new synagogue is to be in the Byzantine style of architecture, and will cost, it is estimated, 1,200*l.* It will contain accommodation for 300 persons.

**Preston.**—The architects of the church at Preston, noticed in our last, are Messrs. Huggall and Mark.

**Dunsforth.**—The first stone of St. Mary's Church, Dunsforth, has been laid by Mr. W. F. Schofield. The contractors are Messrs. Freeman, Kettlewell, and Bramley; and the architects are Messrs. Mallinson & Healey.

#### PUBLIC BUILDINGS IN THE PROVINCES.

**Bagshot-heath.**—The State Asylum for Criminal Lunatics, at Broadmoor, on Bagshot-heath, now approaches completion. The site comprises 220 acres, and the land, which is of an undulating character, falls towards the south, and is sheltered from the north and east winds by a belt of wood. There is a stream yielding from 50,000 to 100,000 gallons daily, of soft water. The buildings are erected upon the northern part, from which extensive views are commanded. The Commissioners in Lunacy state that it has been deemed sufficient at present to provide accommodation for 400 males and 100 females.

**Malvern.**—A new Petty Sessions-room and Police-station have just been completed. The building stands on the road entering Malvern from the Liuk. The materials are red brick, with Bath stone dressings. In consequence of the rapid slant of the ground at the site, the building is only one lofty story in height towards the road, but is three stories at the back. The upper story is occupied by the large room in which the magistrates meet, with a retiring-room for the magistrates at one end, and a waiting-room for witnesses at the other. On the east side is the principal entrance, with a charge-room on one side, and police-room on the other. The justice-room on the south is 35 feet long, 19 feet wide, and 15 feet high. The architect was Mr. Rowe, the county surveyor, and the contractor Mr. Perkins, of Malvern.

**Birmingham.**—The foundation stone of the new Magdalen Asylum, or refuge for penitent females, has been laid by the Earl of Dartmouth. The site is at the farther end of one of the new streets opened on the Rotton Park estate, Hagley-road. The elevation of the building is in the Italian style, of an inexpensive character. The architect is Mr. Thomas Naden.

**Manchester.**—Contracts have now been accepted for nearly all the work connected with the new Manchester Assize Courts in course of erection in Bury New-road, Strangeways. The first contract, for the excavating, was that of Messrs. Gilbert & Sharp, and the cost was about 1,200*l.* They followed the contract for the brickwork and flag foundations, stone footings, &c., for which the tender of Mr. Robert Neill, of Strangeways, was accepted, and the cost has been about 1,700*l.* The work is now to the level of the ground floor. The original estimate was that the builder's work proper should not exceed a cost of 70,000*l.*; but the committee have since that time arranged with Mr. Alfred Waterhouse, the architect, for somewhat extending the plans, so as to give rather more space for the court rooms and the surrounding corridors, and for the addition of a projecting entrance from South-hall street. In addition to this a rise has taken place in the value of building materials and of labour; but the contract of Mr. Samuel Bramall, of Hulme, is understood to be 69,977*l.* Mr. Bramall has undertaken to complete his work by the 1st of May, 1863. The building is to be warmed and ventilated by water apparatus, for the supply of which the tender of Messrs. Hayden, of Trowbridge, has been accepted; amount, 2,600*l.*

STAINED GLASS.

*Doncaster.*—Arrangements are being made for the completion of a stained-glass window at the east end of St. James's Church. The work has been entrusted to Messrs. Clayton & Bell, of London. This window was a spontaneous offering of the officers and workmen engaged in the Great Northern Railway Plant, as a mark of personal regard to Mr. Denton, the chairman.

*St. Peter's Church, Oldham.*—Messrs. Edmundson & Son, of Manchester, have just placed in this church four stained glass windows, three in the chancel and one in the west end. The subject in the centre window in the chancel represents the Last Supper—Jesus seated with the Twelve Apostles—John sorrowfully resting his head on the breast of the Saviour. The window on the left is the Crucifixion, and on the right the Resurrection. The old windows are left in their places, and the new ones of stained glass are placed in the inside, leaving a space of 15 inches between the old and the new windows. These spaces are filled with gas burners, which are at night lighted up, so that the subjects in stained glass are seen almost as effectively as in the day time.

THE GOLD EFFECTS IN MEDIEVAL MANUSCRIPTS.

My notice has just been called to an article in the *Builder*, of June 23rd, wherein a discussion on the gold effects obtained in Medieval manuscripts is reported as having occurred at the last meeting of the Royal Institute of British Architects. The discussion appears to me so meagre and unsatisfactory, that I venture to add some remarks on it, and to give the results of my experiments on the subject. Just now so much attention is being deservedly paid to the exquisite models bequeathed to us by our forefathers, that I hardly think it necessary to apologize for occupying your valuable space.

As regards the discussion, it is quite true that the processes mentioned by old writers, such as Theophilus, will not work. The white of egg and plaster of Paris, from a very coarse groundwork, and would, I imagine, be best laid on with a trowel, an instrument not in request for delicate illuminated work; besides, the gypsum is much too gritty to take a burnish, and the composition would be certain to crack off. I cannot agree with Mr. Burgess that the foundation is prepared in gesso, having (as I understand his remarks), a superposed opaque burnishing layer. I have carefully examined, both with the naked eye and with lenses, the damaged surfaces of raised gilded manuscript ornaments; and I am satisfied that the ground is homogeneous, and that the gold used is extra thick leaf gold, all but free from alloy, if not chemically pure. That the gold is extra thick I am certain, not only from its solid plate-of-metal-like appearance, but also from the fact that it is only within the last few years that the trade has succeeded in beating gold so thin as the three hundred thousandth of an inch: that it is leaf gold I am confident, from examining with powerful lenses, under which it is easy to detect the grain of the gold, and the places where different leaves join. The purity of the gold is proved thus—Use common yellow gold: gold and burnish a surface with it: repeat the experiment with fine gold in leaf. Hold the two side by side in different lights, and it will be seen that in some the common gold shows black, but that the pure gold shows uniformly a soft yellow tone, such as is always seen in old illuminated manuscripts. I speak more confidently with reference to twelfth, thirteenth, and fourteenth century manuscripts, as that is the period to which I have mostly directed my attention.

After numerous experiments, I believe I have succeeded in solving the groundwork problem. I have made a composition which reproduces the gold effects, both flat and raised, mat and burnished, of the Middle Ages. I regret that I do not feel at liberty to make public the nature of the "medieval gold-body," as it is called; for I have disposed of the receipt to Messrs. Barnard, of Oxford-street, and I can, therefore, no longer consider it as my property. I may state, however, that the manufacture is excessively complicated and difficult, and that, even were the ingredients known, amateurs would most likely fail to produce the proper result. Messrs. Barnard have handsomely offered to supply the medieval gold-body gratuitously, to any of the gentlemen who took part in the discussion, and who are desirous of experimenting. Let me caution those who are not in the habit of handling leaf gold (and especially the leaf-gold mentioned above—beaten out of fine gold), not to expect complete success at first.

Some specimens of the effect produced by the medieval gold-body have been shown to several first rate judges, among whom are mentioned several gentlemen connected with the manuscript department of the British Museum, Mr. Warren, instructor to the royal family, and Mr. Noell Humphreys. They are unanimous that the effect is the most perfect they have ever seen. I may mention that the gold-body can be used easily and freely in both large and small spaces, with an ordinary camel-hair pencil; and, if it is laid on in thin coats, it will bear a great deal of rough handling.

HENRY JONES, Jun.

VENTILATION OF SCHOOLS.

SIR,—My attention has been directed to a paragraph in your No. for June 23rd, headed as above. J. B. has described wrongly my plan of ventilation, which does not consist in boring the frames of windows and doors, neither in several 6-inch pipes in the ceiling. If this plan was used 20 years ago, it may boast of its antiquity, but I do not think it can boast of anything else.

My plan which, from personal experience of its advantages, Lord Ducie so highly recommends, is as follows; the description being taken from the *Builder*, vol. xiii. p. 414:—

"It is described as consisting essentially of two tubes, the one placed within the other, with an annular space between them, and both opening freely to the external air. The internal tube, destined to carry off the vitiated air, is placed in the chamber to be ventilated, with its downward opening near the ceiling, towards which the air, from its superior lightness, naturally rises. The annular space is intended to supply the waste, by permitting the external atmosphere to pass into the chamber. A flange checking the entering air in its downward course is introduced, to cause it to spread equally over the whole area, without producing sudden fluctuations of temperature."

I trust you will do me the favour to insert this in order to remove the impression that the plan described by "J. B." at all resembles mine.

J. McKINSELL.

THE "ONE HOUR SYSTEM."

SIR,—With "William Ellison" I fully agree, respecting paying men by the hour, and beg to state that I have paid the men under my charge by the hour for the last twelve months, and I sincerely wish that others would adopt the same system; for I assure you it is no easy matter to bring about such a change alone, and no one in my neighbourhood has as yet adopted the one hour system except myself. I have been both insulted and assaulted for making the change, but now my men are as great advocates for the one hour's pay, as they were at one time averse to it; and I feel certain that were the one hour's pay to become more general, the nine-hours movement would soon become a thing that was.

A BUILDER'S FOREMAN.

CARRARA MARBLE.

MOONSHINE!

In your number of June 23rd, I find the following assertion on the part of Mr. J. Bell, in a discussion on the marbles of Tuscany:—"It [the Carrara marble] was called lunar marble from its moonlight colour."

Now, I want to know if Mr. Bell has a shadow of authority for this remark, which appears to me to be pure moonshine and nothing else! In ancient times, and down to about A.D. 1300, Carrara marble was styled "*Marmor lunense*;" not from anything to do with the moon, but from the matter-of-fact reason that the port of shipment was the famous Etrurian city of *Luni, Luna, or Lane*, which flourished down to 1020 in a sort of way, decayed gradually between that and 1500, and was quite deserted in 1600.

Some imaginative classic, more up in his translated Vitruvius than in the pages of Facioliati or Ducauge, may have taken "lunense" for "lunare," and so hindered into "lunar marble."

In Italy, from traditional habits, Carrara marble was long called "*Marmo di Luna*," but solely from the port which gave its name to that entire district—the Lunigiana.

And as to the "moonlight colour," so far from the even paleness that such an epithet would seem to indicate, no marble that I have ever seen has such a sugary, dazzling surface, as fresh Carrara. F. E. S.

OBVESTRY CEMETERY COMPETITION.—We have received some letters of warning on this matter, but have not had time to inquire into it. Complaints are made of the course pursued by some of the competitors.

THE MAIN DRAINAGE CONTRACTS.

METROPOLITAN BOARD OF WORKS.

At a meeting of the Board, held last week, a report from the Main Drainage Committee, containing the following, was adopted:—

"That the committee, considering the nature of the sewer works being now carried on by the contractors for the main drainage, is of opinion that it would be sufficient for the Board to retain 10 per cent. on the value of the works executed, as certified by the engineer, such certificate to be final and binding."

And recommending—  
"That all the contractors in future be paid 90 per cent. on such value, and the balance of the amount hitherto retained be paid them, the consent of the sureties being first obtained."

That as regards Mr. Helling, who has stopped the works of the outfall sewer on the plea of his not receiving moneys due to him according to contract, he do only receive such payment on his finding a responsible and approved party to join in his contract, on the works being immediately proceeded with, and on the understanding that the certificate of the engineer shall be final and binding as to the value of the amount of work executed—the consent of his sureties being first obtained.

That it be referred to the solicitors to prepare all necessary agreements and securities to make the Board safe."

GAS.

The directors of the Faversham Gas Works having determined upon building new offices, extending the retort house and other buildings, the following tenders have been shewn: Mr. Lewis Shrubsole, 415s.; Mr. S. M. Shrubsole, 435s. The lowest tender was accepted.

—At a public meeting at Buckingham to consider as to the price of gas, it was stated, on the part of the directors, that some time ago they had resolved that, from September next, the price of their gas should be reduced from 7s. 6d. to 6s., and that the charge for metres should be abolished, which would leave about 5s. 6d. per 1,000 feet for the consumer to pay. It appeared that the shareholders, on an average, received about 4½ per cent. This statement seemed to give satisfaction.—The Plymouth Gas Company, who have for some years acted steadily on the principle, recommended in the *Builder*, of reducing the price of gas in order to increase their profits, have, we understand, once more reduced their price, after, as usual, dividing 10 per cent. on their capital, the maximum dividend allowed by law. The price is now reduced to 8s. 6d. per 1,000 cubic feet.—The Bradford Gas Company were to reduce the price of their gas from 4s. to 3s. 4d. per 1,000 feet on and after the 1st July.—At a recent meeting of the Kelson Gas Company a dividend of 10 per cent. on the paid-up capital was declared.

THE PROPOSED GARRISON HOSPITAL AT WOOLWICH.

When the remaining items of the Army estimates for the current year were disposed of in the House of Commons on the 18th ult., the Secretary for War took occasion to advance the somewhat startling assertion that "the Government is now building barracks that would make incomparably better hospitals than the generality of the metropolitan ones," and then, in reply to Mr. Monell, and with reference to one very heavy item in the estimates, Mr. Herbert asserted something like the converse of the first proposition, and gave it a special application by saying that a bad hospital, the very worst perhaps in all England, one which has been conducted for years, would make a good barrack. His words were,—"The present hospital at Woolwich is well fitted for barracks." He added, "It is proposed to build a new hospital on a more eligible site for the purpose."

One must be permitted to doubt how far it is at all possible to adopt an involved series of exceedingly small rooms to the requirements, disciplinary and sanitary, of a barrack. What was meant by a "more eligible site" than the present one at Woolwich we are now enabled to understand, as the War Department has concluded, or is about immediately to conclude, the purchase of Kidbrooke-common, with a view to the new hospital being built on it.

This common is a piece of stillye land, below Shooter's-hill, and just over against the new vast Greenwich cemetery. It is so far removed from the barrack from which patients will be supplied to it, that much delay and great inconvenience must of necessity occur when the hospital is moved to this site; and the distance between the two points will also render necessary a supplementary hospital at Woolwich and a double set of officials,—an arrangement which will cause expense, embarrassment, and circumlocution.

It cannot be necessary to say one word more in condemnation of a scheme for the carrying out of which the House of Commons has, with but the faintest breath of inquiry, without a whisper of objection, with no more explanation than the very superficial one quoted, sanctioned an expenditure of 120,000l. of the public money.

What renders this act of supreme folly all the more deplorable is the fact, which is patent to every one who knows anything of the district, that Government already possesses, in the immediate neighbourhood of the barracks, more than one site,—two are at present unoccupied,—which, in their soil and surroundings, comply with several of the most imperative sanitary necessities, while they are free from the objections which ought to condemn the proposal to build on Kidbrooke common.

There can be little doubt that as soon as many thousand pounds have been expended on this scheme, it will be discovered that a great mistake has been committed, and that there will be much controversy, and the seemingly inevitable array of commissioners and committees.

In view of that contingency, the courteous reader is requested to take note that a public and detailed protest, in behalf of common sense and sound sanitation, has been four several times made in these columns.

It cannot be too well remembered that this work will, in magnitude and expense, be second only to the huge blunder at Netley. There is this difference, however, that, in the course of the last five years, since it was determined to build at Netley, the sound principles of hospital construction, and the principles which ought to influence the selection of hospital sites, have obtained far greater currency in the public mind. It is understood that one site at Woolwich, in many respects suitable, has been abandoned, because a medical practitioner of great respectability has stated that, in the course of a long practice, he had met with a few cases of ague in the neighbourhood. This is an objection to which it is right to attach a certain degree of importance, but it cannot justify the preference of a site, which all the medical practitioners in the world, which any corps of sappers, will tell you is one on which an hospital should never be built. Oddly enough, it would appear that the rejected site has been fixed on for the supplementary hospital, which will be rendered necessary by the great distance of the new large one. If one could suppose that Mr. Herbert is cognizant of all the bearings of the question, it would seem strange that he should so run counter to all that he has so ably said and done, that he should so "turn his back upon himself." If one could suppose that Mr. Herbert is in office to Mr. Herbert out of office, and if the question were to be settled by the judgment, there cannot be a doubt that the sounder principles would prevail. There may yet be time to retrace an unfortunate and indelible step. C.W.R.

#### COMPENSATION TO YEARLY TENANTS.

*The Metropolitan Railway.*—Some interest has been excited by the settlement of several disputed compensations to yearly tenants, by reason of the practice hitherto of coupling the 22nd and 121st sections of the Lands Clauses Consolidation Act, the one section authorising two justices of the peace to settle all cases under 50*l.*, and the other all cases of yearly tenancy. On Thursday, the 25th ult., several parties were summoned by the Metropolitan Railway Company, before Mr. Samuel Gregson and Mr. William Griffiths, two justices for Middlesex. Mr. E. Roberts appeared for the claimants, and conducted the cases. Messrs. Burchell and Mr. F. Fuller represented the company. The first case was,—

*Oborn v. The Company.* for premises, 33, Upper Lisson-street. The sum claimed was 37*8*l.** 10*s.* The company offered 8*8*l.** and a further sum of 17*l.* to save litigation. The justices awarded 13*5*l.**, which carried costs.

*Williams v. The Company.*—This claim was 1*8*l.** for loss on fixtures and an improved rent of 3*l.* a year on a cow-shed in Middlesex West. The company had refused to make any offer, as the claimant was under notice to quit, according to their arrangement with the landlord. The justices advised the company to settle, which resulted in an offer of 10*l.* This was declined, and the justices awarded 13*l.*

*Sharpe v. The Company.*—The claimant is a working lrazier and founder, also under notice to quit, expiring at Christmas. The company made no offer, but upon presence in court proposed 30*l.* The arguments mainly turned upon the damage to the trade for the remainder of the term. Mr. Roberts urged that the notice to quit was caused by the railway works. The justices awarded 85*l.*, which carried costs.

#### ARCHITECTS' CASES.

*Manton v. Farmer.*—In this case, tried in the Wolverhampton County Court, June 23, Mr. Charles Manton, architect, of that town, sued the defendant, Mr. Joseph Farmer, butcher, Tettenhall, to recover 3*6*8*l.** 6*d.* for preparing plans and specifications of some new building which the defendant intended to erect at Tettenhall. Mr. Claydon appeared for the plaintiff, and Mr. Underhill for the defendant. Plaintiff's case was that, in May last year, he was engaged by the defendant to prepare plans and specifications for the erection of some new buildings to be used as a butcher's shop. He did so, and submitted the plans to Mr. Farmer, who thereupon raised a question as to the cost, saying it would make a hole in 200*l.* This was the first intimation Mr. Manton had of any limit as to price. On looking over the plans, Mr. Farmer suggested certain alterations, which Mr. Manton told him would further increase the expense; but defendant ordered them to be done. Mr. Farmer approved of the plans with these alterations, and tenders having been solicited, the lowest was from Mr. Jones, for 32*0*l.** Mr. Farmer cavilled at the expense, and plaintiff suggested a certain curtailment in the plans, but the defendant would not assent to this. While the plaintiff had the plans in hand to reduce them, defendant came to him and told him he should not require them. Plaintiff, being a relation of the defendant, had charged him at the rate of 2*1* per cent. on the 32*0*l.** with the items of 16*8*l.** 6*d.* for preparing a ground plan of the property, and 1*5*l.** for an estimate. Mr. Underhill admitted the plaintiff had performed the work specified, and if he was entitled to an architect's fee in respect of the work done, the charge made was reasonable and reasonable. The whole question was whether an architect was entitled to any remuneration if he had a specific arrangement with his principal as to the amount to be spent, and afterwards exceeded that estimate in his plans. In cross-examination by Mr. Underhill, Mr. Manton said the first interview between him and Mr. Farmer took place at Mr. Farmer's house. Miss Moore, defendant's housekeeper, was present. Plaintiff positively denied that Mr. Farmer then told him he would not go beyond 200*l.* Mr. Farmer swore that, at the interview referred to, he*

told the plaintiff he did not propose to go further than 200*l.* His Honour said this question has narrowed itself into a flat contradiction between the parties. Miss Moore, defendant's housekeeper, was called, and confirmed Mr. Farmer's statement as to the mention of the 200*l.* on the occasion of the first interview. Mr. Banks spoke to the custom amongst architects, in accordance with Mr. Underhill's views. The judge, Mr. Skinner, accepted the defendant's version of the transaction, and gave judgment in his favour.

*Sprague v. Tomkins.*—Mr. Serjeant Parry and Mr. Digby Seymour were counsel for the plaintiff; Mr. Macnamara for the defendant.

This was an action by an architect, tried in the Court of Common Pleas July 3rd, to recover the value of certain plans made for the defendant, and relating to certain proposed alterations at St. George's Wharf at Wapping.

The defendant paid 5*l.* into court, and the plaintiff had a verdict for 10*l.*, being the remainder of his claim.

#### ACTION FOR DILAPIDATIONS.

RUCK V. HALL.

In this action, tried in the Court of Exchequer, June 29th, Mr. Montague Smith, Q.C., and Mr. Field were counsel for the plaintiff; Mr. Henry James and Mr. Griffiths appeared for the defendant. It was upon a branch of covenant to build and maintain a house in a proper state of repair.

The question was one involving all matters connected with the construction of the house, and during the opening of the plaintiff's case, his Lordship said that it was impossible for the jury to try the case, and the matter had better be determined by a surveyor, to whom it ought to be referred. The plaintiff not acquiescing in the suggestion of the learned Baron, the case was proceeded with, getting into a perfect maze of facts and figures, but eventually it was consigned to the fate that had been originally proposed for it, his Lordship remarking that the fault of such cases coming into court lay with the judges, who had not the courage to insist upon referring them. In the present instance an expense of at least 100*l.* might have been avoided if the case had been referred to chambers.

#### THE LABOUR MARKET.

AN advance of wages seems to have been very generally agreed to.

At *Polechampton* an advance of 4*d.* a day has been conceded by the employers to the bricklayers; and the carpenters and joiners have resolved to apply for the same increase. The painters are about to make a similar application.

At *Liverpool* a good many of the master joiners and carpenters are said to have agreed to allow the required half-hour each evening, and others have promised to be nice by the majority.

The *York* joiners have gained an advance of 2*s.* a week, and a diminution of one hour and a half in the time of labour from the masters.

The *Dorsetshire* masons remain much as it was: one master, however, has been obliged to give an advance of new hands of 2*s.* a week in wages, and a few others have got some men on like terms; but the diminution of time has not yet been conceded, and the new works are mostly at a standstill.

At *Dorsetshire* the employers have agreed to give their masons an advance of 4*d.* a day, and labourers 2*d.*, which has been accepted, although the requirement was 6*d.* to masons and 4*d.* to labourers. Wages will now be 26*s.* for masons, and 17*s.* to 19*s.* for labourers.

The *Jedburgh* masons have struck for a rise of 2*s.* 6*d.* a week, which the masters as yet refuse to give. The builder of the Exchange is said to give only 26*s.* 14*d.* in *Jedburgh*, although he gave 2*s.* at Melrose just before he started at *Jedburgh*.

At *Hawick* the masons' wages are rising.

#### "ANCIENT ARMOUR" AND THE TOWER.

SIR.—You have been pleased to notice in your last number, the volumes lately published, "Ancient Armour and Weapons in Europe." Your remarks on the work itself would not have led me to trouble you with a single word; but you accuse me of the "defence, on a previous occasion, of forgeries purchased for the Tower." This is a grave charge, and I claim the right of being heard in denial. Even if I had been guilty of so foolish a thing, I am at a loss to see how a transaction of purchasing armour by the Tower storekeeper, in 1853, bears upon the publication of two volumes on military topics, by an amateur, in 1850. But so far from defending the nefarious practices of vendors of spurious antiquities, if your readers will turn to your No. 522, in 1855, p. 85, they will find that I wrote a long letter in your own columns, exposing, as far as in me lay, the frauds of these dishonest traders.

On the particular object there in question (a so-called "helmet from Florence") I did not indeed express any opinion, either *pro* or *con*, for the simple reason that I had nothing to do with the matter. But I may be allowed to add, that the very first moment an opportunity presented itself for my recording an opinion on the subject, I took care to do so. At page 31 of the Tower Armoury Catalogue, you will find the *Florentine helmet* thus described:—

"Mask burget, the visor in the form of a monster's head, with an ornament of wings at the sides. This helmet, though not genuine, is curious as an ingenious example of metal-work after the manner of the old armour-smiths."

J. HEWITT.

\* \* \* Receiving this at the moment of going to press we are unable to add anything to what we

have already said, but we may find another opportunity.

#### Books Received.

*Transactions of the Glasgow Archaeological Society.* Part I. Macnab, Printer, Glasgow, 1859.

The first part of the Transactions of the Glasgow Archaeological Society has just now been printed. Articles requiring illustration have been reserved, but will probably also be published. The first paper in the present part consists of some interesting reminiscences of James Watt, by Mr. Robert Inart. While speaking of Newcomen's engine (on what authority, by the way, is Newcomen's engine so spelt "Newcomen," as it here repeatedly is?), the author alludes to the Marquis of Worcester's inventions, and particularly to that "engine" in respect to which the marquis says "I do intend that a model thereof be buried with me"; and as it so happens that we recently made mention of a proposal to open the tomb of the marquis in order to look for this model, let us see what an engineer of some skill and experience has said, speaking in 1857, on this subject. But first, we may remark, it is in allusion to the ninety-eighth of his "century of inventions" that the marquis hints his intention to have a model of the engine he is then briefly and obscurely treating of buried with him. That engine appears to have had the atmosphere as its first mover or primum mobile. Of the ninety-ninth he says that by it a weight of 1 lb. can raise 100 lbs. as high as 1 lb. felleth. Now, in respect to these two inventions, Mr. Hart says, "the ninety-eighth means that he has discovered a way to use the pressure of the atmosphere as a first mover: in the ninety-ninth he applies it to act on a piston whose area is equal to lift 100 lbs. by the pressure of the atmosphere. He would have a model of the air buried with him." The 100th (a waterwork engine for raising "an incredible quantity of water") Mr. Hart considers to be "composed of the other two," and to be, in fact, no other than Newcomen's engine. Into this latter question we need not here enter; but of the former we must say we think Mr. Hart's conclusion to be by no means borne out by the marquis's words. It is not a "model" of the "primum mobile" that he "would" have buried with him, but a model of "an engine so contrived" that "the working" of it is by means of a "primum mobile," or first mover, which, in fact, can be no other than the air; and this model "engine" he says he intends to have buried with him—not merely that he will have it buried with him. Moreover, if, as Mr. Hart concludes, the 100th and last invention was based upon the ninety-eighth and ninety-ninth, then, since the marquis says, "I deem this invention [the 100th and last] to crown my labours;" in all probability it was in the form of this crowning invention that he intended the ninety-eighth or "semi-omnipotent engine" to be buried with him, even if that ninety-eighth be supposed merely to denote a discovery of atmospheric pressure as a primum mobile, and not any special application of that power in form of an actual "engine," such as the 100th and crowning invention assuredly was; for the Grand Duke of Tuscany saw it at work in 1665.

*Shall the New Foreign Office be Gothic or Classic? A Plea for the former.* By Sir FRANCIS E. SCOTT, Bart., Chairman of the Government School of Art, Birmingham. London: Bell & Daldy, 1860.

In this addition to the crop of pamphlets grown on the battle-field of styles, Sir Francis Scott, repeating all the arguments which have been used in favour of the adoption of Gothic as the style of the New Foreign Office, writing with considerable vigour and spirit, and putting into it the result of much reading and travel, has made an interesting and agreeable contribution on his side of the question. With all his love for Gothic architecture, he views the Greek ruins as "the relics of an architecture so true, so perfect, and so lovely, that the world can never look upon the like again!"

Against "decorators" the author is wrathful:—"The 'decorator' [he says] is of *Clayton* origin, and was first spawned, in North Italy, about 1870, in an unhealthy state of society, in an utter stagnation of popular life, at a time when architecture was corrupt in taste and deceptive in practice."

The earliest and finest known specimen is Alessandro Victoria, of Trent.

The modern variety in this country is a compound of inferior and superior, of preserving habits and insulating address, with a keen eye to colour, and a keener to profit. Their name is Legion and although perhaps a

dozen of their leading men have very great knowledge and ability, yet their existence as a profession is, and will always be, a token of the incompleteness of architects, and still more of the public, and of the education of the public.

Incomplete in technical skill, their application of it is disgraceful—yet not so much to them as to their patrons; for the gifts that make the artist are prostituted to lies, and the marble, and the plaster, and the semblance of marble, and stuccoed walls into that of porphyry and granite.

These men believe in Louis XV.: "Le style Pompadour est le haven of their choice: they swim the deep waters of Gothic meaning, and swarm in the shallows of pseudo-classic art, as tadpoles in a pond."

Putting aside the debatable points (again and again discussed), here is a paragraph with which the majority of our readers will agree:—

"While upon the subject of architectural criticism, I cannot help regretting that the study of architecture and its history should be so neglected as it is among all classes of the general public except the clergy,—when it is evident that the question must affect us all.

The most direct and obvious method of remedying this defect, and at the same time of imparting a knowledge and love of art in general, would be, I am inclined to think, by the same sort of education in form and colour as is now given in Government Schools of Art being made a necessary part of the curriculum at all private and public schools throughout the country; which system is now pursued with most encouraging results in several large grammar schools in the provincial districts."

Again, to let Sir Francis speak for himself:—

"In ancient Greece the 'Fight for the Championship' would have inspired a Pindaric ode, instead of columns of twaddle from a *Daily Telegraph* and a *Morning Star!* And on the other hand, I am perfectly certain that there are not half-a-dozen connoisseurs and professional architects among us, who could feel the need of, and worthily appreciate the exquisite—and almost indescribable—optical effects of the temple of Minerva, which taste and education made indispensable to the fastidious eyes, not of few critics, but of entire communities of the Grecian race for century after century. And these optical corrections in columns, sphinxes, and ensablures,—these upward deviations, from a horizontal level, of a quarter of an inch in a hundred feet, only to be detected by our grosser sight after the nearest measurement—these we find, not only in the temple of Minerva at Athens, in her Parthenon by Ictinus, in her Propylæa by Mnesicles; but at Eleusis, in *Agina*, and, far away in the west of Magna Græcia, in the temple of Neptune—among the marshes of Posidonia—in the work of colonists from material and lazy Sybaris a century before."

"That such delicacies of architectural design (Independent of material, for we find them with the coarsest breccia and the finest marble), were considered necessary to satisfy the æsthetic requirements of the public, among a practical people like the Greeks, is enough to fill a modern observer with positive amazement! Wonderful that such citizens of Athens! shrewd men and practical—who went down every day to Piræus on their business, as we go to the City; who knew to a fraction the price of tin from Cornwall, of ivory from Egypt, and of grain from Thrace; who made time-bargains in colonial stock, and who were well up to the last new dodge in jarticks, and gave long prices for Thessalian hawks; who had time for arts and arms, for politics and sport; and whose whole soul into each and all with true Athenian intensity of feeling and appreciation!"

VARIORUM.

"THE HABITS OF GOOD SOCIETY," published by James Hogg & Sons, Fleet-street, is a new book of etiquette addressed to both sexes. Although a *Gentleman* is not to be made by hooks of etiquette, this little volume exhibits a great deal of good sense and much knowledge of human nature. There are few who may not gain something from it.—The June number of the *Gentleman's Magazine* commences a volume. It contains, amongst other valuable antiquarian matter, a tolerably full report of the late Architectural Congress at Cambridge.—The *New York Architects' and Mechanics' Journal* is pursuing its course usefully. The editor appears to find it necessary to be more elementary in its teaching than we should have thought desirable. The journal is rightly resisting the stipulation which is being made by some competition committees, that all the designs submitted shall be their property. An organization amongst architects is spoken of "to impose a wholesome restraint on the widening presumption of building committees."—The second part of "The Warwickshire Antiquarian Magazine" (Cook, Warwick) has been published. It contains several interesting papers, among which is a document respecting Kenilworth in the fourteenth, fifteenth, and sixteenth centuries, and notes and extracts from *The Black Book of Warwick*. Amongst the illustrations are representations of several vessels, such as flags, used by Lady Dudley and the Earl of Leicester.—"The Streets of London, and how to make them Passable," is a pamphlet lately printed, the object of which is to urge the throwing open at once to the public of the toll bridges within the metropolitan bounds, and especially Southwark Bridge, in order to relieve the traffic along Cheap-side and London Bridge, an immediate relief and advantage which we ourselves have frequently urged, and which is now absolutely and immediately necessary, even though new bridges

were about to be built, which they are not.—Mr. Newlands, C.E., the borough engineer of Liverpool, has made a "Report on Horse Railways" to the chairman of the special joint local sub-committee on tramways, according to their instruction, in which an impartial review of their advantages and disadvantages is given, and the conclusions from all which are, that, so far as the traffic is concerned, the reporter sees no difficulty in the way of introducing horse railways into Liverpool; that their advantages are proved to have been great, and the evils attending them few, even under systems of monopoly and mismanagement; and that such evils he believes to have arisen simply to malconstruction, and easily to be avoided. The sub-committee alluded to, we may here note, have been examining models and plans in reference to the proposed introduction of such railways in Liverpool, and the general committee are about to report to the council on the subject.

Miscellaneous.

ART-UNION OF LONDON COMPETITION.—In reply to the offer of a premium of 100 guineas by the council of the Art-Union of London for the best series of designs illustrative of "the Idylls of the King," forty-two sets, we understand, have been sent in. The whole will be exhibited to the public, with the works of art selected by the prize-holders, at the close of the various current exhibitions.

PORTRAIT OF THE PRINCE OF WALES.—Mr. John Watkins, the artist and photographer, of Parliament-street, had the honour of attending at Buckingham Palace on Wednesday last, and taking sittings of H.R.H. the Prince of Wales, prior to his departure for Canada. Major-General the Hon. R. Bruce, governor, and Captain Grey, equerry to the Prince of Wales, also sat to Mr. Watkins on Wednesday. The Earl of St. Germans and Major Teesdale having previously given sittings to the same artist, a series of photographs has been completed by him of the gentlemen who will officially accompany the Prince of Wales to the United States.

THE CARLSLE SURVEYORSHIP.—The Town Council of Carlisle have appointed a new surveyor in the place of Mr. McKie, who has resigned. There were in all forty-five applicants for the vacant office, from whom the committee had selected the following:—Jos. Brierley, Jos. Gordon, John Lamb, Wm. Marquis, G. F. Parfit, W. S. Rampling, and Joseph Fox Sharp. The decision eventually rested between Mr. Lamb and Mr. Gordon, who had a personal knowledge of the Carlisle sewerage and drainage, and had been incidentally recommended by the engineer who planned the town sewerage, as a very fit person for the office. Mr. Gordon was finally appointed by a majority of eighteen to twelve. The salary was afterwards fixed at 240*l.*, with an office fund; 160*l.* to be paid by the local board of health, and 80*l.* by the corporation; the object of this arrangement being to ensure the surveyor resigning "the other appointment" if dismissed by either.

MEMORIAL TO THE LATE HON. MRS. LONGLEY.—The subscription window erected in the cathedral, Ripon (see p. 401), is quite honorary in its origin, and constitutes a graceful tribute to a name justly prized in that city. Dr. Longley was its first bishop, and held the see from its foundation, in 1836, till his translation to Durham, in 1856. The episcopal palace was built for Bishop Longley, who, while in occupation of the see, and a suffragan of York, rendered essential services to his aged primate, Archbishop Harcourt. The family memorial to Mrs. Longley is a mural brass, designed by Mr. Morris, and erected in the chapel at Auckland Castle, the palace of the bishops of Durham. It consists of a doubly-foliated ogee arch, of Perpendicular character, within which and the supporting shafts the inscription is displayed, and the ground not so employed is charged with arabesques. The tracery panels over the arch are enriched by seraphim, and the cornice carries bosses, on which are repeated the initials of the deceased. The side piers have, on pedestals within niches (the ground of which consists of stars relieved by azure enamel), figures of the Virgin Mary and St. John, while other compartments bear shields, executed on separate plates of gilded metal, inserted in sunk matrices, and the charges are of various enamel. The two principal figures, named above, are also on separate plates, gilt, as is the one which surmounts the design, namely, our Saviour in an attitude of exhortation.

ELECTION OF ORGANIST AT THE LEEDS TOWN HALL.—After a contest for this post, before Messrs. John Goss, George Cooper (London), and W. T. Best (Liverpool), these judges have recommended Mr. Wm. Spark, of Leeds, as the person best qualified for the situation.

NEW CHURCHES AT ISLINGTON.—The foundation stone of a new church at Hornsey-rs, dedicated to St. Mary, has been laid by Mr. R. C. L. Bevan, the banker. A new church, dedicated to St. Thomas, in Heningford-road, in the same parish, has just been completed at a cost of 4,200*l.*

A RAILWAY ACROSS THE CHANNEL.—Some new scheme, or modification of old schemes, rather, is ever turning up for a junction between England and France. It has been chiefly Frenelmen, too, who have started the idea anew. A pamphlet has been recently published, according to *Galligani*, by M. Gustave Robert, advocating the construction of a jetty across the Channel. The jetty is to rest on a colossal foundation, 10 metres below the level of the sea, having a breadth of 15½ metres at its base, and of 88 metres at its upper service, and on an average altitude of 22 metres. On this foundation rests the jetty, its crest above water measuring 28 metres across, and its base 76 metres, with an altitude of 16 metres from the foundation, so that it stands 6 metres out of the water. Four double lines of rail are laid down along the crest. Two passages are to be left for ships, with ports of refuge on each side. These passages and ports of refuge are to be declared neutral, so as to secure the navigation of the Channel at any time to all nations. The materials for the construction of the jetty are to be had in abundance and cheap from the adjoining cliffs. The cost is calculated at 4,900 millions of francs.

THE MIDLAND COUNTIES ARCHEOLOGICAL ASSOCIATION.—An excursion has been made by this Association, chiefly to view the Abbey Church of Tewkesbury, and Worcester Cathedral. A considerable party of archeologists, accompanied by lady friends, left Birmingham by a train in the morning, and were joined at the Shrub-hill Station, Worcester, by a few members of the Worcester Diocesan Architectural Society. On arriving at Tewkesbury they repaired to the Abbey Church, where the history of that fine structure, as far as it is known, was related by the Rev. C. G. Davies, vicar of the parish. After lunch the party returned to Worcester, and assembled at the College-hall, where Mr. J. Severn Walker gave an historical and architectural account of the building. He next conducted the party through the cloisters, the crypt (which was lighted up for the occasion), the Cathedral, and the Chapter-house, pointing out the principal objects of interest, and speaking approvingly of the restoration works, under the direction of Mr. Perkins, architect to the Dean and Chapter. In the evening the party dined together at the Crown Hotel, after which, Mr. Tymms proposed a resolution to the effect that the meeting, looking on the Guesten-hall as a most valuable record of ancient architecture, and believing that the interests of art and the honour of the city of Worcester alike require its preservation, resolve to memorialise the Dean and Chapter on the subject. The motion was seconded by Mr. Bunce, editor of *Ari's Gazette*, and carried unanimously.

CONTRACTS FOR LENDAL BRIDGE, YORK.—Tenders for the iron-work were received from the following persons:—M. Samuelson, Hull, 12,360*l.*; Bray and Waddington, Leeds, 12,000*l.*; S. and R. Carter & Shaw, London, 11,489*l.* 10*s.*; Cochrane, Dudley, 11,042*l.* 6*s.* 3*d.*; J. Cliff, Bradford, 10,721*l.* 1*s.* 10*d.*; J. Wilson & Bell, Newcastle, 10,700*l.*; Renard, Brothers, London, 9,988*l.*; J. Butler & Co., Stanningley, 9,312*l.*; R. Crossland, Bradford, 8,850*l.*; W. Williams, London, 8,669*l.* 4*s.*; C. D. Berge, Manchester, 8,500*l.*; Head & Co., Stockton, 8,500*l.*; Close, Ayre, and Nicholson, York, 7,632*l.*; and G. J. Calvert & Locking, York, 7,298*l.* 8*s.* 6*d.* There were only three contractors for stone and brick-work, and scaffolding, viz. J. Taylor, Exeter; Bray & Waddington, Leeds; and J. Shaftoe, York, whose contract amounted to 9,390*l.* Messrs. Calvert & Locking's, and Mr. Shaftoe's, being the lowest tenders, were accepted by the committee. It will be observed, remarks the *York Herald*, that the difference between the highest and lowest tenders for the iron work amounted to 5,062*l.*, Messrs. Calvert's and Mr. Shaftoe's tender together being 16,688*l.* 8*s.* 6*d.*, whereas the two highest tenders amounted to 25,560*l.* The difference between Messrs. Calvert's and the next lowest tender (Messrs. Close's) is 338*l.* 11*s.* 6*d.* We understand that Mr. Pickersgill, the city surveyor, estimated the cost at above 17,000*l.*

**WATER LEAKAGE AT GLASGOW.**—The Glasgow water commissioners are compelled to resort to the most stringent measures to prevent the waste of water. Mr. James Gale, the resident engineer, has made a brief preliminary examination, and the result is that in only 300 houses which he has examined there is a leakage or loss of 37,800 gallons per day, being 120 gallons per house, or 24 gallons per individual.

**THE NEW CHURCH IN ST. JAMES'S.**—The foundation-stone of St. Peter's, the new church about to be erected in Windmill-street, Haymarket, was laid on 25th ult., by the Earl of Derby, who stated that great difficulty had been experienced in finding a convenient site, and still greater difficulty in raising the necessary funds. He was, however, happy to say that the deficiency, which six weeks ago had amounted to 2,600*l.*, had since been reduced by 1,200*l.*

**THE NEW POOR-HOUSE FOR HUDDERSFIELD.**—A special meeting of the local Board of Guardians has been held to consider the tenders for the several works connected with the erection of the new workhouse at Dean House. The following tenders were accepted, subject to the sanction of the Poor-law Board:—Mason's work, Abraham Grabau, 2,290*l.*; carpenter and joiner's work, Kaye & Oldroyd, 949*l.*; plumber's work, Lidster & Armitage, 490*l.*; ironmongery, Messrs. Hays, 217*l.* 10*s.*; plastering, Thomas Longbottom, 288*l.*; slating, W. Goodwin & Sons, 210*l.*; painting, Carter & Studdard, 45*l.*

**INTIMIDATION OF WORKMEN AT INVERARY.**—Walter M'Naughton, stone dresser at Mr. Hume's quarry, near Craze, who, owing to a misnomer, was dismissed on a previous complaint, charging him and others with using threats to intimidate the stone-dressers whom Mr. Sim had brought from England and Wales, to replace those who had struck work on the question of wages, and left his employment, was again placed at the bar on a similar charge, under fresh proceedings, as being guilty of contravening the Act of 6th Geo. IV., cap. 129, entitled "An Act to repeal the Laws relating to the Combination of Workmen, and to make other provision in lieu thereof." The Sheriff-Substitute (Graham) found the complaint clearly proven, and, after adverting to the ruinous consequences that might have followed to many of those concerned by the panel's conduct, sentenced him to ten days' imprisonment, remarking that he made the period so short in consideration of his threats not having been followed up by personal violence. A party of those on strike at Craze intimidated Mr. Sim himself, so as to induce him to allow them to go through his quarry, where they first attempted to prejudice Mr. Sim against his new workmen, and afterwards to induce the men to desert their work, offering them a bribe of 20*l.* for the purpose. It was on the new men declining to do so, on being assured of protection by Mr. Sim, that the acts of intimidation took place for which M'Naughton, the spokesman, has been punished.

**THE WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.**—The first general meeting and excursion of this society for the present year has just taken place. The route chosen for the day's journey lay amongst the churches situated to the east of this city, commencing with Spetchley and ending with Abbot's Morton. Admission to Spetchley Church was refused by the rector on account of the "ungenerous remarks in the report of the Architectural Society on their last visit." An external examination of the church was made by some of the party, and a general opinion was expressed that the criticism was fully justified. The party next drove to White Ladies Aston, where they were received by the Rev. H. M. Sherwood and conducted to the church, and afterwards had refreshment in the vicarage. The next church inspected was that of Churchill. The Rev. George Jenkin, the curate, received the excursionists at the gate of the churchyard. Broughton Hacket, Upton Snodsbury, Grafton Plyford, North Riddle, Plyford Flavell, Abberton, and Abbots' Morton churches were afterwards visited in succession. The party had a refectory at Abberton, and lunch and tea at Abbots' Morton. The altar-rails and communion-tables in all the churches visited appeared to be nearly of one common date, between the Restoration and the end of the seventeenth century. The monument-chests appeared to be as old as the churches. The fonts were nearly all octagonal, and plain. That at White Ladies Aston was believed to be the oldest, Mr. Bloxham thinking it to belong to the thirteenth century. The font-covers appeared to be of the same date as the altar-rails.

**HER MAJESTY'S THEATRE.**—Mr. E. T. Smith has produced, with great splendour and completeness, Webber's Fairy Opera, *Oberon*. Mr. Pianchi, by whom the piece was written, has superintended the production of it; and Titiens, Albion, Montgini, Belart, and Everardi, sing the music admirably. We may speak of it more at length next week.

**FABRISHAM ALMSHOUSES.**—Sir: Will you do us the favour to state in your next number that ours was one of the two designs selected out of the four chosen by Mr. Perrey, and that that finally decided on was carried by one vote?—**NEWMAN & BILLING.**

**BROMLEY, MIDDLESEX.**—It is proposed to erect a church, parsonage, and schools in this densely-populated district, on a site liberally given by Mr. David McIntosh. The church will accommodate about 800, the sittings to be free. Messrs. Morris & Son, architects, London, are appointed to carry out the works. The style of the church will be Gothic, of the Decorated period, and it will be built of Kentish rag and Bath stone. There will also be a tower and spire, about 120 feet high.

**THE DRINKING-FOUNTAIN MOVEMENT.**—A drinking-fountain has been erected in front of the Bloomsbury Mission Hall, Moor-street, Seven Dials. The design is the same as that in the Regent-circus, except being surmounted by a lamp. In the place of this is an urn. At the foot of this fountain there is a dog-trough bewn out from the stone. The expense has been about 80*l.*, nearly all subscribed by poor people near the quarter.—Another fountain is being erected in the Strand, opposite Somerset House.—At Portsea, a fountain, the gift of Mr. J. Faulkner, has been opened. It comprises a bronze column, based on a block of granite. At the base of the granite a trough is cut for animals. Above the granite base is a square piece of iron lrouzed, at each face of which is a design in relief, representing "Moses in the hidrushes," above which the water pours down. Four small columns also support the lamp-pedestal, at the base of which are griffins' heads. Mr. Hood, of London, cast and erected the fountain, and Mr. Absalom fixed the granite. The work cost 150*l.*

**THE RESTORATIONS AT LICHFIELD CATHEDRAL.**—The extensive restorations now being carried on at Lichfield Cathedral, under the superintendance of Mr. Scott, are exciting attention, says the *Midland Herald*, not only on account of their magnitude and the prestige attaching to the name of the architect, but also because of the successful manner in which the work is being executed. The magnitude of the works may be judged of by the fact that more than 11,000*l.* will be expended to complete those portions now in hand, exclusive of gifts, and leaving a considerable amount of ornamentation in abeyance. Towards this sum the ordinary fabric fund has supplied 5,000*l.*, of which 3,000*l.* have been absorbed in the restoration of the mutilated stonework in arches, vaulting, and columns, scraping of whitewash, scaffolding, stone, and materials, &c.; and the remainder in warming apparatus, double glazing the choir windows, and the expense of fitting up the nave for service. The heaviest item in the work now being carried on is that for the oak carving, which has been entrusted to Mr. Evans, of Ellastone, Staffordshire. The contract taken by this gentleman includes the bishop's throne (400*l.*), forty-two stalls, substalls, fronts to choristers' seats, &c., at a total sum of 2,030*l.* The choir screen has been confided to Mr. Skidmore, of Coventry: the expense will be 800*l.* The four side screens east of the stalls (including metal work) will cost 600*l.*; and the two pairs of gates to the north and south aisles, 100*l.* The money value of the whole floor pavement will be about 450*l.* The expenses connected with the lighting (gas-fittings by Skidmore) will probably amount to 600*l.* The organ loft having been removed, a new organ (by Houlditch, of London), value 1,000*l.*, will be placed at the angle where the choir joins the north transept. The entire expense of the works now in hand, so far as an approximate estimate can be made, and exclusive of the gifts presented, is about 6,300*l.*, to which must be added 5,000*l.*, the amount already expended by the dean and chapter, making a total of 11,300*l.* Of what is further proposed to be accomplished,—the rest-dos, carved and inlaid with marble, will cost 1,800*l.*; the pulpit, 250*l.*; the fald stool, 100*l.*; the sedilia, 500*l.*; grills opposite sedilia, 350*l.*; grills behind stalls, 800*l.*; canopy over dean and precentor, 150*l.* The total expense (including seats for the nave) will be nearly 5,000*l.* Nor will this sum complete the scheme: the lady chapel, the chapter-house, and the nave will still remain undone.

**LAYING ELECTRIC TELEGRAPHS.**—Sir: I am not a mechanician; I am merely a tradesman; and this will account for the following proposition. Supposing we had a cable to lay across a stream,—say a few miles long,—would it not do to roll that cable round an axle on shore which would revolve easily, and attach one end of it to a ship that would carry it over, and so lay our electric wires, supposing such to be the cable abovementioned? Now if that would do, why would not the same thing apply to the *Atlantic Telegraph*? Two great advantages would follow from the experiment: first, you would be in constant communication—the shore with the ship; and, second, supposing the rope broke, why then each side would hold its own; the vessel would return with hers, and the other part could be wound home again.—P. L.

**TENDERS**

For Merchant Seamen's Orphan Asylum, Spareshook, Mr. G. Somers Clarke, architect. Quantities supplied by Messrs. Batstone and Hunt:—

Design A.	Design B.
Moxon .....	21,820 0 0
Mansfield .....	21,720 0 0
Holland & Co. ....	21,740 0 0
Lucas, Brus. ....	20,455 0 0
Higgs .....	20,300 0 0
Parker .....	20,450 0 0
Meyers .....	19,685 0 0
Kirk & Parry .....	18,925 0 0

For New Dilap Asylum, Brighton, Mr. G. Somers Clarke, architect. Quantities supplied by Messrs. Batstone and Hunt:—

Lynn & Co. ....	23,368 0 0
Widder & Ancombe ..	5,315 0 0
Fabian .....	4,480 0 0
Patching .....	4,300 0 0
Cheesman & Co. ....	4,200 0 0

For building a detached house on Sydenham-hill, Messrs. Banks & Barry, architects. Quantities supplied:—

Wolchman & Gale .....	23,970 0 0
Papps .....	3,755 0 0
Dover .....	3,700 0 0
Richards .....	3,665 0 0
Becton .....	3,673 0 0
Adams .....	3,570 0 0
Wilson .....	3,487 0 0
Jackson & Shaw .....	3,475 0 0
Patrick .....	3,423 0 0
Hill .....	3,428 0 0
Wardle & Baker .....	3,120 0 0
Wade .....	3,357 0 0
Glen .....	3,390 0 0
Adamson & Son .....	3,292 0 0
Stevenson .....	3,275 0 0
Hickard & Co. ....	3,073 0 0
Amos (accepted) .....	2,988 0 0

For Stapleford Abbott Church, near Romford, Essex, Mr. T. Jechell, architect, Norwich:—

Brown & Robison .....	2,730 0 0
Savill .....	2,324 0 0
Spence .....	2,362 0 0
Hammond .....	2,210 0 0
Beever .....	2,201 0 0
Dove, Brothers .....	2,075 0 0

For two dwelling-houses, stables, and coach house, for Mr. A. M. Bles, Woolwich. Mr. James Harrison, architect. Quantities supplied by Mr. Arthur W. G. Nicoll:—

	Stable Fittings.	
	Wood.	Iron, Varnells.
Robertson ..	2,995 17 0	283 11 3
Laurence ..	1,968 0 0	81 0 0
Brake .....	1,894 0 0	75 0 0
Johnson ..	1,776 0 0	271 0 0
Bozique ..	1,645 0 0	56 10 0
Smith .....	1,729 0 0	77 10 0
Little .....	1,593 0 0	145 0 0

For repairs and alterations at St. James's Church, Holworth:—

	Comb. Painting walls.		Four oils.
	graining.	£	
Carter .....	275 0 0	295 0 0	20 0 0
Hardman & Sandon .....	593 0 0	85 0 0	47 0 0
Brown & Robinson ..	468 0 0	120 0 0	50 0 0

For finishing a house, corner of St. James's-road and Rensay-road, Holloway, for Mr. Goldsworthy, Westminster-road, Lambeth. Quantities not supplied:—

Corbet .....	2461 0 0
Senogoff .....	449 0 0
Wishard .....	417 10 0
Starkey .....	359 10 0

For building six small cottages in North-street, Wandsworth:—

Noley .....	2,790 0 0
Thornton .....	630 0 0
Benjamin .....	480 0 0
Stevens & Co. ....	450 0 0
Brazier .....	418 0 0

For sundry repairs, alterations, and additions to a house and premises, for Mr. R. Mathew, Mr. Poagter, architect:—

Little .....	2,437 0 0
Benjamin .....	398 0 0
Harding .....	381 0 0
Thorpe .....	389 7 0
Dovnis .....	380 0 0

For repairs to No. 7, Mead-place, and No. 2, Mead-row, Westminster-road, for Mr. Joseph Stearns, Mr. William Hey, architect:—

Beauchamp .....	2,375 0 0
Knight .....	338 0 0

# The Builder.

VOL. XVIII.—No. 910.

Lambeth.—Maudslay & Field's Manufactory.



WHEN we stood on part of old Vauxhall-gardens the other day, to see the Prince of Wales lay the first stone of a new building for a School of Art there, the changes which have taken place in Lambeth since the days when Queen Elizabeth was in the habit, after taking an airing in the St. George's-fields, of looking in on the Archbishop at the palace, made themselves strongly felt. At the commencement of the present century, according to some authorities, the number of houses in Lambeth parish was only 1,400, while in 1851, when the last census was taken, there were 20,520. In former days two important roadways seem to have passed through this neighbourhood,—one, the Broad Wall, and the other, the Narrow Wall; and the line of the latter is now

the Belvidere-road. Two centuries or so ago, there were several noted wells in this district: that at the Dog and Duck, in St. George's-fields, contained portions of Epsom and sea salts. On the ground lying near the Marsh were scattered residences of greater or less importance. In one of these resided Thomas Bushel, a man of great scientific attainments, who was a friend of Lord Chancellor Bacon. He obtained from Charles I. a grant to coin silver money for the purposes of the king, when the use of his Mint at the Tower was denied to the king. When Oliver Cromwell assumed the protectorate, Thomas Bushel hid himself in this house, which it seems had a turret upon it. A large garret extended the length of the premises. In this the philosopher lay hid for upwards of a year. This apartment he had hung with black. At one end was a skeleton, extended on a mattress: at the other was a low bed, on which he slept; and on the dismal hangings of the wall were depicted several emblems of mortality. At the restoration, Charles II. supported Bushel in some of his speculations. He died in 1674, eighty years of age, and was buried in the little cloisters of Westminster Abbey. In South Lambeth, resided John Tradescant, who left his collection of curiosities to Elias Ashmole. Both are commemorated in St. Mary's Church and churchyard. Lambeth was strong in astrologers. Besides Ashmole, Simon Forman, Capt. Babb, and Francis Moore were its inhabitants. In what was once the marsh stood, until 1523, an old house, called Bonner's house, which was traditionally known as the residence of Bishop Bonner. Reventon, the famous engraver, for some time resided in a house in Lambeth Marsh, but removed in 1774 to a more healthy residence, "opposite the Mother Red Cap, in Tottenham Court-road," where he died. He was buried in old St. Pancras. William Curtis, the celebrated botanist, had a large piece of ground in Lambeth Marsh, where he cultivated an excellent collection of British plants. The small cost of the land, and the advantages of water conveyance have caused the establishment along the river's margin of important manufactories. In Pedlar's Acre, to which the Charing-Cross Railway Bridge across the Thames will stretch, were established, in 1769, by Mrs. Coade, works for the making of artificial stone. The works were afterwards carried on by Messrs. Croggon

& Co., who ultimately removed to the New-road. Amongst the works executed in this material are the screen for St. George's Chapel, Windsor, supporting the organ; also the statues of King Edward, Madonna and Child, and St. George and the Dragon, in the west front of the Chapel; the arms at the Trinity-house and elsewhere, and statues and ornaments for Carlton-house. We have before now spoken of the stone-ware potteries in this district. Here, too, were the celebrated Vauxhall Plate-glass works. As early as the thirteenth century, as all know, the Venetians had attained peculiar eminence in glass-making. For a long time the mirrors of Venice were held in great esteem. About the year 1670, a number of Venetian artists arrived in England, the principal of whom was named Rosetti. Under the patronage of the Duke of Buckingham, a manufactory was established by them, and carried on with great success and much profit. As has been the case with other manufactories which have been introduced into England by foreigners, improvements were made, and the firm of Dawson, Bowles, & Co. soon excelled the Venetians and other nations in blowing plate-glass. The famous Vauxhall Glass-works stood on the site of Vauxhall-square. In 1780 a difference appears to have arisen between the employers and workmen, which led to a total stoppage of the works at Vauxhall; and a descendant of Rosetti died in extreme poverty. The pursuit of this manufactory is one of the many beneficial results from the encouragement of foreign talent by the English. It would be instructive to collect the particulars of the introduction of the numerous great branches of industry, now our own, which have sprung from this source. At Chelsea, for example,—to run across the water for a few minutes,—there was a manufactory of "Chelsea porcelain," carried on by a foreigner. Under fashionable patronage the establishment prospered, and a number of hands were employed. The original proprietor acquired a large fortune and retired from the concern; his successor, wanting his spirit and, probably, his skill, did not succeed so well, and in a few years the concern was abandoned. But on a far more extensive scale the manufactory was carried on at Derby and elsewhere. During the difficulties of the Chelsea works, the proprietors, acting on the now exploded principle that Government protection is of service, addressed the following memorial to the State authorities:—"This manufactory in England has been carried on by great labour, and at great expense. It is, in many points, to the full as good as Dresden, and the late Duke of Orleans told Colonel York that the 'metal,' or earth, made at Chelsea, had been tried in his furnace, and found to be the best made in Europe. It is now daily improving, and already are employed at least 100 hands, of which is a nursery of 100 lads taken from the parishes and charity schools, and bred to designing and painting—arts very much wanted here, and which are of the greatest use in our silk and printed manufactures." Specimens of the Chelsea porcelain have been much esteemed. At the sale of Queen Charlotte's effects, the examples of this china, which were very numerous, brought high prices. In the first instance, the Chelsea china seems to have been patronized by the Duke of Cumberland, and afterwards by Sir R. Faulkner. So great was its repute, that for long it was sold by auction. As soon as a set or hatch left the kiln it was disposed of in this manner, dealers and gentlemen surrounding the doors for the purpose of bidding. Faulkner, in his "History of Chelsea," gives the following curious note:—"Mr. A. Stephens was told by the foreman of the Chelsea china manufactory (then in the workhouse of St. Luke's, Middlesex) that Dr. Johnson had conceived a notion that he was capable of improving on the manufacture of china. He even applied to the directors of the Chelsea China Works, and was allowed to bake his compositions in an oven in Laurence-street, Chelsea. He was accordingly accustomed to go down with his housekeeper about twice a week, and stayed the whole day, she carrying a basket of provisions with her. The

doctor, who was not allowed to enter the mixing-room, had access to every other part of the house, and formed his compositions in a peculiar apartment, without being overlooked by any one. He had also free access to the oven, and superintended the whole process; but completely failed, both as to composition and baking, for his materials gave way to the intensity of the heat, while those of the company came out of the furnace perfect and complete. The doctor retired in disgust, but not in despair, for he afterwards gave a dissertation upon it in his works; but the overseer assured Mr. Stephens, in the spring of 1814, that he was still ignorant of the method of the operation." To return, however, to Lambeth. With the exception of the Archbishop's palace and portions of the old church, but little that is ancient remains to reward the search of the antiquary. Thousands of ill-conditioned houses have been planted on the marsh and adjoining parts, but we may now expect better doings, particularly in that large portion of the parish which forms part of the royalty of the Duchy of Cornwall, which is a portion of the patrimony of the Prince of Wales. Various improvements are already going on: a new railway-bridge will soon pass across the Thames to Pedlar's-acre: schools and churches are rising up; in parts the drainage has been improved, and the manufactories have increased in importance. Let us look more minutely into one,—the establishment of Messrs. Maudslay & Field, marine engine-makers. Little more than a century ago the site of it and miles around were little better than a swamp, the best of its productions being a few bulrushes, while on the edge of certain high lands appeared some vegetation of the willow kind. The hand and the intelligence of man have produced wonders in the comparatively useless waste. In old times, the only living persons who would choose to resort to this district, would be some fishermen eel-catching, or at low water, in the winter time, a few Cockney sportsmen hoping perhaps to shoot some snipe, in hard weather. Sea-gulls and other scarce birds would make the only sounds which, with the exception of the distant note of the bells of the London and Westminster churches, were heard in Lambeth Marsh. At Maudslay's, when, some little time ago, we visited it, there were, independently of clerks, between 1,300 and 1,400 workmen employed from early morning until the hours of evening. Consider that each man here engaged has on the average (as there are here few, if any, apprentices) four persons depending on him for support, there are, say 5,000 men, women, and children who are supplied with the necessities of life as a return for their useful labours on the morsel of marsh where this manufactory is established. This firm was, in the first instance, made by the exertions of a man who was not only the founder of his own fortune, but also that of others; one who, like the Stephensons, rose to eminence from a humble beginning. Entering what seems an ordinary dwelling-house in the Westminster-road, Lambeth, we will not stop to speak of the models of the most important of the marine steam-engines, which have been either improved or invented and patented by those engaged in the direction of this place, though they are most exquisitely formed: they move in the turning of a steam tap, and, in their miniature way, are as perfect as those ponderous works to which, from this place, we are presently guided. In the various workshops, each superintended by a foreman of intelligence and ability, steam marine-engines are in the course of progress for various nations. At the same time that engine work on a certain scale is being executed for foreign governments, it will be seen that commissions for our own government are not wanting. Among other works we saw screws for the British ship *Victoria*: two of those screws were fashioned like the double tail of a whale, or the largest monsters of the deep in times long passed: huge masses of metal were being coated with brass or copper work by processes which require extraordinary management. These screws will be

moved by a power of 1,000 horses. We pass through workshops of great space, lofty as many churches, fitted with cranes which will lift huge weights, and convey them in a slow, but sure manner to parts of the establishment where the rough work may be fashioned and fitted with the most perfect nicety. In all directions swarms of workmen are engaged in fabricating parts of engines, which, in spite of wind and waves, enable large ships to plough the ocean. In another, by means of the cranes already mentioned and by the skill of the workmen, parts of the work, some of several tons weight, are adjusted and joined together; and in another shop of great length, the men are working at lathes, fitting and finishing the more minute portions. In other directions, immense cylinders are being polished and cut round, after they have been removed by powerful means which are completely made available for the uses of man. One machine, the invention, we are told, of Mr. Maudslay, the founder of the firm, is boring and polishing the inside of a cylinder, of such diameter that a man might almost walk upright through it. There are other engines cutting and shaving hard iron, as if it were as soft as wax. One of these, with the greatest ease and exactness, can pare away from 7 to 8 cwt. of metal in an hour. Another of these planing machines has a circular and complex movement. There are all sorts of iron planes and cutting apparatus. Iron of an inch in thickness can be cut cleanly through with great rapidity. The instrument with which it is done has a force of thirty tons. In one place three steam-hammers, of 10, 20, and 30 cwt., perform the part of the sledge hammer, which of old was the only means of executing the heaviest work. There are also rolling mills and machinery by which plates of metal of considerable thickness can be pierced for riveting. An invention for fastening the red-hot rivets is very simple and effective.

In shops provided for the purpose are copper-smiths making steam-funnels of different sizes and shapes. Some men are beating the metal into the necessary form; others are attending the blast furnaces which heat and partly weld the copper together; others are guiding the steam-hammers; cauldrons of hoiling lead are at hand, and the stranger, as he wanders through those numerous places of industry becomes bewildered with the vast extent of iron-girded roofs, the seeming complication of endless masses of machinery, the lifting and moving of immense pieces of metal, the blazing of furnaces, and the clang and clatter of the different parts of the works. All the sounds of this great manufactory are, however, as nothing in comparison with that in the immense space in which the boilers are made. There is something indescribably grand in "the voices" of this place, which, at the hiding of a single man, can be raised or stilled. It was said that when steam-machinery was introduced into manufactories like this, the work of the smith would be useless: there are now, however, perhaps ten times as many smiths, who work with hammer and anvil, employed, and at better wages, as there were formerly.

The smiths' shop here is, like the other portions of the establishment, of great extent, and many sturdy arms are actively engaged. Through vaults lighted by gas, in which numbers are arranging fuel and moulding materials, is the casting-room. These arches support the first part of the building which was reared, and were necessary in consequence of the damp marshy nature of the site. Drainage has, however, of late years, dried and improved this part of Lambeth. Before entering the casting-room, it is worth while to ascend to the pattern-shop, which is on an upper story. Piles of wood are stored in places for use; and, in the long perspective of the pattern-shop, skilled workers are fashioning the models from drawings which have been prepared by the engineers. Here we noticed that the glue is melted by steam, which lessens the risk of fire; and that, throughout the whole place, pipes are laid in all directions, so that, in case of fire, water could be thrown in vast quantities. A fire

brigade has been organized amongst the workmen; and, in parts, iron doors and partitions are in use, to separate portions of the works.

In the casting-room, in deep pits, the metal-founders are preparing the moulds for cylinders and other parts of the engine. Five cupolas will soon send their blazing contents into the hollow shapes provided; and the results, in due time, will be hoisted and borne away to the places through which we have passed, and finished for use. The groups of workmen, the peculiar masses of light and shadow, the mounds of black earth, and the machinery here form a most picturesque scene. Near is the boiler which works ten steam-engines of considerable power, blows the furnaces, and moves the immense machinery, that adds so much in this place to the strength of men's hands.

The firm has provided a large room, heated by gas and well lighted, in which about 200 of the men who live at a distance may eat their meals which they have brought with them, and thus save the expense of the publichouses; they have also provided an excellent reading-room, to which is attached a library, now containing nearly 900 volumes. The books in the library can either be read in the room or taken home. The papers are supplied by a very small payment from those who choose to avail themselves of this advantage.

However, we must get out into the road again, where Astley's amphitheatre takes us back slightly into the past. Nearly a century ago, one Astley, who had been brought up as a mechanic, but who had entered a cavalry regiment and much distinguished himself abroad, erected a temporary shed on this spot for the exhibition of his skill in horsemanship. His wife and he were the only performers. The idea was, however, approved of; and with great energy Astley extended his establishment, until it became one of the most popular places of amusement in the metropolis. He was a man of handsome personal appearance and great strength. Undaunted by two fires which destroyed his premises and caused him great loss, the building was each time reconstructed in a better manner than formerly. Astley is worthy of a place amongst those who by talent and some peculiar ability have raised themselves to repute. This theatre continued to flourish; but the once famous Vauxhall Gardens are now amongst the things that were. The glory of its coloured lamps, its green avenues and sham temples; the arbours where Evelyn and Pepys gossiped, where Goldsmith and Reynolds samtered; the decorations which Hogarth designed, have passed away; and soon the site will be covered with useful buildings, destined, it may be hoped, to improve the rising generation, and aid the general advancement.

#### CO-OPERATIVE SOCIETIES: IRON.

THE BRITISH ASSOCIATION IN OXFORD.

THE relation between the subject of Mr. Robert's paper mentioned in our previous notice of the proceedings of the British Association, and one which we are about to notice,—“Co-operative Societies; their Social and Politico-Economic Aspects,”—did not seem to occur to recollection at the meeting; but it will be obvious to our readers.

We have already given some attention to this subject, last referred to,—that is when discussing the question of means other than strikes, to be taken by workmen in the building trades towards improvement of their position. The paper, which was by Mr. Henry Fawcett, M.A., Fellow of Trinity Hall, Cambridge, and the author's reply to various doubters and objectors, were remarkable efforts—considered as those of one man from the results of a melancholy accident, to read or to take notes. On a previous day, the same author had given an able paper entitled “Dr. Whewell on the Method of Political Economy,” which called forth a defence from the Master of Trinity, and produced like the subsequent paper, a most interesting debate. The object of the paper on Co-operative Societies, was to bring prominently into notice the facts of the success at Leeds and Rochdale; and was similar to our own when we drew attention to one of the very societies instanced,—namely, to show there were means, one of which might be the co-operative principle, by which workmen could possibly benefit their position,—or which at least deserved the attempt, as promising

success if undertaken with the same elements of management as existed in the society called the Rochdale Pioneers. It was, perhaps, unfortunate that the author of the paper appeared to base his argument upon assertions of Mr. Froude, that the condition of agricultural labourers had not advanced, since the time of the Tudors, with all the increase in the national wealth. This of course called up Mr. Edwin Chadwick, and produced an indignant denial from others. The facts adduced on one side, however, did not controvert those on the other, that there was a great contrast between the wealth of one class and the misery of another. The author would seek for a remedy, from the lessons which political economy taught, and take away the dependence of labourers or workmen upon the capital secured by others. Wages being determined by the relative rapidity of advancement of population, and of the accumulation of capital; and it being impossible to permanently raise wages by the mere desires of humane sympathy, he remarked on the widely-spread opinion amongst workmen that wages were reduced by the tyranny of the capitalist. But he said, when labourers expressed unity towards capitalists, they should remember that so long as the labourers as a class did not save, they rendered capitalists who did not work with their hands absolutely necessary. He well said:—

“Capital is that portion of past produce which has been saved to aid future production; capital, in fact, sustains the labourer until the results of his labour become available for consumption; if the labourer will not save, he must look for others to sustain him; and a large portion of the produce of his labour must be devoted to compensate the capitalist for his accumulation, for his risk, and for the labour of superintendence; and the greatest advance which could be made, not only in the social, but in the material condition of the labourers, is, if they would become a saving class,—in fact, that they might obtain from their own savings, all those services for which they now have to pay the capitalist so heavy a price.”

It might be said, however, he continued, that the difficulty was to induce the saving. All saving involved a present sacrifice for future advantage. A sure sign of inferior education, was the absence of foresight. The poor would be naturally not provident; and, of course, saving was peculiarly difficult, where it had to be made by deprivation of some necessities. Recognizing the obstacles, he said, we should be better able to discern the manner in which the saving could be encouraged. The first thing was to bring distinctly before the labourer the advantage of the saving. It was not surprising there should be an absence of the saving; few could accumulate 100l.; and those who did, could only get 50s. a year from a savings-bank, as reward for their prudence. If, however, these individuals could use the capital to support their own labour, they might be able to cease paying the capitalist the heavy price they now have to pay him. The results could not be over-estimated. The labourer would be advanced to a different social grade; the whole produce of his labour would be his own; if this could be made the reward of his prudence, the prudence would not be so rare. The tendency at present, however, was against this desired state; every year small capitalists found it harder to contend against those of larger means. It was hopeless to expect that production would again be carried on by uncombined labourers. But by combination, the labourers would take to themselves the whole of the profits now falling to the capitalists. Savings would have their mode of investment, and accumulation would be stimulated; and the same prudential habits would distinguish the working as the middle classes.

To show there was good prospect of success in this direction, the societies above mentioned were then noticed, and their operations described. Through those societies, articles were obtained free from adulteration; and by the competition, other dealers had been obliged to reduce their prices. The success was ensured by selling for ready money, and by keeping the arrangements in the hands of the workmen themselves, as opposed to the system adopted in some undertakings which had not been so successful. The Rochdale Co-operative Store, and the Leeds Co-operative Flour Mill, together, had effected transactions to the extent of more than 1,000,000l., without having had to set off 10l. of bad debts. If the results were surprising, it was the more reason why we should seek to understand the cause of them.

In explanation of the cause, Mr. Fawcett expressed the opinion that the doctrine of the interests of the employer being identical with those of the employed, was not strictly correct. They were identical only so far as those are of buyers and sellers in other cases. The

produce of labour being divided into two shares, whereof one fell to the employer and the other to the employed, it was obvious that each party must be interested in securing to himself as large a share as possible. The conclusion that the interests were opposed as those of buyer and seller, was confirmed by the fact that every employer felt that no one of his labourers would spontaneously put forth his full energies. Labourers had to be kept to their work; and employers throughout the country, now complained that men were more careless of their masters' interests than formerly. The existence of the trades' unions was evidence that such dissatisfaction existed; and every thoughtful mind must be impressed with the opposition growing up between the classes. Many wished to revive the condition of days gone by, when the master and his servants were as one family. But you could not have an effect when its cause was gone. The attachment had its source in the protection from danger which the labourer needed, and the master never failed to extend; but the relations now were commercial; the attachment could no longer exist; and the utmost efficiency of the labour was rarely secured. And so long as the labour was forced, so to speak, from the workman, so long must the employer pay a heavy charge for the necessary watching. But in co-operation each labourer had the direct interest, both to work himself, and to see that each other did the same. Efficient inspection was thus created without expense, and there grew up a certain *esprit de corps* which never existed amongst mere hired labourers. The mental powers were called forth, whereas in the present system it would be difficult to estimate the pecuniary loss from the apathy and mental inactivity that exist. Looking at the subject thus, it was not difficult to understand the success which had attended co-operative efforts when the labourers had selected proper managers from their own body. Even in France, the societies started in 1848, had when their career was cut short, succeeded so far that they had paid off all their borrowed capital, and had funds in hand. The failures which there had been in London, only showed what would be the elements of success. An erroneous view taken in one of those cases, was that competition was to be displaced, and motives which were inapplicable, substituted. It had been for a long time supposed there was something essentially democratic in these societies; but the truth was, if any political party ought to rejoice in the establishment of such societies, it would be the Conservative party. "The real revolutionary element of a nation," it was very fairly said, "is a class without accumulative property, and so impoverished, that national disturbances may possibly improve their lot, but cannot leave them worse off than they were before." Mr. Fawcett concluded by reminding the section that he had carefully avoided saying anything antagonistic to capitalists. He had sought to explain a mode by which labourers might make themselves independent of others' savings,—becoming their own capitalists; whereby the class might be enriched, not at the expense of other portions of the community, but through developing habits of prudence, and by increasing the efficiency of their labour. And thus would co-operation become a great instrument, not only of social amelioration, but of national wealth: for, the facts quoted proved, that with co-operation, capital and labour both worked with maximum efficiency.

In the discussion, as we have remarked, the position that the working classes were worse off than formerly, was disputed; at least, it was said, the fact was otherwise in the manufacturing districts of the north. No one could be in a more fortunate position than a workman who earned good wages, considering the lessened prices of capitalists, and who had no anxieties like those of the capitalist. Mr. Chadwick went so far as to add that as the small farmers were extinguished, wages of labourers were improved. An evil was that money was spent in beer that would be better devoted to the purchase of meat. Mr. Newmarch considered the *mill* at Leeds, and not the *store* at Rochdale, the fair experiment. The commission principle, which gave each workman an interest, was already in use, and the law was now favourable to everything desired. Mr. Alderman Nield and others dwelt upon the necessity of management, and on the difficulty, especially in undertakings of varied details,—of finding the manager who was not, at the same time, virtually the proprietor. The Rev. J. E. T. Rogers argued that workmen under the Tudors were worse off than now, both from the devastation of epidemics, discomfort, and the price of food. Mr. Senior, in the chair, held that

the interests of employer and employed were, in the most important sense, identical.

Mr. Fawcett in reply, reiterated that they were no more identical than those of buyer and seller. Buyer and seller were both benefited by general prosperity of the country; and so were the employer and the employed by the general prosperity of trade; but in each separate bargain, the buyer tried to buy as cheaply, and the seller to sell as dearly as possible; and just in the same way, employers baving work to be done, would try to get labourers to do it as cheaply as possible. The railway contractor would be as eager to secure cheap labour, as to buy cheap materials. The labourers felt there was not an identity of interest: the feeling was proved by the facts of trades' unions and strikes. Trades' unions had not been mentioned with the view of defending them, but only to show the feeling existent. As to the comparison between one age and the other, Mr. Fawcett had not said that the lowest class of labourers had been in every respect better off under the Tudors. There were epidemics then; and comforts were in cottages now that were unknown in the earlier time. All that he had affirmed was, that the wages then paid, gave the labourers more of the prime necessities of life. This was shown by Froude; as well as, in his later editions, by Hallam. Of course, management was all important; and, truly before the societies had been tried, it might have been supposed that would have offered an insuperable difficulty. But results proved it could be got over. All joint-stock concerns were under a relative disadvantage compared with ordinary concerns; because as a general rule, energy of the manager was not so great as that of the individual owner. In co-operation there was a compensating advantage, namely, that the labourers put forth the full energies of their body and mind, having direct pecuniary interest in their work. The figures proved that the advantage more than compensated for the disadvantage. But the secret of success, indeed, in co-operation, was the good management.

We will not extend a *résumé* already too long, of these proceedings in only one of the sections, by adding our reasons for considering that these co-operative societies, and the controversial points which we have set forth, deserve impartial consideration. The arguments which were brought against the matter of the paper are quite beside the question raised, which may be said to be simply whether it is necessary to pay a large sum for management, and whether the workman is better circumstanced through not having any anxiety attendant upon that. Mr. Fawcett tries to show that, on the one hand, the difficulty has been got over; and, on the other, that the workman is elevated by being induced to take interest in the undertaking. It is singular that many large concerns in Lancashire, such as were adverted to, are carried on, and return large fortunes, without that close supervision of the actual proprietor which some of the speakers supposed; and the knowledge of this circumstance amongst the labouring classes is producing a feeling of dissatisfaction,—call it unreasonable,—or admit exceptions, and the performance of Christian duties by some masters,—which is admitted to exist, and is causing many of those masters who had formerly very liberal views, to become conservative. We do not expect that capital identified with management will be displaced; but a case is certainly made out for the extension of co-operative associations, whether that they be looked to as a resource for the workman, or that further experiment of them be viewed as means of coming sooner to a settlement of the general question—what is the value of capital and management?—which is ever and anon raised.

In the same section, a paper by Mr. John Hitchman, "On Sanitary Drainage of Towns," was announced in the journal of proceedings, but was only partly read. The object of the author, a medical man, was to show the advantage of separation of the sewage and the rainfall, respecting which he quoted a statement that the principle had never received attention. Our readers know that such an assertion is incorrect, and also, fully perceiving that the principle is one to be kept in view, as well as to be applied wherever circumstances immediately permit, as in many small towns, cases similar to those in which indeed it has been applied already,—they know that when the question as regards London came before the Government referees, difficulty was felt in determining what was not sewage. The author began his paper by an attempt to justify *his* having taken up the question—he not being an engineer; and in the course of this, he gave his

account of the manner of selection of the design of the Exhibition building of 1851, and of an invention of the "ridge-and-furrow system" of roofing,—being wrong on every point that he advanced as fact,—inclusive of a statement that the system of roofing was applied in the New Museum. We do not assert that engineering questions may not receive elucidation from medical men: there are instances enough to show in architecture and engineering, that good may accrue from extra-professional suggestions; but there is a growing tendency to expression of opinions on these questions, without the knowledge of facts; and the committee erred in affording opportunity for the statements, in the Statistical Section, which time and place did not allow to be refuted as deserved. In the same section several other papers were read on subjects connected with the objects of our journal,—one of them a paper "On Local Taxation for Local Purposes," by Mr. R. Dowden, which led to discussion.

In the Section for Mechanical Science, the proceedings were of considerable importance. Mr. P. W. Barlow read a paper "On the Mechanical Effects of combining Suspension Chains and Girders, and the Value of the practical Application of this System," the discussion on which was pursued on the following day. Suspension bridges being economic of construction and suited to wide spans, the aim of the author, as in papers on the same subject at previous meetings of the Association, was to show that such bridges could be adapted for railway traffic, contrarily to the opinion of the late Robert Stephenson, Mr. Fairbairn, and most others in this country.

In the discussion, which was very interesting, Mr. Barlow's views as to the sufficiency of a form of girder, to impart stiffness to the roadway, were much contested; but were to a considerable extent supported by the president, Professor Rankine. It appeared that very little was known to the speakers, of the success (whatever that may be) of the application of the principle in the chief example referred to, namely, the Niagara-bridge, whether regarding the manner of passing trains across it and the effects of strain, or the construction of the bridge and dimensions; though we believe the most important particulars are published, and are to be had readily in this country. What was known and was put forward in the discussion, touched rather a question of strength of the several members of the construction, than that of the suspension principle as applied in the bridge. Mr. Fairbairn especially dwelt upon the fact that when in the north of England, experiment had been made on the effect of a railway train on a suspension-bridge, it had been found that the roadway rose in the form of a wave in front of the advancing engine. Mr. Edward Hall observed that there were provisions in the Niagara-bridge to prevent the effects instanced by Mr. Fairbairn. The underside of the roadway was held down by inclined tension-rods anchored to the piers, similarly to the arrangement in the Brighton Chain-Pier, adopted after the storm some years back. It appeared to him, therefore, that the effects were not inevitable. Also, he believed, that the Niagara-bridge was so far a successful work, that its engineer, Mr. Roebling, was proceeding, or had proceeded, to the application of the principle to other bridges. In the course of the discussion, Mr. E. Cowper, who agreed with Mr. Barlow on the applicability of the suspension principle, but differed with him on the method of overcoming disadvantages of the present suspension bridges, brought forward his own proposal for the construction of a rigid suspension bridge. He believed that the passage of rolling weights would rapidly destroy the bolts and rivets of the links of a chain; and we would, therefore, substitute for the catenary of many links, a rigid piece of construction of riveted boiler-plate, of the same catenary figure, and of the usual form of section for girders, but so deep in the web or connection of top and bottom flanges, that the tensile-strain, the only one to which it would be subjected, would follow a curve within the depth of the construction, or, in either case, whether of the bridge being loaded or not loaded. By this principle, rigidity in the roadway would be combined with the advantages of the suspension principle, more effectually than by addition of a girder. We may explain here that it did not appear to be contemplated by Mr. Barlow, that his added girder should bear any portion of the ordinary weight; but that such weight, as well as the girder itself, should be borne by the chains. Respecting the modification of the principle by the late Mr. Brunel in the Saltash and Chepstow bridges, where, instead of anchorage of the ends of the chain in the usual manner, there is a great cross-

head, or girder, in a state of compression between the towers, Mr. Barlow did not seem to consider that the method secured the economic advantages of the suspension principle.

A subject equally important at the present time, was that of Mr. Fairbairn's paper, entitled "Experiments to determine the effects of vibratory action, and long continued changes of load upon wrought-iron girders." The subject has engaged the attention of Mr. Fairbairn, as will be known to most of our readers, since the date of the experiments by himself and Mr. Hodgkinson, which have done so much for our knowledge of the best form for cast-iron girders; and the investigation into the effect of time in contributing to destruction, is still in progress under the author of the present paper. Mr. Fairbairn observed that opinions were still much divided upon the question, namely, whether the continuous changes of load which many wrought-iron constructions undergo, have any permanent effect upon their ultimate powers of resistance,—that is, whether a beam or other construction, subjected to a perpetual change of load, would suffer such a change in structure of the iron, or tenacity of the joints, that it would in time break with a much less force than its original breaking weight. Few facts were known bearing on the solution. We knew that in some cases, wrought-iron subjected to continuous vibration assumed a crystalline structure, and was deteriorated in cohesive properties; but we were ignorant of the causes of this change, and of the precise conditions under which it occurred. The commissioners appointed to inquire into the application of iron to railway structures, found that in cast-iron, no bars would stand 4,000 impacts, bending them through one half their ultimate deflection, but "that sound bars would sustain at least 4,000 impacts bending them through one-third of their ultimate statical deflection." They ascertained, also, that when the load was placed without impact, the bar was not weakened, provided the deflection did not exceed one-third of the ultimate deflection; but that if the deflection were one-half the ultimate deflection, the bar was broken with not more than 900 changes of load. With wrought-iron bars they found no perceptible effect from 10,000 changes of load when the deflections were produced by a weight equal to half the statical breaking weight. Interesting as these experiments were, they were incomplete as regards wrought iron. For bars, they were not continued long enough; and they do not apply to a construction of riveted plates. The question for solution was, whether girders of the kind now so much used became weakened from the continual passage of trains, and whether it is requisite to give increased strength accordingly, or for deterioration beyond that from the influence of the atmosphere. A contrivance was devised for the experiments, imitative of the gradual manner in which the load is brought upon bridges, and of a succession of impacts. First, a girder formed of plate and angle iron, having been loaded with one-fourth of its ultimate breaking weight, the experiment commenced by causing the beam to undergo impacts, or changes, amounting to about eight a minute, or half a million in the two months for which the experiment lasted; the result being that there was no visible alteration. The load was then increased from one-fourth, to one-third of the statical breaking weight; and the experiment proceeded till the total number of changes amounted to one million. It sustained these changes with only a slight increase of permanent set in the latter experiment; but the experiment being continued with a load from one-third to one-half that which would ordinarily break the beam, it broke after 5,175 more changes. The beam, of course, had been submitted to severe tests; and the molecular construction had, no doubt, suffered considerably ere it gave way. The fracture occurred across the bottom plate and angle iron, and part way up through the side plate, and at two rivet-holes immediately under the shackle from which, in the centre of the beam, the load was suspended. These facts (submitted to the Association, by permission of the Board of Trade) were rightly regarded as of immense importance, and it was desirable they should be continued. A recommendation was subsequently made by the Association to this effect. Mr. Fairbairn considered these experiments tended to show that there was a limit of time, however remote, to the endurance of such pieces of construction as those of iron bridges of railways, calculated on the hitherto recognized data; and that this required the provision of additional strength. In the discussion, it was remarked, that experiments tried with weight in one place, were not the test for rolling weight; but the necessity for special pro-

vision against the percussive action of a railway train, was adverted to by Colonel James; and facts of the destruction of fibrous character of axles, and of similar parts of steam-engines, were mentioned by several speakers. Mr. Fairbairn said the lifetime of axles on railways, could not be computed at more than four to five years; and that, in short, no material could be depended upon permanently, subjected to variable strain. In consequence of what had been ascertained, the Railway Board had largely increased their requirements for the strength of bridges in proportion to the load.

In the same section a paper was read by Mr. Calcott Reilly, "On the Longitudinal Stress of the Plate Girder;" and there were also a paper "On a new Mode of obtaining Blast of very high Temperature in the Manufacture of Iron," by Mr. Cowper; one "On a Cylindrical Strip Boiler," by Mr. J. Elder; one "On the Density of Saturated Steam;" and on the Law of Expansion for superheated Steam," by Mr. Fairbairn; one "On Giffard's Steam-jet Feed Apparatus," by Mr. W. Froude; and one "On an Atmospheric Washing Machine," by Mr. John Fisher. In the washing-machine, air was forced in at the bottom of the vessel, by means of hollows worked by turning a handle; and the results were said to be quite successful. Also, in this section, Admiral Taylor described and illustrated by models, "A novel means to lessen the frightful loss of life round our exposed coasts, by rendering the element itself an inert barrier against the power of the sea; also a permanent deep-water harbour of refuge by artificial bars." The subject is one to which the author has long given attention. He considers that stone breakwaters are always of short duration. In the case of those of rough stone, he says disruption of the masses must occur from the compressed air in vacuities, when the waves are dashed against the breakwater. He therefore advocates the adoption of timber framework. One of his models showed a structure of open timbers, somewhat in the form of a prism laid horizontally, with one of the edges downwards, which would be placed at anchor, and would be furnished with gangways at the top, and otherwise designed to afford place for shelter. A paper was read in this section by Mr. David Chadwick, "On Water Meters," in which a meter was described which it was considered would prevent waste, as well as, on the other hand, restrictions of a non-sanitary character. The determination of the best form of meter, he remarked, was of importance both to the companies, sellers, and the public who were buyers of water; and there was no reason, if a suitable apparatus existed, why water should not be sold by measure, like gas. No one entertained the idea of buying or selling gas otherwise than by meter, although frequent complaints were made of defective registration by the contrivances in use.

Until about seven years ago, no high-pressure water-meter had been constructed on which reliance could be placed. There were now about 10,000 high-pressure water-meters in use in Europe, of which about one-half were of the kind known as "Inferential Meters," under the names of different inventors, and the remainder as "Positive Meters," working on the principle of the piston and cylinder. From 1824 to 1858, 84 patents had been taken out for meters; and it might be affirmed that not more than six or seven of these are in practical use, and only two were in extensive use. The principle of increasing by inference, from the revolution of a wheel, spiral fan, or turbine, did not seem likely to give exact results; and with the best workmanship there was leakage, varying according to size of the meter, when used under circumstances in which the velocity of the current was insufficient to overcome the friction of the working parts of the machine. The new high-pressure piston water-meter of Chadwick and Frost, the author of the paper considered overcame the difficulties and objections. The contrivance would not be intelligible from mere verbal description; but, as experience of the use of nearly one hundred of these meters has appeared to confirm anticipations of their efficacy and durability, we may be considered to have rightly called attention to them.

Mr. Kell, taking up the subject of the paper, said he was connected with a company in the north of England where they had used a meter on the principle of the vortex wheel. This had been discontinued in consequence of small shells becoming fixed in it, and interfering with the workings. They now used Kennedy's meter (which Mr. Chadwick had named as one of those on the piston and cylinder principle), and they had no reason to doubt its accuracy. Consumption of water for

domestic purposes, they found to be 25 to 35 gallons per day. Waste of a portion of this quantity could not be prevented; the small houses not having meters. The chairman stated with regard to waste, that the inhabitants of Glasgow, since the supply from Loch Katrine, drew about 50 gallons per head per day. One family had drawn 2,500 gallons daily; and many families drew two-thirds more than they used. Mr. Chadwick said that for the last seven years, he had measured the water used in his house. His family consisted of nine persons; the water was carried into the cellar, ground-floor, bed-rooms, two closets, and bath; and as he was a sanitary man, they used water to excess. Finding the quantity was 180 gallons, he thought 20 gallons per head must be the maximum daily consumption for all domestic purposes: all above that was waste.

The last paper in this section which we are able to notice, was "On Street Railways as used in the United States," by Mr. G. F. Train, who is about commencing the formation of the railway at Birkenhead. The paper was illustrated by a model of a car on the rails. The rails were broad tracks well suited for the wheels of waggons, and were furnished with strong flanges rising very slightly above the general level to receive the flanged wheels of the cars. We have so recently and so fully treated the subject in connection with that of improved metropolitan communications, and the saving of time and avoidance of confusion in the existing streets, that we need not quote the points of argument in favour of the system, as they were stated by Mr. Train. The truth is, as was shown at the section, there is perfect unanimity of opinion as to the saving of time, and the lessened confusion and wear and tear, which would follow from the introduction of horse-railways or tramways into the London streets viewed as they are. New main routes and greater width of the present thoroughfares, are required; but the tramway, at least one line along the centre of the street, would be a considerable gain in almost any of the routes. Narrowness of streets is not found to be an objection in America. The non-introduction of these tramways into the streets of English towns was imputed by the author of the paper to Sir Benjamin Hall, who had thrown cold water upon one project "partly to please his constituency; but mainly, because an accident happened to his carriage in passing some coal tramway in Wales." Mr. Train referred to tramways of this kind, to those in Paris and St. Petersburg, the tramway from Carnarvon to Nantle, and the omnibus railway along the docks at Liverpool, as giving no idea of what he contemplated. The advantages of the amended system for omnibus traffic, he said, were that "you ride in less time, with less confusion, less noise, less fear of accident, less mud and dust; and with the additional luxury of more regularity, more attention, more comfort, more regularity, better light, better ventilation, and with a greater facility of ingress and egress." The carriages, or cars, for the Birkenhead traffic, are commenced. The reports of proceedings of the section in the local papers, print a great deal of irrelevant matter which we did not hear read, and which if furnished to them by Mr. Train, he would do well to omit on subsequent occasions. But he has evidently the energy to carry forward the undertaking upon which he has embarked. He has already placed himself in communication with the authorities of several large towns. In reply to questions, Mr. Train explained that his car would accommodate sixty passengers in all, and that gradients of one in thirty would be surmounted easily by two horses. For steep gradients an additional horse might be required. On the tramway, two horses would draw five times as much as they would on the common road. Dr. Carpenter, who had lately returned from America, spoke forcibly on the advantages of the principle in every respect. In Boston, which was like an English town, in its crooked streets, the system worked well, and caused a reduction in the number of vehicles and in the confusion of traffic. Mr. P. Le Neve Foster spoke to a similar effect, as did also Mr. Smith, of "The Artizan." The latter, alluding to remarks on the possibility of inconsequence through stoppages and different speed of traffic returned to one of the inventions for shifting the flange of the wheel, whereby the carriage could readily be turned on or off the line or the common road. The Chairman said there was no doubt, the advantages of the street-railway had owing to a concentration of attention upon the system required for long distances in the country, been too little attended to. Referring to objections which had been raised, he said that

he had been engaged in the construction of a horse-railway; and he had found that one horse could draw forty passengers up ascents of 1 in 66, to 1 in 40, at the rate of five miles an hour, the average speed on a level being ten or twelve miles an hour. They had on his line level crossings, but met with no accident; though there were trains of coal-waggons, there was no difficulty in passing them; and there was this convenience in the system that the train could be stopped anywhere, to set a passenger down near his home, instead of at a distance from it. He saw no difficulty in carrying out the same system in our streets, but rather every advantage. The rails as proposed by Mr. Train would not interfere with the ordinary use of the road; they would, on the contrary, serve for the ordinary vehicles. His experience showed there was no difficulty in getting round curves of great sharpness. For very steep ascents, it was only necessary to have an additional horse, although for Hothorn-hill and Ludgate-hill, the proper corrective was a windcut.

In the Mechanical Section, also, a paper was read by the Earl of Caithness, "On Road Locomotives," in illustration of which a carriage was shown working along the streets of the city.

Had our space permitted, we could have wished to note particulars of some of the papers of which only titles were given in our last. Dr. Gladstone's paper, "On his own Perception of Colours," was exceedingly important, as showing that there is an intermediate condition between absolute colour-blindness and the accurate perception, not hitherto recognized by those who have paid most attention to the subject, but adverted to as possible when the attention of the Department of Art, and of decorative artists, was called to the subject by a correspondent in our journal. This condition, it appears, is capable of improvement. The instrument described by Dr. Maxwell, for exhibiting any mixture of colours of the spectrum, would have been equally worthy of notice.

The proceedings in the Mechanical Section included the reading of several important papers. The business at Oxford was wound up under the general impression that the meeting had been one of the most successful since the Association was established. This opinion we willingly endorse, saving only as to the charges by the townspeople, and the difficulty of getting anything whatever to compensate for them. Also, we may add, that the map of the town, and arrangements in some other points, might have been improved. The inconveniences to those not housed in colleges, sent many of the visitors away at the end of the first week. Next year the meeting will be held in Manchester, under the presidency of Mr. William Fairbairn.

The condition of the low land about Oxford, charged with moisture from the overflow of the numerous branches of the streams, which almost encircle the town, or intersect many parts of it,—and exhaling perceptible miasma under the action of the sun,—gives reason for apprehension as to the proximate sanitary state of the town. A very difficult engineering question is involved, which is receiving some attention from correspondents of the local journals. We gave in our last, the title of a paper, by the Rev. J. C. Clutterback, which ought to afford some hints to those competent to suggest improvements.

#### VISITS TO MANUFACTORIES. THE PREPARATION OF BOX-WOOD.

AMONGST the manufactures of the metropolis there is one which, although it is not of any great extent, yet is connected in such an important manner with literature and art, that it deserves notice; for, without the process of which we are about to speak, the illustrations which in our day are made to advance the teaching of science and other descriptions of knowledge could not be given. Some of our professional readers may think that the method of preparing box-wood blocks for the use of engravers is so well known as not here to require note. In truth, however, more than ninety in each hundred persons, even of some education, know little of either the nature of the material or the manner in which the box-wood is prepared for use.

Box-wood is about as heavy and durable as ebony, and cuts better than any other description of wood. So close and even is its surface that, by the means of sharp graters, it can be cut with the greatest delicacy in all directions on the cross grain of the wood. In England a dwarf description of box is used for the flower borders of gardens. There is, however, a larger species, which grows at times to 15 feet in height. The diameter of

the trunk at the widest part is not more than 6 inches. The great demand for wood of this size, and the large value of it, have caused the finest of this description of trees to be cut down at Box-hill and other parts of this country. The wood is further valuable for the making of the handles of some kinds of tools, delicate parts of surgical instruments, children's toys, such as peg-tops; and, by a steam process, this close-grained wood can for a time be made soft as wax, on which by means of pressure medallions and other ornamentation can be stamped by engraved dies. Snuff-boxes and parts of cabinets have been beautifully decorated in this manner.

The introduction of wood-engraving by the Bewicks soon led to a considerable demand for box-wood suitable for the practice of that art, and it was worth the while of speculative merchants to import box-wood from Turkey and some other districts in the East. From them a larger description of wood was obtained than any that had been grown in England, yet the large box-wood of a useful description from even foreign parts, seldom exceeded 12 inches in diameter. From this a square of a considerable size might be cut. The nature of box-wood is, however, to retain the sap and moisture for a long period; and, until these have been carefully removed by time and keeping in a dry and tolerably warm atmosphere, the wood, when cut into slices of the proper width, is liable to warp and split in various directions from the outer bark towards the pith or centre of the tree. The undried wood, and even that properly seasoned, without great care, is liable to warp; and if in that state, after the block has been drawn and engraved on, it he exposed to the pressure of the printing-press, it will be likely to split into many pieces, and thus destroy the valuable work of both the draughtsman and engraver. Besides this loss is the more serious inconvenience of these accidents happening at the time when a periodical publication is ready for printing.

It may be worth while to mention that the form of the type used for books, newspapers, and all other printed matter, is of a uniform height,—about  $\frac{1}{2}$  of an inch,—and to this thickness the box-wood for the use of the engravers must be reduced. In addition to the trouble caused by the splitting above referred to, few blocks of large size can be found without specks of soft rotten parts, which would crumble under the action of the graver. If one of these happened in a dark part of the design, or a tint of clarity, this imperfection in the printing would prove a sad blot,—a flaw destroying the general effect of a wood engraving in a most unpleasant manner. For some time these difficulties restricted the size of wood engraving; but Thomas Bewick, ambitious to excel on a larger scale, produced some works on wood which, although not so large as the page-blocks of the *Builder*, were nevertheless looked upon with wonder. This was effected by selecting pieces with great care and at much cost, and joining them together with metal clasps. This did not, however, prevent the destruction of the wood: one piece more porous than another was affected to a greater extent by the changes of temperature, and pined and shrunk away from its neighbour in spite of the iron binding; another piece would crack or warp; and all was trouble and uncertainty; when Mr. William Hervey, who was a pupil of both Thomas Bewick and the clever but improvident Hayden, made a worthy attempt to produce the picture, by his latter master, of the "Assassination of Dentatus," on what was then thought a large scale, on wood. The greatest difficulty was experienced by the artist to provide a sufficient block, although that beautiful and artistic work is not much, if any, larger than a page of the *Illustrated London News*. This block\* was, like the castle-gate described by the poet, "clamped with iron within and without." This, however, did not prevent the warping of this fine work.

When the *Penny Magazine* was established, the difficulty of procuring proper blocks for the largest cuts was great, and the artists who worked upon them will remember the anxiety they experienced when the studio got too hot, and caused preliminary cracks, similar to those heard amongst the wood fittings of old churches and houses on a change of weather. Another drawback was, that in a large block (as then called) only one engraver could work at the same time. It is evident that without improvements it would have been quite impossible, even within any reasonable time, to

\* It would form a feature of very great interest, and even instruction, if some of the engraved blocks by Bewick and some others of the early engravers on wood could be gathered together and placed in the Brompton Museum.

have produced the cuts in our own journal, much less those, of immense size, which have appeared at such times as the Duke of Wellington's funeral in the *Illustrated London News*, and some other illustrated newspapers. In order to show how this difficulty has been overcome, we will step into the workshop of a preparer of box-wood, who has for several years been engaged in making this material ready for the engravers. Here are stacked large quantities of box-wood cut into slices of a little over the required thickness, brought from the places abroad already mentioned. These slices of box-wood are in few instances perfect, but are split from the centre, or else imperfect in other respects. A small steam-engine is at work, and we cannot but think of the wonder which would have been felt by Thomas Bewick if any one had hinted that such a powerful means would have been needed to fashion the wood required for the engraver.

Here we learn that this manufacture is confined to only two or three firms, and that there are some secrets in the trade which it is not considered desirable by the box-wood preparers to reveal. Having been accustomed to look for some time past at many works, some of immense extent, when we have been shown with great readiness the various operations, and anxiety expressed to explain the various processes to the public, it reminded us of old days to be told that there are mysteries in this trade into which it is not convenient to inquire. Without being too curious in this instance, we will look at the process of selecting from the circular slices of wood the perfect parts, and cutting them, with a circular saw driven by steam power, into square, oblong, and other shaped pieces. These, by a process of which we are not informed, are planed with the greatest nicety, and joined together with glue, or some species of cement; sutures of cedar or some other wood are passed from one small block to another; and when a portion of what may be a large block has in this way been joined together and allowed a sufficient time for drying, it is a matter of rare occurrence that any portion of this skilfully-arranged mass will separate or crack. The whole of the joined block can be separated, so that when an engraving is needed in haste, one of these blocks can be divided into six portions, so that instead of one engraver, six might be engaged at the same time. Care is, of course, to be taken that the work on each part of the block should correspond; but this is, in a measure, partly effected by the touches of the draughtsman, and the cutting of the proper lines at the joinings by a skilled engraver gives a key to the whole work, which produces uniformity.

At the back of the block oblong holes are pierced, about half way through the block: these are for the purpose of inserting brass screws of about  $2\frac{1}{2}$  inches long. Before passing the screw, by means of a properly-drilled hole, a nut is dropped into each of the orifices above mentioned, and attached to the screw, which is octagonal; these can be turned by a key made of the proper form, which draws the parts of the block tightly together; and so nice is the fitting of the joints, that if the block is properly managed there should in printing be no evidence of any of the divisions of the block.

Sometimes, in the hurry of going to press, this is not sufficiently attended to, and the consequence is those white straight lines, which mar the beauty of many wood engravings. In this manufacture much depends on the quality of the wood and on the great nicety with which the various small pieces of box-wood are squared and joined together; and it would be worth while for any ingenious mechanic, who might be anxious to understand the nature of this construction more clearly than we have at present the means of showing, to examine one of these prepared blocks, and particularly notice the manner of joining and inserting the hands of softer wood into the permanently-joined parts of the blocks.

It seems to be a matter of dispute who was the person to whom credit is due for bringing this work to its present state of perfection. It is, however, certain, that Mr. Brunton, to whom the art of wood-engraving is in other ways indebted, long made expensive experiments in order to prepare blocks of this description. In this he was in a great measure assisted by Mr. Williamson, of Pickett-place, Strand, who, in the forty-third volume of the "Transactions of the Society of Arts and Manufactures," page 58, describes a plan, worked by a peculiar action, which prepares a surface of wood so smooth and generally even, that it requires little, if any, further polishing for the uses of the engraver. Mr. Wells, of Bonvicar-street, also lays claim to have brought this invention to perfection.

The cost of boxwood thus prepared is from 1½d. to 2d. per square inch. A page block of the *Builder* costs from 10s. to 12s. This shows that a very large sum must be expended on this article in England alone; and in consequence of the facilities which we have for the importation of boxwood, and our skill in its preparation, it is likely that both the Parisian and German wood-engravers would be glad to come to this market but for a duty of say 30 or 35 per cent., and the great cost of insurance and carriage, which would probably amount to more than 50 per cent.

Having thus glanced at the manner of this manufacture, it may be worth while to mention the method of preparing the surface of blocks for the use of draughtsmen.

When the block is completed it has a smooth and somewhat greasy surface, on which neither black-lead pencil would mark nor could Indian ink be properly laid: it is therefore necessary to give it a sort of tooth; and, while this is done, the preparation must neither be so thick nor so gritty as to interfere with or damage the engraver's tools. The best preparation is a quantity, according to the size of the block needed for use, of the best finely-powdered flake white,\* diluted with a very weak mixture of gum arabic and water. When sufficiently mixed, it must be spread evenly over the block, from side to side and from end to end, until the whole is covered with a very thin even stratum.

To those, however, who have not the opportunity of seeing this simple operation performed by one used to it, it is perhaps better to ask the wood-preparer to make ready the block. By means of tracing on black-lead paper, the design can be easily transferred, and then both pencil and Indian ink can be worked, the same as on paper.

#### THE ARRANGEMENTS IN THE BRITISH MUSEUM.

It ought to be generally known to artists and other students who visit the Reading-room of the British Museum, that right of admission to that department is not sufficient, without further express permission, to allow persons to visit or sketch in other parts of the Museum collections on the closed days.

There are, for instance, the Manuscript-room, the Print-room, the Egyptian, Ornithological, Geological, Botanical, and several other departments, which have each a head; and according to the present regulations it is necessary, before free access can be had to the different galleries of the Museum, to obtain about a dozen permissions. This arrangement is unpleasant to some of those who have charge of departments, and the cause of inconvenience and loss of time to those who are engaged in collecting varied information.

A chief reason for continuing the galleries of natural history and antiquities in immediate connection with the Reading-room is the advantage which readers have in the ready means of examination and contrast of objects. But, if a person engaged in some historical inquiry wished to examine and sketch a medal or other object, in order to be certain that the description in books is correct, he would be told that according to the regulations it is necessary that application should be made to the head of the department. This might cause a delay of several days. It would be the same in connection with the Print-room, and elsewhere. The writer, on one occasion being suddenly called upon to make a tracing in the Manuscript-room of a matter required for immediate publication, found that, although as a reader he might be permitted to look at the MS., he could not trace it without an introduction from one personally known to the keeper of the manuscripts. It may be that a young man who is commencing his career, although able to obtain sufficient introduction to the Reading-room, has not any friend who can give him a recommendation to the heads of departments. Or it may be that such friends are out of town, so that a delay may take place in getting the means of obtaining matters which may be of the greatest use for some purpose of the press, or other illustration. Several persons will remember the inconvenience of this, and that in the old times Sir Henry Ellis stepped out of the routine of his office, and gave facilities which persons might otherwise have had some difficulty in obtaining.

Once the writer, in explanation of some

\* Some skilled chemist might suggest another material for the flake white, which is a form of lead, and, if not speedily used, is liable to turn black, and thus effect is in a measure lost.

printed matter, suddenly needed to leave the reading-room for the purpose of examining and drawing several natural history objects, and, on reaching the place, an attendant said,—“Have you an order to sketch here? If not, it is necessary to have an express permission.” The head of the department did not at the time happen to be in, but on his arrival said,—“I do not wish to ask about orders, and, so long as no damage is done, it pleases me to see any one come to sketch.” But an order is needed, and, in this case, if it had been officially applied for, such a delay would have taken place as would for the purpose have rendered the matter useless. In some other departments the chief officer might be more strict or less courteous. But, even under the best circumstances, few wish to obtain a matter of this kind on surference. It would be well for the trustees of the British Museum to consider if a beneficial change might not be made in rendering the admission to the reading-room, art, and other collections more general, and that, as the right of admission to the library is obtained only by persons of respectability and position, the same should carry the right to the use of all the galleries.

The Print-room, notwithstanding its accumulation of not only art treasures, but illustrations of great historical importance, is, so far as visitors are concerned, a comparative desert, and a large proportion of those who call there are persons of rank and position, and not those engaged practically in the arts. If access could be obtained to the prints in the manner suggested, the number of those who resort to this fine collection would be increased five-fold. On the closed days the long galleries are desert places, and certainly it would be an advantage, if the public are to be excluded on certain days in each week, that every means should be used to render the marvellous collections which are here gathered together useful by affording every facility to those engaged in art and literature.

#### PLATE OF THE CITY COMPANIES.

At an extra meeting held by the Society of Antiquaries last month, Lord Stanhope in the chair, a very interesting exhibition was made of ancient plate belonging to the City companies.

Down the centre table were disposed numerous cups and other articles, together with some of the rarer documents from the companies, flanked by the maces of the whole of the City Wardens, and interspersed with the ancient garlands or crowns used by the livery companies on the election of their master and wardens. Amongst those present were the master, wardens, and clerk of each of the following companies, who had contributed, the Ironmongers, the Carpenters, the Waxchaulders, the Armourers, the Plasterers; Mr. John Nicholl, F.S.A., the historian of the Ironmongers; Mr. E. B. Jupp, the historian of the Carpenters; and Mr. Thomas Brewer, the writer of the memoir of John Carpenter, Town Clerk of London.

Mr. Octavius Morgan, M.P., discoursed at some length on the various articles before him. He assigned the first place to the oldest piece of plate exhibited, the Richmond Cup, from the Armourers' Company, of the date 1460.

The quaint salt-cellars of the Ironmongers' Company, 1520; the more modern shaped and larger cups of the Carpenters' Company, of the seventeenth century; and the Carpenters' posset, or candle cup, were specially noticed: the exact use of the latter was not clear, unless it was used in the families of the masters of the company on interesting occasions. The mayoralty mace of the City of London, of the time of George II., was referred to as perhaps the finest example of that description of article that existed either in ancient or modern plate at the present day.

Amongst the articles exhibited were, from the Ironmongers' Company,—Grant of Arms by Lancaster, King of Arms, to the Company, dated 24 Henry VI.; Grant from the Prior of Rochester to Mathew de la Wyke, of the Manor of Norwood, in Middlesex, dated A.D. 1241; Two Volumes of the manuscript collections for a History of the Ironmongers' Company, compiled by the present master, Mr. John Nicholl, F.S.A. From the Carpenters' Company,—Grant of Arms to the Company, by William Hawkeslowe, Clarenceux, dated Nov. 24, 6 Edward IV. The Crowns of the Master and three Wardens (date 1561). The master's cap is of crimson silk, embroidered with gold and silver lace. On it are represented, in silver shields, the arms of the City of London (with date 1561) and the Carpenters' Company, enamelled in proper colours. The Merchants' mark, and initials of John Tryll, Master in 1561, are also on the cap. The Masters' Cup (date 1611). This cup, which

is silver gilt, and of elegant workmanship and design, bears the following inscription:—“John Reeve, being Mr. ye second tyme, made me for ye use of the Mr., Wardens, and Countye of ye Mystery of Freeman of ye Carpenry of ye Citty of London for ever, without charging ye Countye then being.” From the Plasterers' Company,—Grant of Arms to the Company, by Thomas Hawley, Clarenceux, dated 15 January, 37 Henry VIII.; the Book of Ordinances; and from the Armourers' Company,—Grant from John le Despenser, of Cockeham, to William Stote, citizen and fishmonger, dated 27 Edward III. A MS. Volume, containing “the marks allowed to the workmen armourers' freemen of the same company,” dated 1619.

#### CHANGES AT KING'S-CROSS.

ALTERATIONS at King's-cross, or Battle-bridge we would rather call it, are going rapidly forward, and so altered will the spot soon be that those who knew it twelve or fifteen years ago, and have not seen it in the meanwhile, will fail shortly to recognize this important point of the metropolitan thoroughfares. At about the time mentioned a dingy-looking piece of green sward, enclosed by an iron railing, led to the Small-pox Hospital, a plain brick building, with a dome surmounted by a weathercock over the central entrance, which is, probably, the only fragment of this edifice remaining. It is now above a shop nearly opposite the railway hotel. The site of the hospital and grounds is covered by a portion of the Great Northern station and the hotel. The statue of King George IV., to which we have before referred, stood near the large lamp, surmounted by a dual crown, which, though not so conspicuous as the “cross,” as it was called, is not designed in much better taste.

There are few efforts which have had the least pretension to art of which we have such an unpleasing memory as of the clumsy stuccoed figure of royalty which once stood here. The changes on the north side prevent one from being reminded of it; but often the peculiar corner, which will be soon amongst the matters of the past, would bring unpleasantly to mind the architectural pedestal the superstructure of stiff line which were supposed to represent the drapery of royal robes, and that singular countenance, monoidly looking, weather-beaten, and falling like “shreds of sentheons” (but more prematurely) into decay.

#### DESIGNS FOR THE FOREIGN OFFICE.

MR. D. FORTESCUE, in the House of Commons, asked the First Commissioner of Works whether it was his intention in the course of the present session to submit Mr. Scott's amended designs for the Foreign Office to the inspection of members of this House, and if so, when?—Mr. Cowper said Mr. Scott had prepared designs for an elevation in the Italian style. That design was still under consideration, and therefore at the present moment he was not able to answer the question, but he hoped in a few days to be in a condition to do so.

#### THE RAGGED REGIMENT IN WESTMINSTER ABBEY.

In former days, when people were less cultivated than at present, there were exhibited at the same time with the tombs and effigies of the kings, queens, and the noble in intellect and rank, in a portion of the interior of the Abbey, a singular collection of figures, which were known as the Ragged Regiment. Many persons who visited this ancient building took more interest in these figures than in matters really worthy of notice.

Amongst the most conspicuous of them was an effigy of Queen Elizabeth, wearing, it was said, her coronation robes. There were, besides, the Earl of Chatham, Lord Nelson, and other worthies of more modern date. Some of the figures are of ancient date. The garments had, however, become dilapidated (whence the name); in some cases, were entirely removed. Some had been carried in the funeral processions of several monarchs, upon the hearse. This fashion went out of use, and we believe that the last of these effigies brought to Westminster Abbey was that of the first earl of Chatham. In those days it appears that the attendants at the Abbey were without any regular salary, and they were allowed, as a perquisite, to exhibit the Ragged Regiment at a stated sum to the curious. In order to increase the attraction they renovated and made gay some of the most popular of the ancient characters, and added the waxwork effigies of persons of note, who, although not hurried in the Abbey, were much

under the notice of the public. The regiment, in this way, became, in such a place, offensive to right taste and feeling, and arrangements were made to pay the attendants in a more proper manner, and close this exhibition.

For many years now the Ragged Regiment has been hidden from the public view. The modern part is worthless, and might well be disposed of. Some of the old figures are, however, curiously cut, and worthy of preservation as remnants of the past. A sight of this regiment of wooden and wax figures, once an exhibition in such a place, shows that in matters of taste and propriety the present generation has made an advance upon the last.

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.

A DISTRIBUTION of prizes in classes of architecture and construction took place on Tuesday, the 3rd inst., when the following were adjudicated as the result of the examination, by Professor Donaldson, for the session 1859-60:—

*The Art.*—1st year, prize and 1st certificate, Edward Mawley; 2nd year, prize and 1st certificate, Ernest Beck; and 2nd and 3rd certificates to J. H. Tarring and Francis Nibbs.

*Construction.*—1st year's prize, and 1st certificate, Edward Mawley; 2nd certificate, C. H. Bright; 2nd year's prize, and first certificate, Francis Nibbs; and 2nd certificate, J. H. Tarring.

FRANCE.

At Saint Malo, the new works ordered by the Emperor in his decree of the 24th March, 1860, for finishing the floating-basin, consist of the following:—

1. The Napoleon Quay, valued at 1,820,000 francs.
2. Interior Dyke, 640,000 francs.
3. Sluices for letting in water, 540,000 francs; moles to protect the locks, 250,000 francs; swing bridges, 87,000 francs; culvert sluices, 54,000 francs; lock-gates, 620,000 francs; basin-gates, 480,000 francs; breakwater against the northeast currents, 50,000 francs; contingencies, 459,000 francs. Total, 5,000,000 francs. These works will yield to the state revenues of the floating-basin; also tolls for graving dock, and the use of the gridiron for ships, besides the road revenues on the highway between Saint Malo and Saint Servan.

The racecourse of Craon (Mayenne), recently established, is likely, from the beauty of its scenery, to take a prominent position in the ranks of French hippodromes. The next meeting will take place on the 16th September next, and Horace Vernet, who holds property in that department, is painting a work for the Society. It is to be presented by him as a gift to the winner of the handicap reserved for French horses.

NOTES IN IRELAND.

THE War Department are about having a Royal Engineer office built in connection with the Royal Barracks, Dublin, as also certain drainage works executed at the Curragh camp.

A new iron bridge, with masonry abutments, is to be built in the county Cavan, on the post road from Cavan to Arva, according to plans by the county surveyor. Tenders to the 17th July.

The church at Drumcliffe, Ennis, is to be rebuilt, according to plans by the architects to the Ecclesiastical Commissioners.

Messrs. Gillespie and William Welland are the newly appointed architects to the Ecclesiastical Commissioners of Ireland, in lieu of the late Mr. Joseph Welland.

The Royal Hibernian Academy have opened their exhibition of pictures to the working classes in the evenings, at a charge of one penny, and the attendances are very numerous. We learn that this body will shortly have an accession of six architectural members to its ranks, and which, we trust, will ensure a more creditable display in the department of architecture at the annual exhibition.

Extensive works are to be erected at the churches of Rathclarin, county Cork, and Killflyn, county Kerry, by the Ecclesiastical Commissioners.

The additions and alterations to Sandford Church, near Dublin, are progressing towards completion, under the direction of Messrs. Lanyon, Lynn, and Lanyon, of Dublin and Belfast, architects, who are also about having built a mansion house and offices at Earlsfort-terrace, in the same city.

A new mart is to be erected in Drogheda, according to plans and under the direction of Mr. Lyons, of Dublin, architect. The town needs much improvement, and business premises generally have a neglected appearance. We understand that the internal arrangements of the Tholsel are to be remodelled, and it is desirable that they should be, for the hall or court is one of the most ill-arranged in the kingdom. A vast amount of discussion has taken place relative to the proposed new bridge over the Boyne, leading from the railway to the town, and various plans have been suggested; but lacking an indispensable requisite, we presume that they must remain for some time in abeyance, though the present structure is in a dilapidated and dangerous condition.

The subsidence in one of the piers of the viaduct, which caused much alarm, and gave rise to a lengthened discussion between certain professionals, is not of sufficient importance to impede the traffic, and has been pronounced by Mr. Hawkshaw, C.E., as not to afford grounds for immediate apprehension. House rents in the town have dwindled to such insignificance that commodious dwelling-houses may be had from 10l. to 12l. per annum, exclusive of taxes, which are heavy; yet trade is increasing, and excellent fairs and markets are periodically held.

The services of gentlemen of the long robe were more than usually called into requisition last term; and at the after sittings, in actions relative to disputed accounts with architects and builders, dilapidations, injuries to premises, &c., &c. In the case of "Cunningham v. Knox," for the latter cause, Mr. Whiteside, Q.C., M.P., thus humorously described plaintiff's case, his client being a hotel and dining-room keeper, and the defendant the proprietor of the *Irish Times*:—

"The result of the working of the defendant's printing machine was that, when the visitors to the Ship Hotel sat down to dinner, the plates danced before them, and the knives and forks indulged in the same amusement." Cheapness might be a very desirable object; but counsel doubted very much "if a man would not be sulky if he was to read a newspaper while bungry and deprived of his dinner." The action was arranged by defendant paying 5l., and naming an architect to see the requisite building operations made.

The new Roman Catholic Church recently erected at Cookestown, co. Tyrone, has been consecrated. The plan comprises nave, 80 feet by 25 feet; aisles 14 feet wide, chancel 32 feet deep, side-chapels, tower, sacristy, and vestry; style, Gothic. A five-light window, filled with stained glass, by Messrs. Hardman, of Birmingham and Dublin, lights the chancel; and the aisles and clerestory have also traceried windows. The roofs are of open timber-work; the high altar of Caen stone, by Mr. Lane, of Dublin; and the interior fitted carvings by Messrs. Purdy and Outwaite. The tower (with spire 175 feet high) is placed central on west elevation, and has a deeply-recessed doorway, with three-light traceried windows, and canopied niche above in the first stage, and a two-light belfry, open, in the second. Mr. McCarthy, architect; Dr. Johnson and Mr. Charles the contractors.

Two memorial windows—one to Knox, the reformer, the other to Mrs. Hemans, the poetess—have been erected in St. Anne's Church, Dublin. The former is centrally placed in the chancel, and is 21 feet in height by 11 feet 6 inches wide; the latter at one side, 16 feet high, and 7 feet 6 inches wide, both Byzantine in character. They are to be filled with stained glass by Mr. Warrington, of London, and the stonework is by Messrs. Purdy and Outwaite, of Dublin, supplied from the quarries of Messrs. Pictor & Son, of Clippenham, Wilts.

A new bridge is to be erected over the Lagan at Ormeau, near Belfast, by the Board of Public Works.

Two new Gothic churches are to be erected respectively at Dingle and Fierces, county Kerry. Messrs. McCarthy & O'Connell, architects.

Extensive alterations are being made to the marine residence of the Marquis of Downshire, at Dumdrum.

A small church in the Gothic style is to be built at Dollymount, near Dublin, after the plans by Mr. Rawson Carroll, architect. It will accommodate 300 persons.

A new railway hotel is in progress of erection at Kinsale. It has an Italian facade, with oriels, carried up two stories, an ornamented cornice, and balustraded parapet; spacious terrace in front, with steps descending to the river. Mr. Conybear, architect; Mr. Barnard, contractor.

Alterations and additions are to be made to the Court House, Armagh.

A church in Early English style, with nave and chancel 100 feet by 26 feet, vestry, tower, spire, &c., is being erected at Taghadee, county Kerry. Mr. McCarthy, architect.

HER MAJESTY'S THEATRE: "OBERON."

It is to be regretted that this fine work was not produced earlier in the season. Wanting in melody though it may be, it displays so many beauties, so much genius, that its popularity has increased each night. We may expect, however, that it will be given by Mr. Smith's English company, and with Madame Titiens and Mr. Sims Reeves, we shall be surprised if it do not even more completely lay hold of the sympathies than it has done with Signor Mongini. Signor Mongini is so robust a tenor that we find little sentiment or feeling in his singing. In "Oberon," the process with which we are most familiar was reversed. It was written for Weber by Mr. Planché, in English, and has been translated into various languages. Much of it is charmingly written, and has long been well known; for example, Hnon's song, "Oh! 'tis a glorious sight to see," and Reiza's great scene,—

"Ocean! thou mighty monster that liest e'er'd,  
Like a green serpent, round about the world."

The scenery is very agreeably painted; "Oberon's hower," for example, with which the first act opens, and the banks of the Tigris, showing the City of Bagdad. For the eighth and ninth-century buildings in Bagdad the artist has adopted the Alhambra as his type,—a building of the fourteenth century,—and thus gives an aspect less archaic than might in strictness be desired. In Bagdad, during the reign of Haroun el Rasheed, the greatest magnificence prevailed; but of the buildings of that period not a vestige remains. There is nothing earlier than the thirteenth century. The artist would assert, and it would not be easy conclusively to disprove it, that Mahometan architecture had taken in Bagdad as magnificent a form in the eighth century, as we find it presenting in Spain in the fourteenth. Madame Alhoni sings exquisitely the music entrusted to her, and Mr. Benedict has discharged the duty that devolved on him of fitting the opera to the present position of musical taste and knowledge, in a manner that has gained the approbation of Weber's warmest admirers.

ECCLESIOLOGICAL SOCIETY.

At a committee meeting, held on Monday, June 11, the president, Mr. Beresford Hope, in the chair, Mr. Slater exhibited a design for a large mosaic pavement, to be executed in the *opis Alexandrinum* method, for the sanctuary of Chichester Cathedral.

Other architects exhibited designs. Mr. E. R. Robson presented to the Society three photographs, representing portions of Durham Cathedral which no longer exist, taken from water-colour drawings by Carter, made in 1795. The following extract is from Mr. Robson's letter:—

"No. 1 shows the Galilee, in which nothing has been disturbed except the fifteenth century altar, replaced by enormous oak doors and cast-iron hinges.

No. 2 represents that end of the Chapter-house, four years after the execution of Mr. Carter's drawing, was entirely swept away.

No. 3 gives the opposite end of the Chapter-house, which is not 'destroyed' (as Mr. Carter mentions), but only defaced. No vestige of the groining, or of the small side door, remains. The floor is of wood, about the same distance above the cloister pavement which is formerly measured in the opposite direction. The two-light windows have the window-order vaulted up.

The originals belonged to the late venerable antiquary, Dr. Raine, whose son has allowed the photographs to be taken for the Dean and Chapter of Durham.

"Thanks to the faithful work of Carter, the Chapter-house can be restored to its pristine glory, but, as Dr. Raine forcibly asks, 'Who can restore its pavement, studded with the gravestones of the first three centuries after the conquest?'"

At a committee meeting held immediately after the annual meeting, the president undertook to frame a memorial to the Incorporated Church Building Society, on the subject of chairs in churches.

The document was subsequently forwarded to the Incorporated Society; and the secretary, in reply, says:—"There was subsequently much discussion on the subject of chairs for churches, and a sub-committee has been appointed 'to consider the expediency of making grants' where they are introduced 'in lieu of fixed seats,' and the regulations under which such grants shall be made."



MEDIÆVAL GROTESQUES.

## GROTESQUES.

## RESEARCHES IN LIBRARIES.\*

THE accompanying fantastic designs are from a MS. of the fourteenth century, in the Royal Public Library of Stuttgart, in the kingdom of Wurtemberg, Germany. (Bibl., fol. 3, vol. iii.) The building is in Neckar-street. I copied them because they show such an exquisite healthy sense of humour, and, though grotesque, they are not obscene. They are, in the original, executed with a spirit and life remarkable for the age, especially in the expression of the faces.

A. B. LE V.

## THAMES EMBANKMENT COMMITTEE.

AMONGST the schemes for Thames embankment laid before the committee now sitting, we must give an outline of that proposed by Mr. James Edmeston.

The road would run from Westminster-bridge to London-bridge upon a river wall as far as Southwark-bridge, and thence to London-bridge upon iron piles, so as to allow craft to pass under the wharfs: from Westminster to Southwark it would be constructed so as to allow access to landing places beneath, for the use of the owners of river-side property.

The road would pass under all the bridges, including Blackfriars, in which bridge an alteration in the first arch might be effected without stopping the traffic. The river wall would be recessed beneath Blackfriars bridge and Southwark-bridge, to allow barges to lie near to the present frontages. The landing-places would be 4 feet above Trinity high-water mark, and the roadway over these recesses would be carried on iron girders, leaving large open spaces for landing purposes. The railway would run from Westminster-bridge to Queenhithe inside the river wall, just low enough to pass beneath the landing-stages or platforms, and thence would be continued in a tunnel to the Fenchurch-street station, and might be extended in a tunnel from Westminster to the new Pimlico station, communicating with the Metropolitan and Hungerford-market stations, and thus connecting all the railways north and south of the river. The entire proposed constructions, except where the river is very wide, would run as close to the side as possible, in order that owners of wharf frontages might receive the least possible injury, and also that the work might be done tide-work, and at as little cost as possible. But little water would be abstracted from the river. Opposite the Temple-gardens, and where desirable, an open arcade would be formed, which would in no way obstruct the view.

The railway behind the river wall would be at a level of about 8 feet above low water.

The intercepting sewer, which is proposed by the Metropolitan Board to pass through the Strand and Fleet-street, would pass beneath the railway, or in the river wall, as found most convenient.

The estimated cost of the entire construction, except the railway, is 450,000*l.*, and some capitalists have had the matter under their consideration, with a view to undertake the whole, in-

cluding arrangements with the wharfingers, if the public bodies interested would pay a sufficient sum, the road being dedicated to the public use.

## MODERN LONDON AND ARCHITECTURAL SCULPTORS.

DURING the growth of London we have had several "ages" marked by the use of peculiar materials.

Two thousand years or so ago, we had an age of mud-work and wattle. Then the Romans came, and we may believe that we had for four centuries an age of brickwork. During the Saxon times there was an age of wood, superseded by the use of stone in the Norman days. Then came again the use of wood, which was continued, to a very great extent, until the Great Fire of 1666. Afterwards we had another age of brick, which lasted for nearly two hundred years. Then, for a short time, stucco was the rage; now, however, an age of substantial stonework is beginning, which promises to give us a lasting city.

From time to time we wander abroad, and look with wonder at the vast masses of buildings which are at present in the course of removal for alteration and improvement. This is the case, not only within the corporate limits, but throughout most other neighbourhoods which are about a hundred or a hundred and fifty years old.

The premises of the City warehousemen, the offices of the great bankers, and of insurance and other companies, now contrast curiously with the recollection of the dingy and inconvenient buildings which stood in many instances not twelve years ago.

The old-fashioned hostelry, the "Swan-with-two-Necks (Nicks)," its gabled roof and quaint-looking frontage, have disappeared, and instead a front of massive architecture is appearing. Here the railway carrier, notwithstanding the alterations, is busily pursuing his work. Shops, and places of less pretension, are also undergoing a great change. Note, for instance, the shop of a well-known butcher, not far from the Guildhall: the front, of stone, is composed of a large circular-headed window and entrance. At the centering of the former is a colossal lion's head: the head of the ox is equally classical, it would have harmonized as well with the general design, and have been more appropriate. It is surprising to look in all directions at the works of magnitude which are going forward above the surface; and now the curb below is being troubled, and soon in all directions thousands of passengers will be rolled along beneath the crowded footpaths and roadways.

Most wonderful are the phases of London: no man can fathom its varied depths, its glories, and its shame.

It would be interesting if we could get an account of the sums which have been spent even within the last ten years on the building of new houses, churches, prisons, and other institutions, within the metropolitan district; the cost of the alteration of shops and public-houses: the latter alone would amount to an extraordinary sum. Some rough estimate might be formed of the amount of capital expended within the metro-

politan district in the way above mentioned, and in the construction of sewers and roads: the total would be startling.

Seeing the massive and solid manner in which the bulk of the buildings within the City are being raised, and that they may be expected to remain for a long time to come as examples of the skill and taste of the present age, it is important that these should be satisfactory. The general appearance which the streets are putting on is more harmonious and picturesque than might have been expected. The broad design of many of the buildings is good, and some will bear examination in the decorative details. In many instances, however, as we have before said, the sculptors, instead of being ornamental, are actually blemishes, and these on buildings which have cost thousands of pounds.

That the necessary ability is to be had is certain. How is it, then, when imposing buildings have been planned evidently without consideration of expense, that those details on which so much depends should be slighted and made unpleasant to the sight? We could point out more than one building on which groups of allegorical figures have been placed, which are so distasteful in design and so bad in execution, that it must be absolutely an infliction for a person of only ordinary feeling for art to live opposite to them. Several circumstances concur to produce this. In some instances, perhaps, the architects do not sufficiently appreciate the value of excellence in the sculptural decoration of modern buildings. In others, so great is the hurry, that it is impossible to give proper effect and finish. But chiefly those who are putting up an important building are indisposed to a sufficient expenditure on what seems to them to be extra and unnecessary works. The details of the buildings of Greece and Rome have now a priceless value. The sculptures by Flaxman, introduced into his house by the late Samuel Rogers, brought more than their original cost; and, if proper ability were used, it would be the same in time with the decorations of the buildings of modern London.

Up to the present time it is to be regretted that sufficient attention has not been given to architectural sculpture. The sculptors have not taken their right position. They have an important mission to fulfil in the progress of English taste; and it is to be hoped that before long they will be enabled to take their proper place amongst the artists of the land.

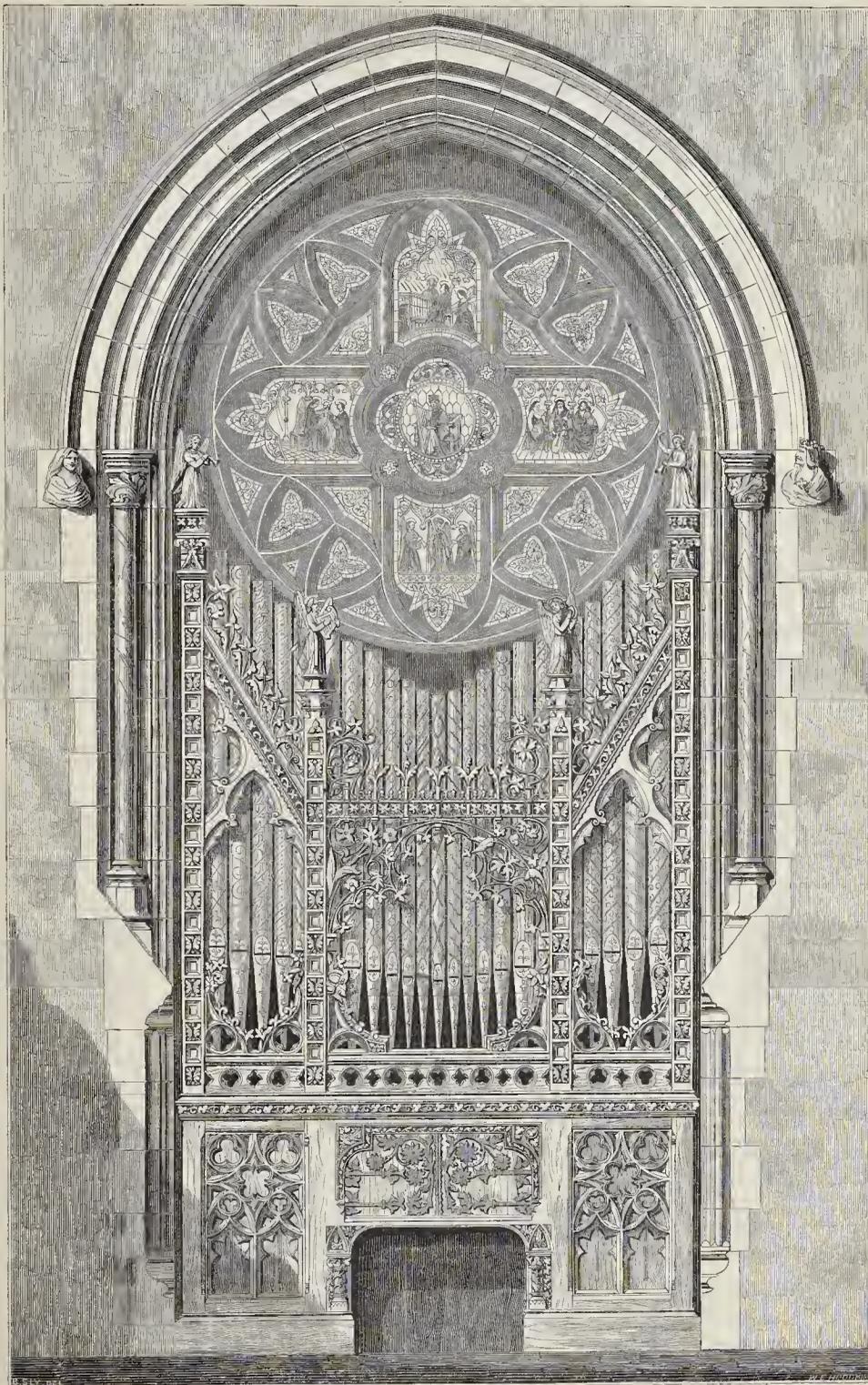
## ORGAN, SHADWELL COURT, NORFOLK.

THE accompanying engraving represents the organ which has just now been set up in the great hall at Shadwell Court, Norfolk, the seat of Sir R. J. Buxton, under the direction of Mr. S. S. Teulon, architect. On a previous occasion we gave a view of the exterior of the building.

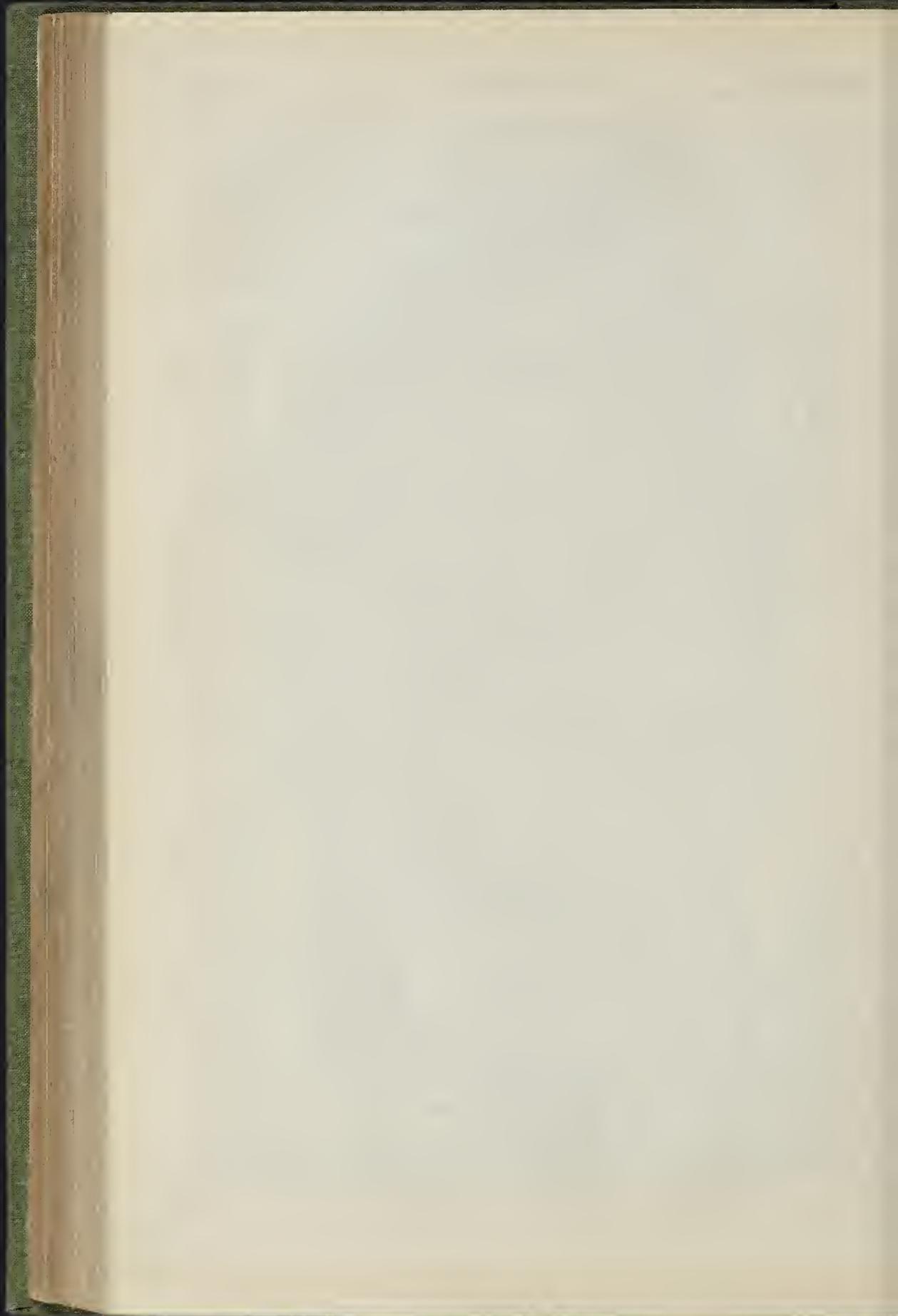
The woodwork of the organ-case is of oak. The metal work was executed by Skidmore, of Coventry; the coloured decoration by Fisher. The organ was built by Messrs. Gray & Davison.

The window at the end of the hall, seen above the organ, contains medallions of great composers, not exactly represented in the engraving.

\* See p. 849, vol. xvii.



THE ORGAN, SHADWELL COURT, NORFOLK.



LOCAL PORTRAIT GALLERIES.

A MEMORIAL, the only one yet raised to Admiral Blake, has been erected within these few days in the Courts of Assize at Taunton. It consists of a portrait bust of Blake, designed by Baily, and executed in the studio of Mr. Papworth, his son-in-law, with a pedestal, and an inscription from the pen of Mr. Hepworth Dixon. The design of the memorial is said to be well adapted to the place which it occupies, though it suggests the want of a companion bust, which might be fitly supplied by the other great Somersetshire worthy, John Locke.

A contemporary in alluding to the Blake memorial very justly observes that, "The erection of such monuments, while it illustrates our history *in situ*, has a tendency to promote provincial spirit in its worthiest form of emulation; and for its promotion of patriotic influences or its expression of the gratitude of posterity it deserves equally to be noted and encouraged."

We have before this suggested the usefulness of forming galleries of portraits of eminent townsmen in the halls, or some other proper place, in the provincial towns of the kingdom,—so that the inhabitants of such places might take visitors and their children, and say, pointing to such a collection,—“These are the men who have been born or reared amongst us.” And if this be advisable in the provinces, it is no less so in the great metropolitan districts, which have grown into such vast proportions, and which are connected in various ways with men famous for their abilities. In the great districts of St. Pancras, Marylebone, Islington, Clerkenwell, and others, vestry-rooms, which, in a measure, answer the purpose of the guild-halls of the country, have been reared. Many of these are large in size, but by no means creditable either in their interior or exterior forms to modern architectural taste. In these places, however, thousands of persons assemble for various purposes, and there the effigies of men who had been an honour to the neighbourhood could not fail to have an inspiring and beneficial effect. In the chief portions of these vestry halls, however, there are no portraits or other artistic matters to break the flat uniformity of the walls; and yet what interesting collections might be formed at comparatively small cost; for, if an appreciation of such works were shown, many pictures of great value and interest in a general collection would not doubt be freely offered.

In the Clerkenwell session-house there are some very good pictures, but they chiefly consist of royal personages or distinguished statesmen who are not particularly connected with that locality,—and yet what a gallery of Clerkenwell worthies might be gathered together. There is not one of these metropolitan parish halls which could not be usefully ornamented in this way.

Take any of the parish histories and glance at the names of resident inhabitants whose career would be worthy of imitation. Let us look at the first of these which comes to hand, Robinson's "History of Stoke Newington,"—a place which is still suburban, but which is rapidly increasing its population. Here lived, about the year 1710, Daniel Defoe: how profitable it would be if a portrait of this man—one of the most popular British authors—could be pointed to in the national schoolroom, or vestry hall. Would it not be instructive to mention that the far-famed author of "Robinson Crusoe" was the son of a London butcher; and so on, giving a sketch of his history, and what he did to make himself so celebrated?

Another distinguished resident of the same parish, though born at Hackney, was John Howard, the great pioneer of sanitary and social improvement, whose devoted life is worthy of the study of both old and young. The father of this public benefactor was also a London tradesman, who died when he was an infant, but left him in charge of guardians, who apprenticed him to a grocer. Howard came to Stoke-Newington rather before 1750, and lodged in the next house to Mrs. Wollaston: from thence he removed to the eighth house from the Church, which was kept as a lodging-house by Mrs. Sarah Lardcan—the lady to whom he was afterwards married. What a fine subject for expatiation, *apropos* of his portrait on the wall, would Howard be!

The memory of another choice spirit is connected with Stoke-Newington. Here Isaac Watts wrote a large portion of his beautiful works; and here he died on November 25th, 1748, in the 75th year of his age. He was buried with great solemnity in the dissenting burial-ground of Bunhill-fields. Since then a small monument has been erected to his memory in Westminster Abbey. But how strange it is that in a position where a monument might

be so well placed, close to the resting-place of John Bunyan and Daniel De Foe, one to Isaac Watts should not have been raised long since.

We have before referred to this neglect, which is not creditable to us. But our present object was merely to point out a few examples showing the interest which such local portrait-galleries, both in London and the provinces, could not but excite in connection with the histories of the local worthies, so brought face to face again, as it were, with young and old, in the present and coming generations.

BUILDERS' CUSTOMS.

SHORING ADJOINING PREMISES.

A PROBLEM, of considerable importance to all connected with the building profession throughout the United Kingdom, has been for a lengthened period in process of legal solution before the Court of Common Pleas and a special jury at Dublin. In the abstract it is simply this,—is a builder who contracts for the taking down and the rebuilding of a house or premises, with one on either side thereof, bound to protect by all necessary shoring, bracing, strutting, &c., the adjoining houses?—and does he, by reason of neglect, or insufficiency of skill in so doing, incur a responsibility?

Another question, bearing materially on this, suggests itself as regards the practice of architects in inserting a clause in their specifications, that the contractor is to provide for such precautions; and again, assuming that there is no special agreement between the client and the contractor, is it the custom of the trade to adopt the necessary measures, in its absence; and must the latter be responsible for the consequences? The case to which we refer is that of "Kempton v. Butler," before mentioned in our pages, the plaintiff being the proprietor of a house of business, in Grafton-street, Dublin, and the defendant the contractor for the taking down and rebuilding of the adjoining premises, during which plaintiff's house fell, destroying all his goods, furniture, &c. The defendant acted in the double capacity of architect and builder: there was no specific agreement as to the protection of the adjoining houses, and therefore the chief question devolved on "the custom." At the first hearing of the case last November, the plaintiff was non-suited on a technicality; at the second, after evidence on both sides had been fully entered into, and counsel on both sides had advocated their respective client's cases, during five days, the jury disagreed, *six to six*, and were discharged without a verdict; and at the third—last term—with substantially similar evidence as before, they found a verdict for 750*l.* with costs, damages being laid at 7,500*l.*

Does such a custom universally exist? If so, is it one of obligation or of courtesy? And if not an obligation, why should not the trade unanimously disavow it?

Assuming that to a certain extent it does exist where precaution is practicable, should it apply to all cases, however great the difficulty, and however dilapidated the premises, when all prudential measures would be unavailing? and, apprehensive of a consequent responsibility, should a builder decline all interference with premises so circumstanced, and should a proprietor be precluded from rebuilding? These general questions involve serious considerations worthy of attention and a definite understanding; for though "the law" may be with the builder—as impressed by Sergeant Fitzgibbon, Q.C., in the case alluded to,—"the custom" will, to a great extent, influence the jury in a verdict.

THE LIVERPOOL ARCHITECTURAL SOCIETY.

THE annual excursion of the members of the Liverpool Architectural Society and their friends took place on Mouday, 2nd instant, on which occasion the ruins of Furness Abbey were visited. The aid of Mr. Paley, of Lancaster, architect, was of great value to the excursionists.

After the inspection of the abbey, the excursionists assembled in the Furness Abbey Hotel, where dinner was provided. The chair, in the unavoidable absence of Mr. James Hay, the president, was occupied by Mr. W. H. Weightman; and the vice-chair was filled by Mr. Wm. Stubbs, one of the vice-presidents.

In giving the toast of "The Army, Navy, and Volunteers," the Chairman remarked that the volunteers had added another safeguard to the kingdom, and that he was glad to know the society numbered many volunteers amongst its members.

Mr. C. O. Ellison, in responding, gave "The Profession," coupling with it the name of Mr. Paley.

The Chairman proposed the toast of "The Visitors," coupled with the name of Mr. Golding, from whom it elicited an appropriate response. He proposed the toast of "The Liverpool Architectural and Archaeological Society," coupled with the name of Mr. J. A. Picton. Mr. Picton, after replying, proposed "The health of Mr. James Hay, the president," who was unavoidably absent. Mr. John Hay acknowledged the toast, and afterwards proposed "The Associate Members," responded to by Mr. Frodsham.

The health of the chairman was next drunk; and Mr. Sherlock gave "the Secretary, Mr. W. H. Picton," which was suitably acknowledged by that gentleman.

STATUES AND MONUMENTS.

A COMMISSION having been given by the present Earl of Ellesmere to Mr. Noble, the sculptor, for a tribute to the late earl, the artist has completed a recumbent statue, at full length, with the arms placed crosswise on the breast, the body being folded in the robes of a knight of the garter. The figure is rather over life-size, and is cut from a solid block of the finest Carrara marble. The statue will be conveyed to Worsley, the family seat, near Manchester.

The committee for raising a memorial to the late Henry Hallam, have resolved to erect a full-length statue of him in St. Paul's, an eligible site having been offered by the Dean and Chapter.

For some time past several influential gentlemen connected with the parish of Islington, have been desirous of erecting a monument to the memory of Sir Hugh Myddelton, who brought the New River through the parish to the metropolis, and in the prosecution of which gigantic work it is well known he embarked all his vast fortune. It has been resolved to erect a drinking-fountain in some conspicuous part of the parish, and on it to place a statue of Sir Hugh. The most appropriate site for the monument, it is considered, would be on Islington-green, on the spot on which the old watch-house stands. Sir S. M. Peto has promised to present the statue to the parish. A full committee has been appointed to assist in carrying out the object in view.

A tablet has just been erected in St. John's Church, Moulsham, to the memory of the late Mr. Henry Guy. The design is by Mr. James Lockyer, architect. The white marble slab terminates at the top in a pinnace, ornamented, and around the whole runs a mosaic border formed by inlayings of black marble. The centre is occupied by a long inscription to the deceased.

The *Darke* monument in the Penzance Cemetery is to be in the form of a Gothic spire, carved and crocketed, and surrounded by an iron railing. It will stand upon a base 9 feet square, and will be of Lamorna granite. Plans have been prepared by Mr. Matthews, the borough surveyor, and much of the material and work will be furnished gratuitously or at a low price.

A statue to James Hogg, the Scottish poet, popularly known as the Ettrick Shepherd, has been publicly inaugurated on the banks of St. Mary's Lake, at the head of the vale of the Yarrow, one of the finest and most picturesque streams on the Scottish border. There was a large assemblage at the inauguration, at which three daughters of the poet were present. Mr. Glassford Bell, one of the Sheriff-Substitutes of Lanarkshire, delivered the inaugural address. The statue of the poet is rather above the life-size, and represents him seated on some "grassy knoe," with his shepherd's staff in hand, and his grey bill plaid thrown carelessly over his shoulder. In his left hand is a scroll bearing an inscription,—“He taught the wandering winds to sing.” On the panels are inscriptions from his own works. At his feet lies his dog "Factor." The block from which the figure has been chiselled out is of fine grained white sandstone, and was procured *gratis* from the Duke of Buccleuch's quarry at Whita-bill, near Langholm. Mr. Currie was the artist.

At a meeting of subscribers to the fund raised to erect a memorial to the late Rev. Principal Macfarlan, of Glasgow, held in the Council Chambers of that city,—the Lord Provost in the chair,—it was reported that a site had been obtained for the monument in the Necropolis, and that Mr. J. A. Bell, of Edinburgh, architect, had prepared a design, not to exceed 700*l.* in erection. It is in the form of an ancient cross, ornamental in details. It will rise 50 feet from the surface, is to be 11 feet square, and built of

Binny stone. The site is on the crest of the Necropolis-hill, a little to the south-west of John Knox's monument.

#### CHURCH-BUILDING NEWS.

**Southport.**—Christchurch has just been reopened after extensive alterations: the walls have been taken down, the roof supported on iron columns, and side aisles added. The galleries have also been thrown back and widened. Additional sittings have thus been provided for about 400. The work has been executed by Messrs. Richard Wright & Son. A stained-glass window has been presented to the church by Mrs. Edward Rimmer, in memory of her father, Mr. Wright, builder. The subject chosen is, "Job in the days of his prosperity," as described in Job, xxx. 11, 12, 13.—Messrs. Wright have also obtained, by competition, the contract for pulling down and enlarging St. Cuthbert's Church, the parish church of Southport. All that now remains of the original structure is the spire and eastern wall. A new roof and new galleries are to be added, and additional sittings, to the number of 500, obtained. A subscription has been raised for the purpose of placing in the eastern window a testimonial stained-glass window, to the Rev. Charles Henkeht, the rector of the parish.—The enlargement of Trinity Church has also been entrusted to the same builders. The plans prepared by Mr. W. Culshaw, of Liverpool, contemplate widening the church nearly 90 feet, and lengthening it 36 feet, adding a new tower and spire 120 feet high. The new seats will hold about 720 people. In this rapidly-increasing town and favourite watering-place, the demands for extra church accommodation have necessitated these enlargements, and it is now contemplated to build another church in the town.

**Louth.**—At the first meeting of the committee for the restoration or rebuilding of the parish church of Rotherby, a proposal was made "That Mr. James Fowler, of Louth, be the architect to the committee." To this an amendment was submitted "That Mr. James Fowler and Mr. Charles Ainslie, of London, be joint architects to conduct the restoration of the church." The amendment having been negatived, the original resolution was carried. It was also resolved that Mr. Fowler be instructed to prepare plans for the restoration and rebuilding of the nave and tower, and reseating the interior, with an estimate of each; also to prepare a plan and estimate of a vestry, about 10 feet 3 inches square, to be placed on the north side of the chancel, or elsewhere adjoining the church.

**Ridlington (Rutland).**—Ridlington church has been re-opened, after having undergone a restoration. The church was in a very dilapidated and unsafe condition, when the Rev. C. A. Hay, having entered upon the living, set about the work of restoration. Mr. Henry Parsons, of London, architect, received instructions to examine the fabric, which was found in a very unsatisfactory condition, and Mr. Halliday, of Greetbam, was asked to do the work without any competition, at the estimate of 800*l.* The architect has preserved ancient relics. The nave is of three bays. The pillars on the south side are circular, with moulded caps and bases,—on the north side, octagonal. The carving was executed by Mr. Matthew Irving, of Leicester.

**Boyton (Wills).**—The parish church of Boyton has been restored and re-opened. In the old church, at the west end, now rebuilt, says the *Wills Mirror*, there were two flat Norman buttresses, showing the antiquity of the church. Beneath the pavement of the tower a low black sepulchral slab was discovered, the style of carving upon which is remarkable, and would indicate an antiquity prior to the Conquest. The ancient font of the church, placed in front of the Manor House, discovered under the floor of an old cottage, partakes of the same very rude antiquity. The steeple of the chancel, the oldest part of the existing building, was lamentable. The walls were above a foot out of perpendicular, broken bricks, rotting pews of gigantic height, windows broken and grieved with damp, a hideous plaster roof falling upon the worshippers, such was the aspect of this part of the building, the date of which might be fixed at about 1240. This part of the building has been restored: the roof is similar in formation to that of Ely Cathedral. The north wall is wholly new. The eastern window is in keeping with the rest of the chancel. The east window, by Mr. A. Gibbs, represents our Lord's Crucifixion, with the types of resignation—the Virgin on one side,—and of Love and St. John on the other. The east lancets are memorials to the Rev. S. Routh, rector

of Boyton, presented by his family. The north-west lancet contains an ancient piece of glass, with the arms of Sir Alexander Giffard, the Crusader, whose tomb is in the church. The pulpit is of stone. The arch separating the chancel from the nave was cut off at the top for about 8 inches by a flat plaster nave roof, which exceeded even the chancel roof in deformity. The gable has been raised about 16 feet, and is now as nearly as possible at its original height. The old roof has been gradually let down, as the ends of the beams decayed, until it became nearly flat, with just enough pitch to cause the rain to run off.—The Warminster Chapel, containing the tomb of the Giffards, has been restored. Under the slab at the entrance, a headless skeleton, probably that of the last of the Giffards in Edward II.'s reign, was found. The west and east windows have been restored, the rose windows with glass, by Messrs. Horwood, of Mells. The top circles contain the arms of the sees of York, Worcester, and the family coat of Giffard, the Crusader. The next triplet contains the *vespas* or symbol of each brother, the crozier with W. G. for Walter Giffard; G. G. for Godfrey Giffard; and the mitre to mark the Bishopric of Worcester, the Red Cross of St. George, the Standard of the Crusader. The other triplet contains the later descent of the Manor—the Lambert, Bonett, and Fane coats. The centres of the large quatrifolios contain emblems of the Knights of the Temple, the Holy Lamb, the Angels at the open tomb, and St. George of England. The east window in the chapel, like the west or rose, partakes of a mixture of English and Decorated architecture. The glass (by Mr. A. Gibbs, of London) is a memorial of the ministerial connection between Mr. Fane and the parishioners of Warminster. The chapel has been mainly restored by their liberality. The centre light contains the Charge to St. Peter,—the other two, St. John Baptist, the Preacher of Repentance, and St. Paul, the Preacher of Faith: above are the four Evangelists and the symbols of the Passion. The south windows are all memorial,—the centre one presented by Mr. T. H. Wyatt, the diocesan architect. The nave is the latest part of the building. The east window has been moved from the chancel and placed on the western gable. The roof replaced a flat plaster roof about a foot below the point of the arch. The south window, which replaces a ruinous doorway, has baptismal references. The west window, of Mells manufacture, contains the arms of her Majesty, of the Lord Bishop, and of Magdalen College, the patron of the living. The architect of the restorations was Mr. T. H. Wyatt; the builder, Mr. W. Barnden; mason, Mr. Trap; plasterer, Mr. Duteber; painter, Mr. T. Harris; master masons, John Turner and William Handcock; master carpenter, John Grist; clerk of the works, Mr. John Harding. The church has been restored at a cost of about 2,000*l.*

**Belgrave (Leicester).**—The Chancel of Belgrave Church is about to be restored, from plans prepared by Mr. Evans Christian, of London. The tender of Mr. B. Broadbent, according to the *Leicester Advertiser*, has been accepted by the Ecclesiastical Commissioners for the carrying out of the work.

**Moorhouse (Notts).**—A new Church is to be built for the small parish of Moorhouse, at the cost of the Speaker of the Commons. Mr. B. Broadbent, of Leicester, is to carry out the works. Mr. Henry Clutton, of London, is the architect; and the style adopted is Continental Gothic.

**Rochdale.**—The chief stone of St. Martin's Church, Castleton Moor, has been laid on Brunt Hill. The cost of the church is estimated at 3,000*l.* Mr. Ernest Bates, of Manchester, is the architect; and the contractor for the stonework, for 1,760*l.*, is Mr. Edmund Taylor, of Rochdale; and Mr. John Mills has undertaken to do the woodwork for 650*l.* The Early Decorated is the style chosen for the church, which consists of a nave, aisles, north and south transept, and chancel. In the north-west aisle a tower will be erected, which will be surmounted by a spire, rising to a height of 140 feet from the ground. The stone used for dressings will be from Summit, and the tracery will be from Halifax. The interior of the church will be fitted up with red deal, the seats open and stained, and the roof of the same material. There are to be no galleries, and the church is to accommodate 600 people, 250 free. The building was commenced in October, 1859, and it is expected, will be finished by November next.

**Bradford.**—The work of altering and restoring the parish church will shortly be begun, Mr. Thomas Hill, joiner and builder, having received the contract. The "faculty," authorising the

removal of the west gallery and the altering and removing some of the pews in the body of the church has been received. There is a fair prospect, says the local *Observer*, of such an arrangement being made with few owners in the east gallery as will result in the removal of that ugly and unsightly object. It is intended to re-hang and elevate the bells in the old tower.

**Montrose.**—A new Free Church has been opened in Castle-street, Montrose. It is capable of accommodating 550 sitters. Mr. Henderson, of Edinburgh, was the architect. The cost, including the price of the site, was 1,400*l.*

#### PROVINCIAL NEWS.

**Rushall (Staffordshire).**—The tender of Mr. E. Spencer for the erection, at a cost of 1,429*l.*, of a police station at Rushall, has been accepted.

**Trysull (Staffordshire).**—The new workhouse for the Grisdou Union has recently been finished. It was built to accommodate 120 inmates. The site is an elevated one, near to the village of Trysull, and the buildings form a conspicuous object. They are of red brick, banded with blue, and roofed with tiles. In plan they comprise three distinct groups. The front is appropriated to the board-room, clerk's office, vagrant and receiving wards, &c. The main or central group, with a frontage of 155 feet, accommodates the various classes of healthy and more permanent inmates, the females being on the left, and the males on the right of the master and matron's residence, which forms the centre of the range, while the third group is formed by the infirmary, and each group is divided by the yards of the respective wards. The water supply, contracted for by Mr. Deeley, of Dudley, is obtained from a well sunk on the premises, and pumped up to a wrought-iron tank, on the top story of the main buildings, whence it is laid on to the lavatories, waterclosets, &c. The works, including fittings, have been carried out by Mr. Hlevningham, at a cost of 2,595*l.*, from the design, and under the superintendence of Mr. George Bidlake, of Wolverhampton, architect.

**Leicester.**—The following tenders for the various works required in rebuilding the Infirmary were accepted:—Stonemason's work, Mr. Firn; carpenter and joiner's, Mr. Clifton; bricklayer's, slater's, &c., Mr. Collins; plumbing and glazing, Mr. Pazzard; ironfounder, Mr. Richards; painter, Mr. Haynes.

**Doncaster.**—The tenders for the erection of six almshouses, four of which are under Stock's trust, in the Holmes, having been opened, Mr. Taylor, who is at present engaged in extensive alterations at the Turf tavern, was declared the successful competitor, at the sum of 600 guineas. Mr. Butterfield is the architect.

#### DRINKING-FOUNTAINS ASSOCIATION.

A CONVERSATION in furtherance of the objects of the Free Drinking-Fountains Association was held in St. James's Hall, on Thursday, July 5. The Earl of Shaftesbury took the chair. Dr. Lankester made an address on the qualities of the water of the metropolis, and Mr. John Bell read a paper on "Art," connected with the drinking-fountains. It is to be hoped that better council on art-questions will now prevail in the Association.\* Various specimens of fountains were exhibited, as was also a very remarkable drawing by Mr. George Cruikshank, illustrating "The social drinking customs of society." A committee has been appointed to obtain subscribers to an engraving of this work and assist in the production of a large picture of it to be painted by the artist.

#### SCHOOL-BUILDING NEWS.

**Southampton.**—The foundation stone of Holyrood National Schools has been laid. The site of the building is in the Warden's garden, "God's House," and has been granted by the Provost and Fellows of Queen's College, Oxford. The contract for these schools, says the *Hampshire Advertiser*, has been taken by Mr. John Gumbling for 600*l.* The girl's school, which is on the ground-floor, is 40 feet by 16 feet, and together with an adjoining classroom contains space for about 100 girls and infants. The boys' school, together with a class-room at the end, is 40 feet by 16 feet, and is intended to hold about forty scholars.

**Wombourne (Staffordshire).**—The parochial schools at Wombourne have been completed.

\* A correspondent objects that the water supplied to the fountains in London is not cool and pleasant tasted, and thinks the Society should set itself to obtain spring water. We have not heard the objection before.

They are built from the design of Mr. George Bidlake, of Wolverhampton, architect, by Messrs. Hartland and Addenbrooke, and consist of girls' school-room, 39 feet 6 inches by 18 feet; boys' school-room, 39 feet 6 inches by 18 feet; with class-room, 14 feet by 12 feet, to each, and infant school, 30 feet by 18 feet. A teacher's residence, with additional accommodation for an infant mistress, is built on the south-east side of the schools. They are of red brick, with bandings of blue brick, and Bath stone dressings. The rooms are ceiled to the back of the rafters, which are stained and varnished, and the roofs are covered with tiles and plain cresting. The cost of the buildings, including boundary and fence walls, and forming play-grounds, has been £1,275l.

**Birstall (Leicester).**—The building of Birstall schools, upon plans prepared by Messrs. Millean & Smith, has been commenced. Mr. Firm, of Leicester, is contractor for the stone work, &c., and the carpenter is Mr. Robinson, of Dorking.

**COUNCILS OF CONCILIATION BILL.**

The Bill, entitled "Masters and Operatives," is now before a select committee of the House of Lords.

The committee is composed of the following peers—Lord Chancery, Lord Cranworth, Earl Granville, Lord St. Leonards, Earl Derby, Lord Brougham, Lord Overstone, Lord Ravensworth, Lord Kingsdown, Lord Belper, and Lord Wensleydale.

The report from the select committee of the House of Commons on "Masters and Operatives," together with the proceedings of the committee, minutes of evidence, appendix, and index, have been communicated to the House of Lords, pursuant to a message of Tuesday last, and ordered to be printed.

The select committee held its first sitting on Monday, the 9th, and will meet again on Friday.

Lord St. Leonards, in moving the second reading of this Bill, in the House of Lords, last week, said it was not anticipated that it would directly operate against such a strike as had lately taken place in London; but it was hoped that it would prevent strikes taking place at all. It was impossible to overrate the enormity of the evil of strikes, or the urgent necessity for a remedy. If the relation between masters and operatives was fairly looked at, it would be seen that the operative was really a limited partner in the concern, drawing his share of the profits in the shape of wages, although not responsible for the liabilities of the firm. It was obvious, therefore, that he had a direct interest in the continuance of the business, and that mutual confidence and regard between the employer and the employed were essential to the interests of both. Lord Ravensworth moved that the Bill be read that day six months. He believed that a court of petty sessions would give more satisfactory judgment than a court of conciliation under this Bill, which was hastily prepared and ill digested, and would probably be attended by disastrous circumstances. The Earl of Derby supported the motion for a second reading, but believed the Bill would require serious examination. Lord Granville recommended a select committee, in which recommendation the Lord Chancellor and Lord St. Leonards concurred, and the amendment was withdrawn, and the Bill read a second time.

**THE NINE-HOURS MOVEMENT.**

A MEETING of the building trades was held in St. Martin's Hall, Long-acre, on Wednesday evening, the 11th instant, in furtherance of this object. The chair was taken by Lord Robert Montague, M.P. There was a very numerous attendance.

The Chairman, in the course of his address, said,—He felt sure that no acrimonious language would mark what had hitherto been conducted with great temper and discretion. There were two questions before them, but they had been mixed up and confused by those interested, who had raised the cry that they required ten hours' wages for nine hours' labour. There were, however, two questions for consideration. The first was the fair and proper duration of daily labour, and the second was the amount of wages they were to receive. Now, the question of labour was one thing and that of wages was another. The first question was, what was a fair day's wages? Lord Cranworth had thought to settle the question by laying it down that wages should be the subject of a free bargain between the employers and the employed. But how could there be any free bargain when the capitalist could close his works and still reveal in luxury and magnificence, while the workmen must submit to any terms, or pine away of starvation and die, both themselves and their families? Then they were told that wages must be regulated by the principles of political economy. The pet mission of political economy was to buy in the cheapest market and sell in the dearest market. But should the labour of man be subject to the higgling and bargaining of the market? Was labour to

be dealt with like cotton? As to the second part of his subject—the quantum of daily work which a man ought to perform. Many of them had an hour's walk to work, and the same to return home, and they often could not sleep that, because they could not always change their residences from time to time so as to be near their work. Then they often had to have their meals away from home, and it was only fair to say that nine hours' work represented twelve hours' labour.

Mr. Cremer (a carpenter), moved the first resolution,— "That we believe our request for a reduction of the hours of labour, justified by the first principles of political economy, and that the increased skill and rapidity of manipulation acquired by the workmen the necessity for the ten-hours system has passed away, the building operatives, in conjunction with machinery, being enabled to produce sufficient for the requirements of society by labouring nine hours per day."

The speaker adduced extracts from the works of Adam Smith to refute the statement of Lord St. Leonards' recently made in the House of Lords that the demand for the reduction of the hours of labour was not in accordance with the principles of political economy. He further asserted that labour was not a marketable commodity, and ought not to be treated as such. Mr. Pitt, painter, seconded the resolution, and recommended organization, after which the resolution was carried unanimously.

Mr. Howard, bricklayer, moved the second resolution.— "That the meeting regretted the late refusal of the master builders to discuss the nine-hours question with a deputation from the men, believing such refusal to be inimical to the interests and position of the employers, and calculated to engender embittered feelings between themselves and their workmen at a time when every effort should be made to render the interests, welfare, and progress of both identical. Being convinced that the concession we seek is for the preservation of the physical and the expansion of our intellectual and moral powers, we pledge ourselves to press our claim until it has been conceded."

Mr. Major, a plasterer, seconded the resolution. The resolution was then agreed to. Mr. Potter then moved a vote of thanks to the chairman, which was carried amidst loud applause.

**THE "BUILDERS'" LAW NOTES.**

**Partnership.—Breach of Trust.**—Where one partner committed a breach of trust, it has been decided by the Master of the Rolls that the other partner has a right to dissolve the partnership; such dissolution to take effect from the date of the notice of the dissolution.—*Essell v. Hayward.*

**Metropolis Local Management Act.**—A District Board, under the above-mentioned Act, may assess a parish to an amount greater than is required for the outlay within its own limits, if such assessment be by a general rate throughout the district to meet the expenses of the district at large. It is, however, competent for the Board, in the exercise of its discretion, in cases where the outlay is for the exclusive benefit of a part of a district, to exempt from the rates that part which enjoys no benefit; and the Court of Queen's Bench, in a recent case, refused to interfere with such discretion.—*Parish of St. Botolph v. The Whitechapel District Board.*

**Wills.—Shakespeare's House.**—Mr. John Shakespeare, by will in 1556, bequeathed to his executors 2,500l. out of his personal estate, "to be laid out by them as they shall think fit, with the concurrence of the trustees of Shakespeare's house, in forming a museum at Shakespeare's house, in Stratford, and for such other purposes as they shall think fit for giving effect to my wishes." This bequest was held by Vice-Chancellor Wood to be void for uncertainty, and the same opinion was held by the Lord Chancellor and Lords Justices on appeal.—*Thompson v. Shakespeare.*

**Shareholder.**—If the entry of a person's name upon the register of a company be sufficient to identify him, a mis-spelling of the name will not release him from liability as a shareholder. An acceptance of shares by a person in writing, in the manner prescribed by the company's deed, must be proved in order to fix him as a contributory, and the fact of his name being on the registry is not of itself sufficient.—*Re Otterenshete.*

**STATE OF BATTERSEA-PARK.**

SIR,—A few days ago I strolled through Battersea-park, and saw the beauties of nature and art lately introduced there. The swampy fields of days babbly gone by, where the lower class of Londoners were wont to spend the Sabbath in frivolity and crime, now converted into a splendid garden, looked truly beautiful: the once silvery Thames flowed by in its sombre blackness, yet a shade brighter than it did last year.

In my ramble from enchantment to enchantment in this lovely garden, I was forcibly reminded of a picture which was in your journal a few weeks back (an east-end tea-garden, with a black ditch skirting the edge); for here is a ditch black and stagnant, running, or I should say standing, in the gardens, surrounded by flowers, shrubs, and in many places hidden from view by long grass. Little children played and gambolled, attended by their parents or nurses, out for the good of their health, each enjoying the most blissful ignorance.

But, although the cesspool (for such it is) was almost covered up, its disagreeable odour rose most painful to my sensitive nasal organ.

Should the ranger or commissioners fail to profit by the remarks of your correspondent C. S., many fond mothers may regret taking their children to this spot. A KNIGHTSBRIDGETTE.

**CLUB CHAMBERS FOR CLERKS.**

SIR,—With reference to a "City Clerk's" social want, I would repeat the following suggestion, offered some fifteen years since:—

Say 100 bachelor clerks (no great number out of upwards of 7,000) subscribe each their 50l.

This amount will purchase the land, create a club-house, provided with spacious coffee-room, library, smoking-room, lavatories, bath-room, water-closet and cloak-room, separate sleeping rooms, kitchen offices, with wash-house, laundry, &c., &c.\* Rent to each, say from 3s. per week; washing, from 1s. food, from 3s. 6d. per week, provided they dine out.

The advantages are such, that it has been a matter of great surprise that there should not have been some ten or twenty established; but the fact is, our young men, with some of the middle-aged, are so fast, that the accumulation of 50l. is difficult to attain. F.

**RECENT PATENTS CONNECTED WITH BUILDING.**

**MACHINERY FOR CUTTING AND DRESSING STONE.**—A. F. Newton, Chancery-lane, London. A Communication. Dated 21st December, 1859. The blades, whatever may be the form of their teeth, are made thicker in cross section at their cutting edges than at the back. The teeth may be chisel-shaped, or the saw edges may consist of chisels carried between metal bands or plates. The kind of blade preferred is made with long, vertical, chisel-shaped teeth, the uppermost being set the most forward, and the others receding, so that when the saw commences to operate the teeth will come into action in succession, instead of simultaneously. The invention also includes several arrangements of mechanism, in which these blades are employed for cutting and dressing stone. The invention cannot be described in detail without reference to the drawings.

**A KILN OR OVEN FOR BURNING BRICKS, TILES, &c.**—A. F. Newton, Chancery-lane, London. A Communication. Dated 22nd December, 1859. The kiln or oven is built of an annular form, and, by preference, sunk in the ground, so as to leave the roof only exposed. This inclosed annular space is divided radially into compartments by sliding doors, and each compartment is connected by a radial flue with a concentric annular smoke-chamber which surrounds the central chimney-shaft, and is connected therewith by short lateral flues. Dampers are provided for shutting off communication between the radial flues and the smoke-chamber, and the compartments into which the kiln or oven is divided are closed at top, and fitted with openings which may be shut when required.

**REMAINDER OF WORKS SELECTED BY ART-UNION OF LONDON PRIZEHOLDERS.**

From the Royal Academy; 201. and upwards.—An English Pastoral, by H. B. Willis, 210l.; The Nile Raft, F. Dillon, 120l.; Chastity (marble statue), J. Durham, 103l.; The First Step in Life, Mrs. E. M. Ward, 75l.; Volunteer Movement in the Studio, J. Balaizant, 65l.; The Sexton's Sermon, H. S. Marks, 63l.; Fisherman's Cottage, J. Cassie, 50l.; Loch Fied Bute, J. F. Buchanan, 31l. 10s.; The Sister's Prayer, J. A. Fitzgerald, 20l.; A Cottager, Waistcoat, J. W. Hayes, 23l.; A Fisherman's Hut, W. Hensley, 17l. 5s.; Going a Milking, W. Lucas, jun. 20l.

From the Society of British Artists.—Summer on the Thames, W. W. Gossling, 100l.; River View, J. C. Ward, 62l.; A Sea Breeze, J. Henzell, 35l.; Fishing-boats off Lunby Island, W. West, 35l.; A Scene in Brittany, E. J. Cobbett, 30l.; A Shepherd's Home, E. A. Pettit, 30l.; Mounts Bay, G. Wolfe, 45l.; A Lane Scene, J. C. Ward, 25l.; Girl with Blackberries, J. T. Pease, 30l.; On the River Loos, W. Pitt, 27l.; at Montreux, J. F. Pettit, 25l.; St. Michael's Mount, G. Wolfe, 23l.; Pont Aber, Cornwall, J. Steele, 21l.; On the Tavey, W. Williams, 20l.; At Wiltshire Lees, J. J. Wilson, 20l.; The Daughter of Jerusalem, J. Bouvier, sen., 23l.; The Warrenter's Boy, J. Davall, 15l. 15s.

From the Water-colour Society.—Venice from the Rialto, by W. Callow, 70l.; Meel Shabod, S. P. Jackson, 42l.; Auld Robin Grey, Mrs. Criddle, 30l.; Clovelly, S. P. Jackson, 30l.; The Fountain and Red House Hotel, Treves, J. Cowess, junior, 15l.

From the New Water-colour Society.—Interior of the Cathedral of Cefalu, Carl Werner, 75l. 15s.; Port Madoc, H. C. Pidgeon, 40l.; A Salmon Leap, D. H. McKewan, 32l. 10s.; Flute Pucelle, G. Howe, 40l.; White-bridge on the Dudden, D. H. McKewan, 31l. 10s.; Sea, Coast of Nice, T. L. Rowbotham, 30l.; Toll demanded, H. Warren, 21l.; A Weir Gifford, P. Mitchell, 25l.; An Old Mill, Estabate, D. H. McKewan, 17l. 14s.; Springing Eggs Shells, Emily Farmer, 15l.; View on the Swale, W. Tebbin, 36l. 15s.

\* Scarcely.

From the *Institution of Fine Arts*.—The Close of a Summer Day, G. A. Williams, 261.; Head of Loch Lomond, J. T. Walton, 261.; The Haunt of the Kingfisher, J. Adams, 261.; Carrickfergus Castle, J. Godet, 261.; An Interesting Topie, H. King, 261.; Ferring, E. Tolley, 181.; The Lake of Geneva, R. E. Tindall, 261.

#### THE LABOUR-MARKET IN THE PROVINCES.

At *Liverpool*, the change of hours conceded by some has been introduced more generally. The reduction, however, has not been granted by one extensive firm, that of Messrs. Holme & Nicol, who are said to object more to the mode of application than the principle. They have the Free Library at Shaw's Row in hand, but have been allowed time, under the circumstances, by the Library Committee.

The *Leeds* masons, as intimated, have followed the joiners by striking for objects similar to those just attained by the latter. The employers refuse to accept and sign a code of rules adopted by the men. The master builders have conceded to their bricklayers an advance in their wages of from 26s. to 27s. per week; and the strike which was apprehended in this department of the building trade is thus avoided. The men have also given twelve months' notice of their intention to ask to be paid by hour instead of by week.

The *Bradford* stonemasons' strike may be said to be at an end.

The *York* joiners are settling into good understanding with their employers, who have agreed to the advance in wages and reduction in Saturday time asked for.

At *Castletford*, says the *Newcastle Courant*, the workmen employed in its staple trade, that of glass bottles, have given notice to strike for an advance of wages, and the movement is general all over the district.

#### THE STATE OF THE RIVER THAMES.

On this important subject Dr. Lethaby, in a report to the City Sewers Commissioners, says:—

In the spring quarters of the last two years I have had to report to you of the putrid condition of the river, and to discuss the circumstances which have attended it; but this year I am relieved from that necessity, for up to the present time the river has not been offensive. In point of fact it would appear from the analyses which I lately made of the water, and a comparison of them with the results obtained by Dr. Lamb and Dr. Bostock in 1828, that the river is now in its normal condition. At that time the water of the Thames at high tide at Lambeth and Blackfriars contained only about 27 grains of dissolved matter in the gallon, which is not much above the natural proportion of its constituents at from Teddington-lock to Wandsworth; and during the whole of the present year this has been nearly the proportion found in the water at high tide at London-bridge. Last month the highest proportion was 32 grains in the gallon, but at all other times of this year it has ranged from 24 grains to 27 grains in the gallon; and of these from two to four grains were organic. Last year, however, at this time the water contained 94 grains of soluble matter in the gallon, and the year before it contained nearly 144 grains, of which from 11 to 12 were organic. Little by little it went on increasing until it amounted in August and September to from 300 to 400 grains in the gallon, and during the whole of that time the river was most offensive. The source of these impurities I have already described—they were derived from the sea water and the stagnant sewers. A long continuance of dry and warm weather had so diminished the supply of water from the tributaries of the river, that the oceanic wave was not kept back to its usual confine, but advanced far upwards into the bed of the stream, and brought with it its organic and saline impurities. Then came the heavy showers which flooded the sewers and washed out the stagnant matters that the torpid stream had been unable to discharge. In this way a large quantity of impurity was discharged into the river, for the proportion of solid matter in the storm sewage is often as much again as that in the sewage of dry weather. When these storms occurred at the flow of the tide, the foul matters were carried upwards by the stream, and were thus a cause of serious annoyance; while at other times they seemed to act in a beneficial manner upon the river by diluting and carrying the impurities seaward. The present state of the river has evidently been secured by the continuance of wet weather. In the month of May last year, the total rainfall in London was but 2 inches—whereas in the corresponding month of this year it has amounted to 3.7 inches. In June of last year, it was barely 2 inches, and of the year before, only 1.2, but in the three weeks of the present month it has been 4.6 inches. The wet days have also been more numerous, and therefore the supply of fresh water to the Thames more continuous. This is the principal circumstance which has characterized the present season, and it has manifested been the principal agent in securing the normal condition of the river; for as regards

the effects of temperature on the water, the differences up to the present time have not been so marked as to have exerted any important influence. At this time last year, and the year before, the Thames was very offensive, notwithstanding that the mean temperature of the water during the month of May was nearly a degree lower than it has been during the present year. The conclusions, therefore, to be deduced from these facts are, that the main causes of the putridity of the river are a great excess of sea water far up in the stream, and a large amount of organic matter from the stagnant sewers, both of which are due to a continued absence of rain, and to the sudden flushing of the sewers during the upper flow of the tide. A certain temperature is, of course, necessary to the putrefactive changes, for they do not progress with any remarkable activity below the temperature of sixty degrees; but when the heat of the water rises, as it did in June, July, and August of last year, to a mean temperature of seventy-two degrees, the changes are exceedingly rapid. There is an additional mischief at such a time from the decomposing mud upon the exposed banks of the river. Dr. M-William, of her Majesty's Customs, has so recently inquired into the effects of the river miasms, and has so clearly shown that they have not yet produced the mischief which was anticipated of them, that I need not here discuss this subject. Happily for us, there is evidently some condition wanted to make "this filthy river capable of generating cholera, or of forming a soil fit for the germination of the seeds of that disorder when introduced into it." But this is no argument for the neglect of sanitary precautions, or for disregarding every means for abating the noisome condition of the river. Nor is it a reason for temporising with the mischief, by resorting to any doubtful expedient that may merely serve as a disguise for the nuisance. Already I have reported on this matter, and have directed your attention to the uncertainty of the proposed plan for deodorizing the river by means of perchloride of iron. But since then I have ascertained that the perchloride is highly charged with a compound of arsenic, which is exceedingly poisonous. A sample of the liquid, furnished to me by the patentee, Mr. Dales, and described by him as the same as that used in the experimental inquiries for the Board of Works, has yielded from 296 to 297 grains of chloride of arsenic per gallon. If, therefore, the sewage of London were deodorized in the way proposed, there would be discharged daily into the Thames as much as 227 pounds of chloride of arsenic. I cannot tell you what would be the consequence of this, but it would be equivalent to casting into the river about one hundred weight and a half of powdered arsenic daily. It is true that the poison would be diluted with a large quantity of water, and with many millions of gallons of sewage, but a knowledge of this fact would afford no relief to our apprehension of danger, or to the anxiety that must be felt lest the accumulated effects of the poison might in the course of a very short time be dangerous to the extreme.

The report was ordered to be printed, and a copy sent to every member of the Corporation, as well as to the members of the Metropolitan Board of Works.

#### Books Received.

*Handbook of the Mechanical Arts concerned in the Construction and Arrangement of Dwelling-houses and other Buildings.* By ROBERT SCOTT BERN. 2nd edition. Blackwood & Sons, Edinburgh and London. 1860.

WHEN first published, this work was intended exclusively for the use of colonists and emigrants. Very considerable additions have been made in the present issue, to a great extent in the shape of extracts from "The Book of the Farm," so that, although still chiefly of value to settlers and others thrown on their own resources, it will be found useful as a skeleton text-book for the student at home. It is illustrated with 504 engravings, is clearly written, and is altogether a valuable little book.

*Address to Trades' Unionists on the Question of Strikes.* By MALCOLM ROSS, Bradford. London: W. Tweedie.

UNIONS amongst workmen are a fact of our times that must be acknowledged and received as a fact, however unwelcome to masters under its present aspects; but much can be done both by men and masters towards directing them into channels really useful to the working classes, without being

so obnoxious and injurious to employers, to trade, and, though last, not least, to workmen themselves, as they have been. It is most unfortunate that unions should have sought to obtain unreasonable objects in objectionable ways, but we must not overlook the fact, that in the eye of some masters requests ("demands") they have too often assumed the shape of) neither unreasonable nor objectionable, in themselves, have been looked upon as both, and hence to be resisted.

That some of the procedure of trades' unions has been both objectionable and unreasonable as well as extremely injurious, not only to the masters, but to the men themselves, it has not been left exclusively to the press to point out; for not a few of the most intelligent of the workmen also have done so with ability and cogency of argument and demonstration. In the three-penny tract under notice, Mr. Ross, who is himself a workman, severely reproaches one too frequent resource of a desperate kind by trades' unions in the attempt to benefit their members,—namely, strikes, with which, indeed, such unions have come to be regarded as almost synonymous in meaning, although there is really no necessary or essential connection between them, since it would, on the contrary, be much more consistent with the main purposes of these unions, that is, with the joint interests of the unionists, that resort should be very rarely, if ever, had to strikes, however beneficial it may be considered to hold them in *terrorem* over refractory or unreasonable masters.

Trades' union strikes, says Ross, are, in their nature and action, the most unjustifiable means which can be resorted to for the purpose of keeping the rate of wages at a high, or, if you like to prefer, an equitable standard, and for the following reasons:—

1. An account of their coercive character.
2. Because they inflict an irreparable injury on the morals and habits of workpeople.
3. Because of the injury they do to the general trade of the country.
4. On account of their natural and logical impotence, as manifested by their repeated failures.
5. Because they prevent better means being employed to elevate the people, for whose pretended benefit they are brought about.

As an example of those better means to which he alludes, and which he would like to see adopted by trades' unions, he adduces trades' union co-operative workshops and factories:—

"When trades' union co-operative workshops and factories," he remarks, "are in regular working order, the wages given there will, most probably, become a standard in each separate branch of trade. When working men capitalists have to compete with the goods in the general markets of the country, they will get to thoroughly understand what the wages fund will allow to each workman, skilled and unskilled. They will be able practically to solve many problems as regards remuneration for labour and the requisite number of hours for work, which one-sided committees are scarcely qualified to do. They will then be in a condition to offer employment to those workmen who are disliked by masters, and to whose dismissal are owing many causes of contention, where they do not lead to combined strikes. Above all, they will be the most likely men to suggest wise remedies for grievances, whether they originate with the masters or the workpeople, since they will perceive that their own interests will be best served by the trade which they follow being least disturbed. Once let working men share in the profits of their own capital,—let them realize the idea of success being achieved by incessant application,—let them begin to practically understand the operation of the law of supply and demand, as it affects both the produce and the labour markets,—and it is more than probable that the evil day of strikes will have passed away, with all its attendant miseries and workhouse associations.

What say you, shall you carry these suggestions out to their legitimate end? Then first of all use your great influence in staying the threatened renewal of the London strike in the building trades. Let the object for which that strike is again to be renewed, be worked out by the means, and in the manner, I have advised. In such a way, if you can prove that even eight hours' work per day is sufficient (and I do not see but what it yet might be) to serve for all your personal and domestic requirements, let the change be so brought about that it will produce no suffering to yourselves or your fellow-creatures, and no injury to the trade and commerce of the country."

Nor are such means of turning trades' unions to really useful and beneficial purposes the only ones that suggest themselves: there are others, such as a system of emigration for behoof of the unemployed, by which means the employed unionists would not only benefit their fellow-workmen, whether unionist or non-unionist, but also themselves, by the removal of such surplus labourhands from the field of competition with them for a share of the profits of the capital of the country. By a strange perversity, however, it so happens that because this was suggested by those opposed to strikes, an obnoxious face was put upon it by the unionists, who resisted the idea as derogatory to their class, instead of taking advantage of it as a benefit; and we should not wonder but that a similar fate awaits even the suggestion of co-operative work-shops and factories, as well as stores, which latter are being successfully carried out in the North of England, much to the advantage and comfort of the working classes there. In fact,

anything, however good and however beneficial to the workmen, is likely to be resisted that will interfere with the prospects of those who live upon their fellow workmen by the pernicious system of strike organizations.

It is most earnestly to be hoped, however, that dear-bought experience will now speedily open the eyes of the working classes to their true interests in such matters; and the little tract under notice is just an evidence of the working out of so desirable an end.

VARIORUM.

The ninth part of "Ure's Dictionary of Arts, Manufactures, and Mines, new edition (Longman & Co.), chiefly rewritten and greatly enlarged, and edited by R. Hunt, F.R.S.," has been issued. It concludes the elaborate article on "Iron," and proceeds to the end of letter L, and of the second volume. The more important articles contained in this part are on Lead (an extended one, but not containing much practical information for our professional readers), and on Lamps, Light-houses, Leather, &c. We need not repeat the favourable opinion already expressed, by us as well as others, in reference to this standard work: Ure's Dictionary is a well-known book, more than ever useful and valuable to all classes.—The Board of Works for Hackney district have issued, in a printed form, "A General Report on the Works executed by the Board." By James Lovegrove, Assoc. Inst., C.E., Surveyor to the Board." From this document it appears that, since 1856, 14,596½ have been expended upon sewers for the district, calculated to benefit 3,418 houses, and an area of 588 acres. Ten miles and a half of sewers of various sizes have been executed. The average cost has been 5s. 3½d. per foot. Of new houses, 337 have been erected, and 815 drained, at a private cost of 5,155. Gravel-paths about Hackney are being paved, and several drinking-fountains have been erected. Many other useful works have been, and are being, carried out.—A little twopenny treatise on "The Art of Swimming, for Beginners, by James Bennett, M.D., LL.D." (Lea, Warwick-lane), contains some useful and curious information, thus given almost gratis, by an experienced swimmer. In a nation who "go down to the sea in ships," as we do, swimming ought to be as universal an accomplishment as it is in the Sandwich Islands, where the human species seems to be amphibious, or semi-fish semileg in its nature. The little treatise under notice will, as far as possible, we dare say, obviate the objection of the cautious gentleman who would not trust his precious corporation in the water till he learnt to swim; but learners are to be advised to take their lessons with, rather than without, "the fluid element."

Miscellaneous.

PAINTERS' COMPANY.—EXHIBITION OF SPECIMENS OF DECORATIVE ART.—The successful competitors—viz., Messrs. Kershaw, Sinkin, Edmott, and McDonald—were, at a full court on Wednesday, the 4th inst., presented with the freedom of the company and certificates of merit for specimens of decorations in Arabesque, marbling, graining, and writing. 876 persons of all classes have visited this exhibition during the month it has been open.

REMUNERATION OF THE ESSEX COUNTY SURVEYOR.—The committee appointed, at the Essex quarter sessions, to consider the principle upon which the county surveyor should be remunerated in future for works exceeding 1,500*l.*, reported that, having referred to the order of court containing the appointment of the county surveyor, and the terms of his remuneration, they are of opinion that the exception extends to all new works, alterations, additions, or improvements exceeding in amount the sum of 1,500*l.* for any one such, and not merely to any excess of expenditure in such cases over that sum. The committee recommended that such remuneration should be according to the usual rate of professional charges, but that no extra charge should be made for travelling or other incidental expenses. Capt. Dudworth said, in the committee they moved the usual sum of 5 per cent., but it was thought there might be larger works in which the 5 per cent. would be more than adequate, or there might be matters on the other side with which the Court would no doubt deal liberally, but judiciously. Mr. J. O. Parker said they did not think of anything over 5 per cent. It was stated that anything over that would not be professional. The report was agreed to.

THE PROPOSED LEEDS CORN EXCHANGE.—Fifteen sets of plans for the proposed new Corn Exchange have been sent in. They were opened by the committee, and ordered to be placed in the Civil Court.

FALL OF A CEILING.—Mr. John Cail, optician, Grey-street, Newcastle, was exposed to a considerable loss on Saturday last, by the fall of his shop ceiling. About one-half of the entire ceiling fell down, destroying plate-glass cases and their contents to the value of not far from 100*l.* In this building age, one would have expected the art of ceiling-making to have arrived at such perfection as to have prevented an accident like this.—*Gateshead Observer.*

INAUGURATION OF BANBURY (NEW) CROSS.—The Foresters' Court of the district have inaugurated the new cross at Banbury. The foresters rode to the cross, in grand parade, preceded by a lady, but not on "cock-horse," nor probably had the lady "hells on her toes," though she may have had "rings on her fingers." An address suitable to the occasion was duly delivered by one of the white lady's attendant foresters. The cavalcade included Robin Hood, Friar Tuck, and other characters with which modern poetry still keeps alive the memory of the olden times of merrie Sherwood. Old English sports in the field closed the festival.

ANTIQUITY OF THE CHURCH AT DITTON.—Extensive repairs have lately been going on in this venerable church. In cutting away some portion of the old building for the formation of a new vestry-room, an arch was discovered constructed of the Tufus or Tufia stone—the same as that of which a considerable portion of the ancient Pharos at Dover Castle was built. The *Maidstone Journal* says,—Mr. Knocher, in a lecture on the antiquities of Dover, alludes to this stone as one which he thinks "is found nowhere in this part of Europe, save on the banks of the Rhine and the Tiber;" though it is said to have been used by the Greeks, Romans, and Egyptians as a stational concretion.

LEICESTER ARCHITECTURAL AND ARCHEOLOGICAL SOCIETY.—At the last meeting of this society various objects of archaeological interest were exhibited, and Mr. Gresley read a paper upon "Newstead." The secretary distributed to the members present copies of a paper upon armorial windows erected in the reign of Henry VI., in Woodhouse Chapel, Charnwood Forest, read last year by Mr. J. G. Nichols, F.S.A., at the annual meeting of the society at Loughborough. It was resolved that a special meeting should be called to make arrangements for an evening *soiree* of the society to be held shortly in Leicester, and that the annual meeting of the society for the transaction of business should be held at the close of the year; these arrangements to be independent of the contemplated excursion and meeting at Rugby.

PUBLIC WORKS AT ADELAIDE.—The *South Australian Register*, in its last summary for England, says,—"With respect to the Colonial Architect's department, in which extensive changes have recently been made, it appears that a sum of 25,290*l.* was laid out under the control of that officer during the last half-year. The staff of that office has been subject to considerable reductions of late, the post of Assistant Colonial Architect having been left vacant from the 15th of November last. It is now understood that the office is to be annihilated. A statement indicating the details of the expenditure on various public works during the half-year last past shows that among the principal works in progress or completed are the South Australian Institute, Dry Creek Labour Prison, New Registry Offices, New Treasury Offices, Observatory and Observer's house, Additions to Lunatic Asylum, Casualty Hospital, Gaol at Robe Town, New Adelaide Hospital, New Custom-house, Police-station, and Court-house, Port Adelaide; Custom-house, Court-house, and Post-Office, Port Augusta; and various other court-houses and police-stations. The total amount expended in public works during the half-year under notice was 234,754*l.*, viz.:

By Colonial Architect . . . . .	£23,290
By Superintendent of Telegraphs, in constructing new lines . . . . .	7,474
By Railway Engineer, for construction and extension . . . . .	125,653
Waterworks expenditure . . . . .	26,811
By Central Board of Main Roads, inclusive of surplus labour expenditure . . . . .	45,416
By Harbour Trust . . . . .	3,309
Clearing channel of River Murray (say cost relating to half-year) . . . . .	750
	£234,754

In addition to this expenditure for the half-year, the sum expended on public works by Municipal Corporations and District Councils during the whole of 1859 was 43,637*l.* 1*s.* 1*d.*

THE PROJECTED PUBLIC ROAD THROUGH HYDE-PARK.—We regret to learn that the Chief Commissioner of Works has no intention at present of doing anything towards opening the much-required direct communication between the districts north and south of Hyde-park.

THE STOCKPORT SURVEYORSHIP.—Mr. John Whittaker, Jun., of Alton Norris, has been appointed to the office of surveyor to the Stockport town council, by a majority of twenty-six to ten votes. There were nine candidates.

A STEAM ELEPHANT.—One of Taylor's patent traction engines called "steam elephants" built at the Britannia Works, Birkenhead, for the Dutch Government, for use in the docks at Flushing, when tested, it is said, drew a load of 14 tons 13 cwt., going up and down hill, turning corners, &c., with ease.

THE GREAT EASTERN.—Intelligence from New York announces the arrival in that city of the *Great Eastern* on June 23; that is, eleven days after her departure from Southampton. A great crowd had, of course, assembled, to give her an enthusiastic reception. Her average rate of speed was something less than 300 miles a day; the greatest speed she attained was 1½ knots an hour—considerably short of what was anticipated.

ELECTRO-PHOTO-TELEGRAPHY.—A Florentine abbé now in Paris has, it is reported, made a wonderful discovery in connection with photography and electricity. He is able, in sending a telegraphic message, to produce, at the opposite end of the wire, a *fac-simile* of the writing that the message has been sent in. The idea of an autographic telegraph, however, is not new, although the connection of photography (if it really be such as alleged) with electric telegraphy does seem to be a novelty.

GAS.—The Sunderland Gas Company have resolved to extend their works, and a piece of ground, ten acres in extent, has been purchased near the "Blue House," Hendon, whereon a new gas-work is shortly to be erected, having a gasometer 123 feet in diameter, and 28 feet in depth.—At the annual meeting of the Brechin Gas-Light Company it was resolved that the rent of consumers' meters (1,900) be lowered from 2*s.* 6*d.* to 2*s.* per annum, and a dividend, at the rate of 9½ per cent., was declared, free of income-tax, being a rise of a half per cent. on the previous dividend.—The Alyth Gas Company, says the *Montrose Review*, have resolved to divide 6 per cent., and carry to the sinking fund 15*l.* out of their total income of 400*l.* Great disappointment is felt by the community that no reduction in the price of gas is to take place. Here it is 10*s.* per thousand feet, being the highest price paid in any town in Scotland.

LENDING MONEY TO WORKMEN.—IMPORTANT TO MASTERS.—At the Wolverhampton petty session, a journeyman locksmith, late in the employ of Mr. Benjamin Walters, master locksmith, was summoned by Mr. Walters for leaving his employment without having completed his agreement, by which he bound himself to serve for two years, the complainant at the same time lending him 4*l.* 17*s.*, to be repaid in 1*s.* instalments weekly; and the agreement stating that, "in case the whole of the said sum of 4*l.* 17*s.* shall not be repaid by me, or I shall be indebted to the said Benjamin Walters in any further sum of money, at the expiration of the within-mentioned term, then I do hereby agree not to quit his service until I have fully paid all such sum or sums of money, and give to the said Benjamin Walters fourteen days' notice in writing, before leaving his service." Complainant deposed that the defendant had given the required notice to leave, but inasmuch as he was indebted to him (complainant), in the sum of 5*l.* 4*s.* 6*d.*, he could not legally leave his work. The magistrates declined to convict, as the man had served the specific time for which he had agreed with the complainant, who wanted the magistrates to do that which a small debts court would not do, viz., order imprisonment in the event of non-payment. The complainant would then have lent money with an advantage on his side that no insurer in the kingdom could secure. Having lent the man the money, the complainant could have stopped it from his wages without consulting him. With such an agreement in his possession, it would be quite possible for an employer to lend a workman money, and keep him in perpetual bondage. Mr. Walters said that every lockmaker in Wolverhampton made such agreements, that convicts were constantly taking place upon them, and that he had himself taken proceedings successfully against twenty-five of his men at different times, under similar circumstances. The magistrates said complainant might appeal, but the case must be dismissed.

BUILDERS' DINNERS.—Sir: The workmen in the employ of Mr. John Jay had their annual excursion, on Saturday last, to Rosherville Gardens, and about 220 sat down to a substantial and satisfactory dinner. Mr. Jay contributed 35*l.*, and several of the architects and merchants subscribed handsomely. Surely if this were more generally adopted in the building firms, it would tend to create a better feeling between employer and employed.—ONE OF THE COMMITTEE.

KNIGHTHOOD OF AN ENGLISH ENGINEER.—The Manchester Advertiser announces that a former fellow citizen, Mr. W. G. Giuty, has had conferred upon him, by the Emperor of the Brazils, the rank of a Knight or Chevalier of the Imperial Order of the Rose. Mr. Giuty is engineer-in-chief of the City Canal and other important public works of Rio de Janeiro.

THE TRAFFIC RETURNS OF RAILWAYS, in the United Kingdom, for the week ending June 23, amounted to 539,230*l.*; and for the corresponding week of last year to 502,440*l.*; showing an increase of 36,790*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 237,220*l.*; and for the corresponding period of 1859 to 224,821*l.*; showing an increase of 12,399*l.*

SMALL-POX AND VACCINATION HOSPITAL.—It has been resolved that in consequence of the frequent return of epidemics of small-pox, and of the crowded state of the hospital, steps should be forthwith taken to provide a separate building or wards to receive the more urgent cases, and thus afford additional accommodation to the public and security to the patients. In accordance with this resolution applications for plans and estimates were made, and eventually a tender accepted from Mr. John Perry, for building two additional wards to the hospital for the sum of 3,858*l.*, and these wards are to be proceeded with at once.

THE CONSERVATIVE LAND SOCIETY.—At the thirty-first quarterly general meeting of the members, held on Tuesday, the 3rd inst., Sir Lawrence Palko, bart., in the chair, it appeared that the society has acquired its forty-first estate by a second purchase in Hert, close to the Hertford Terminus, which estate, in twenty-six lots, will be offered to the members on the 15th inst. On the same day will likewise be allotted twenty-six plots, being the first portion of the Roehampton Park estate. The sites selected are in the south-west part of the estate, partaking of both the Richmond Park and Putney Heath boundaries, and the finely-wooded scenery, and the immunity of being built against, which the Royal Park and Putney Heath both secure. The plots range in price from 102*l.* 7*d.* to 696*l.* 13*s.* 6*d.* each; the quantities varying from 36½ perches to 1a. 1r. 3p.

A NEW STONE-CUTTING MACHINE.—We were not a little surprised the other night at seeing a small machine planned by Mr. D. Ross, foreman, to Mr. Craig, constructed and erected upon the green island along the side of the river for the purpose of cutting pavement, and by which Mr. Ross says a man and boy will accomplish the labour of four men who cut by the ordinary method, at the same time saving a great deal of unnecessary labour. The machine is set in motion by means of a large fly-wheel which is driven about by manual labour. A piston is attached to a crank fixed to the wheel, and extends to an upright bar in the frame which gives it motion, in this way bringing the whole lever power to bear on the movements. The affair is only in a temporary condition merely to try its practical utility, and if successful will be adopted. We observe that "D. Ross, Patentee," was printed upon the machine.—John O'Grady's Journal.

REFORMATORY SCHOOLS.—The annual report of Mr. Sydney Turner, inspector of reformatories in Great Britain, states that the number of boys in these institutions at the end of 1859 was 2,636, and of girls 640; but another school for girls is urgently required. During the year 108 of the inmates emigrated, 57 were sent to sea, 143 were apprenticed or placed in service by the managers, 212 were allowed to return to their friends, and were placed in service by them, 102 absconded, and were not recovered. Of those who enlist or go to sea, a large proportion turn out well. Of the whole number (637) of boys and girls discharged from English reformatories up to the end of 1858, above half (333) are known to be living honestly, and maintaining a good character. The total expenditure for the year was 72,893*l.*, of which the Government paid for maintenance 51,681*l.*, the parents 1,804*l.*, and 16,169*l.* was raised by voluntary contributions. Mr. Turner speaks very favourably of the condition of the reformatories.

ASSOCIATION OF FOREMEN ENGINEERS.—The usual monthly meeting of the above society took place at their rooms, St. Swithin's-lane, City, on the 7th instant; Mr. J. Newton, of the Mint, in the chair. After the transaction of the routine business, Mr. James Robertson, iron merchant, of Barkside, read a paper on the Development of the Iron Trade.

FRIEND'S PANORAMA OF CANADA, ST. JAMES'S HALL.—The variety of talent exhibited by Mr. Washington Friend in his entertainment, "Two Hours in Canada and the United States," enforces recognition. The art may not be very high, the acquirements not altogether complete; but when a gentleman paints you a panorama, describes it very forcibly, sings you some songs, plays the pianoforte, the violin, the banjo, and the harp, and, moreover, opens your eyes to the extent and importance of one of our most important dependencies—just now, too, invested with an extra interest,—you must be very unreasonable if you are not amused and gratified. Speaking for ourselves, we certainly were both, and were glad to see the room well filled, as a reward for the skill, tact, and energy displayed.

TENDERS

For Wottonhampton Church, Berks. Mr. J. Jansom, architect:—  
Weller ..... 2,500 0 0  
Dove, Brothers ..... 1,785 0 0  
Hollis ..... 1,930 0 0

For new roof and restorations to Brandon Parva Church, Norfolk. Mr. John Daymond Ellis, architect, Norwich:—  
Bartell ..... 2,470 0 0  
Woodbine ..... 450 0 0  
Skipper ..... 424 8 0  
Miller ..... 412 0 0  
Bardman (accepted) ..... 385 11 6

For new schools and class-rooms, Princess-street, Norwich, for the Rev. John Alexander. Mr. John Daymond Ellis, architect, Norwich:—  
Lacey ..... 2,682 10 0  
Brooks (accepted) ..... 619 0 0

For additions and alterations to the Small Pox and Vaccination Hospital, Upper Holloway. Messrs. Williams & Smith, architects. Quantities supplied by Mr. James Dudley:—  
Patman & Potheringham ..... 2,343 0 0  
Koyner ..... 3,079 0 0  
Turner & Sons ..... 3,430 0 0  
Ashby & Homer ..... 3,400 0 0  
Perry (accepted) ..... 3,358 0 0

For alterations and additions to St. Andrew's Schools, Lambeth:—  
Sawkins & Vokhis ..... 2,365 10 0  
Chatter ..... 103 0 0  
Jeffs, Brothers (accepted) ..... 183 0 0

For Congregational Chapel, Morcton-in-Marsh, Gloucestershire. Messrs. Poulton & Woodman, Reading, architects:—  
Wood & Son ..... 2,128 0 0  
Young & Co. ..... 1,050 0 0  
Turner ..... 930 5 11  
Sharpe ..... 590 0 0  
Gore (accepted) ..... 3,400 0 0

N.B. All the above tenders include, in addition, the old materials of the present chapel.

For building ten houses for Mr. Martlett, Carshalton, Surrey. Mr. E. C. Wade, architect:—  
Wilson ..... 2,246 0 0  
Downs ..... 2,120 0 0  
Fowler ..... 1,934 0 0  
Smith ..... 1,493 0 0

For fittings and finishings to 77, Aldgate-street, for the Worshipful Company of Tallowchandlers. Mr. William Snook, architect:—  
Rider ..... 2,494 0 0  
Piper ..... 453 0 0  
Mare ..... 387 0 0  
Collis ..... 475 0 0  
Ashby & Homer ..... 470 0 0  
Wells ..... 452 0 0  
Coleman ..... 419 0 0

For storage reservoir for the Torquay Water-works:—  
Wilecocks ..... 2,050 0 0  
Royds & Wittie ..... 3,490 15 0

Stepneyford Abbots Church.—We are asked to insert the following detailed and corrected list of Tenders:—

	For rebuilding the old complete.	For Hot Water Apparatus.	Reduction for repairing and putting in new fittings and materials.	Reduction for putting in new fittings and materials instead of Wain scot.
Brown & Robinson	2,390	148	139	200
Beever	2,490	199	229	274
Savill	2,471	143	217	74
Dove, Brothers	2,297	105	130	195
Spence	2,282	157	147	30
Hammond	2,275	148	237	60

For Shoreham and Mid-Sussex Line Stations. Mr. R. Jacob Hood, engineer. Quantities supplied by Messrs. Pearson & Doughtney, and Mr. William Trego:—  
Fabian ..... 21,640 0 0  
Hack & Son ..... 10,620 0 0  
Dowson ..... 16,544 0 0  
Longmire & Bruce ..... 10,341 0 0  
Busby ..... 10,183 0 0  
McLennan & Bird ..... 9,660 0 0  
Todd ..... 9,300 0 0  
Rudkin, junior ..... 9,002 0 0  
Reynolds ..... 8,853 0 0  
Barclay & Co. ..... 8,770 0 0  
Evans, Brothers ..... 8,743 0 0  
Dales (accepted) ..... 8,493 0 0

For house at Whitbourne, Herefordshire, for Mr. E. Bickerton Evans. Mr. E. W. Elmelic, architect. Quantities supplied by Messrs. Batstone & Hunt:—  
Mansfield & Sons ..... 25,745 0 0  
Gascoyne ..... 23,227 0 0  
Lucas, Brothers ..... 24,063 0 0  
Myers ..... 24,738 0 0  
McClain & Everal ..... 23,750 0 0  
Barclay & Co. ..... 23,480 0 0  
Wood & Son ..... 22,740 0 0  
Broadbent (accepted) ..... 21,500 0 0

For house at Wanstead, Essex, for Mr. L. Hart. G. R. Noble, architect:—  
Pritchard ..... 23,000 0 0  
Ferry ..... 2,995 0 0  
Dove, Brothers ..... 2,965 0 0  
Hill & Son ..... 2,947 10 0  
Hill, W. ..... 2,906 0 0  
Conder ..... 2,899 0 0  
Hedges ..... 2,880 0 0

For additions and alterations to a house near Chertsey. Mr. W. Walker, architect. Quantities by Messrs. Lausfloren, Bloomsbury:—  
Including Lodge.  
Onles ..... 28,680 0 0  
Hickey ..... 7,990 0 0  
Macey ..... 7,737 0 0  
Mansford ..... 7,778 0 0  
Wilson ..... 7,380 0 0  
Williams, Brothers ..... 7,880 0 0  
Nicholson ..... 7,438 0 0

For repairs and alterations to the Bedford Arms public-house, Commercial-road, for Mr. Masters:—  
Libbeter ..... 2,499 0 0  
Brake ..... 359 0 0  
Fox ..... 315 0 0  
Williams, Brothers ..... 305 0 0  
Hodges ..... 227 0 0

For new galleries, &c., to the Congregational Church, Kentish-town. Mr. E. M. Habershon, architect:—  
Batterbury ..... 2,813 0 0  
Patman & Potheringham ..... 720 0 0  
Williams, Brothers ..... 684 0 0  
Lambell ..... 665 0 0  
McLennan & Bird ..... 614 0 0  
Porter ..... 637 0 0  
Hull ..... 615 0 0

Trailing Church.—Sir: Observing in your last impression the list of Tenders for "Trailing Church Restoration" from a local paper, and finding them not exactly correct, we have to state there were only the following three Tenders given in, and not four, as represented:—  
Williams, Brothers, without hauling ..... 2,050 0 0  
Griffiths & Son ..... 2,180 0 0  
Williams & Son 450 0 0 ..... 400 0 0  
W. Williams (acc.) 402 14 6 ..... 322 14 6

We had in our estimate (as stated distinctly in writing) included the whole of the chancel and vestry roofs, of new framed oak. The other contractors did not, and this, of course, made a great difference in the estimates. Mr. William Williams (the accepted tender) subsequently was requested by the committee to furnish an estimate for the work above stated, and which said tender now amounts to 475*l.* without hauling, and being within 5*l.* of our original tender, which included the whole. Mr. Williams has just told us that the committee has also given him the hauling in addition to the above (last week), as at this time of the year it is very inconvenient for the farmers to spare their teams for that purpose.

GRIFFITHS & SON.

TO CORRESPONDENTS.

Portea Fountain.—Sir: As there are five or more "Mr. Hoole, London," will you oblige me by stating in your next that the drinking fountain, given by Mr. Faulkner, Portea, was erected by "William Hoole, Upper Thames-street, London."—W. H. M. (better entered by list to some person used to moulding. A genuine mould would, probably, be the best).—E. M. G.—H. W.—Another of the Transients (we know nothing of the decision by the Board of Oak Benefit Society. We have received several complimentary letters).—H. T. R. (we do not know. One architect of that name, Mr. John Blake, of Quareway, died, we regret to say, a few months ago).—M. B. R. A.—R. R. (no).—O. J. London (no; my thanks).—J. H. R.—A Competitor.—J. N. P.—W.—A Practical Man.—T. D.—F. W. H.—G. B. A.—J. S.—G. S. R. (Transactions of Yorkshire Agricultural Society).—K. P.—H. L.—F.—N.—E.—W. (it could not be legally removed).—J. N.—G.—S.—Poor Man (it depends on local circumstances. Inquire on the spot).—H. R.—J. R.—G.—Subscriber (we are unable to assist).

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

# The Builder.

VOL. XVIII.—No. 911.

The International Statistical Congress.



READERS of the *Builder* do not require to be informed how much they are concerned with the science of political arithmetic. The judicial, the sanitary, the industrial, and the commercial divisions of statistics are necessary to the attainment of the objects of our publication. It is obvious that not a step could be taken towards the structural formation and sanitary arrangement and regulation of towns,—towards the provision and planning of churches, schools, hospitals and asylums, workhouses, prisons, or public buildings of whatever other class, without *data*, such as it is the aim of the congress, now sitting at Somerset House and King's College, to devise improved means for elucidating and supplying. The longer our journal runs on, however, the more we are astonished at a necessity for showing what is the range and character of the architect's study and pursuit. In the present case, we are surprised that no intimation to us of the congress, should have been deemed necessary; and that needless trouble should have been given, even in our procuring the report of the proceedings which is supplied to the daily journals. It has happened occasionally that our profession has been accused by such as those who are the promoters of statistical congresses, of not co-operating sufficiently in one department of the objects above referred to. It is clear, however, that, considering the *Builder* has done as much as most journals to disseminate information in some of the branches of statistics, omission, or a neglect of duty, is not always on the professional side.

Our readers are more likely to be aware of the importance to them of statistics, than of the special objects and of the nature of proceedings of the congress now sitting. The object of the present congress, as that of the sessions at Brussels in 1853, Paris in 1855, and Vienna in 1857, is to secure, as nearly as possible, uniformity as well as completeness in the tabulation of facts, so that these may admit of comparison. The idea of a congress originated at the time of the Exhibition of 1851. The chief proceedings in this week, commenced with the excellent address of the Prince Consort, have been divided in six sections; besides which there have been general meetings to receive reports of delegates from the several countries, and from the sections; whilst the mode of conducting the Ordnance Survey of the United Kingdom has been explained by Colonel Sir Henry James, R.E., Director of the Survey. These arrangements were decided upon by an organization commission, at a meeting prior to the opening of the congress, when an elaborate report on the programme of this, the fourth, session was submitted by Dr. Farr.

The programme, of which copies are printed in French as well as English, comprises papers with forms, and heads of inquiry, in the several branches of the subject. The first section, presided over by Lord Brougham, attends to the department of Judicial Statistics. The programme for this section has been written by Professor Leone Levi and Mr. J. Hill Williams,—the former attending to civil and criminal statistics, and the

latter to that subject so nearly concerning all who are interested in building property and investment, statistics of the subdivisions, transfers, and burthens of real property or land.

At a preliminary meeting Mr. Williams read his note upon the second subject. He explained that at former meetings, the Congress had expressed itself strongly in favour of the registration of landed property and the systematic collection of facts connected with it, and regretted that, from the absence of a general national map and book of reference, England was not in a position to contribute the materials necessary for a general scheme of statistical inquiries applicable to this question, as specially recommended by the Vienna Congress. He stated the objects of registration to be to increase the security of titles and the value of real property by facilitating its transfer and encouraging its improvement, and proposed the following general propositions as worthy of support, viz.:

1. That the establishment of a general land register in every State is highly expedient.
2. That it should be based upon a general survey and map, accompanied by a book of reference, giving for each parcel or close of land the names of owner and occupier, the state of cultivation, and contents.
3. That the map and reference should be revised periodically, so as to represent, as nearly as possible, the actual state of the land itself.

These three propositions met with approval. Other propositions, recommending the registration of all transfers of land and mortgages, were postponed.

In the second section, Sanitary Statistics, of which Lord Shaftesbury is chairman, Dr. Farr has submitted an elaborate scheme for determining the sanitary condition as effected by circumstances of the population of different states: Dr. Sutherland similarly has put forth "Proposals for a Uniform Scheme of Sanitary Statistics," which we give in a note\*; and Miss Nightingale has treated the Statistics of Hospitals.

In the third section, Industrial Statistics, as those of Manufactures, Mining, and Agriculture, of which Lord Stanley was named as president, the programme includes papers by Dr. Farr on the general subject (manufactures having been dealt with at Vienna); on Agricultural Statistics, by Mr. James Caird and the Registrar-General of Ireland; and by Mr. Robert Hunt, on Statistics of Mineral Produce, and of Mining and Metallurgical Industry. The last-named paper contains suggested points for returns respecting stone and brick.

In the Fourth Section, Commercial Statistics, presided over by Mr. Nassau W. Senior, the

\* *Proposals for a Uniform Scheme of Sanitary Statistics.*

1. Statistics of mortality, and causes of mortality, arranged according to age, sex, and occupation. To include not only entire towns, but districts of towns, such as wards, arrondissement, and also *culs de sac*, courts, &c.
2. The same as regards local charitable institutions, hospitals, poorhouses, schools, &c.
3. The local climate to be tabulated.
4. The geological formation, soil, and facility or otherwise of drainage.
5. The area covered by the town.
6. The length of a line enclosing this area.
7. The amount of space occupied by buildings, and the vacant area, such as squares, streets, places, &c.
8. The length of streets:—  
(a.) Drained; (b.) undrained.  
(c.) Paved; (d.) unpaved.
9. The breadth of streets, with the height of the houses to the top of the front walls.
10. Number of houses.  
" of flats per house.  
" of rooms "  
" of families "  
" of windows "
11. Character of houses as to—  
(a.) Repair.  
(b.) Cleanliness.  
(c.) Ventilation and light.  
(d.) Healthiness.
12. Supply of water per head of the population; and its source from:—  
(a.) Rivers.  
(b.) Lake.  
(c.) Shallow wells.  
(d.) Springs.  
(e.) Waterworks.
13. Consumption of—  
(a.) Food.  
(b.) Drinks, with their kinds.
14. Classification of Trades:—  
" Manufactures.  
" Workshops.
15. Internments, their cost, and costs of sickness.

programme includes Statistics of Prices, and of Wages in the principal Trades, the heads of inquiry being set forth at considerable length, with suggested basis tables, by Mr. W. Newmarch; whilst Mr. J. Crawford shows what details will be necessary in the Statistics of Banks.

The fifth section, of which Lord Stanhope is president, includes two subdivisions,—“Census” and “Military and Naval Statistics.” These heads as stated, do not show the whole importance of the subjects comprised under the section. In the programme, Enumeration of Population, and Existing Methods in connection with the Recommendations of the Congress, are treated by Mr. Hammack, and “Occupations of the People,” by Dr. Farr. In the second subdivision of the programme, towards the subject of the general Statistics of the Army there is a paper by Mr. W. B. Hodge; and there are papers on the Vital Statistics of the Army, and Statistics relating to Horses, by Dr. Balfour. Let us take the last suggested head of inquiry in illustration of the importance of statistics to ourselves. Dr. Balfour remarks that a heavy item in military expenditure is that for keeping effective the horses of the cavalry and artillery. He finds the mortality, and horses “cast,” making a loss in one case, in the English army, of 11.2 per cent. of the annual strength, and in the French army of 14.7 per cent. He therefore asks for a series of returns of the causes of mortality and “casting,” and the ages at which these have occurred, analogous to the returns now in use for the *personnel* of the British army. The points to be comprised would be the number and ages of the horses borne on the establishment, numbers dying and “cast” in each year, and at each age; the diseases; the relative mortality of horses, geldings, and mares; the amount of sickness, with the diseases; and the annual cost. He says,—“The results would probably give rise to modifications in the stable arrangements and general management of the horses, by which these diseases might be considerably diminished in amount.” Were this the place to discuss the particular subject, we could show we have some grounds for believing from observation of places in which horses of the cavalry are kept, that the modifications, as they are mildly called, are required; and that some recent questions in Parliament were not asked without reason. To continue; in the Sanitary Statistics of the Army, there is a paper by Dr. Sutherland, embodying the procedure and forms recently introduced into the British army medical department, but suggesting the tabulation of all the essential conditions to which each man is exposed during the period of his service,—as regarding the country served in, its climate, its diseases, and the habits of its inhabitants; the soldier's duty, diet, and clothing; his barrack, its position and neighbourhood; the harrack-room, the superficial area and cubic space for each soldier; the window-space and means of ventilation and warming. Dr. Sutherland proceeds:—

“We must take account of the water supply, its quantity and quality; the cleansing, drainage, and paving; the latrines, urinals, and means of ablution and bathing; the means of cooking; the expenditure of fuel; the amusements and occupations provided for the soldier, such as libraries, reading-rooms, schools, soldiers' clubs, gymnastics, work-shops, &c. We must follow the soldier into his guard-room, and examine its cubic contents, ventilation, and warming. We must go to the canteen, where he spends his spare time, and to the cell where he has to undergo confinement. We must also know the man's habits when left to himself, and his general character.

But further, the sanitary state of the hospital which the soldier enters during illness has a most important bearing on his health, and on the results of sickness. It must be submitted to an examination similar to his barrack. Its position, neighbourhood, construction, and dimensions must be examined; the dimensions of its wards, the superficial area and cubic contents for each bed, must be carefully noted; the extent of window space and its position, the means of ventilating and warming in use; the hospital appliances, water-closets, baths, ablution-rooms, kitchen, must be noted; the water supply, drainage, paving, cleansing, must all be examined, as well as any

special peculiarities, changes, or additions which disease is apt to undergo in different hospitals; the nature and causes of hospital diseases, such as pyæmia, gangrene, fevers, &c.

These subjects of inquiry, so far as their results admit of the application of statistical methods, show the extent of the question of sanitary statistics as regards armies, and the importance of the results which may be expected to follow from carefully investigating them.

A separate division of the inquiry would refer to the occurrences of active field service, in which corresponding data would have to be examined.

The whole would be incomplete without taking account of the circumstances under which troops and sick are moved from place to place, marches, and their results to health, including distances and times of march. Troop transports and hospital ships, with their arrangements as to cubic space, ventilation, &c., would pass under review in this inquiry. But at this point the inquiry would merge into another most important branch, namely, Naval Sanitary Statistics.

The division of the programme, just mentioned, "Statistics of the Navy," is treated by Sir R. M. Froomley.

It is one object of statistics to collect facts and figures, after devising the means conducive to accuracy; but they would often be of comparatively little use, unless presented to the eye as by picture. Hence the value of all such aids as statistical maps. The sixth section, presided over by M. Quételet, takes cognizance of this branch of the subject, or "Statistical Methods." The importance of notation in a science, as observed by Dr. Farr, may be understood from the obvious results of the introduction of the Arabic numerals into arithmetic, and of the use of signs and letters in algebra and chemistry. Dr. Guy has contributed a paper on Statistical Methods and Signs, in the course of which, following upon the indicated "tabula invenendi" of Lord Bacon, and the method in the Book of Analysis of Dr. T. J. Todd, he endeavours to show how such tables, recording, displaying, and analysing all the constituents of the compound fact, may be made the instruments of discovery. Dr. Guy, to whom many of the best arrangements for the congress are owing, also has arranged in the meeting-room of the sixth section, a considerable number of illustrations of methods of representing statistical facts. Tables in ordinary use are divided by Dr. Guy into—1. Tables of Record and Reference. 2. Tables of Illustration and Exposition; and 3. Tables of Analysis and Discovery. Dr. Guy further proposes to call certain forms "Tables of Elimination," "Tables of Identification," "Tentative Tables," and "Tables of Coincidence." The exhibition includes a number of ruled forms for the delineation of statistical facts through the medium of lines, curves, columns, squares, and other mathematical figures, or circles with radii, as well as maps. Thus there are diagrams representing the density and the proximity of the population of England and Wales in the years 1570, 1700, 1801, and 1851, by means of hexagonal divisions for the amount of ground to each person. By the addition of points in the centres of the hexagons, and lines connecting, we are able at a glance to see facts of density and proximity of houses and persons at contrasted dates. In the use of circles and radii, the latter may mark months, the circles as distant from the centre, numbers of deaths, and colours the class of diseases. Amongst the maps, the Austrian ethnographical maps; and a Swedish map, showing, besides rail-road statistics, the produce of corn, whether above the necessary want, or equal to it, or below it; the wood equal to consumption; the iron ore extracted, and the works; and density of the population, are the most conspicuous. But the application of the method of representation is seen in maps (several of them English), showing the statistics of idleness and lunacy, population, cholera, traffic along roads, and distribution of occupations in the several parts of Great Britain.

The metrical system of weights and measures is explained by a sheet of diagrams published in France, and by specimens of weights and measures themselves; and the decimal system of coinage is illustrated by specimens of the currency of certain states. There is also a

large collection of publications on statistics. It is to be regretted there is no catalogue of these, and of the other portions of the exhibition.

In the programme of this sixth section, Mr. Valpy writes a paper of suggestions for an "Abstract of Principal Statistical Results for one year, to be prepared in each country, as a basis for comparative statistics;" Mr. S. Brown, one on "Units of Money, Weights and Measures;" and Mr. J. Winter Jones, one on "Statistics of Literature." In an appendix, Admiral Fitzroy gives "Suggestions intended to promote Correspondence between Meteorological Observers."

It is difficult to give by heads of subjects (which are only a selection of those which have occupied the attention of the Congresses), or by quotation from any of the papers, an idea of the course of investigation upon which every state of the civilized world will be, it is to be hoped, now actively engaged for the advancement of its people, and of other nations. The object of statistics, it is well said by Dr. Farr, is "by investigating the things of the greatest interest to nations, to promote their prosperity, and to benefit mankind. It is the study of enlightened princes, ministers, legislators, and political students; but its principles are the appanage of the people of every rank who exercise any influence in the conduct of public affairs. They should all be, in Milton's words,—

\* \* \* \* \*  
"And lovers of their country;"

We could have desired to ask one or two questions respecting the compilation, in the programme of the fifth section, of the list of corresponding terms for occupations, in three languages. May we say that "éditeur" is not French for "editor, writer," &c.; that "architecte" cannot represent "builder," since it is given for "architect" in another place; and that if "maçon" be the word for "bricklayer," "paveur" fails to identify "mason, pavior," as intended, or to be distinguished from the other trade? Good nomenclature will be found essential, even should it involve some correction of terms in use.

#### THOUGHTS IN THE STREETS.

##### PATER-NOSTER-ROW.

EVERY one takes his own particular view of the metropolis. The antiquary, besides stately Westminster Abbey, the massive tower, and other old buildings, notes in nooks and corners things of great value which many would overlook. The man of commerce lingers amongst the vessels in the river—a fleet,—the warehouses to which the products of the world, of costly kind, have been brought, and takes an interest in buildings which may possess no great external attractions, but where operations are carried forward which have influence in shaking or establishing thrones and kingdoms. The military man, comparatively heedless of other matters, wanders to the neighbouring arsenals, inspecting the vast stores of arms, the preparation of the munitions of war, and the making of those "arms of precision" which will pave the way, although by present deadly effects, to a more intelligent manner of contest between nations. The medical professor, the lawyer, and the man of letters, have each their peculiar views. The mechanist finds pleasure and instruction in spots which others would pass over without note. The artist has his views. He sees the phases of this great life-mass according to the guidance of his fancy; and the tasteful architect, in his way, looks with feelings of mingled satisfaction and regret at the marvellous extent of the work of human hands which covers so many miles of space. Fewer look at it as a whole—as the home of nearly 3,000,000 of inhabitants, and as the great centre of the world's civilization.

Viewed from the highest point of sight, from Highgate or Hampstead, the Monument, or the upper gallery of St. Paul's Cathedral, even when the atmosphere is clear, the extent of London is such that great districts teeming with life vanish into a hazy distance, which prevents any complete picture. Seen from over the dome of St. Paul's the appearance is singular. The men and women, the horses and carriages, appear like mere specks. The houses and buildings are dwarfed to the size of children's toys. That moving figure which looks like a pigmy in contrast with the great

statues on Wren's church, may be a lord mayor of London, a capitalist whose means are boundless, a chief minister of State, or one of those lions of literature who have a world-wide fame. How small is the figure in comparison with the extent and movement around! How great is the praise due to those who, amongst such a multitude, rise to distinction! Many thoughts are caused by the sights presented from this spot, and the mind forms pictures of times gone by, running over 2,000 years, during which the capital has been growing to its present size.

There are some sights in London which are familiar to most visitors. The venerable Abbey, the palace of the Parliament, the galleries of pictures, sculptures and antiquities, the parks, St. Paul's, Gog and Magog, the Thames Tunnel, Greenwich Hospital, and the public offices, are looked at by most strangers, be they hurried as they may, and who generally leave in a bewildered state in consequence. Nor is this surprising when those who have made the various parts of the metropolis a study for a life, each day wonder afresh at its marvels. By constantly looking at it, the huge whole seems to expand, and important interests, powerful operations, which were at first invisible, become evident.

Like the ebb and flow of the tide, streams of men and women, of various grades, move in all directions at all hours of the day (unhappy is the wanderer in this flood of human life who has no object in view), and this to our fancy is one of the most remarkable sights of London. What variety of condition, how strange the difference amongst so many countenances. Here the prosperous gentleman or gentlewoman elbows the struggling and needy passenger, doubtfully endeavouring to obtain the commonest necessities of life. Isolated as each seems, many are more dependent on, and connected with, the other than may be thought. Most have their cares, and there are few even amongst the most humble but have a circle of greater or less size and influence, to whom even in the hustle of business, the thoughts revert, and to whom they look for sympathy and pleasure.

The great thoroughfares are crowded: statisticians would be puzzled to estimate the value of what is borne along in the roadways. A single van may contain from 10,000l. to 15,000l. worth of silk, or other costly wares; and that meek-looking, ill-clad individual, whom you jostled just now on the pavement, may be revolving an idea which, when it becomes a fact, may give employment and bread to thousands, and advance the interests of the whole human family. There is raw material yet in London for a great poet to work into a great poem, developing the lights and shades of this mighty metropolis.

While sitting out of the stream, accident has led us into Paternoster-row. World-wide as is the fame of this locality in connection with the publishing trade, it has not long been such an important mart as it now is for the sale of literary productions. Stow says that in 1549, when the chapel had been pulled down which had been built on the site of the old charnel house, several dwelling-houses and warehouses were built in its stead, and sheds before them for stationers. On this occasion Wolfe paid for removing 1,000 loads of bones to Finsbury-field. But few names of publishers are met with as carrying on business in Paternoster-row before the fire of 1666: one of these is "R. Harford, in Queen's-head-alley, Paternoster-row, 1642," and another, "Christopher Meredith, Crane-alley, Paternoster-row." Ivy-lane, Cheap-side, Ave Maria-lane, were much occupied by booksellers and printers. Caxton (citizen and mercer) had a shop for the sale of books, &c., in Fleet-street. He was succeeded by Wynkin de Worde, who, in his last will, 1545, calls himself "citizen and stationer." The following were also contemporary printers in Fleet-street, viz., Robert Copland, stationer, printer, bookseller, author, and translator; his sign in 1515 was the rose garland; he died about 1547. John Butler lived at the sign of St. John the Evangelist, in Fleet-street, in 1529: Thomas Bertholt, king's printer, dwelt at the Lucretia Romana, in Fleet-street; he retired from business about 1541. John Bedel, stationer and printer, lived in 1531 at the sign of Our Lady of Pity, in Fleet-street; John Wayland, citizen and stationer, lived at the Blue Garland, in Fleet-street, 1541: Lawrence Andrew, a native of Calais, was a printer at the Golden Press, by Fleet-bridge.

From Fleet-street several of the succeeding printers removed to St. Paul's-churchyard, and some were settled there at an almost equally early date. Julien Notary, in 1512, lived in St. Paul's-churchyard, near the west door, by my lord of London's palace, at the sign of the Three Kings.

Books printed by him occur from the year 1527 to 1544. Robert Foy lived at the Bell, in St. Paul's-churchyard, he died in 1566. Thomas Petit lived at the sign of the Madman's Head, in St. Paul's-churchyard, about 1538; Thomas Ragland lived in St. Andrew's, in the Wardrobe, and kept a shop in St. Paul's-churchyard from 1544 to 1548. Reginald Wolfe, a native of Switzerland, was a man of learning, and brought up to the profession of a printer. This was the printer who removed the bones alluded to; he was Archbishop Cramer's publisher, and publisher of other books appointed for the use of the Church; he was also a great collector of English history, which was afterwards digested and printed by Hollingshed. Most of the printers who published theological books had religious signs. Henry Petwell's sign was the Trinity, in St. Paul's-churchyard; he was buried in St. Faith's Church, under St. Paul's. John Juy had the sign of St. Nicholas, in St. Paul's-churchyard; and John Caward, who published some of Bishop Bonner's works, had the sign of the Holy Ghost, in St. Paul's-churchyard. Rivington's house, which ever since the Fire of London has been noticed for the publication of works on divinity, still retains the sign of the Bible and Crown.

Thomas Godfrey, the printer of Chancer's works, lived near the Temple-bar; and Robert Wyer, an early printer, lived at the sign of St. John the Evangelist, in the Bishop of Norwich's rents, beside Charing-cross.

THE WANTS OF THE ARTISAN IN LONDON.

THE circumstance, that in this huge population of London, education, both artistic and otherwise, is not sufficient for the need, must be evident to all who have carefully considered this most important subject.

In a former article in the *Builder* we have shown how an immense number of the youth of modern London are springing up to a certain extent a deteriorated class, and we wish most earnestly now to hint how matters may be improved.

Let us once more mention that the present population of London is about *two millions and a half*, and that if the same increase of population go on, in A.D. 1900 we shall have five millions of people in this metropolis; and the question is, whether a large portion of this multitude shall grow up as little profitable as the weeds of the fields, or be manufactured into a useful and profitable material.

No words that we can use can sufficiently express our appreciation of the value of that education which is gathered after leaving the ordinary schools, and yet how few have been the efforts made to form institutions in this great place to meet the urgent demand.

We hear constantly in the provinces (in small towns even) of buildings called *Lycæums*, and what not, having sprung up for the avowed purpose of providing the industrious classes with the means of intellectual improvement; and yet, notwithstanding this example, and the evident good which has resulted from such steps, little of the same kind is done in London.

In the days of Queen Elizabeth, when this country took a step onward, many schools were established which, according to the population at that time, were sufficient for the purpose of supplying useful knowledge to those who required help. Some of those schools then endowed have now risen to such prosperity that they are no longer available to the poorer part of the population.

In Elizabeth's reign, London grew so much that the greatest alarm was felt in consequence, and vigorous means were adopted to improve the knowledge of the citizens. Since that time never has the necessity for the most strenuous exertions been so apparent as at the present day.

In Islington, Somers-town, Camden-town, and other districts, there are no institutions which are available to the humbler classes, and the consequence is, that many a promising youth is lost for the want of opportunities. The only way to tackle with this evil is to take London into pieces, and look upon each portion as a distinct town or city which needs its Athenæum, Lycæum, or Mechanics' Institute, where young men may obtain useful books, and at the same time have an opportunity of joining classes composed of men of similar taste and pursuits, and in some cases obtaining the encouragement which is derived from the praise he would have from his fellows.

At the present time in London, throughout miles of streets, there are no places in which the

young workmen can, at a moderate cost, obtain the culture which would be valuable to him in life. Lord Stanley some time ago, at the opening of the new Institution at Oldham, remarked, with great truth, "that the establishment of an Athenæum, an Institute, a Lycæum, in every large town in England, call it what you will, is no longer a mere luxury which may be enjoyed or dispensed with at pleasure, but has become an essential part of our social organization." He also said, "that a man may leave either of the great Universities, after a school and college, which together have extended over ten years, an accomplished classic, an able mathematician, yet be wholly unacquainted with external nature, ignorant of the principle on which a common steam-engine is constructed, ignorant even of the mechanism which he carries with him in his own body, and utterly unversed in that law of the land under which he lives."

This acknowledgment that after a course of our highest system of education, it is necessary to go to school again, and learn the useful knowledge of every-day life, shows the need which must exist for the improvement of a large number of our artisans, who have had only the most imperfect training.

PROPOSED MEMORIAL OF THE LATE SIR CHARLES BARRY.

WE are glad to find that our views on this subject are likely to be carried out. A deputation from a committee of the Institute of Architects had an interview a few days ago with Lord Palmerston, to urge the propriety of erecting a statue of the late Sir Charles Barry in some convenient part of his great work at Westminster. The premier, we understand, acquiesced fully, and, moreover, when it was suggested that the Government should undertake the duty, expressed his personal willingness that it should be so. The site spoken of is the top of the flight of steps at the end of Westminster Hall, under the large window put in by Barry, and where, indeed, his work, it may be said, commences.

The Art Union of London, being about to commission the execution of a medal commemorative of an architect for their medallie series, have determined on appropriating it to Sir Charles Barry, who was for many years one of the council of the society.

PROPOSED MEMORIAL OF THE LATE A. W. PUGIN.

WE mentioned last month that a committee had been formed to raise a travelling fund as a memorial of the late Mr. A. W. Pugin. It has since appeared that some of his friends were contemplating a more personal memorial. On the 14th inst., in consequence, a conference was held for the purpose of receiving mutual explanations, when the following resolution was agreed upon:—

"That as the utmost unanimity is essential to ensure the successful carrying out of the above object, on which two bodies of gentlemen are from accidental circumstances engaged, it is expedient that immediate measures be taken to promote the amalgamation of the two, any decision as to the appropriation of the funds to be raised being left to the united body, or to a committee to be appointed by them."

On Thursday last a meeting was held in the rooms of the Royal Institute of Architects, to take the matter into consideration.

INLAID SLAB-TOMBS.

THE brief mention in our last of the incised tablet erected under the direction of Mr. James M. Lockyer, in the church at Moulsham, does not give a correct idea of it. The slab is of Sicilian marble, 7 feet 6 inches by 4 feet 4 inches, incised to an average depth of one-sixteenth of an inch, deeper in the large surfaces, less in the fine lines, and slightly undercut, to afford a better hold for the inlay, which is a fine scagliola. It was found necessary to polish the marble before the scagliola was introduced. The former being so much harder, required an amount of friction and force in the polishing which would have destroyed and hollowed out the softer surface of the inlay. Two shafts of columns (which support a foliated arch), the narrow hands round the border, the fields of the quatrefoils (in the spandrels), and the cross, are inlaid with a green serpentine, the remainder with a black, and the whole, being highly polished, presents exactly the appearance of being entirely of marble.

The perspective effect given to the border at the bottom should have been continued round, if introduced at all. It is, nevertheless, a very in-

teresting work. The architect says on the subject:—"Slab-tombs and pavements inlaid in this manner are of common occurrence in Italy and France; but generally, if not invariably, in the latter country, are of a dull, unpolished stone and cement. In Italy, I have, however, found examples in marble, the whole polished, and have no doubt that the material used was a scagliola, and not a mastic, as Viollet le Duc supposes. Some of the slab tombs in Florence are very elegant, and as most of these works date from not later than the fifteenth century, it is evident that the inlay (which in many places is exposed to the action of the atmosphere, and in others to the wear of foot passengers) is sufficiently indestructible and imperishable to entitle it to more frequent use; nor is it so expensive as one would imagine; the total cost of this slab, including the cost of carriage thirty miles from London, and fixing, being only 587."

THE ARRANGEMENT OF MODEL WAREHOUSES.

I REMEMBER once hearing an eminent divine\* express himself as follows:—"When I hear any one allege that he has discovered in the Scriptures a new article of faith, I set him down for a fool, because the field of doctrines has long since been thoroughly explored and exhausted; but did he profess to have discovered some new application of Christianity to the improvement of society, I would listen; for the time will never arrive when the Christian religion, in reference to what it suggests and inculcates for the social happiness of man, is not in advance of every specimen of human society found in the world."

It is some such feeling as is here expressed that leads me to give an account of what I call 'A Model Warehouse,' that is, a warehouse the management of which has been devised and is carried on in a spirit of benevolence; and yet the description I shall give will, I doubt not, be only a remote approximation to the standard that may in time be attained.

Happening to be in Nottingham last summer, I paid a visit to the new lace warehouse, Stoney-street, occupied by Messrs. Thos. Adams and Co. Here may be seen at work some hundreds of women; and I could not help being struck with many things in this establishment as presenting a very favourable contrast to what I had heard of women's work-rooms in London and elsewhere. The building faces the east, presents a handsome façade about 120 feet in length, consists of cellar and five stories, including the attic, and has, projecting from the centre behind, a narrow wing of the same number of stories. A visitor, on entering from the street, finds himself in a well-lighted, spacious room, whose area is 10,200 feet, and the cubic air space 132,500 feet; the area of the next story is 9,100 feet, the cubic air space 117,155 feet.

The windows are numerous, and face each other in the opposed (external walls); the frames are of iron, and reach in height to within a few inches of the ceiling, and a portion of the upper part in each window being hung upon hinges, it is readily pushed out at the bottom, by which arrangement the casement, when thought proper, can remain open in rainy weather as well as fine.

The building, in winter, is warmed by a system of vertical flues in the outer walls, through which a continuous current of air, heated by contact with water-pipes underneath the ground story, is discharged.

There is gas in all the rooms, and when it is lighted, ventilation, in addition to what the windows afford, is sought by openings near the ceiling leading into flues in the walls. In the top rooms the ceiling is perforated by large zinc pipes, which run out some feet above the roof, and are found to improve the ventilation. When I again refer to gas-lighting, I shall have occasion to point out the insufficiency of these and all other modes hitherto adopted for carrying off the polluted atmosphere generated in the combustion of gas in offices and warehouses.

In addition to three stone staircases, each running the whole height of the building, the several stories are communicated with by a powerful hydraulic hoist, by which the heavy goods, and occasionally the workpeople, are carried up and down.

The *Lathings* are well placed. In a small room entered from each landing of the outside stair, marked A, are a closet, urinal, and lavatory; and behind the same staircase, I may just observe

\* The late Dr. McCall.  
+ Illustrations of this warehouse, Mr. Hine, architect, will be found in a previous volume of the *Builder*.

(though not marked in the plan), there are various rooms used as library, class-room, &c.

The women occupy portions of every flat, excepting that on which is the sale-room. The room which, in proportion to its area, contains the greatest number, is 69 feet long, 31 wide, and 12 high. Here forty-four girls work; yet in this, the most crowded apartment in the warehouse, the cubic air space for each girl is 581 feet, an allowance, though not more than sufficient for health, vastly greater, we shall find, than exists in most of our warehouse work-rooms. The happy, comfortable look of the women impressed me much. The weather at my visit was warm, but the rooms were all well ventilated by open windows. I remember remarking to an attendant, after walking amongst the girls from room to room,—“Why these women look almost as fresh and healthy as if they were hay-making!”

When I had completed my survey, Mr. Adams said to me that perhaps I would like to meet the hands at prayer next morning. To this I assented, and accordingly was with them at the door of the little chapel, which is behind the warehouse, as the clock struck eight. On entering, I walked to the further extremity, and sat down near the chaplain's desk. In about a minute the master, Mr. Adams, entered and took his seat, which is by the door, and a multitude of the people, the majority females, locked in. A hymn commenced, accompanied by the sound of a neat organ, purchased for the chapel by the contributions of the hands; and at five minutes past eight the door was shut, so that none after that came in. The service consists of a portion of Scripture, the reading and exposition of a portion of Scripture, the time occupied altogether being limited to twenty minutes, a portion of the day not deducted from the time of the hands, but given them by their employer. The scene was very impressive, and the service so wisely conducted as to be without weariness even to the youngest present; and when I saw Mr. Adams seat himself with a look of paternal benignity, and unite with his workpeople in seeking a blessing ere commencing the labours of the day, I felt that here was the recognition of a bond of brotherhood which as yet is too little regarded in the world.

By the kindness of the Rev. Edward Davies, chaplain to the warehouse, I was furnished last December with information in answer to queries respecting a number of points, and this I give chiefly in his own words. It will show how valuable are the services of this devoted gentleman, who, in the best sense of the word, may be pronounced the workpeople's FRIEND.

“1. The number of hands in the warehouse is about 410; of these about 330 are females, sixty of whom are under the age of fifteen. We have no definite age at which young persons are admitted. We should not scruple to receive them at any age, provided they were able to do the work, which is always light, and not infrequently pleasing to a child. Our reason for this is, that we do not take them, they are thrust into ‘dame houses,’ that is, into the little and not unusually dirty houses of the ‘middle’ women, who do lace-work in their homes, where they are at times exposed to harsh treatment, and are commonly kept at work at unreasonable hours. I have seen little ones at work in these places when not more than eight years old. They cannot do our work until they are about eleven, so that it is a rare thing to see one among us younger; and then all our children under fifteen years are required to attend the night-school, where they are taught to read and write. Out of the sixty young ones there is not one who does not attend a Sunday School, and that without any direct pressure on my part. They are most of them under the influence of kind, motherly overlookers, which is a matter of great importance.

2. Our daily service in the chapel lasts twenty minutes, and the average attendance is 365. In the winter time we commence half an hour later than in summer, so that the people in the former season get to work by about five minutes to nine.

3. The hands go to dinner at one o'clock, and return at two. Seven o'clock is the common hour for leaving. In busy times they work until eight, when the warehouse is closed. We are gradually shortening the hours of labour. I speak of the females now, for all the males, with very few exceptions, leave at six o'clock every evening.

4. There is a tea-room, but for the males only. Tea is provided for them at the expense of the firm,—the hour five o'clock,—and twenty minutes is the time usually taken. We have not, at present, a ‘girls’ tea-room, but hope to have in a little time. They take tea in their own work-rooms,—the hour, five to half-past.

5. There is ready access to pure drinking-water in every story. Two years ago the public company's water was used; but not liking it, we sank a shaft within our yard, and obtain excellent drinking water, which is constantly distributed over the warehouse by means of the engine.

6. The school-room is open every evening in the week. On Monday is the meeting of the ‘Mutual Improvement Society,’ attended by the youths, nineteen members, who read papers of their own preparing, chiefly on moral or religious subjects. On Tuesday evening we have a reading and writing class for grown females, numbering about fifty. On Wednesday and Friday are reading and writing classes for children, all females; we have no young boys in the warehouse. Thursday we have a meeting of the Choral Union: this is a most promising society, composed entirely of our own people. On Saturday the warehouse closes at five, and on that evening I have a Bible class for the youths at my house, attended by about ten of them. We receive the girls into the children's school until they are about fifteen, after which they have the privilege of attending the young women's class.

7. The sick are always visited by me at their homes, whether male or female. Last week I had four on my list, one of whom, a female, died. My visits are gratefully received. The girls of the room to which the sick person belongs show the most tender feeling: the woman who died on Saturday last was supported by two of her fellow-workers when she expired.

8. Our Savings Bank is not just now in a flourishing state, which, I must confess, is not the fault of the people, but of the Chaplain. It occupies so much of my time that I find it difficult to attend to it. I am, however, to have a helper, and hope to begin again in good earnest next year. I may mention that at the time of the panic, when trade received such a serious check, there were females among us, some of whom had not a creature they could look to for help, who had sufficient money in the bank to carry them right through the winter. I see, from the book of the woman who died on Saturday last, that she has 9*l.* 5*s.* 8*d.* saved. She has no friends excepting a kind, noble-hearted widow, with whom she lived: the money is to be given to her.\* In a subsequent communication the Chaplain says:—“We are just about to start, under improved regulations, our bank, which we intend to call a *Penny Bank*. It will be for the use of our own people only, and they will be allowed to deposit as little as a penny and as much as a pound. Two persons—probably myself and an overlooker—will go over the warehouse shortly after the workpeople shall have been paid, to receive their deposits or to make payments.”

9. We have a sick club that has been in operation about a year, and there are at present on the books 204 members. This is the only one of our schemes which is not self-supporting. Indeed, this society might have been so, but that Mr. Adams does not like the common club system, where the medical attendant is paid a fixed amount yearly, and that frequently a very small one. He resolved, therefore, that the people should pay a penny a week,—I mean those who might wish to do so,—and that the medical gentleman should keep a separate account for each patient, and send in his bill for attendance and medicine to the counting-house as soon as the case was done with. During the first ten months of the society's existence the sum received from the hands was 37*l.* 4*s.* 11*d.*, whilst the amount paid for medical attendance by the firm was 63*l.* 3*s.* 6*d.*

10. As we all enjoy many privileges owing to our connection with the warehouse, we think it only right that we should try and do a little good to others; accordingly we have, for the last two years or more, been supporting a missionary school on the Red River. This money comes chiefly from the working males and females. But it may be asked—Is there no undue influence exerted to get this money from the people? None whatever. To prevent this, the people collect it among themselves, and a person is deputed to hand over their little sums every fortnight. It is not known to me who give and who do not. They take great interest in this little matter. In the past year the

aggregate sum handed to me for the above object was 25*l.* 3*s.* 5*d.*

11. We circulate periodicals among those who like to have them. Last year we received 18*l.* in payments for these. The works are—Leisure Hour, ‘The Sunday at Home,’ ‘British Workman,’ ‘Teacher's Friend,’ ‘Family Economist,’ &c. The people also purchase Bibles and other books from me, paying for them by instalments.\* On Wednesday evening I am at my own home after warehouse hours, and the people know I am to be found there if wanted, and they come to see me, perhaps to ask for religious counsel, or for advice on domestic subjects. On Wednesday night last I had a larger number than usual—eleven came.

My time is occupied in a variety of other ways than those I have named; but these are the chief matters which take up my attention from week to week. Since I last wrote you, Mr. Adams has engaged the services of a person to act in the capacity of a general superintendent of the warehouse. He is a man of good education and gentlemanly mien, and will not fail, I think, to secure the respect of the people. His duties will be to traverse the warehouse from top to bottom, and be as nearly ubiquitous as possible,—to see that every one employed is in his or her right place,—to correct irregularities if only trivial, and to report them if serious. I cannot but think that this arrangement will be attended with very happy results.

You are of course aware that, where large numbers of young people of both sexes are brought into daily contact, there must be at least a great deal to excite one's fears. Wherever such arrangements prevail there is immorality, and our warehouse is no exception to the rule; but there certainly is far less among us than there used to be. The daily service has been very beneficial in this respect,—it has been the means of many of our young people becoming entirely changed characters, and I do trust that there will yet be many more.†

#### THE GENIUS OF VANBRUGH: BLENNIEM.‡

THE grand master-fault of Vanbrugh, according to his detractors (who, be it remembered, are all of one school,—scholars of one belief, and men of corresponding train of thought), is the neglect of rule which characterises so strikingly his productions; the very slight and partial reverence which, seemingly, he paid to modes of composition taught and practised by his predecessors; and that strong self-assurance and independent feeling which led him to place such confidence in himself and in his own genius.

His detractors are the *ultra* advocates of adherence to precedent,—men who denounce departure therefrom as the greatest error, and any originality of invention in architectural composition with feelings somewhat analogous to those of the theologian who sees the feeble thoughts of the human mind attached to the sacred Scriptures as improvements. The one, in their notion, is as great a heretic in architectural composition as the other is in religious belief; and, as a consequence, in the opinion of these men, our architect's views were more heterodox, and his conduct more lame-worship and injurious to the profession than that of almost any man who has practised considerably as a member of its ranks.

Surely it must be acknowledged that the slavish trusting to precedent is most unhealthy in its nature, and must be very injurious in its consequences, if it attain an *ascendant* authority over the minds of architectural students. I know of no influence more powerful to turn the mind in favour of Vanbrugh, and to induce the student to seek a more reasonable and just standard to apply his works to, than such an indiscriminate censure as Vanbrugh has suffered from the hands of these men; because his works were not able to stand the comparison with precedent. Allan Cunningham says, most justly,—“Vanbrugh was an inventor: he has been criticised by a race of classic copyists who think it a merit of the highest kind to build according to the expressed dimensions and form of some famous temple of old. They cannot perceive that he has dealt in

\* We can hardly overrate the importance of encouraging the labouring classes to lay up against the evil day, especially when we consider how great is the number of destitute widows and orphans. From the last report of the Poor-law Board we learn that the number of widows, July 1st, 1858, in receipt of out-door relief, in 679 Unions in England, amounts to 59,468; yet these figures do not reveal the number of orphan children belonging to the widows, no more than they do the number of widows and orphans who are all but on the Union, and the number of widows struggling in poverty whose husbands are disabled through infirmity or long sickness.

† Last year I sold of Otter's beautiful edition of the ‘Pilgrim's Progress’ sixty-eight copies at 2*s.* 6*d.* each. I also sold 152 copies of Miss Marsh's ‘Light for the Lion’ at 6*d.* each, and eighteen Bibles, chiefly family Bibles, quarto.

‡ This paper, by Mr. John Robertson, was read before the Manchester Statistical Society. To be continued.

§ The following observations form part of ‘A Critical Essay on the Architectural Genius of Sir John Vanbrugh,’ signed *Hope*, and submitted to the Royal Institute of Architects, last session in competition for their medal.

the original elements of art; and, disdaining to copy where he could invent, has created an original style" (or, rather, originality of treatment) "of his own." "The scholars of his day were against him, but he obtained the wider applause of those who were not learned enough to try merit by other standards than their own feelings."

Without yet offering one opinion of the train of thought from which Vanbrugh's works sprang as the fruit from the tree, I think that this authority and absoluteness of styles should be combated by arguments which have occurred to my mind, and, in spite of efforts to shake them off, demand to be heard.

These men advocate the absoluteness of style, and the authority of precedent; by which they mean, that since Gothic architecture is chiefly associated in our minds with the Christian Church, and since its most successful and beautiful examples are ecclesiastical edifices, therefore Gothic architecture furnishes to us unquestioned precedents for all future edifices of that class. Upon its beauties we may be allowed to improve, if we can, but from its distinct and settled characteristic principles and features no man must depart.

Some even say that not only all other styles of architecture which have had their birth and development are to be ignored as styles; but even any of their features or elements, however beautiful, are not to be valued and esteemed by us, because they may not harmoniously blend with their favourite style, which is to displace every other style, at all times, and for whatever purpose the structure may be intended, to which they apply it.

There are other men who have broader views, who see beauties in more styles than one, and who are ever willing that these styles may be severally adopted by our architects, and, in their fuller development, made increasingly beautiful; but, whilst agreeing with the other class that Gothic is the style *par excellence* for ecclesiastical edifices, since the Christian Church conceived it, and developed it as its own—they deny its applicability, or even the appropriateness of its architectural expression, for other and secular purposes. Their theory is, that municipal and secular public buildings should be faithful and scrupulously correct imitations of some classic (Grecian or Roman) edifice, with such deviation from precedent as the peculiarities of modern wants absolutely necessitate; whilst the requirements of a palace, a villa, and all domestic structures, call for as faithful an adoption of the Italian style, preserving as closely as circumstances will permit the characteristics which belonged to it as a style in its palmy days, and in its early freshness and vigour.

Yet, it must be acknowledged that precedent alone is a most inadequate and unsatisfactory authority for our present architectural practice. The fact that most artistic and exquisitely beautiful and harmonious creations were conceived and produced by the Middle Age architects—edifices which were not only in harmony with the ritual ceremonies and the religious feelings of the age, but which were actually the architectural expression of those feelings—is certainly not sufficient authority to bind us to a servile copyism of them in our present ecclesiastical edifices, whose ceremonies are so unlike, and whose feelings are so changed.

Nor do these men tell us why our intellectual and creative faculties are to be cramped and restrained more considerably than those of any preceding age by such adherence to precedent.

I think that in a future day our art shall be unique; that every development of it, for every purpose, shall spring from common principles; and, amidst large diversity and variety of architectural expression, our architecture, as a noble art, shall be perfectly harmonious at all times with itself. I conceive that the several styles shall not proceed as at present—everlastingly upon the same beaten track, even to the perfection of each; but the judicious efforts of a band of geniuses shall bring about the convergence of these styles into a phase of architecture as unique as any preceding style, and yet which shall be calculated more fully to express the feelings and the thoughts of our advanced civilization.

Though Vanbrugh was the author of several architectural works (some of which do not now exist), among them being a facade to Grimsthorpe, in Lincolnshire, and King's Weston, near Bristol, erected for the Hon. Edward Southwell, yet his fame must ever rest on his two masterpiece of composition—I mean the palatial edifices of Blenheim and Castle Howard, which infinitely more fittingly attest the native grandeur and majesty

of our nobility than the baronial castles and fortified strongholds of their ancestors.

There are strong and marked points of divergence in these compositions, but it requires little closeness of attention to trace the defined and characteristic workings of the same master-mind in them both.

What I consider to be the first and most indispensable law of architectural composition, that the work should have its due measure of praise, or even be styled a work of art at all, demands that it should be a perfect conception, elaborated and worked out, free from all fragmentariness or sketchiness, and should be complete in itself, as needless of addition, or as liable to suffer from excision as the human frame. Blenheim and Castle Howard illustrate this principle most strikingly.

Secondly, in this advanced and progressive stage of architectural practice, each work of art should be distinguished by variety in plan, and in perspectives. I must qualify my assertion, and remark that this law is almost inflexible where our structure is surrounded by landscape, of which it is to form a component part.

Sir Joshua Reynolds, in one of his discourses, suggests this thought, and adduces Vanbrugh as an illustration of the happy effect of its free recognition. He says, "Variety and intricacy is a beauty and excellence in every other of the arts which address the imagination, and why not in architecture?"

I have been much impressed with the power to delight, which the various perspectives of Blenheim can impart. As you walk round it, at a suitable distance to take the whole structure within the range of your vision, fresh beauties and fresh combinations of forms strike upon your eye. Sir Uvedale Price says, "No mansion has, from such a number of different points, so grand an appearance as Blenheim."

A higher expression of beauty than this, which I have denominated a *passive* one, is inadmissible in the palatial residences of our cities, where the line of plan is determined by the formal regularity of its streets and its squares—the cities of Rome and Florence, presenting to us some of the most illustrious examples of this style of treatment. But, surely, was not Vanbrugh justified in striving to emulate in his beautiful art-creations, by the free use of this element, the piquant life of the varied landscape scenery in which his work was embosomed, and of which it formed one of the most essential parts?

Speaking of Vanbrugh's proportions—though they often are as singular as his genius—yet the pavilions at the four angles of Blenheim are in excellent proportion; and have, by the way, been introduced wisely and with discrimination, for they are surmounted by belvederes for the better appreciation of the beauties of the landscape.

The south facade of Blenheim, in my estimation, is treated with the most artistic feeling. The scenery is full of grace, and the spirit of beauty: some would say it was tame—there is nothing striking, obtruding, nor severe. And so Vanbrugh has designed in its spirit: he has shunned those bold and violent projections which he has so freely courted at other times; yet this facade is as free from tameness or insipidity as possible. This elevation is replete with a quiet, subdued vigour and energy. Due emphasis and increased expression are given to the colonnade or portico, as a central feature, and to the pavilions forming the angles.

In summing up these observations, and arriving at a just estimate, I beg leave to say that I do not believe in any remarkable *universality* in Vanbrugh's genius. I do not think he is destined, after the most perfect justice has been done him, to rise to the distinguished platform upon which our world's greatest men will stand.

In my opinion, Blenheim possesses many qualifications to be called a work of high art; and, as an architectural edifice, not the least of its peculiarities, and its greatest merit, is, that the whole of its wondrous beauty and grandeur are the effects of what should always be the predominant quality of our art—I mean, *form*. Simple lines and curves, varied in their contour, and diversified in their arrangement, are—to the exclusion of ornament and colour—the source of these results.

I know that some tell us that ornament or sculpture is the chief part of architecture; and, if they be consistent, they must hand this edifice as a huge pile of construction only, which the sentiments and pleasurable emotions of every student of these buildings flatly deny the truth of.

But, after all, the qualities which have been the chief attraction and source of wonder to all are

those which are expressive purely of his individuality—his idiosyncrasy. A certain degree of universality I have already given Vanbrugh the credit of; but I must reiterate that there never has practised a man in our art who left the marks and impress of his idiosyncrasy upon everything which he touched so much as Vanbrugh.

Other men have designed singularities; but they have been whims, freaks; but we are not justified in stating that, as a rule, Vanbrugh's peculiarities were whims, but they were rather the creations simply of his own mind, distinct from anything which other men had produced, and harmonious with themselves. Seeing that Vanbrugh discarded all formulas or rules to guide him in his designs, I confess that I can discover no explanation whatever for the peculiarities of his proportions, the heavy forms (when not required for certain architectural expression) so very much complained of by his detractors, the singular and original disposition, use, and arrangement of those architectural elements which preceding styles furnished him with, the quaint and peculiar contours of his features, whose outline was not determined by the best principles of construction, other than that they were emphatically his own.

The student of Vanbrugh will find numerous instances of the outpouring of the soul into his works. His comedy has found vent in a myriad forms, in the decoration of the keystones of Castle Howard. The exuberance of his imagination, and the fertility of his invention, are alike displayed in the prodigal use of ornament, in both the interior and exterior of that palace.

But perhaps the student will never understand the existence of an individuality in the treatment of Vanbrugh's productions so forcibly as if he visited Blenheim, and viewed it by the light of the moon, when he will find an undue prominence given to the forms upon the summit of the structure, exhibiting their contour and outline to great advantage against the illumined sky, whilst the more impressive qualities, those more purely architectural and grand, dwindle, on such an occasion, into comparative unimportance.

So I am convinced that when Vanbrugh is studied through the medium of prints, views, or displayed elevations, similar injustice is done him, in consequence of a like preponderance being given to these peculiarities.

I would here quote the remarkable words of Mr. Gwilt upon this very subject—"Vanbrugh's buildings are the result of a combination of forms and anticipation of effects, originating solely from himself; effects which none before had seen or contemplated."

HINTS ON THE BUILDING OF SCHOOLS.

SOME time since Mr. Harry Chester delivered a lecture on the subject of Building a School. It was afterwards published,\* and it may not be useless to reproduce some portion of it in our pages.

I do not say never accept, but I advise you never to seek, the gratuitous services of a solicitor or architect. The true professional responsibility is scarcely consistent with gratuitous performance. You must not look a gift horse in the mouth; and you can scarcely haul over the coals a gratuitous attorney. Engage professional services on the usual professional terms; and when these services have been rendered and remunerated, then and not sooner, is the proper season for professional donations, if any, to be made.

When your memorial, and the plan of your proposed site, have been approved by 'My Lords,' they will send to you two distinct sets of instructions, which you may find more or less easy to understand;—first, with reference to the plans, specifications, estimates, and available funds for the building; and second, with reference to the title to the site, and to its conveyance in trust.

The documents which relate to the plans, specifications, and estimates should form a part of the general instructions which you should now give to the best architect that you know of, or to a few of the best architects in competition, to prepare the plans and specifications.

When the Committee of Council on Education was first created, in 1839, so little attention had been given to the planning of schools, that they were very commonly erected by the village bricklayer and carpenter, by rule of thumb, without any plans at all. The National Society, not so wise then as now, had unfortunately proclaimed that 'any shape' would do for a school, and that there was no better model than a 'common barn.' The organization of schools had been little studied.

\* Chapman & Hall, Piccadilly.

The buildings were low, thin, dingy, ill-drained, often without means of warming, often without proper conveniences; with no furniture but a teacher's desk, a few rickety forms, a rod, a cane, and a fool's-cap: the floors were almost invariably of brick—the worst kind of floor, as it is tenacious of moisture, cold to the feet, easily abraded into red dust, and soon worn into holes. There were rarely any porches or lobbies for the caps and cloaks of the children. If there were a house for the teacher, it was seldom such a house as a teacher of the present day would like to inhabit.

Under these circumstances, when the Committee of Council on Education requested the applicants for grants to exhibit plans and specifications of their proposed buildings, the request was often regarded as an insult. 'Plans and specifications! why put me to the expense of plans? do My Lords suppose that I cannot build a school without plans?' Others were milder or more honest, and sent plans about the size of the palm of my hand, with a few indistinct scratches upon it. Now, however, all this is improved. The National Society has long been wiser than it was in 1839. It has set a splendid example to the other educational societies: they all vie with each other in architectural exploits; and the hand is adorned with schools. The most celebrated architects undertake to design these buildings; and give their minds to the designs. No one now thinks that a school can be built anyhow, without any reference to the uses to which the building is to be applied.

Of course, a school may be held in almost any building; and a clever teacher may teach cleverly almost anywhere; but the shape of a school-room is nevertheless important as regards (1st) the cost of the building; (2nd) the convenience of organization and supervision; and (3rd) the strength of the teacher. Persons used to go, and some persons still go, to an architect, and say, 'Let me have a plan of a school for (say) 100 children, allowing six square feet to each child.' Now, what could an architect do, thus instructed? In the first place, no school can be so organized that six square feet per child will afford a sufficient area; and, in the second place, you can no more determine how many square feet per scholar will suffice in a particular school, without reference to the peculiar organization of that school, than you can determine how many guests can sit down to dinner in a dining-room without knowing the shape of the room, and whether the table is round or oblong. The capacity of a school-room depends on the organization of the school, on the length and breadth of the room, and on the positions of the doors and fire-places.

Before you instruct an architect to prepare plans, determine how many scholars you will provide for, and on what system you will organize the school. How many boys, how many girls, and how many infants? Shall the boys and girls be instructed in one room as a 'mixed' school, or in two separate rooms? If you wish to have a perfectly convenient building, you must determine these questions before you instruct your architect. In your mind's eye you must see the several departments and classes of the school at work; and then, the area necessary for each portion of the work of each class being calculated, you may surround the scholars (as it were) with the proper walls, and you may give such instructions to your architect as will enable him to prepare a convenient and economical plan.

It is possible to organize a school in a great variety of ways; but, given the case that we have to deal with in educating the poor, i.e. given one principal teacher, assisted only by pupil-teachers, to instruct the greatest possible number of children, I am satisfied that the organization, recommended by the Committee of Council on Education, and commonly used in the best national and many other schools, is on the whole by far the best; and therefore to this system of organization alone I shall at present refer. It is not my business to give a series of plans for schools. That is the proper work of architects.

In extreme cases it may be necessary to have groups of benches and desks on two opposite sides of a room: it should then be not less than 30 feet wide; but this arrangement has many inconveniences, and I recommend you to avoid it if possible. The fireplaces are at the two ends of the room, in the corners, where the fires, though out of the way of the children and of the teachers, can be seen from all parts of the room. The fires may be 'gathered over' and carried up in the gables. The walls all round are free for maps, diagrams, and pictures.

Windows should be high up. Get your light as high as possible, plenty of it, and from all quarters if possible, by slanted windows in the long walls, by great windows in the gables, by dormer windows, and (best of all, in my opinion) by vertical skylights. No wretched little diamond quarries, but big panes of white glass. Let all windows be made to open. Have blinds to the east, south, and west. Never let the children or the teachers sit or stand in front of an unblinded window on a bright day. If you do this, you may do more than you intend towards blinding the children and teachers. When I go into a school-room and see the poor things blinking in the face of a streaming sun, I cannot help thinking that the managers should be indicted for cruelty. Never introduce a window in such a position that a child standing in its place at its desk or on the gallery will be projected in front of the light. As far as may be, let your light from different quarters be equalized, so that strong shadows may not be cast. If the faces of the children are in a full light, an equal light should be cast on the teacher's face and board, otherwise they will be in shadow. Do not place a gallery in a school-room at right angles, or opposite, to the benches and desks: if the gallery be in the same plane as the benches and desks, the teacher, instructing a class on the gallery, retains a command of the rest of the room. The seats of a gallery (not intended for infants) should be fitted with backs, which are not needed in the desks groups, as the children receive support from the desks. The height of a seat should be such that the knees of a child seated thereon shall be bent at a right angle: the desks for the girls should be made with flaps to let down for needlework, leaving only a ledge horizontal to hold cottons and scissors, and allowing space for the girls to place their work on their knees.

Be very particular in your specification for the floor of the school-room. Oak being too expensive, the planks should be of the best deal, perfectly seasoned, and well laid down. If they are cut into short lengths, they will be the less noisy.

Make your school-rooms as comfortable and as pleasing to the eye as possible. What can be more depressing than the appearance of many school-rooms, which exhibit either extreme, of bare walls or of superabundant hangings of untidy maps, ugly pictures, threatening texts? The latter extreme is the worse of the two. I have seen school-rooms whose walls have been so huddled all over with such things as to make one imagine oneself in an ill-arranged religious toyshop. I advise you to batter your walls, which will add a little to the cost, and a great deal to the comfort. If you will paper your battered walls with a few good bright maps, a few good diagrams, a few good prints, and a very few well-chosen texts; and if, round each of them, arranged with good taste, you will paste a little border of coloured paper to set it off as by a frame, the cost will be trifling, and the educating effect will be very great; and if you will have the whole surface well sized and well varnished, the walls may be occasionally washed, and will not require to be repapered for many years. The ground colour of the walls should be light and warm: avoid yellow, which I believe to have an injurious effect on health. Instead of smothering the walls with prints, have as good and as large a collection of prints as possible in strong books, with leaves of brown holland: you will find them repay you for the trouble and expense. Let such texts as you select be rather soothing and elevating, than grim and depressing.

The woodwork, especially in the higher portions of a school-room, is very commonly too much darkened.

Benches and desks of birch, varnished, will cost little more than deal, and be better appreciated and taken care of; but they may warp if not made of wood particularly well seasoned. Do not screw the fittings to the floor, but either have them heavy and firm enough in their own weight to be not easily capable of accidental displacement, and yet such as may be lifted from one part of the room to another; or screw them to sleepers, and lay the sleepers loose on the floor. The benches at least should be so constructed as to stand each by itself when wanted, apart from the sleepers. The hindmost bench and desk should be somewhat taller than those of the middle row, and the latter should be somewhat taller than the front row. In opposition to the ordinary opinion and practice, I advise you to provide a larder and pantry—small ones will suffice—in the teacher's house, and to let there be plenty of cupboards and presses in the school and in the house, and coal-cellar capable of containing a year's supply. It is also

as well not to forget to lay on water, or to provide a well and pumps.

Have the ground so made up to the entrances of the schools that there may be no need of high flights of steps. There should not be more than a single step, if any, at the entrance of an infant school. There should be a provision for washing hands, but not on a large scale: the children should come to school with clean hands. Never provide a separate entrance for visitors, but keep the children's lobbies in a state fit for the passing of visitors; and if the children's doors are large enough to admit criminal of reasonable size, unreasonable crinoline need not be admitted.

Allow no inferior nor unduly perishable materials to be used in the building: let everything be of the most durable character. In regard to the architectural style, I say only let it be pure and simple. (Face Lord Palmerston and Mr. Tite.) I have seen many excellent Gothic designs, some good Elizabethan designs, and some few very bad Italian designs for schools. Whatever you do, do not allow of any false architecture: let the beauty of the building depend on its good proportions, its good materials and workmanship, its correct details, and on its exterior's truthfully representing the facts of the interior. For example, do not turn the master's kitchen into a Crystal Palace on a small scale, under the notion that, where you want a window of moderate dimensions, you may have a great big one to balance another big one, very properly placed in one of the end walls of a school-room. Do not allow breaks and projections for mere effect, where uses point to unbroken lines: forbid all construction of ornament as ornament, and let the real structure of the building be ornamental. Let the ground plan be first settled as convenience may point out, and let the elevations absolutely follow the carefully-arranged ground plan. Never let the ground plan be tampered with under the idea of improving the elevation: for effect and utility combined, let the chimneys be lofty and massive. About open roofs, where all the timbers are shown, I confess myself somewhat heretical. *Non equidem insideo, miror magis!* hot in summer, cold in winter, they are more handsome than comfortable. For comfort, give me a ceiled room, having a good air-chamber between the ceiling and the roof: if you object to a ceiling, even at the collar-beam, you must at least ceil to the rafters, and insert a layer of felt; and you should board to the under side of the rafters.

Never let any one persuade you that the site does not require draining.—

Let sites be drain'd that ne'er were drain'd before,  
and those that have been drain'd, be now drain'd more.'

#### ROMAN MOSAICS.

At the last meeting of the Northern Architecture Association, Mr. F. R. Wilson, as elsewhere mentioned, read the following observations on the manufacture of mosaics:—

At a former meeting I took occasion to suggest the use of mosaics as a decoration for buildings in this country. My suggestion referred then most especially to the Royal Exchange, London, where the distemper decorations had perished, or been obliterated by smoke, only a very few years after they were perfected. I have seen since, in the *Builder*, that there is a proposal to apply mosaics to the embellishment of the interior of St. Paul's Cathedral, London, after the manner of those in St. Peter's in Rome; and deeming that such a proposition is likely to call forth a more general desire to know more of the particular decoration in question, I venture to introduce to the present meeting the specimens I brought home from the Eternal City.

The small pieces of enamel, about the size of a pin's head, are those employed in the manufacture of the smallest objects,—ornaments, trinkets, &c. The larger sizes are used for larger surfaces, such as pictures, or buildings; and when required for situations very removed from the eye, as in the dome of St. Peter's, the cubes are nearly an inch square. You will note that the edges of the blocks are not geometrically perfect—a circumstance which takes away all appearance of stiffness, and admits of more accommodation, in some cases, to the exigencies of outline.

The studio in which the government manufactory is carried on—a room nearly a quarter of a mile long—is in the Vatican itself, and is a sight most artist-visitors take care to see. Some idea may be formed of the nicety and skill required in the manufacture of these stone pictures, when we consider that there are upwards of ten thousand tints in the enamels, and that an artist will sometimes spend from twelve to twenty years in the

delicate though durable construction of a large work. Great knowledge of art, and a full appreciation of the difference of schools, are requisite to do justice to subjects thus invested with immortality. The prices of the same design vary, according to the character of the work, from one to five-fold.

The method employed in forming a picture is not intricate. A ground-work of a certain clay is first formed, into which the slender shafts of enamel (all ready to the hand) are inserted in the order and colour required. When this stage of the operation is completed, the surface is reduced to a level by means of grinding with a lathe. When unequal heights are thus removed, there remains but the application of a fine polish to finish the process. Pictures are thus produced which rival those of the enamel in the subtlety of their colouring, and in the grace of their flowing lines; and outshine them all in the imperishable nature of their tints, and in the almost everlasting qualities of the materials used in their construction. Mosaics more than two thousand years old attest these facts.

It remains only to inquire whether the conditions of our very humid climate be likely to affect mosaic work injuriously. The tessellated pavements of both ancients and moderns appear to have suffered no ill from them. At all events, it is very clear that decorations in distemper are not for us; and that it is highly desirable to find an efficient substitute for their light and colour in a superior vehicle as regards durability; for, with the increasing appreciation of the beautiful so strongly manifested around us, we may be assured that the public will not be content much longer with white-wash for the decoration of the national buildings.

**NORTHERN ARCHITECTURAL ASSOCIATION.**

The committee of the Northern Architectural Association, in pursuance of one of the objects of the Society, forwarded the following protest to the advertisement lately issued by the committee of the Hartlepool Mechanics' Institute.

**ADVERTISEMENT.**

"The committee of the Hartlepool Mechanics' Institute are desirous of receiving plans and drawings for a proposed new institute, to be erected at the head of Medley-street. The site is 100 feet by 50 feet, and the building is to include library, news-room, class-rooms, large lecture-hall, and keeper's rooms. A premium of 10*l.* will be given for the plans approved of and accepted. Plans, accompanied with estimates of the cost, to be sent to the secretary, Mr. J. Hindmarsh, on or before the 2nd day of July, next."

The following condition was also appended:—  
"That the committee do not bind themselves to employ, in any way, the drawer of the successful plan, or to pay any other remuneration than the 10*l.* for the plan accepted."

**RESOLUTION.**

"The Committee of the Northern Architectural Association, having had their attention drawn to the advertisement issued by the Committee of the Hartlepool Mechanics' Institute, offering a premium of 10*l.* for the best plan for a proposed new building, beg respectfully to call the attention of the committee to the utter inadequacy of the payment as a remuneration to the successful competitor, especially as the committee do not bind themselves to pay any other remuneration, or to employ in any way the drawer of the accepted plan; and the committee would also respectfully suggest that the terms of the competition be revised, and beg to offer their services to assist in preparing such terms as may be equally advantageous and honourable to the committee and to the competitors."

The committee of the Mechanics' Institute have not responded to the offer and suggestion of the committee of the Association, but have awarded the premium to their vice-president, Mr. J. W. Gaffray, manager at Messrs. Richardson's engine factory. There were six competitors.

The ordinary quarterly meeting of this Association was held on Saturday, the 15th inst., in the Old Castle, Newcastle-on-Tyne, Mr. Dobson, president, in the chair. After transacting the preliminary business, and electing Mr. Green a vice-president, in place of the late Mr. Wardle, Mr. Pritchett, of Darlington, re-read a paper entitled "The Evils of our present Practice, and the best Way of remedying them," and concluded by proposing the following resolutions, which, after some discussion, were carried unanimously:—1st. That the committee, with power to add to their number, be requested to correspond with other associations, to ascertain the possibility of establishing an Architectural Alliance, and report to next meeting. 2nd. That the committee, with power to add to their number, be requested to

prepare a code of professional charges, for the use of this Association, to be laid before the next meeting. 3rd. That the committee, with power to add to their number, be requested to prepare a circular to be sent to the promoters of all competitions advertised, the conditions of which are not satisfactory, and present it to the next meeting. Mr. F. R. Wilson afterwards read a paper on Roman Mosaics, which we print elsewhere. After remarks from the president and other members, it was agreed that the annual excursion be to Hexham and neighbourhood, on the 1st of August next.

The Secretary, Mr. Oliver, called the attention of the members to the decision of the Royal Institute of British Architects to adjourn the consideration of the diploma question till November next, in order to ascertain the opinion of Provincial Architectural Societies, and urged the consideration of it in connection with the present resolutions.

**ABINGDON RECREATION GROUND COMPETITION.**

IN reply to the offer of a premium for the best design for laying out the Recreation Ground at Abingdon, Berks, several were submitted. From these, we understand, the Governors of Christ's Hospital have selected the design of Mr. J. W. Chapman, landscape gardener, of Dulwich.

**GENEALOGICAL AND HISTORICAL SOCIETY.**

THE annual general meeting of this society was held on Tuesday night last in the mansion of the president, the Earl of Ellesmere. Lord Ebury, one of the vice-presidents, took the chair, and the vice-chair was filled by Sir Thomas Maryon Wilson, Bart.

In opening the business of the evening Lord Ebury stated that the objects of the Genealogical and Historical Society deserved to be more widely known than they were. They are the collection, recording, and preserving facts connected with the descent and history of families: these facts are in danger of passing into utter oblivion, though they often throw unexpected light on many events in the history of the nation, and therefore possess a general as well as particular interest. The report of the past year was then read and adopted. It stated that the society is receiving a steady, increasing support; but the funds at its command do not yet allow it to make such an extensive examination of the public records and the private sources of information at its disposal as the Council would desire. Nevertheless the materials it has gathered already fill several folio volumes. In the last year the society has examined the registers of wills in thirteen diocesan courts, commencing with the will of the earliest date in each, and has had extracts made from them relating to names of military, political, or literary celebrity.

After other formal business, the Rev. Thomas Hugo read a paper on the Domesday Survey, showing the importance of the information which Domesday Book affords with reference to the ancient tenure of land, and the names of those who held land at the time of the survey.

Mr. Hamilton followed with a paper "On the Anglo-Saxon Chronicles, and the History and Heraldry of the Saxon Kings;" and Professor Christmas delivered a discourse on "Half a Crown, Historically and Archeologically considered."

**THE PRESENT STATE OF CHURCH-BUILDING.**

So much has been said and written on the best form and arrangement of large churches, that some apology might seem to be needed in offering the following remarks on so trite a subject: I can only plead as an excuse a very strong conviction that in the struggle to escape from so-called Classicism, and to return to the healthy and vigorous guidance of our Mediaeval masters, we have, in church-building, lost sight of some of the first principles which governed them, as they ought to govern us now. It was only natural that in the early days of the revival the merits of a new church should be judged according as it approached more or less nearly to an exact copy of some Mediaeval favourite; but now that architects are supposed to have risen above copyism, and to be able to originate churches rivaling our ancient models in beauty, it is time to take a common-sense view of the question, and to ask ourselves whether our present system is really founded on true principles.

Let us start with these two axioms:—First, that

a building should be in every respect adapted as completely as our resources will allow to the purposes for which it is erected; and, secondly, that in its architecture—i.e., not only in the furniture and arrangements, but in the bare walls—the very skeleton, in fact, of the complete edifice, it should bear the lasting marks and evidence of its original purpose.

Now, we invariably see these principles carried out in our old churches. They presented the most convenient form for the existing services, and to this day we find the piscina marking the position of altars; we find the sedilia, the ambry, the credence-table, the low side-windows, the priest's door, and the entrance to the rood-loft, even where rood and loft have long since been destroyed: all these we find as parts of the building, each speaking for itself, and bearing evidence while the church stands of some rite or custom in use when it was built. Go, on the other hand, into almost any one of the best of our modern churches, and examine it with reference to these principles. Beautiful and correct in detail as it is, you find, in the first place, a building unadapted in many respects to our present requirements—still, in fact, a mere dead copy of the Mediaeval type, if not of any particular example. You find that it wants all the interest imparted by the above-named characteristic features; or, if it has any of them, they are either useless, and consequently meaningless, or else trivial and unnecessary, and apt to give offence to many minds. Turn to the body of the church, and you find a roof containing a forest of timber, high pitched and open to the ridge, thus giving a form of ceiling destructive to all acoustic qualities, so that you will generally find the officiating minister nearly inaudible at the west end of the church.

Turning to the aisles, you find that the view of a considerable number of the congregation is obstructed by the columns of the nave arches. You find the font placed canonically near the western entrance, but its position unmarked save by a gap in the sittings. The altar, pulpit, and reading-desk were probably provided for by a sum named in the specification, and the very positions of the two latter not finally settled, perhaps, until near the completion of the building; so that they are necessarily mere pieces of furniture, which might be removed in an hour, and leave not a trace behind. The church, in fact, carries in itself no inherent evidence of what our ritual uses.

Again, we can adapt our existing Mediaeval church more or less completely to our present wants; but we cannot, without violent destruction, get rid of the means and appliances of forms of worship now passed away. But in a modern church how different is it! What a want of interest in the building itself, apart from decoration! It is generally ill adapted for seeing and hearing, and, while thus sacrificing utility to what is considered church-like appearance, it might, without injury to the fabric, be stripped in a few hours of all evidence of any particular kind of ritual observance whatsoever. This cannot be right, and yet the principles with which we started will probably be readily admitted by all those who habitually infringe them in the case of churches.

What have we to do, then, in designing a large church? We have to contrive accommodation for a great congregation, in a building the most fitting and convenient we can devise for seeing and hearing the officiating minister; and for joining, decorously, and with undistracted attention, in common prayer and praise; and we have to take care that our building shall show distinctly, in its architectural features, that in it are to be celebrated the two sacraments and daily services, consisting of public prayer and praise, the reading of God's word, and preaching.

The question of plan is one that must, of course, be settled in a great measure by peculiarities of site; but, wherever a church is built, we must not forget that there are many other considerations to be kept in view along with the mere requirements of seeing and hearing. And if these points can be satisfactorily attended to (putting it on no higher grounds than association and traditional custom), who would not see with regret the abandonment of the auditorium, half lecture-room, half theatre, which some persons wish for. The truth is, that it is possible, beyond doubt, to retain the traditional divisions, and yet to produce buildings fitted in every way to our present wants, and an architect should not content himself with less than this. To attempt to point out any of the methods that might suggest themselves would occupy too much space; but what we have to avoid may be summed up in a few words, namely, wide aisles and heavy piers,

deep chancels, excessive height, and high-pitched roofs open to the ridge.

Next let us take care to make the positions of altar, font, reading-desk, pulpit, and organ as distinctly marked as possible in the architecture of the building; to make them, in fact, as much as possible part and parcel of it, and to let none of them remain to be added as an after-thought or piece of furniture.

A clergyman, who has thought much on this subject, and could speak with authority on it, once said to me,—“Give me a handsome communion-table, a good and well-placed font, an unmistakable reading-desk, and a large pulpit, not too low, and I do not care what the rest of your church is like.” This is, of course, pushed to an extreme, but in it is involved the principle which I hold to be so sound, and so generally neglected in our modern system of church building.

M. A., Cambridge.

#### RAILWAY MATTERS.

THE directors of the Midland Railway have decided upon covering with a glass roof the down platform of the Chesterfield station from the collector's gate (the usual place of exit for passengers) to the semaphore signal. The work of roofing has been commenced.

On the 1st inst. the Great Indian Peninsula Railway to Sholapore was inspected by the Government consulting engineer and other railway officials, and the line from Mohol to Sholapore has been opened to the public. This section of twenty miles makes the entire length of the railway now opened 315 miles. Sholapore is the place that was chosen for a temporary station till the through line from Bombay to Madras was completed.

On the subject of preventable risk in fast railway travelling, Colonel Yolland, in a report to the Board of Trade (just published) on the accident at Hatfield in April, states that a train at Hatfield, travelling down an incline of 1 in 200 at the rate of sixty miles an hour (a frequent rate of that train at that point), could not have been stopped by the breaks in less than three-quarters of a mile. This, as he remarks, is a very unsatisfactory condition attending fast railway travelling, and such quick trains ought to be furnished with an amount of break power which will enable them to be stopped in a third of that distance: this can be done by means of continuous breaks, which augment the retarding power three or four fold. Two years ago the Board of Trade sent to all railway companies a report of the successful working of such breaks on the East Lancashire Railway, where a train of 90 tons, supplied with 80 per cent. of break power, travelling at the rate of 53 miles an hour down an incline of 1 in 120, was stopped after running 235 yards.

#### DOINGS IN CORK.

THE all-absorbing topic in the capital of Munster is the approaching national cattle show, which is to be honoured by the vice-regal presence; and judging from the enterprising characteristic spirit of the Corkonians, and the preparations made so far, we may fairly anticipate a creditable display.

The exhibition will be held in the corn exchange building, a portion of which, many of our readers will remember, was adapted for the industrial exposition of 1852, after designs by Sir John (then Mr.) Benson. A number of sheds have been erected, with promenades between of 20 feet in width, and with ranges of stalls on either side. These will be decorated with striped calico in various colours, and flags of all nations interspersed throughout the yards. Externally there will be a gay dressing of the main building likewise. Two drinking-fountains will be placed in the implement yard, also two ornamental *jets d'eau*, with catter-troughs at base, in the promenades; and a fountain jet supplied with five gallons of *eau de Cologne* before the table allotted for his Excellency in the dining-hall, which will accommodate 350 persons. The ceiling of this apartment will be decorated also with striped calicoes, and the columns with festoons of evergreens and banners. A new supper-room of permanent character, 90 feet by 30 feet, and 18 feet to the eaves, and to accommodate 250 persons, is being built. The statue of William Pitt will form a conspicuous feature in this apartment.

Numerous English, Scotch, and Irish manufacturers of eminence have secured space in the implement department, which will embrace many other classes of goods besides those of a purely agricultural character.

We have little else to chronicle in the way of building improvements here; indeed, save the new St. Patrick's-bridge and the R. C. Church of SS. Peter and Paul, both in progress of construction,—matters are somewhat at a stand-still, and the builder's mission seems to have dwindled into a state of nothingness. The new bridge, which, between the abutments, will be 185 feet, and consist of three elliptical stone arches surmounted by balustraded parapets, and having a breadth of 60 feet at roadway level,—will supply a desideratum and verify the proverb, that “out of evil cometh good.” It is being built under the direction of Sir John Benson by Mr. Hargreave, contractor; Mr. Barnard, clerk of works; and will cost some 15,000*l.* We must remark, *en passant*, that the architects (Messrs. Pegin & Ashlin) of the new church above alluded to, can hardly congratulate themselves on the site of the structure, completely hemmed in as it is by the backs of houses on all sides.

#### THE WESTMINSTER PALACE HOTEL COMPANY.

MR. S. C. HALL, a member of the Board, has printed a letter to his brother shareholders “concerning the position, past and present, and the future prospects, of the Westminster Palace Hotel Company,” which, whatever reply the other directors may have to portions of the charge, shows proceedings on their part, unusual, illegal, and little calculated to inspire confidence, or lead to a satisfactory result. We must set Mr. Hall right, however, on one point—

“The dismissal of Mr. Burchell was, he says, but the beginning of the end; the surveyor and the clerk of works were to be ‘got rid of’ also; and some time before the extraordinary meeting of the shareholders, a written question was put to the architect as to whether he could dispense with the services of the surveyor and the clerk of works. It was akin to asking the wolf if dogs were needed for the protection of the flock; inasmuch as both these officers were guardians of the company, as against the architect and the builder. The clerk of works was expressly appointed by the board with that view: he was appointed in direct opposition to the wish of the architect, who claimed and contended for the right to such appointment. The answer of the architect was of course pre-arranged: it was simply the one word ‘Yes.’ The dismissal of these gentlemen did not, however, then take place, although they have since been so dismissed—an event in all respects deplorable, and to which I shall presently advert.”

Without knowing whether the dismissal was judicious or right, it is necessary we should say that the duties of the measuring surveyor and the clerk of works are to carry out the views of the architect and to assist him,—not to protect the employer against him. The moment a committee, or board, or individual employers, cease to have confidence in their architect,—begin to believe that he has any object in view above the protection of their interests, the sooner they separate the better for them, the better for him, the better for all.

However, this is in no degree a reply to Mr. Hall's pamphlet. He has been from the first an indefatigable member of the Board, and led his friends to take shares representing a tenth of the whole capital required. He objects altogether to the arrangement which has been made with the India Board, and the way in which it has been made. He denounces the proceedings of the Board as showing “a thorough incapacity for business,” and concludes by calling on the shareholders to attend the half-yearly meeting on August the 6th, and add to the Direction three or four members. I trust, he says,—

“That they will be themselves large shareholders, gentlemen of position and high character, and men of business; who will, by their ability, assiduity, and business habits, not only relieve you from danger, but soon and greatly improve your circumstances, and conduct this hotel for the advantage of the company, which the present board, so little aided by the business element, cannot do.”

#### THE NEW BANK AND EXCHANGE BUILDING, VIENNA.

CONFINED space in the old building of the National Bank, in Vienna, and the want of a proper exchange for merchants in that city, induced the directors to undertake the new building, for which purpose they purchased the houses belonging to Count Traun, situated between the Herren Gasse, opposite their present place of business and the Freyung, and had them pulled down to afford a site for the new building.

Several architects of the city were invited to send in designs in accordance with a programme, drawn up by the bank directors—among them, in August, 1855, Ferstel, who was then at Florence, but forthwith returned to Vienna, passing through Venice, and who endeavoured to embody in his design the artistic impressions he had received

in these two Italian cities. He had the honour of having his design selected, and the superintendence of the building was entrusted to him in the beginning of the year 1856.

Unavoidable circumstances required modification in the plan, by which the area of the Exchange Hall was increased from 140 to 160 square fathoms, and the other rooms and passages became necessarily contracted. Necessity, however, demanded these alterations.

In addition to the great irregularity of the ground plot, the difficulty had to be encountered of partially using the old locality, and of not interfering with the neighbouring houses; so that while the building next the Freyung was roofed in in 1856, the last pulling down and getting in the foundations, towards Count Harrack's Palace, were warily taken in hand, in the winter of 1857-58, and great difference was found in the depth to which the foundations had to be carried. The whole was roofed in in 1858, and the interior finished in 1859. The bazaar was opened October 3rd, and by the end of the same year the bank buildings could be brought into use. This summer the decoration of the Exchange Hall and of the coffee-room will be complete, and the whole building in use.

The arrangement of the whole building, and the purposes to which it is appropriated, are shown in the *Bauzeitung* (1 Heft, 1860), from which admirable periodical we have engraved the view in our present number, and have gathered these particulars.

The governor of the bank, Herr Ritter von Pipitz, desired that with strict economy, and avoiding useless luxury, the building should be carried out with solidity, and artistic as well as technical completeness, corresponding to the object of its erection, and to the dignity of so rich a national institution.

With the view of employing *genuine materials*, it was intended to use brick, with glazed coloured, and unglazed courses, &c. for the fronts, but the result of the trials not being satisfactory, free stone was chosen for all the fronts, as well as for the internal works. All carved ornament is wrought in stone. The stone was taken from different quarries, and varies in hardness according to the position in which it is used in the building. The balusters of the principal stairs are of marble. Polished stone is used for columns, pilnths, and walls, in the Exchange Hall. In the coffee-rooms the columns are of polished stone, the walls in stucco to represent grey marble. *Natural* and real woods are used; oak for the windows and doors. The bank directors' room has a ceiling of carved oak, gilt and coloured; the wainscoting is of the same. The ante-hall of the Exchange, and the ante-hall of the bank directors' room, have ceilings of soft wood.

The floors are most substantially constructed of wood and iron. Hollow bricks, on rolled iron bearers, 3 to 4 feet apart, form the arched ceilings of the bank offices. These arches are plastered underneath to form a flat ceiling. The bearers are 9 inches deep, 53 lines thick. The top and bottom flanges are 2 inches 9 lines wide, and 5 lines thick. Such a bearer, 22 feet long, weighs about 395 pounds, and costs about thirteen florins, say a guinea English the hundred pounds. The glass roofs have wrought-iron bars.

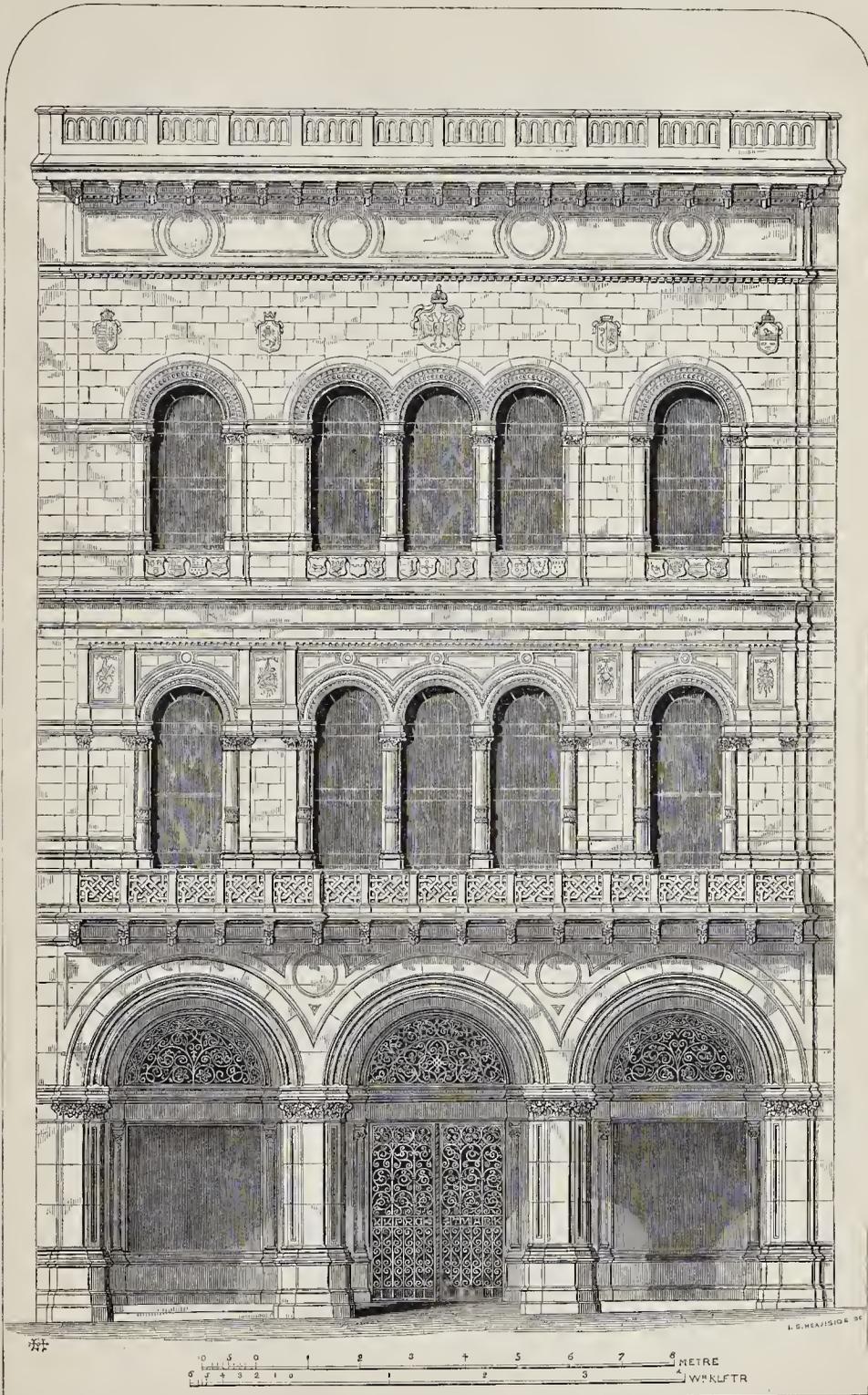
The walls of the passages and staircases are covered with solid, smooth cement work; those of the Exchange Hall in its lower portion, and of the coffee-room, with stucco-marble. The vaults of the vestibules, staircases, and halls, have ornamental fresco painting. The ceiling of the great Exchange Hall is of wood, and appears a piece of solid joinery, carried by strong beams. Bronze and brazier work are introduced in the doors of the hall, and in other places *red bronze*. The fittings and furniture correspond. There are leather hangings in the bank directors' room, after designs by the architect.

In the same room there is a chimney-piece of Porto Venero marble, with bas-reliefs of Carrara marble, with oil paintings, and bas-reliefs in pear-tree wood.

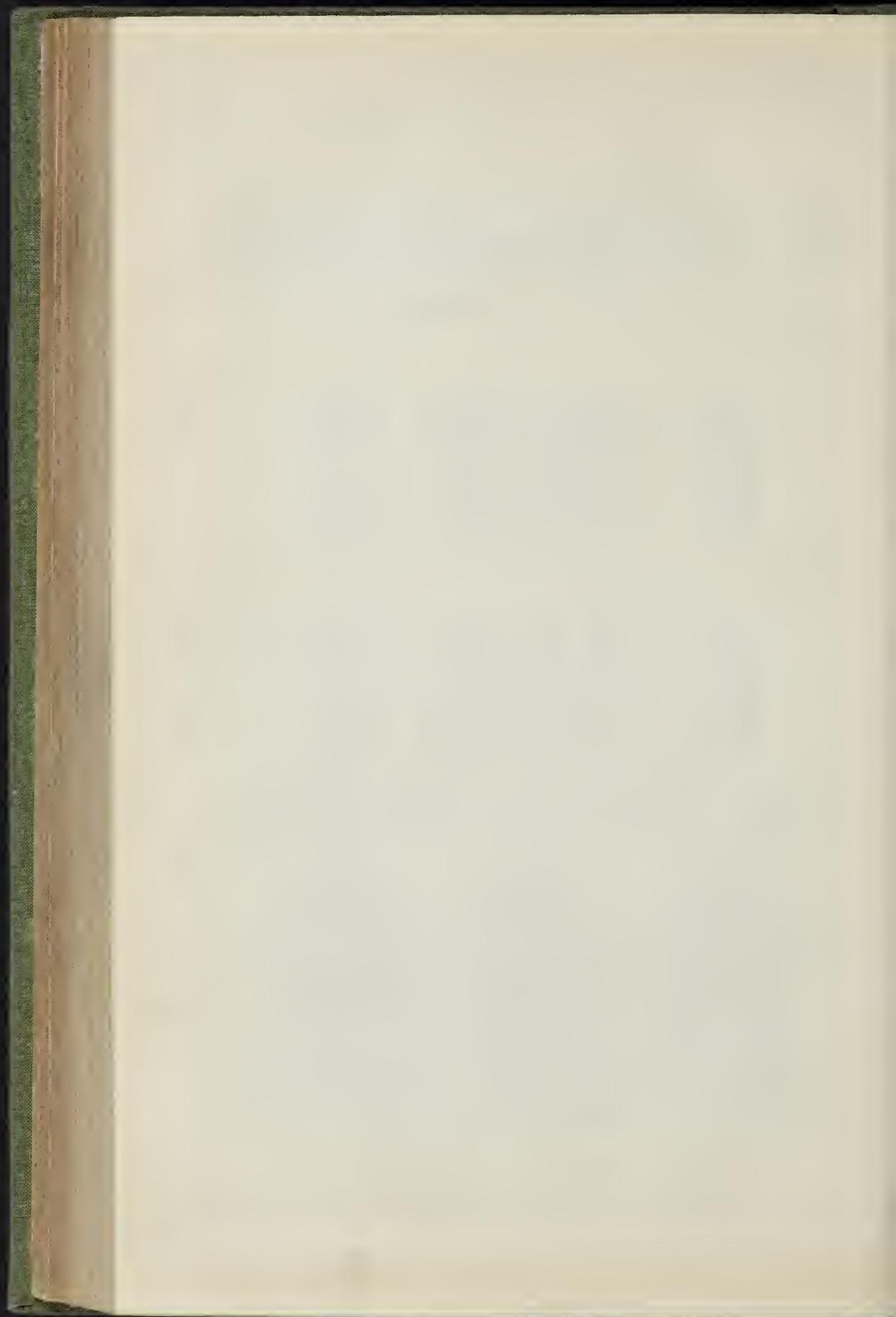
In the bazaar staircase fresco painting is introduced, and in the Goods Exchange Hall there are bas-reliefs in stucco. Further works in stone and bronze have been agreed upon.

The cost of the whole building, together with internal fitting and embellishments, will amount to 1,400,000 florins, or, at twelve florins to the *l.* English, 116,667*l.* The plan is curious and suggestive.

Herr Ferstel is the architect of the Gothic *Gotiv Kirche*, at Vienna, praised by Mr. Tite in his address to the Royal Institute of British Architects, of November 7, 1859.



THE NEW BANK AND EXCHANGE BUILDING, VIENNA.—HERR HENRY FERSTEL, ARCHITECT.



**OSWESTRY CEMETERY COMPETITION.**

The competitors are about twenty in number. Nearly a dozen have written to members of the Burial Board, so that the adoption of mottoes is a joke. One correspondent says,—"The following is the closing paragraph of a signed circular forwarded to members of the Board. Do not architects, so writing, place themselves in the position of common shopkeepers?"

"We shall be happy to modify our plans, or prepare other designs more in accordance with the wishes of the Burial Board; or should our designs be generally approved, and other competitors' drawings exhibit points liked by the Board, we would not object working in conjunction with such competitor, if required."

**SCARBOROUGH WESLEYAN CHAPEL COMPETITION.**

In answer to advertisement the committee received upwards of thirty designs, and, after consideration, those bearing the motto "Truth prevails" were selected, and were found to be from Mr. W. B. Stewart, architect, of that town, who has since received instructions from the committee to prepare the specifications. The design is Italian, with Corinthian portico, pediment, and four staircase towers, the two in front carried up considerably above the roof; the whole to be faced with Whitley stone. (The original design, to cost 3,000*l.*, did not include columns and towers.) The whole congregation in the body of the chapel sit facing the minister direct. The body of the chapel is to be lighted by three sun-lights in the ceiling. The ventilation of the edifice is to be assisted by the windows: a piece of finely-perforated zinc is to be attached to the upper sash, so that, when the same is lowered, the zinc is drawn down with it from above the window head, filling up the aperture. The ventilation of the lecture-room it is proposed to assist by means of a revolving fan, placed in the roof, and worked by a descending weight, all the ventilating flues from the lecture-room being drawn together and connected with a case in which the fan works. The chapel is to accommodate 1,200 persons, allowing 1 foot 9 inches for each sitting, and 2 feet 9 inches for the width of the pews. The second premium was awarded to Messrs. J. & D. Petch.

**PROPOSED LONDON, CHATHAM, AND DOVER RAILWAY.**

The fight which has been going on, first before a committee of the Commons, and now before a committee of the Lords, has cost thousands of pounds. We take from the evidence given by Mr. Joseph Cubitt, engineer of the railway, before the Lords, the following particulars, showing the direction of the line.

The line, he said, was considered by Mr. Turner and himself with a view of giving relief to the streets, and proving an independent access to the city of London, the terminus being in Farringdon-street. There was one portion of the line called the Beckenham Station, with which they proposed to make a junction, and so pass on under the Brighton railway to the Sydenham station by means of a girder bridge. There would be no difficulty in doing that, and it was constantly done by other companies. They then proceeded to Dulwich, near the Alleyne's Head, over the property of Dulwich College, and so on to Herne-hill. The carrying of this line through that property would greatly increase the value of it; and, as it would increase the value of the property, it would increase the benefits of the clarity. The City section commenced at Herne-hill, passing over Cold Harbour-lane by a bridge, and from thence on a viaduct all the way to Farringdon-street. It would pass through Camberwell, Walworth, and Newington, with a station near the Elephant and Castle. From there the line passed over the New Kent-road, Newington-causeway, the Borough-road, and Friar-street, crossing the new street proposed to be made by the Metropolitan Board of Works from London-bridge to Stamford-street. From Green-street the line would go on by Holland-street, crossing the Thames by a bridge about 40 feet to the east of Blackfriars-bridge, the bridge to be 945 feet in length, including the abutments. He proposed a plan for making the bridge of nine arches, but that had not been determined. The line then skirted the houses on the east side of Bridge-street, crossing Ludgate-hill by a bridge 18 feet high, and from thence to the site of the old Fleet Prison. The bridge over Ludgate-hill was to be subject to the approval of the City authorities. The bridge over the Thames will be wide enough to take three lines of railway,

The three lines will extend to Charlotte-street, Blackfriars-road. The total length of that line will be 4 miles, 3 furlongs, and 2 chains. The line from Farringdon-street would proceed to Skinner-street, and there form a junction by a gradient of 1 in 40, with the Metropolitan Railway. That railway is an underground railway, and to get at it they were compelled to adopt that gradient. There would be no difficulty in working that railway with a junction of 1 in 40, as it would never be worked at a high speed. Whatever gradient it was, as the bridge over Ludgate-hill was fixed by the City authorities, they had no alternative to get a junction with the Metropolitan Railway but by the plan proposed. There would also be a short branch to the proposed dead-end market under Smith-field-market, the length of this branch being one furlong and fifty chains. Another branch line commences at Herne-hill, and runs by Manor-road, at Brixton, where there would be a station for the benefit of the inhabitants of Brixton and Stockwell. It would then go on to Clapham, over the Wandsworth-road, and under the South-Western line at Stewart's-lane. It then went on to the West-end and Crystal Palace Railway at Pimlico. There will be a permissive communication at Stewart's-lane with the South-Western Railway. This junction is approved by the South-Western Railway Company. The worst gradient on the line would be 1 in 200. The length of the viaduct on one branch, No. 3, was 1,300 yards. He had great experience in making viaducts, and by means of those proposed it would afford almost an omnibus route from all parts to the City. There would be six stations on the line. The estimate for the whole of the works of the line was 1,650,000*l.*, 930,000*l.* for land, and 720,000*l.* for works and stations. There was a proposition for a branch to the Crystal Palace, but that was violently opposed by the Brighton Company, who have a monopoly of the traffic to it, and it was cut off by the committee of the House of Commons. His estimate of the cost of that branch was 12,510*l.* As to the Farringdon-street station, that was now clear, but they proposed to take additional property.

**THREATENED DESTRUCTION OF THE HEREFORD TOWN HALL.**

In a few numbers back we lamented the rapid destruction of our national antiquities, and the want of taste and spirit which dictated such removals. We have now to record that it is in the contemplation of the Hereford city authorities to remove the remains of the interesting old wooden Townhall, standing in the centre of High-square, in that city.

This building is one of the largest of the kind erected in the kingdom. It measures 80 feet by 34 feet, and is supported on twenty-seven oak columns, having bandsomely-enriched spandrels and pendants, which, together with the interior of the hall above, remain in a perfect state at the present time. It is to be hoped that the authorities will pause before they consign to destruction so curious an edifice.\*

**THE STRIKE IN COVENTRY.**

GREAT distress, we regret to hear, prevails amongst the ribbon weavers of Coventry. More than 10,000 hands have turned out from their employment, and are wandering in the streets. This has been brought about by the change in our tariff with France, which in other ways will cause temporary trouble to various departments of trade. In the case of the Coventry ribbon weavers, it seems that the reduction of the duty on ribbons has led to the introduction of a quantity of French goods, of such quality, and at such prices, that those heretofore obtained for the English manufacture cannot be had, and the masters assert that they are obliged to abandon the prices which for some years past have been given to the men. The masters have also determined to pay weekly instead of by piece-work. The men have in consequence struck, and every loom is silent.

This dispute at the present time is most unfortunate, and if not settled will lead to disastrous results. Misfortunes which fall upon an individual induce feelings of commiseration, and these are naturally increased in proportion to the extent of the evil. A strike, it is to be feared, will not mend matters, at a time when both masters and men should be using every exertion to compete with the foreign maker; and if intelligence and right feeling on all sides are not used, the ribbon

weaving trade will be lost to us. The new trade treaty is formed with a view towards the general benefit of both nations. In all such changes a certain amount of suffering must unfortunately be the result. In the matter of ribbons, the price of that commodity has been much reduced to the whole of the millions who form the population of this empire.

This saving it will be said is dearly earned at the sacrifice of so many persons—the impoverishment and ruin of so many homes. It does not seem to us, however, that this need be the case, provided that proper means are used to place the trade in a right position. Examining samples of ribbons for which there is the chief demand, it is seen that in the French patterns the colours are more harmonious and the patterns more tasteful than in our own. Nor is this to be wondered at when we consider the artistic education which has long been general in France. The change which has taken place should cause every exertion to be made to improve the defects of the artistic part of the English work, and the ribbon weavers must take advantage of the facilities which are to be had in England for manufacturing purposes, and of the powers which can be obtained through the advanced condition of science. If that be not done, the ribbon weavers will fall into the same condition as the silk weavers of Spitalfields. On the contrary, if proper endeavours and improvements are made, there seems to be no reason why we should not be able successfully to compete with the French, not only in our own country, but in the other markets of the world. In order, however, to ensure success, both masters and men must get rid of old-fashioned ideas, and work with that determination to succeed which has, in so many other instances, raised up struggling branches of industry into prosperous conditions, which have given employment to increased thousands, and added largely to the national wealth.

The spring reports of the factory inspectors show that wages for sixty hours a week are now higher than they were twenty years ago for sixty-nine hours in the week: new mills have sprung up, and hands have become so scarce that machinery has stood still from the want of them. It was not long since thought that the introduction of machinery would prove the ruin of the cotton-spinners: how different, however, have been the results—how vast has been the increase of cotton-spinning, and how improved is the condition of the work-people.

There is much intelligence in Coventry: the application of steam machinery has increased; but great work has yet to be done there; which, if properly carried forward, will do for ribbon weaving what has been so successfully carried out in other large branches of English manufacture. A strike, however, under the present circumstances, seems little better than madness.

**THE DRINKING-FOUNTAIN MOVEMENT.**

London.—In the Green-park, nearly opposite Coventry House, a series of three drinking-fountains has been completed. It is the gift to the public from a benevolent lady of rank, and was designed by Mr. Sydney Smirke, R.A., who likewise superintended its modelling and subsequent execution. In the centre of the composition is a die or pedestal, upon which rests a vase having carved enrichments of fruits and flowers. Below and around the pedestal are three capacious basins, into each of which a stream of water of uniform volume is poured through a lion's mouth. The structure is made of Roach Abbey stone, and was erected by Messrs. Edwardes & Co., of Newman-street, Oxford-street.—In Fleet-street, near St. Dunstan's church, a drinking-fountain has been opened, thus inscribed:—"The gift of Sir James Duke, Bart., M.P., Alderman of this Ward, elected Lord Mayor, 1848," and "Elected Member for London, 1848."

Newbury.—A sum of 40*l.* having been obtained, the work of erecting a fountain here has been commenced. The site chosen is in the centre arch of the Mansion House, facing the church. The basin is of marble, and the water will issue from a tap above it.

Bristol.—Another public fountain is being erected in front of the Counterslip schools, at the top of Temple-street. It is of carved freestone, with a metal basin.

Leek.—Three fountains have been lately erected in Leek. One erected in Buxton-road is the gift of Mr. J. Brough. It is supplied from a pure spring upon the spot, called Duxton Spout. The other two fountains were given by Mr. C. Pliat. They are situate in the

\* A view of the hall in its original state will be found in Clayton's work on "Ancient Timber Edifices."

centre of the town, one being in the Market-place and the other at the end of Church-street. To this fountain is added the necessary apparatus for watering cattle and dogs.

**Edinburgh.**—A sum of 90*l.* has been forwarded to the magistrates by Mr. Dunlop, of Brockloch, for the erection of three granite fountains in this city; and the fountain committee have fixed on the sites,—one on the road leading from Princes-street to the Mound, between the East Princes-street-gardens and the Royal Institution; the second at the foot of the Calton-hill stairs at the end of Waterloo-bridge; and the third at the north end of St. Patrick-square. These fountains were all ordered from Aberdeen.

#### PROVINCIAL NEWS.

**Worcester.**—At the last monthly meeting of the committee of Lunatic Asylum visitors five tenders were received for the building of the infirmary ward; that of Mr. S. Jones, Lewesmoor, for 2,338*l.* being accepted. There were several other tenders, the highest of which was 3,521*l.*, showing a difference of nearly 1,200*l.* The work was ordered to be proceeded with as soon as practicable. Mr. Warrington is proceeding with the water-tower contract.

**Crickhowell.**—The opening of the new bridge which has been erected over the river Usk, at Llangrwyney, near Crickhowell, was celebrated by a public dinner, held at Llangrwyney. The bridge has been erected by a proprietor, under the Limited Liability Act, at a cost of 2,378*l.* The principle of the bridge is that of the lattice-girder, the river being crossed by a main span of 145 feet, in addition to which there are two flood arches of 50 feet span each. The whole of the materials used are iron, with the exception of the roadway, which is timber. The contractor was Mr. John Hughes, of Newport; the work has been mostly carried out under the superintendence of his assistant, Mr. John Morgan, who is at present engaged on the Merthyr and Abergavenny railway.

**Darlington.**—A covered market having been considered necessary for the increasing wants of this town, the Local Board of Health, some few months ago, offered 100*l.* for the five best designs for a covered market, in sums of 50*l.*, 30*l.*, and 20*l.* The result was that there were thirteen competitors, some of whom sent two designs each, and the designs have been exhibited in the Mechanics' Hall, for the inspection of the public.

**New Byth (Bauflshire).**—Contracts have recently been entered into for the erection of a new school-house and schoolmaster's house at New Byth. The buildings are to be erected after a design furnished by Messrs. Reid, Elgin, and the cost of the buildings will be about 600*l.* The contractors are, for the mason's work, T. Whyte, Pligair; carpenter's work, J. McAndrew, Turrie; slater's work, A. Walker, Band; plasterer's work, R. McKenna; plumber's work, W. Duthie, Band. The school is to be in connection with the Church of Scotland, and the Privy Council give a considerable portion of the funds necessary for the erection.

#### CHURCH-BUILDING NEWS.

**Islington.**—St. Thomas's Church, Islington, was consecrated last week. The church is situate in Hemingford-terrace, a little to the east of the Caledonia-road. The edifice is in the Decorated Gothic style, and consists of a nave and chancel 87 feet long and 27 feet wide, with north and south aisles of about the same length and 12 feet wide. The aisles and west end of the church have galleries, which are approached by stone staircases at the ends of the aisles. The principal entrance to the church is through a deeply moulded and recessed double doorway on the north side. The nave is divided into five bays, supported by columns alternately circular and octagonal, with high pointed arches. The chancel arch, 45 feet in height, is carried one day westward into the nave, at the steps of which stand the stone pulpit, of an hexagonal shape, with carved panels and columns at the angles, with sculptured angels and foliage introduced. At the east end of the chancel, and occupying nearly the whole of the wall, is a large five-light window. At the west end of the church is a large circular window of the same diameter, and filled with tracery. The whole of the windows are filled with green cathedral glass, with white glass borders, except the large circular portion in the east window, which has been filled with stained glass containing the subject of our Saviour's resurrection, by Mr. Warrington, the gift of the architect, being one of a series of subjects intended to

illustrate the life of our Saviour. The whole of the roofs are of stained lead open framing, and the height of the nave is 57 feet. The church is built of Kentish rag-stone, from the design of Mr. Arthur Billing, at a cost of 3,375*l.*

**Rochester.**—The ratepayers of the parish of St. Nicholas, have resolved to have the church of St. Nicholas altered according to plans by Mr. Gough, architect. The contemplated alterations include the erection of a gallery and re-arrangement of the seats in the body and chancel of the church, by which a number of additional sittings will be obtained. The sum required to make the whole of the alterations will be about 1,400*l.*, to be raised by voluntary contributions. About 500*l.* have been already subscribed.

**Elm (Cambridgeshire).**—Elm Church, after having been closed some time, was reopened on the 3rd July, by the Dean of Ely. The fittings are in English oak. Mr. S. S. Teulon was the architect, and Mr. Brown, of Lynn, the builder.

**Pontardawe.**—The Church of Pontardawe, South Wales, according to the *Cambrian*, is now completed. The architect is Mr. Baylis, of Swansea. The style is Decorated Gothic. The pulpit is carved, and embellished with figures of several of the Apostles. The steeple and tower, 200 feet high, are seen from Swansea, a distance of eight miles.

**Birmingham.**—The want of a commodious place of worship in the rapidly-increasing suburb of Selly Oak is about being supplied by the erection of a church, from designs by Mr. Holmes, of Birmingham, architect. The foundation stone of the edifice has just been laid. The church, according to *Aris's Gazette*, will be cruciform in plan, having a nave 70 feet 6 inches long, and 21 feet 6 inches wide, with north and south aisles, 11 feet 6 inches wide; north and south transepts, 20 feet 3 inches wide, and 21 feet deep; and a chancel, 32 feet long and 20 feet wide; with a vestry and organ chamber on the north side, and an aisle for children on the north. A tower, with a spire, is to be placed at the west end of the north aisle: the height to the top will be 145 feet 6 inches. The extreme height of the nave roof will be 46 feet. Sittings will be provided for 617 persons, viz.—263 free, 172 for adults, and 182 for children.

The style adopted is the Early Decorated, and the materials for the walls are to be bricks, faced with Promogrove stone, and Bath stone for the tracery, the dressings, and the spire. The nave, chancel, and aisle arches and columns are to be of Bath stone, with Wooley Castle stone introduced in the arches.

To improve the effect, marble shafts are to be used under the chancel arch, and in the sedilia. Bands of Wooley Castle stone are also to be introduced at intervals on the inside of the walls, thus forming a contrast to their plastered surface. The roofs will be open timbered, stained, and varnished, and plastered between the rafters, and will be covered with tiles laid in patterns. The seats will be open, no distinction being made in appearance between free and appropriated. It is proposed to fill the principal windows with stained glass: several have been already promised. The work is being carried out by Mr. S. Briggs, of Birmingham.

**Letchford (near Warrington).**—On Tuesday, the 10th, the foundation stone of the New Baptist Chapel, at Letchford, about to be erected to supply the place of the old "Barn Chapel," at Stockton Heath, was laid by Mr. Aaron Brown, of Liverpool. It is situated in Aekers-lane, near the Warrington and Stockport railway, on a plot of ground purchased from Mr. Barber. It is intended to be of the Italian style, 58 feet by 35½ feet, and will seat, in the body of the chapel, about 240 people. There is to be a gallery for the Sunday School children, and vestries. The cost of erection will be about 600*l.*, towards which 400*l.* have been subscribed by the congregation and friends in the immediate neighbourhood, leaving 200*l.* yet to be raised. Mr. T. Mollard Reade, of Liverpool, is the architect of the building.

**Stockport.**—The Roman Catholics of Stockport are about to build a new church, near the schools lately erected by Messrs. Hadfield and Goldie, who are also the architects for the proposed church.

**Manchester.**—The foundation-stone of a new Independent church and schools has been laid, on a plot of ground fronting Chorlton-road, Moss Side, and near to the toll-bar. The total cost, including the site, will be about 6,000*l.* The general plan of the chapel is a parallelogram, 85 feet 6 inches by 40 feet in the clear, with semi-octagonal transepts, 23 feet 6 inches wide by 15 feet 9 inches, and an apsidal recess, 22 feet wide by 19 feet deep at the west end. Behind the church, and at the

sides of the apse, are the minister's and deacons' vestries, cloak-room, stairs, corridor, and school-entrances; infants' class-rooms, room for prayer-meetings; and two class-rooms. The school is rectangular in plan, 57 feet by 26 feet, and is on a story above the class-rooms, approached by staircases. The building will be erected in the Decorated Gothic style. The walls are of Yorkshire parpout, with Hollintun stone dressings. The east front is divided by buttresses into three portions, the outer compartments being slightly recessed, and having a single-light window in each. The centre division has a large five-light window, the upper part being filled with tracery. Over the large window is a quatrefoil opening, serving as one of the ventilators to the upper part of the roof, and surmounting the whole is a stone cross. The south buttress is made to project, and is pierced with a window, so as to form the side of a porch which gives one access to the church. At the north-east angle of the building is the main entrance, formed in the base of a tower standing out from the main building, measuring, in the interior, 10 feet by 10 feet. The tower has buttresses at the angles, the space left by their intersection being filled by stone spilays. The internal entrance to the tower is designed to be exactly central, with a corridor that runs across the church from north to south to the porch entrance before referred to, which corridor gives access to the aisles of the church. The tower is pierced in its upper stages with small rose windows and two-light windows, as well as lucerne lights in the base of the spire, which rises over the whole to the height of 116 feet from the road level. The sides of the church are divided into bays by buttresses, covered with water-tables, and between the buttresses are two-light windows. The visible access to the school is covered with a turret, 60 feet high, which gives character to that portion of the building. There will be red and black paving to the passages. The roof will resemble that of a vaulted building, with groined arches, these terminating on carved stone corbels. The sides of the apse are pierced with windows, intended to be filled with stained glass. The church will have accommodation for about 700 persons. The contract has been taken by Messrs. Young & Co., of Oxford, at the sum of 4,377*l.* 10s. Messrs. Poulton & Woodman, of Reading, are the architects who designed and are superintending the erection, their design having been selected by the committee in competition.

**Barnworth (Manchester).**—The corner-stone of Barnworth New Wesleyan Chapel has been laid. The cost of the building is estimated at 6,000*l.*, the accommodation being to seat 1,200 persons. Mr. Coope, of Leeds, is the architect.

**York.**—A new Roman Catholic Church is about to be erected in Blake-street, York, on the line of the intended street from the railway station to the Minster. Messrs. Hadfield and Goldie have been appointed the architects.

**Glasgow.**—The foundation-stone of the Seamen's Chapel, to be erected in Brown-street, by the Glasgow Seamen's Friend Society, has been laid by the Lord Provost. It is estimated that the building will cost somewhere about 1,500*l.*, and it has been designed to accommodate between 400 and 500 persons.

#### STAINED GLASS.

**Gloucester Cathedral.**—Messrs. Clayton & Bell, of London, are erecting the glass of the memorial window, in Gloucester Cathedral, to the memory of the late Sir B. W. Guise, bart. The subject is the Coronation of Henry III, which took place in the Cathedral in 1216. The state of England at that time was distracted by the wars of the barons, and it was the interest of one faction to get the king, who was then only ten years of age, crowned as early as possible after the interment of King John at Worcester; and as, in their hurry, they could not send to London for the crown, the youthful king was crowned with a golden bracket taken from his mother's arm. This will be represented. The window has also the armorial bearings of the Guise family, who claim to be descended from one of the barons who were present at the coronation.

**St. Paul's Church, Warwick.**—Two memorial lancet windows have just been fixed in this church. They have been executed by Mr. Holland, of Warwick. One light contains a female figure in the act of devotion. The other light represents figures of six children, deceased, supported by angels ascending to Heaven.

**Aleston Church, Stratford-upon-Avon.**—Two lancet windows have been fixed in this church, by Mr. Holland, of Warwick. The first light con-

tains a female figure as "Resignation," and the other a subject representing "Our Saviour's Ascension."

A VOLUNTEER RESERVE.

SIR,—I beg to send you a proposal for a volunteer "reserve," designed to meet the views of the unostentatious, and men of moderate means throughout the country.

1. That a volunteer reserve be instituted.

2. That this reserve shall require a special call for service in the field.

3. That the annual subscription shall accumulate, and be devoted, in case of danger, to the equipment of those of the reserve desiring to join the regular corps, and also contribute to the support of the National Rifle Association.

4. That the accumulating funds of the reserve be under the management of the National Rifle Association, provided the committee of that institution could in some measure be made representative of the reserve.

5. That the companies of the reserve be attached to the local corps, in the councils of which the senior captain of the reserve companies only shall have a voice, and that only when attached.

6. That the annual subscription shall be one guinea; the uniform a cap, blouse, and belt.

W. CAVE THOMAS.

THE CATHEDRAL OF ST. PATRICK, DUBLIN.

SIR,—It has been frequently stated, and as often denied, that the extensive works here are being proceeded with without efficient professional superintendence, if any. Can any one throw any light on the subject? Or, if the Dean and Chapter and Mr. Guinness have been unjustly accused, can any one name the gentleman or gentlemen to whom has been entrusted the delicate task of renovating and restoring the most perfect remnant of Medieval glory in this country.

DEILA.

\*.\* We have every reason to believe that there is not any architect superintending the works at St. Patrick's Cathedral, although the donation of Mr. Benjamin Lee Guinness for its restoration is £20,000; and it is understood that if that amount be insufficient, more funds will be forthcoming from the same quarter. The builder (Mr. Timothy Murphy) appears to be proceeding partly on plans made some time ago. The sooner a proper architect he appointed, the better, or Mr. Guinness, instead of doing the good he desires, and gaining the credit his liberality deserves, may find himself justly reprobated or ridiculed for his share in an injurious vandalism.

THE AUTHOR OF "ANCIENT ARMOUR," AND THE TOWER.

SIR,—You may think it unnecessary to reply to Mr. Hewitt's letter in your number of the 7th instant, denying your assertion that he had defended the purchase of forgeries for the Tower. I hope, however, you will not object to receive a few words, in the interest of truth and our national collection, from an outsider. The hardihood displayed by Mr. Hewitt in this letter is nothing less than remarkable. You referred, of course, to the famous winged hurgonet, which he now admits not to be genuine. When did he make that discovery? Certainly not till after it had been exposed in the *Builder*, when he had exhibited it as *genuine* at a meeting of the Archaeological Institute, and furnished the council with a paper on it, which is printed in their journal (with a plate of the helmet). Upon the notice of it in the *Builder* as a modern fabrication, he wrote a furious letter in its defence, wherein he says, "If there is any point of suspicious work about it, let your correspondent point it out." Was he not aware of the doubt thrown upon it when he so ostentatiously exhibited it? and is not his letter to the *Builder* a defence of it after positive exposure? It is true he abuses the dealers; but as Mr. Falck told him, in his letter to the *Builder*, it is the people at the Tower who ought to know what is *genuine*, and therefore not to be taken in by dealers, as they were upon that occasion, and have been, too often; while their constant rejection of valuable and unique articles has shown the utter want of knowledge and discretion in them and their advisers, amongst whom Mr. Hewitt is avowedly the most important, attending sales for them, making journeys for them (*vide* his letter), and now drawing up their "official catalogue," in which, by the by, his determination to ignore Meyrick is curiously illustrated. He is compelled

in his preface to mention the re-arrangement of the armoury by Dr. Meyrick, by whom "many improvements were effected;" but at page 6, where he describes the fine suit of Henry VIII. (No. 8), he speaks of the engravings by the late G. Lovell, Esq., published in the "Archæologia," with great praise, but says no word of Meyrick's work, elaborate, and valuable paper upon it, which they were engraved to illustrate! Dr. M. having been the first person who called the attention of the public to this magnificent suit, and the interesting circumstance of its being a presentation one on Henry's marriage with Katharine of Aragon, a suggestion which Mr. Hewitt complacently adopts, without the least reference to the original promulgator.

I repeat that the hardihood shown by Mr. Hewitt in his last letter to you is nothing less than remarkable.

A LONDONER.

LE PROPHETE AT COVENT GARDEN.

The production of Meyerbeer's "Prophète" by Mr. Gye is an event. It is so large and remarkable a work, that all who are interested in good music, good singing, good acting, and good scenery, should see it. Mademoiselle Gilling, although somewhat inferior to her predecessor, Madame Viardot, is an admirable *Fidès*; and Tamherlik, in his singing of *Jean de Leyden*, leaves nothing to be desired. The action of the drama passes, as most of our readers remember, first in Dordrecht and Leyden, in Holland, and afterwards in Munster, about the year 1536. Mr. Beverley has put forth all his strength, and has produced some exquisite pictures; including a scene near Dordrecht, with castle and mill; the frozen lake, with Munster in the distance; and a square in Munster, with well in foreground; and the interior of the Cathedral, with preparations for the coronation of the prophet. The excellence of the painting, the number and grouping of the persons engaged, and the dramatic situation, render this latter one of the most remarkable scenes that has ever been witnessed.

The Floral Hall has been again put to use for a flower show. Seen lighted after the opera, the effect is very charming.

PAWNBROKERS AND THE POORER CLASSES.

SIR,—A recent enactment is at the present time causing much angry feeling in some of those districts of the metropolis which are inhabited by the poorer classes. Believing, however, that this measure is likely in some respects to add to the comforts of the poorest class, it may be useful to state the facts. Before the new Act was passed pawnbrokers would receive articles and lend upon them so small a sum as 3d., 4d., or 6d.: in some instances downright poverty compelled persons to take the last remaining article of clothing belonging to themselves or children, and pledge it for the purpose of providing bread or firing; but in the great number of instances these articles of the last necessity were parted with to procure drink, and thus little children were stripped of their last portion of covering of any value; but for this facility many things of the greatest use would have remained in the possession of families. The interest paid upon these trifling loans was in proportion enormous: for all sums under 1s. a halfpenny a month was charged; if the article remained a day or only a portion of a day, the cost was just the same; and in thousands of instances the same article was in this way disposed of and redeemed four or five times in the week. Supposing that 4d. was lent on some article, and pledged and redeemed four times in the week, 2d. would be paid: how much, in the year, would amount to 9s. 6d.! How much is this per cent. per annum? Parliament has determined, and as we think wisely, that it shall be no longer legal for pawnbrokers to receive pledges on which they may lend a smaller sum than 1s.; and for this they are entitled, in order to make up for the loss of the profits on the smaller loans, to a charge of one halfpenny on the delivery of each duplicate for goods up to a certain value, and the usual interest of a halfpenny in the 1s. in the month besides. I have made some inquiry about this matter, and believe that, although the profit of the pawnbroker is large, the change will be the means of sparing to many a poor little child articles of clothing, on which the sum of 1s. would not be advanced, but which are of very great use.

In the course of your wanderings in the poorer neighbourhoods you may have met with places called "dolly shops," or "leaving shops," where articles of small value are taken in by unlicensed

persons, something in the same manner as they are by the pawnbrokers. The charge for this accommodation is still more enormous than that above mentioned; moreover, these, kept by the worst characters, are places to which young boys and girls are encouraged to take articles which they have come dishonestly by; and it is well known that these shomahable places, and also many of the marine storerooms, are a great means, by affording ready facilities for parting with goods, of encouraging crime in the poorer districts.

Now that this change has been made, the police should leave no means at their disposal untried to root out the "dolly shops," and keep up a very close surveillance on certain of the rag-shops. Measures such as these, although they may seem trifling, are all leading to a good end.

A STRUGGLER.

Books Received.

*Companion to Hoopss: Hand-Book of Tables for the Use of Timber Merchants, Builders, Ship-owners, and Others.* By JOSEPH SMITH, of Bristol. Houlston & Wright, Paternoster-row, London.

THESE tables, which occupy ninety-five pages, purport to show the number of Petersburg standard deals, "and the fractional part of a deal, contained in any number of deals, any length, any width, or any thickness." Also the number of Petersburg standard deals, &c., contained in any number of superficial feet of  $\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $1$ ,  $1\frac{1}{2}$ , and up to  $7\frac{1}{2}$  inches thick. We have tested a few of the calculations, and found them quite correct. This said Petersburg standard gives a deal of trouble.

*Country Cottages: a Series of Designs for an Improved Class of Dwellings for Agricultural Labourers.* By JOHN VINCENT, Architect. London: E. & F. N. Spon, Bickersbury, 1860.

MR. VINCENT gives plans for single cottages, with two bedrooms, and three bedrooms for double cottages; a group of three cottages, a group of four cottages, sections, plates of details, and six perspective views of the designs. The cottages are mostly a little too expensive, the cheapest pair, with only two bedrooms, costing 250*l.*; but the designs are tasteful, and the work is so nicely got up, that our impulse was to give our commendation without qualification. Looking a little closer, however, an unlucky blot becomes observable, which may not be passed by. So little attention has been given to the staircases, that in several of the designs they would be useless. In plate 7, for example, there would be 4 feet 6 inches headway, the result of which is, that the bedrooms could not be formed as shown. The author says of sections,—"These constructional drawings, though necessary to the builder, are very uninteresting even to professional persons." If he had taken a little more interest in the section he has himself given on plate 9, he would have seen at a glance the error he has unfortunately fallen into.

Mr. Vincent has prefixed some observations on the earnings and condition of agricultural labourers, and gives a table of their wages in twenty-nine English counties. The pith of his remarks is contained in this extract:—

"The interest of the resident population, no less than that of the proprietor, dictates that no cottages should be added to those already built in a parish, in which the numbers are in excess of profitable employment, as any surplus, however small, must inevitably depress the whole community, and reduce them to a low level of wages. It not unfrequently happens that in one county there is ample and remunerative employment for the whole class of labourers, while in an adjoining county (and even sometimes in a neighbouring parish) the lowest rate of wages is paid. And this state of things continues, when a free circulation of labour would benefit all parties. Every independent labourer moved away would make room for a pauper: the hands that are wanted for the extension of commerce and manufactures would be supplied; the ratepayers relieved; and pauperism restricted to the tender in years, the enticed by age, and those incapacitated by mental or bodily infirmity."

While, in Wiltshire, say, a man could with difficulty get 8s. a week, he might be able, in the West Riding of Yorkshire, to obtain with ease 15s. or 16s.

*The Edinburgh Review*, July, 1860. Longman & Co.

In this No. of the *Edinburgh* there are several very interesting articles, especially a review of Chevalier On the Probable Fall in the value of Gold, and one on Mrs. Grote's "Memoir of the Life of Ary Scheffer."

The reviewer of Chevalier's work differs from the author on some essential points, and discusses

questions which the author leaves untouched. The gold movement, he conceives, whatever may be its effect in particular cases, will, on the whole, operate favourably for the industrial classes of society, by throwing into their hands an increased share of the purchasing power of the world. But during the transition how will it operate—how is it operating?—these are the more pressing questions of the moment. Is it not already raising prices faster than wages? May not the recent advance in prices be at least to some extent attributable to this cause? The reviewer differs from Chevalier on this point, but here we cannot help differing somewhat, not only from the author but also from the reviewer, who says:—

"If the prices of the labourer's provisions and clothing rise, this result can only happen (assuming that the rise proceeds from an abundance of money) because more money is spent on these commodities; and, inasmuch as the labouring classes themselves immensely outnumber all classes who consume the same commodities, it is plain that it is their expenditure, and consequently their wages, which must substantially regulate the rise. The rise in wages, in short, is (where it proceeds from an abundance of money) the cause of the rise in the price of commodities, and consequently cannot be preceded by its own effect."

No doubt this must be true, strictly speaking, so far as it goes; but when did ever wages rise as fast as prices? Does not experience show that when provisions rise, from whatever cause, wages are not necessarily raised in the same proportion?—not that an upward movement of wages, as Chevalier remarks, does not follow a continued dearth of provisions, but in the majority of employments it follows slowly and far behind. The reviewer, as we see, considers that the rise in prices always follows on the rise of wages—not that the rise in wages is what follows on the rise of prices, in the case of an abundance of money. But is it not more probable that the sequence will be twofold and reactive? That not only will the rise in wages cause a rise in prices, but this consequent rise in prices eventually cause a further rise in wages? All such questions, however, are really of less pressing moment to the working-man than the one great question,—how often and how long will the rise in wages lag behind the rise in prices? Doubtless there will be occasional or partial falls in prices too; but for the next twenty or thirty years,—for the life of the coming generation, in short,—it is Chevalier's opinion that there will be a *tendency* at least to depression of the state of the necessitous working classes, in accordance with the depreciation in the value of gold, which both author and reviewer think will probably be all that time in progress. Nor is his prospect even then, according to Chevalier, by any means so bright as the abundance of gold would induce the belief of; for his opinion is that then,—at the close of this era of anxieties and trials,—he will only be placed substantially in the same position as at present.

But it is not the operative class alone who are expected to suffer at least temporary inconvenience from the depreciation in the value of gold from its increasing abundance: many others will also suffer, and especially those whose incomes consist in fixed sums of money, or whose property depends on fixed contracts expressed in the current gold coin of the realm. Thus, if the fall in the value of gold go on till it be 50 per cent., that would indicate a loss to such persons of one half their incomes, unless, as is likely, compensatory modifications take place in the mean time.

The impending changes, as the reviewer remarks,—

"Will in many instances increase, instead of mitigating, existing inequalities of condition. They will enrich the cosmopolitan merchant at the expense of the petty trader. They will enrich the commercial classes, as a whole, at the expense of possessors of fixed incomes, the professional classes, and of salaried employes. Landlords will probably, on the whole, be gainers: they will lose temporarily where the outstanding leases are long, but they will gain permanently through the lightening of their fixed incumbrances; the balance of gain being obtained by encroaching on the incomes of their mortgagages. The tendency of the movement, amongst the middle and higher portions of society, will thus be to aggrandize the wealthy at the expense of the indigent; to tax the more liberal and enlightened, for the benefit of the more narrow minded and selfish, by enriching those whose command of wealth is, perhaps, already somewhat in advance of their sense of its responsibilities, from the means of classes at once more necessitous and more cultivated. These are the evils of the change; and against these we have to set the benefit to the working classes, and the ultimate gain to the world, from the opening of new and fertile regions to man's industry, and the extension of his dominion over the earth."

That the influx of gold is neither an unmixed good nor an unmitigated evil, in short, there can be little doubt. Even to those who reap of and enjoy the abundant harvest the advantage is in itself by no means an undoubted one; and, should the working classes fail to derive all the benefit

promised by the reviewer, he himself gives them this consolation, that,—

"It cannot be denied that the sudden introduction of higher rates of wages and more ample means amongst the working classes often tends to their own destruction. The temptation of money inflames the worst passions of their nature for drunkenness and debauchery in men, for dress and frivolity in women. It militates against those homely virtues of thrift and self-restraint which most effectually elevate the condition of mankind as intelligent and moral beings. Experience proves that it is not amongst those who have the most money at their disposal that the best examples of manly independence are to be found. The highly-paid pitmen and navvies of this country are the most brutal, portion of the community; the gold of the Australian diggers is too often fettered away in reckless sensual indulgence; and, although the wages of labour are far higher in the United States than they are in Europe, we question whether the moral standard of the population can sustain an equally favourable comparison. It may, therefore, be doubted whether the physical improvement resulting from the greater diffusion of gold will be sufficient to outweigh the concomitant evils, and we are far from regarding these evils as either few or trifling."

Meantime, however, there are not yet many unequivocal signs of the pending depreciation in the value of gold. For eight years the golden stream has been flowing, and not less than 200,000,000 sterling of metal have already been added to the common stock. The annual supply is now 38,000,000 sterling, or one-tenth of all the gold obtained in the principal field of supply throughout the whole period from the discovery of America down to the year 1818, when the annual supply had increased from 2,500,000, at the beginning of the present century, to 8,000,000,—itself a very moderate sum compared with the 38,000,000 of annual increase which now takes place, and which is expected to continue for at least twenty years to come.

#### VARIORUM.

Part I. of vol. iii. of the new series of the "Proceedings and Papers of the Kilkenny and South-east of Ireland Archaeological Society for the year 1860, Twelfth Session," has been issued. Besides the general proceedings of the Society, it contains portions of papers on Money in the time of Charles I., with illustrative engravings, and on the Barony of Idrone, in co. Calow.—Some account of the works contemplated by "The Bombay Elphinstone Dock Company (Limited)" has been printed, in the shape of a pamphlet, at the Education Society's Press, Byulla, at Bombay. A "Plan for Improving the Shipping Accommodation of Bombay, and the Reclamation of Back-bay Shore, by Robert Fairbairn, C.E.," accompanies the letterpress.—We are glad to observe that "The Law Amendment Journal," being the proceedings of the Society for Promoting the Amendment of the Law—so much needed on many points,—is progressing. The number for the 12th July, which happens to be before us, contains a report of the annual dinner, at which the veteran law reformer, Lord Brougham, presided.

#### Miscellaneous.

THE AREA OF THE BANK OF ENGLAND.—We have been asked to settle a dispute by stating the quantity of land covered by the Bank of England. It is not our province to settle such disputes, but as a misconception prevails on the point in question, we will not refuse reply. We learn from the best authority that the building covers three acres of land, within nine or ten yards.

DOCKS NOT RATEABLE.—MERSEY DOCKS AND HARBOUR ROAD v. JONES AND OTHERS.—In this case the Court of Common Pleas, by a unanimous judgment, has reaffirmed the principle laid down in the "King v. The Inhabitants of Liverpool," to the effect that the Birkenhead Docks are not subject to be rated, on the ground that the property is held and applied for the public interest.

THE SUMMER DRESS OF THE POLICE.—Many have been the complaints which have reached us of the discomfort, in the hot weather, of the leather stock, the closely-buttoned coat, and unwholesome hats, of the guardians of public peace. Remonstrances have been made, but closed are the ears of metropolitan authorities. We are glad, however, to learn, that the magistrates of the county of Kent have adopted a reasonable dress for their section of the police in the summer heat. The dress now in use there consists of a loose tunic of blue serge, with trousers to match, and light straw hat: the suffocating stock too has been done away with. This intelligent change, which has been carried out on the recommendation of Captain Ruxton, the superintendent of the Kentish force, is worthy of imitation elsewhere.

JAPANESE KNOWLEDGE OF MAGNETISM.—The Japanese have discovered that a few seconds previous to an earthquake the magnet temporarily loses its power, and they have ingeniously constructed a light frame supporting a horse-shoe magnet, beneath which is a cup of bell metal. The armature is attached to a weight, so that, upon the magnet becoming paralyzed, the weight drops, and, striking the cup, gives the alarm. Every one in the house then seeks the open air for safety.

THE NORTH-WEST LONDON PREVENTIVE AND REFORMATORY INSTITUTION.—The annual meeting of this institution was held on Friday, the 6th instant, in the hall of the Reformatory, Euston-road; the Earl of Shaftesbury in the chair. The report states that the number of inmates in the institution is now 110, and that inducements are held out either in diet or accommodation for them to prefer the reformatory to the gaol. The course of training to which they are subjected is calculated to encourage self-respect and self-control, and continues about twelve months, when they are either sent out to Canada or assisted to provide for themselves in this country. The committee rejoice to state that the general working of the institution is most satisfactory. In addition to the asylum for voluntary adult inmates is a juvenile industrial school, certified under Mr. Adley's Act, for fifty lads, and provided with masters skilled in various useful trades, which are taught.

THE TIMBER TRADE OF BRISTOL.—Messrs. Barnes and Sons, in their monthly circular for July, say: "We have to report an unprecedentedly small importation for the month of June. The consumption has been fairly maintained, and the stocks are now lighter than they have been in this market for a considerable period, all which tends to an active and profitable season for the importers. The arrivals for the past month have been 5 vessels, 1,633 tons register (against 16 vessels, 8,830 tons for the corresponding month last year), and consist of 2 from Danzig, 894 tons; 1 from Memel, 437 tons; and 1 from Wyborg, 175 tons; and 1 from Dramen, 177 tons; showing a decrease of 11 vessels, 7,147 tons register, compared with the corresponding month last year. For the season commencing February 1st, 1860, to the present time, there have been 23 vessels, 8,457 tons register, arrived, against 39 vessels, 18,411, for the same period last year, showing a decrease of 16 vessels, 9,954 tons register."

SOCKET JOINT PIPES.—Sir: I perceive it is discussed in your pages as to how long socket-joint pipes have been made in this country. I cannot assist in clearing this question, but I can prove them to have been made long before the modern application or invention of the socket-joint. In under-pinning some cottages in this town two or three years ago, I came upon an old drain of red socket-joint pipes, one foot long and full two inches in the bore. They were as perfect as when laid down, and bear strong and evident marks of having been made on the potter's wheel. The tiles were four or five feet from the surface, and far below the foundations of the cottages. I should have concluded they were for conveying brine or water, but no cementitious matter was in the joints. I shall be happy to forward one or two to the Kensington Museum, if the curator thinks them worth accepting. The date of the tiles I cannot guess at, but they are very perfectly made.—J. SMITH, Droitwich.

NEW ACT FOR PUBLIC IMPROVEMENTS.—The new Act which has just received the Royal assent and is now in force provides for local improvements beneficial to the health and comfort of the people. The ratepayers of any parish maintaining their own poor, the population of which, according to the last account, exceeds 500 persons, may purchase or lease lands and levy rates for maintaining the same, and for the removal of any nuisances or obstructions to the free use and enjoyment thereof, and for improving any open walk or footpath, or placing convenient seats or shelters from rain, and for other purposes of a similar nature. The Act may be adopted in boroughs. After the adoption of the Act a meeting of the ratepayers is to take place, to make a separate rate, and such rate is to be agreed to by a majority of at least two-thirds in value of the ratepayers assembled. Previous to any such rate being imposed a sum in amount not less than at least one-half of the estimated cost of such proposed improvement shall have been raised, given, or collected by private subscription or donation. The rate is not to exceed 6d. in the pound.

**ELECTRO-TELEGRAPHIC PROGRESS.**—Mr. W. P. Piggott, says the *Photographic News*, has laid and satisfactorily worked an experimental cable between Ryde, in the Isle of Wight, and Alverstoke, on the main land, which cable has the remarkable peculiarity of being uncoated, and of having neither india rubber nor gutta percha in its composition.

**THE TOWN DRAINAGE OF MONTROSE.**—It has been resolved by a joint committee, named by the police board and by the inhabitants, to consult Mr. Leslie, C.E., as to the most eligible mode of draining the town, and to put into Mr. Leslie's hands the plans of Mr. Thomson, and other information already obtained. Mr. Burnes, says the local *Review*, proposed to apply for a copy of the Government survey of the town, which, he said, would be useful in furnishing or verifying the levels of the ground. Mr. Millar thought there could be no doubt about the levels; and, after consideration, Mr. Burnes agreed not to press his proposal.

**THE NEW TINTS.**—The attention of dyers is just now directed to some new tints which have been brought into the market. The colouring matter for these fine shades is extracted from gas tar, and several analytical chemists are busily engaged in prosecuting an investigation into the qualities of the new agent. A considerable amount of business is doing in the new shades by dyeing houses in France, also in Leeds, Bradford, and Halifax. The French call the colouring matter by the terms Magenta, or Magent. Mr. Coleman's, which is somewhat different, is called Dianthine. The colouring matter, which is a liquid, is applicable in dyeing worsted, silk, and cotton. In the finer shades, as crimson and rose, cochineal, it is said, cannot approach it in brilliancy; and even saffron yields a tint flat and thin compared with the new element. The shades range from a deep purple to a brilliant rose. The great object the dyers have now in view is to discover some mordant that shall perfect the process.

**MAUSOLEUM FOR THE GORDONS OF CLUNY.**—A mausoleum which has been erected near the Episcopal chapel of St. John, at Edinburgh, for the Gordons of Cluny, is described in the *Scottsman*. It is in the Early English style, and is some 26 feet in height, 24 feet in length, and 12 feet in breadth. The front elevation shows three pointed arches, with mouldings, springing from pillars with small shafts of polished red granite, and decorated with floral capitals, the arches terminating in pointed gables, decorated on each side with crockets, and finished with finials. The mausoleum has a ribbed stone groined ceiling, the ribs being supported on both sides by ornamental corbels. Entrance to the vaults is obtained by the arch openings. The interior wall has three polished tablets of grey granite, with gold letters recording the names of the Gordons interred below. The "skevyns" (at the angles of the building) are ornamented with masks, male and female alternated. Three grotesque masks in front form gurgoyles. The mausoleum is of Binny stone, and was designed by Mr. David Bryce, R.S.A. The sculpture work was executed by Mr. P. B. Smith, of Dean Park.

**INTERESTING ARCHEOLOGICAL DISCOVERIES AT ELEUSIS.**—The famous temple of Ceres has been unearthed, according to the newspapers. "The excavations of Eleusis," says a letter from Athens, "have just been for the present terminated. The temple of Ceres is completely disinterred, and a number of articles connected historically with it and with the *rites* of Eleusis have been brought to light. Among others are the propylea of which Cicero makes mention in his letters, and a magnificent marble statue, to which only a left arm is wanting, and which represents Antinous, the favourite of the Emperor Adrian. This statue is the size of life, and is considered a likeness from nature." A vast court, paved with marble flags, lies in front of the temple. A large cubic altar has been brought to light, standing in its original place, and adorned in front with the *torches* of Ceres and Proserpina *crossed*, and surmounting the inscription, AXAIOI. The famous sacred well, Kalichoros, mentioned in the thirty-eighth chapter of the first book of Pausanias, has also been found, at least M. Lenormand, the excavator, thinks so, since he has discovered, in a grotto, situated between the first and second of the sacred enclosures, a well, partly cut in the rock, and partly built of large hewn stones, bordered with sculptured marble at the top. A kind of crypt or sepulchral hall has also been discovered, coated with green stucco, and filled with the bones of the animals sacrificed to Ceres. The excavations are said to have been carried out at the cost of the French Government.

**INSTITUTION OF MECHANICAL ENGINEERS: ANNUAL PROVINCIAL MEETING.**—The annual provincial meeting of this institution will be held in Birmingham on the 8th, 9th, and 10th of August next, when many engineers are expected to attend from different parts of the kingdom. Papers on engineering subjects will be read and discussed, and a conversation held. A local committee, of which Mr. William Matthews is the chairman, has been appointed.

**CAIRNCROSSAN EXCAVATIONS.**—Excavations, says an Arbroath paper, have been going on at these interesting objects of antiquity, and in addition to curious works previously discovered, an entrance has been found on the north, which connects the round or beehive-shaped house with two other passages. One of these passages stretches towards the north-east, and the other towards the north-west. Both are upwards of 6 feet deep, and, so far as traced, the former is about 16 feet long, and the latter about 48 feet. It is to be feared that some time may elapse before the work is resumed, in consequence of a want of funds.

**DISCOVERY OF ROMAN REMAINS AT ROCHESTER.** In recently excavating the foundations for a new inn at Cuxton, on the site of the White Hart, the workmen dug up a quantity of Roman pottery, probably the remains of a sepulchral interment. It consisted of five or six patens and cups of the red glazed ware, commonly called "Samian," an urn (which probably contained the burnt bones), and a smaller urn-shaped vessel in dark-coloured clay. Two of the red dishes bore the potters' names, one of which was imperfectly stamped and illegible. The other is Maternus, a name which occurs in the list of Roman potters' names found in the late excavations made in the city of London, and published by Mr. Roach Smith in his "Collocanea Antiqua." The vessels discovered are now in the possession of the Earl of Darley.

**MR. TRAIN'S HORSE RAILWAY AT BIRKENHEAD.**—The operations in connection with the construction of the horse railway from Woodside Ferry to the Birkenhead Park were commenced on Tuesday in last week, at the Park entrance. The Ebbw Vale Company, says Mr. Train, have agreed to deliver the iron in July: Messrs. Crowe & Williams are preparing the timber: Mr. R. Main is at work on the carriages, to be ready in August: Mr. Chas. Burn is the contractor, under the engineering of Mr. Samuel, of London, and Mr. Palleo, of Philadelphia, the resident engineer. In September, the Birkenhead Street Railway Company, Limited, will issue excursion tickets from Liverpool to Birkenhead Park and back for 6d.

**GAS.**—By the Bill before Parliament it is proposed that inspectors shall be appointed with very extensive powers of supervision over the gas companies. Should the Bill become law these officers will hear all complaints made against the companies, for which purpose they are to hold a meeting at least once every month. They will also be empowered, without giving notice to any one, to test at any time both the quality and the quantity of the gas supplied by any company, and to enter upon their premises and examine their works. If in any case the gas is found to be deficient in illuminating power, of which a fixed test is prescribed by the Bill, the company which supplies it shall be liable to a penalty of 50*l.*, to be recovered by summary conviction before a police magistrate, with a further penalty of 10*l.* a day so long as the offence continues. It is also proposed, or provided, in the Bill, that "The metropolitan gas inspectors shall inspect and audit the accounts of each of the gas companies to which this Act applies, at least once in every year; and the companies shall lay before the inspectors at every such audit their accounts for the year preceding, accompanied by proper vouchers, and submit to their inspection all books, papers, instruments, and writings belonging to the companies relating to their accounts; and the inspectors of the directors or officers of the company whom they shall think fit; and they may summon before him or them any such director or officer for the purpose of the examination, and may take the examination upon oath, and administer an oath, to the person summoned." A subsequent clause in the Bill—the forty-eighth—empowers the inspectors, whenever they find that any company has earned 8 per cent. upon their paid-up capital, to oblige them to reduce the price of the gas supplied by them to the amount of sixpence for every thousand cubic feet.—At Wigan the gas company have resolved on a reduction in the price of gas of 3*d.* per thousand cubic feet, thus lowering the net price to large consumers to 3*s.* 4*d.*, and to all other consumers to 3*s.* 9*d.*

**THE GUESTEN HALL, WORCESTER.**—We understand that Mr. Christian, architect to the Ecclesiastical Commissioners, has made a survey of the Guesten Hall, in this city, in order to report to the commissioners upon its actual condition, and the outlay which its restoration would require. It is stated that the expense of making the roof good, tying it with iron rods, patching the walls, and restoring the windows (without, however, restoring the west end or the porch), would be about 1,700*l.* or 1,800*l.*: if the west end be restored with the porch and turret, the cost would reach nearly 3,000*l.*

**FLOATING HARBOURS AND BATTERIES.**—A cheap mode of constructing wooden floating breakwaters, &c., is now under the consideration of Lord Clanricarde's committee of the House of Lords. From printed particulars it appears that the design is that of Captain Adderley Sleigh. The system proposed consists of the use of floating structures, built according to the method adopted in the construction of slips, hollow, water-tight, drawing about 3 feet of water, their bottom broad and flat, and the seaward side of them presenting to the sea a decked plane inclined inwards at an angle of from 12 to 15 degrees from the sea level, and rising upwards from the line of floatation at the same angle to the height of about 12 feet; and the decked plane descending in like manner at the same angle below the water to a depth of about 10 feet, the whole being moored from that extremity. It is in principle a *wedge*, of which the point is moored seaward, and it resembles an artificial beach. The cost, it is said, would only be 60*l.* per yard, instead of 1,000*l.*, as the cost of stonework. As outer defences, such wedge-shaped floats, it is conceived, would be useful, as shot would glance off them as they do off the surface of the ocean itself. Coir cables are recommended for anchoring the structures. Wind, it is urged, would be deflected as well as waves by the inclined planes presented to seaward, thus securing quiet harbours to the landward by means of such breakwaters. No difficulty as to security in mooring is anticipated.

**UNPICKABLE AND GUNPOWDER-PROOF LOCKS.**—An invention, patented by Mr. Price, of Wolverhampton, which we have lately seen, seems to be an effective one, and well adapted to the purpose in view. It is called the double patent *unpickable* lock, and is warranted unpickable against every mode of picking, and also proof against repeated charges of gunpowder, as two *drifts* are said to be the most that can be hammered into it. "The hardened steel nozzle," says Mr. Price, "prevents the keyhole being enlarged, and the spindle of the knob being case-hardened, and working in a rebate with a shoulder inside, prevents gunpowder being got into the lock-chamber by breaking the spindle." These and other important improvements in locks and safes are secured by his patents of 1855, 1859, and 1860. Mr. Price has published a document with numerous names of military men, engineers, and others, who witnessed the experiments with gunpowder at Burnley in April last, from which it appears that it was not this lock at all into which gunpowder was introduced so as to explode it on that occasion, the safe produced by his opponent, after every attempt on the right one had failed, being an old one, though of Price's make; and that Mr. Price and his agent and friends repeatedly protested against its introduction, or any operation on it, as a test of the properties of Price's gunpowder-proof locks and safes.

**BUILDERS' DINNERS.**—Sir: Seeing a notice in your last of the annual dinner of Mr. Jay's men, and entirely concurring with your correspondent in respect to the advantageous results of the annual festivities where, by the aid of (I suppose I must call them) the good things of life, masters and men get into such good humour with each other, as, at least for the time, to forget there is any distinction between them, I wish to record the fact that on Saturday last the men in the employ of Messrs. Evans, Brothers, builders, had their annual dinner (at the Rye House), when this happy state of things was fully realized. This desirable result, however, was not entirely due to the consumption of "creature comforts," but was rather the effect of the expression of kindly feelings. One of those present, had their toast, "The Gentlemen Visitors," indignantly repudiated the invidious distinction, and showed that employers, particularly those of small capital, who took an active part in their business, were clearly entitled to call themselves working men, as they generally worked, if not harder, at least more hours than the majority of their assistants.

ONE OF THE COMMITTEES.

**THE BRONZE COINAGE.**—Mr. Hopwood has asked in the House of Commons, when the bronze coinage would be issued. The Chancellor of the Exchequer said he was informed the Master of the Mint was prepared to proceed with the striking of the coin almost immediately; but some time would necessarily elapse, after the striking of the coin, before the issue could be commenced. It was necessary that about two months should elapse to have a sufficient accumulation before they commenced the issue; and therefore the issue would probably take place about the end of September.

**DEATH FROM THE FALL OF A GALLERY.**—An inquest has been held at the Clerkenwell Workhouse on the body of William Mavity, aged 27, who died from the effects of injuries received by the falling of a gallery in the St. George's Hall, St. George's-road, Southwark, on the 17th of April last. The evidence showed that at a pugilistic exhibition a number of people crowded into the music-gallery, a place constructed only to hold about twelve, and the gallery broke down, and Mavity, among others, fell and was crushed by a beam. He was at Guy's Hospital for nine weeks, and was afterwards removed to his own house, where he died. The jury returned a verdict of "Accidental death."

**ACCIDENT AT THE RATCLIFF GASWORKS, SHADWELL.**—A sad accident has just occurred at these works, whereby one person lost his life, and several others were severely injured. For some time past workmen have been engaged in the erection of a new gasholder, capable of containing 80,000 cubic feet of gas, and which was so far completed as that the boiler, being finished, was suspended by chains attached to the pillars which were to be its permanent support, and which were some 60 feet in height. It was raised by means of these chains to the height it will attain when full of gas, in order that the workmen might finish off some of the points which could best be done with the holder in that position. There were a number of workmen employed about it; some of them at the top of it, some of them on the pillars to which the chains were attached, and a considerable number were employed in various ways on the ground outside the tank; when, with a crash which resounded throughout and alarmed the surrounding neighbourhood, the holder frame became detached from the chains suspending it, and snapped into a hundred pieces, and fell a distance of 12 feet into the bottom of the tank, while the pillars, some of them smashed into half a dozen pieces, swayed outwards and inwards, crushing and scattering the workmen in all directions.

**EXTRA PAYMENT TO PUSH ON A CONTRACT.**—*Swansea County Court.* Joseph Downing, contractor, v. Robert Morris, contractor.—The action was for the recovery of 37l. 6s. for work executed. 19l. 6s. had been paid into court. The dispute was a difference of 3d. per yard. Mr. Joseph Downing deposed: I have been doing mason's work in the half-tide basin for defendant, and continued the work until the contract was taken by the Harbour Trustees. The price for the masonry was 2s. per cubic yard, with the rubble backing. The materials were to be delivered to me, but some were obliged to wheel about 300 yards, and Mr. Morris agreed to give me 2s. 3d. per yard.—Cross-examined: Mr. Morris told me the price was too high. I reduced my men one half after it had been agreed to give me 2s. 3d.—Re-examined: When I gave in my tender to Mr. Robert Morris it was on the understanding that I should do all the masonry: what I have done is the most expensive work.—Mr. R. Morris, the defendant, said that the first agreement was for 2s. per yard, and he made no other agreement whatever. Plaintiff told me the materials were not delivered on the spot as required, and I told him that as the trustees were to take possession of the work at the end of the month, I would give him 3d. extra per yard if he would push on the work as much as he possibly could. No sooner, however, had I agreed to this than Mr. Downing reduced his men one half. The advantage which I should have received had the work been pushed on was, that I should have used all the materials on the ground. I should have gained about 4s. for every yard executed by Mr. Downing. He having failed to push the work on, he is not entitled to the extra 3d. per yard. It was not necessary to pause occasionally to allow the wall to "set." The judge remarked that some of the work had evidently been executed before the new agreement to give 3d. extra per yard had been entered into, and under these circumstances the plaintiff could not sustain the action for the full amount claimed. He gave a verdict for plaintiff of 9l., in addition to the sum of 19l. 6s. paid into court.

**CATTLE SHOW DECORATIONS AT CANTERBURY.**—The Royal Agricultural Society have just held their usual meeting and exhibition, this year at Canterbury; and the city appears, from the local papers, to have been effectively decorated for the occasion. Mr. Clarke, of Gloucester, architect, who has superintended extensive decorations in other places, was engaged by the committee, having been recommended for that purpose by Mr. H. Maubing, the contractor for the erection of the sheds and other works in the show-yard. The intentions of the committee only comprised the erection of three triumphal arches—one at the top of North-lane, another in High-street, in front of the Guildhall, and the third on the site of the old city gate at St. George's, together with the decoration of the public buildings. In addition to those named, however, four other arches were put up by private subscription among the inhabitants of different parts of the city—one in High-street, near the Corn Exchange, one in Northgate, one at the end of St. Margaret's, spanning both at St. Margaret's and Walling-street, and one near the toll-gate at St. Dunstan's.

**BATHS AND WASH-HOUSES.**—The report of the Commissioners for Public Baths and Wash-houses in the parish of St. James's, to the Vestry, states that the additions rendered necessary by the increase of business at the establishment in Marshall-street have been for some years under consideration, and it was felt that a decision upon the subject should be no longer delayed. It was necessary to raise an additional sum of 6,000l. under the provisions of Sir H. Dufkinfield's Act, and to appropriate two houses belonging to the parish to carry out the proposed improvements. At a meeting of the Vestry, held on the 28th ult., Mr. Geesin stated, with respect to the financial position of the undertaking, that it was in a perfectly solvent state, and that this was entirely owing to proper management. The Rev. J. E. Kempe, the rector, remarked that it was not a financial question alone; for it had been shown that great moral and social improvements would follow. After some further discussion on the subject, the motion for the adoption of the report was carried. In 1859, 100,133 baths were taken, and women availed themselves of the wash-house on 40,900 different occasions at the Marshall-street establishment. The gross receipts amounted to 2,292l. 10s. 8d., and the working expenses to 1,772l. 10s. 7d. In 1818, two establishments were open in the metropolis, and the receipts for bathing and washing then amounted to only 2,806l. 5s. 1d.; in 1855, at thirteen establishments, to 24,526l. 7s. 2d. We may add that, from 1818 to 1855, the very considerable sum of 113,541l. 1s. 5d. was received at the public baths and wash-houses in London alone.

**HOLYHEAD HARBOUR OF REFUGE.**—On the 16th the Earl of Mayo moved, in the House of Lords, for a select committee to inquire into the state and efficiency or otherwise of the new refuge harbour at Holyhead, and the cause or causes of the number of wrecks that occurred therein during last year;—also to inquire into the plan as now sanctioned by the Admiralty for the construction of a packet harbour for the accommodation of the large class of steamers about to be employed for the Irish mail service.—The Duke of Somerset said he believed that the first outline of the plan proposed by the late Mr. Rendle, if carried out, would have given a much better harbour than the present one, at a much smaller cost, but the question was the actual state of the harbour at present: Was this harbour a bad one as a harbour of refuge? Now, according to the report of the officer in charge of the harbour as to the effects of the gales on the 25th and 26th of October last, it appeared that none of the fifty-six vessels which at that time were riding with the harbour sustained any material damage, except four or five which had been fouled by a vessel that had lost her anchor off Liverpool, and had run into Holyhead harbour for security. Under these circumstances he did not think there was any foundation for the assertion that Holyhead was not a harbour of refuge, and the Admiralty were disinclined to assent to any further expenditure.—The Marquis of Clanricarde observed, that what was required was a vigorous exertion to overthrow an expenditure of millions of money. The Government justification for that expenditure was, that it was incurred under the direction of the most eminent men; but he believed it would be found to be a total waste of public money.—Earl Granville said it was impossible for any one who was acquainted with Mr. Rendle, not to be aware of his singular clear-headedness with regard to any sort of business.—The Earl of Mayo, after a brief reply, withdrew his motion.

**PREPARATION OF BOXWOOD.**—Those of your readers who may be desirous of extending their knowledge, afforded by your article "On the Preparation of Boxwood," would do well to visit the South Kensington Museum, where, in a glass case in the Educational Department, they will find a good illustrative series of boxwood blocks exhibited by Mr. Scott, of Whitefriars-street, Fleet-street, practitioner of this said-to-be mysterious art, VERITAS.

**TENDERS**

For house at Wimbledon, for Mr. John Reeve. Mr. John Giles, architect. Quantities supplied by Mr. James Barnett:—

Macey	£6,297 0 0
Lucas	6,257 0 0
Jackson & Shaw	6,025 0 0
Higgs	5,987 0 0
Baberbury	5,969 0 0
Piper & Sons	5,900 0 0
McClyment	5,873 0 0
Patman & Co.	5,796 0 0
Hardman & Co.	5,750 0 0
Asby & Sons	5,680 0 0
Manfield & Sons	5,676 0 0
Brown & Robinson	5,614 0 0
Down	5,498 0 0
Hill	5,470 0 0
Adams & Sons	5,400 0 0
Down	5,340 0 0
Nyers	5,268 0 0
Wilson	5,237 0 0
Welshman & Gale	5,195 0 0
Avis & Sons	5,184 0 0

For the new passenger station at Redcar, for the Stockton and Darlington Railway Company. Mr. Wm. Peachey, architect; by whom, also, the quantities were supplied:—

Bolmer	£6,000 0 0
Marree	4,179 9 3½
Reedy	3,871 0 0
Armitage	3,850 0 0
Chapman	3,824 0 0
Wainman	3,729 0 0
Pearson (accepted)	3,716 11 11

For restoring the clerestory and internal stonework and for re-erecting St. John's Church, Chester. Mr. R. C. Rickman, architect. Quantities supplied by Mr. T. M. Rickman:—

Add for		Materials exclusive of local.
Tracery in Roof.	of local.	
Haswell	£5,798 0 0	£88 0 0
Stone	5,480 12 9	33 2 8
Hitchen	5,469 0 0	45 7 110
Roberts	5,188 0 0	80 0 0
Lockwood & Co.	5,100 0 0	50 0 0
Owens	4,579 0 0	68 10 0
	4,938 0 0	29 0 0

For residence and warehouse at Leytonstone, for Mr. R. Payne, architect. Quantities supplied by Mr. T. M. Rickman:—

Saville	£2,413 0 0
Dove (Brothers)	3,103 0 0
Coxter & Son	2,554 0 0
Reed & Son	2,730 0 0
Asby & Horner	2,735 0 0
Newman & Co.	2,723 0 0
Rivet	2,709 0 0
Hedges	2,673 0 0
Hill	2,649 0 0

For villa at Moseley, near Birmingham, for Mr. Isaac Ford. Mr. Edward Holmes, architect. Quantities supplied:—

Hardwick	£2,684 0 0
Briggs	2,590 0 0
Barneley	2,530 0 0
Matthews	2,457 0 0
Jones (accepted)	2,288 0 0

For restoring damage by fire, Castle Tavern, Longley. Same architect:—

Dearsley	£1,026 0 0
Wills	963 0 0
Gadsby	880 0 0
Papps	890 0 0
Day	650 0 0

For the chapels and lodge for the Battersea Burial Board, minus the inclosure fence, the board not being in a position to carry out the former contract:—

McLennan & Bird	£1,173 0 0
Bov's	1,119 0 0
Adams & Sons	1,025 0 0
Bass.	1,020 0 0

For erecting a villa at Buckhurst hill, near Langton. Mr. J. Tanner, architect. Quantities supplied:—

Taylor	£616 18 0
Axford	520 0 0
Turner & Son	475 0 0
Roper	450 0 0

For additions to the Maid and Magpie, Stepney. Mr. W. E. Williams, architect:—

Seck	£123 0 0
Brake	121 10 0

For addition and alterations to house at Thames Ditton, Surrey. Mr. Thomas Milbourn, architect:—

Atkinson	£295 0 0
Matthews & Son	230 0 0
Newland	192 10 0
Cannon	145 0 0

For building new luncheon-bar, The Dolphin, Coleman-street. Mr. William Nunn, architect:—

Day	£250 0 0
Buffam	225 0 0
Anley	221 0 0
Elphinstone	210 0 0
Gadsby	210 0 0
Papps (accepted)	180 0 0

# The Builder.

VOL. XVIII.—No. 912

Architectural Publication Society.—The "Dictionary."



THE satisfactory progress of the "Dictionary of Architecture," commenced by the Architectural Publication Society, is a matter in which we are much interested, as indeed all our readers should be. We desire, in the most emphatic manner, again to draw attention to it.

Since the beginning of last year, when we noticed the progress of the Society, further progress has been made in the "Dictionary." The letter D has been commenced and issued; one half of the letter E has also been issued; the remainder we have completed, and the letter F is taken in hand.

The Part before us, containing the first mentioned letter, we observe whilst turning over the pages, *Dagoba; Dairy; Damp; the Dances*, father and son, which articles appear to have been drawn up with some care; *Deal; Decay; Decomposition; the Decorated Period of Gothic Architecture in England with its contemporary examples abroad; Dentil; Desk; Desk*, with some capital Medieval illustrations supplied by Mr. Salter; *Diaper*, which, whilst clearly defining the difference between it and *Chequer*, throws doubts upon the generally received origin of the word from the town of Ypres; *Dog-tooth ornament; Dome*, under which head is given a tabular statement of 150 of the most celebrated examples produced in the ancient and modern worlds, with the sizes and dates of construction; *Door*, presenting carefully drawn up lists of those mentioned by various authors as being of stone, and early dated examples of wood, and the more remarkable ones of metal, still existing in Italy, Turkey, Palestine, Egypt, Germany, Russia, and Spain, with their dates, artist's name, general style of ornamentation, and description, if any, forming a most valuable contribution, whether considered in an historical, archeological, or artistic point of view; *Doric Order; Doubling Stone; Drawing*, which article details the existence of such of the few mediæval productions as have come down to our time, not forgetting reference to the interesting album of Villard de Honnecourt, which has excited so great an interest during the early part of last year, and it may surprise some of our readers to hear that there are but four existing, it is supposed, in England, three of which are in the British Museum and of late date; *Dresden; Dry Rot; Dublin; Durham*; including with a concise account of *Dutch Architecture* and the present state of the art in the Netherlands.

We reprint the article, *Drawing*, to serve as a specimen.

### Drawing.

This word in the singular means the developed plan of the designer expressed in lines: in the plural it signifies all the plans, sections, elevations, and working details necessary to carry out such a design. It is usually stated that, under ordinary circumstances, the drawings belong solely to the architect: he is employed to design and to erect the structure, whatever it may be, with due regard to expenditure, and for that he is paid: the drawings are simply his means of proceeding. As a general rule an architect, in charging for his plans and specifications for a work which has not been executed, is not bound to give them up to

his employer; but something would depend on the circumstances of the case. Builders will sometimes refuse to give up the drawings during or after the execution of the work, but a summons before a magistrate has been considered sufficient to meet the case. This appears to be founded upon the acknowledged principle that letters belong to the writer and not to the receiver of them.

It appears difficult to understand how a foundation could be put in of proper proportions, before the nature of the superstructure had been determined. Yet Raine, "Catterick Church," 4to, London, 1834, says, "No reference is made in the contract to anything resembling the working drawing of modern times; nor has the greatest pains, taken for this purpose, been able to discover any such record relative to any other early fabric. The archives of Durham Cathedral have been carefully searched for architectural plans, but without success. A manuscript commentary upon the prophet Ezekiel, belonging to the Dean and Chapter of Durham, written apparently in the eleventh century, contains some curious pen-and-ink delineations in the Norman style, of Ezekiel's temple, such as ground plans, elevations, &c., which prove the architectural skill of the commentator, and the fact that it was no unusual thing to commit to parchment illustrations of this nature. 'Patternes in paper,' 'portraictures,' 'patternes in timber,' are referred to in the contract for the Beuchamp chapel at Warwick, in 1439; but, during the earlier centuries of our national architecture, we suspect that models in wood, or drawings upon wooden tablets, were in general adopted as specifications by the contracting parties, and referred to during the progress of the work." The value of parchment seems to have been sufficient to cause the erasure of designs upon that material, so that it is hardly reasonable to expect the discovery of any drawings made before the general use of paper, unless the original owners and their heirs had considered that the preservation of such documents would be useful. Such a feeling does not appear to have existed in England. Britton, "Dict.," s. v. Cathedral, also observes, "it is a remarkable circumstance that amongst the numerous records preserved in muniment rooms respecting cathedrals, there have not been found any ancient drawings of the ground plans and architectural designs for these splendid national buildings."

If exception be made in favour of the valuable section of the mouldings to a door of the church of St. Stephen at Bristol, engraved in *fac-simile* by Willis, "Arch. Nomens," 4to, Cambridge, 1846, from the original in William of Worcester's (or Botoner's) "Itinerary," preserved in the library of Corpus Christi College, at Cambridge, there does not seem to be as yet any knowledge of architectural drawings in England older than those in the British Museum, Cottonian MSS., Augustus I, II, and III. Among these is "the monument intended for King Henry the Sixth," beautifully (for the time) drawn and slightly shaded in ink, on parchment 2½ inches by 15 inches, which has been inadequately engraved on a reduced scale in Gough, "Sepulchral Monuments," fol., London, 1796, pt. 231. Another is entitled "Capella bte. Marie in collegio regali Cantabrigie," and is a slightly-tinted view of the exterior of King's College chapel while the interior was being finished. It is on paper, and is 48 inches long by 26 inches wide. This is accompanied by a less excellent drawing, 52 inches long by 15 inches wide, being the design for a "campanile regalis, Collegii Cantabrigie," which has been engraved on a reduced scale, with many alterations in the drawing, in Lysous's (Magna Britannia), "Cambridgeshire," 4to., London, 1808, p. 116. A tinted drawing of a gallery intended to be built for Henry VIII. may be passed over; but three large drawings, highly coloured, with the decorations in gold, of magnificent pavilions made of tents, deserve much attention. The Society of Antiquaries, "Vet. Mon.," fol., London, 1808, iv. pl. 16-20, has published the pictures of the death (1522), &c., of John Islip, abbot of Westminster, which contain his hearse, chapel, and other details. Many of the contracts which have been recovered refer to then-existing works as models for imitation. A few notices are appended hereto of mention of drawings of late date.

In the will of Henry VII., 1509, it is declared, "we wol that our towmbe bee in the myddes of the same chapel, before the high autlier, and in such distance from the same as it is ordered in the plat made for the same chapel, and signed with our hande;" "also that the said chapel be desked \* \* \* as is by us redily devised, and in picture delivered to the priour of Saunt Bartilmew's

beside Smythfeld, maistre of the workes of our said chapel." In 1516 was made an agreement with Peter Torrysan for the monument of Henry VII., "according as appereth by the patren"—"all the aforesaid worke shall be graived, and workmanly wrought according to the said patren;" Ackerman, "Westminster Abbey," ii. 136-137, 141-2; and "a plat" signed by the executors of King Henry VII., is referred to in the agreement dated 1513, for building King's College Chapel at Cambridge. Considerable difficulty may be expected to arise from the various constructions which may be given to the words "carve" and "pattern" in the following extract relating to the building of Roslyn Chapel, 1446, wherein it is stated that "to the end the work might be more rare, first he caused the draughts to be drawn upon Eastland boards, and made the carpenters to carve them according to the draughts thereon, and then gave them for patterns to the masons, that they might thereby cut the like in stone;" MS. memoir, Hay's collection in the Advocates' Library, Edinburgh; printed in Britton, "Arch. Antiq.," 4to. London, 1812, iii. 51.

The following list comprises drawings mentioned as still existing on the Continent, and proves them to have been abundant and of large scale.

A copy, four-fifths of the size of the original, supposed to date 820-30, that is preserved in the library of S. Gall, of a design for the monastery there, was published by Keller, Zurich, 1844, and has been repeated, to half the scale of that publication, in the *Archæological Journal*, Svo. London, 1848, v. 85.

A design on parchment about 11½ feet long, dating about 1450, for the still unfinished tower to the church of Ste. Waudru, at Mons, was published in *fac-simile* by Chalou, "La Tour," &c. Brussels, 1844, who notices that at Ghent a drawing of the Hôtel de Ville is preserved; and that in the Town-hall at Louvain there is a drawing containing almost every detail of the towers and principal portall of the Church of S. Pierre.

The Comité Historique, &c. "Bulletin Archéologique," Svo., Paris, 1843, mention, i. 311, a *projet* in west door for the Cathedral at Clermont Ferrand; ii. 460, the full-size outlines worked on the granite paving covering the vaults of the aisles to the choir of the Cathedral at Limoges; ii. 513, 542, the (fifteen or) twenty-two drawings in the Frauenbaus at Strasburg; the magnificent *portall* of the fifteenth century for a cathedral (? at Barcelona), which was traced by M. Tastu; and ii. 726, five drawings for the church of S. Pierre, at Tonnerre, three of which are dated 4th January, 1567. The interesting album of Wilas de Houceurt (1230-60?), including sketches of the tower at Laon, of a window at Rheims, and plans of the choirs of the church at Vaucelles, of S. Etienne at Meaux, and of Notre Dame at Cambrai, as well as of the apsidal chapel at Rheims, was edited in *fac-simile* by Lessus, 4to. Paris, 1858; the *Builder*, 1858; paper read by H. B. Garling, at the Royal Institute of British Architects, 10th November, 1858. Didron, "Anuales Arch.," 4to., Paris, 1846, v. 37, gives, at two-thirds of the size of the originals, two out of three palimpsest drawings discovered 1838 at Rheims, under a necrology reaching down to 1270, of the principal church in that city. Those that were published exhibit a design for the west front of a cathedral having three large porches, a smaller design of the same character, and some foliage: the restoration shows the careful use of central lines, and complete regularity in the arrangements. Didron, who attributes these drawings to the first half of the thirteenth century, also mentions more of the others, herein described, which, as he observes, are nearly all of the fifteenth and two succeeding centuries; and adds intimations of the existence of others at Auxerre, Bourges, Montpellier, and in the hands of private persons at Paris and at Treves. The drawings of the tower, of Beauvais Cathedral, which fell 30th April, 1573, were lately or are still in the possession of M. Dorgedray, of S. Lucien, near that city, and were engraved by Gilbert, "Notice Hist. de l'Eglise," Svo., Beauvais, 1830.

Didron also notices the existence of a plan on the walls of the cathedral at Freiburg, in Breisgau; and states that the sacristy at Ulm possessed an interior elevation of the cathedral, with the name of the architect Ensiger written upon it. A drawing of the tower and spire of the same cathedral belonged to Canon Schmidt. This is partly engraved *fac-simile*, pl. 58 of Moller, Denkmaler. Fifteen old drawings have been found at Frankfurt, and others at Munich. The *Acquis* Au

Ratisbon Cathedral was published in a new very scarce plate, entitled "Idea cathedralis ecclesie S. Petri in civitate Ratisbouensi juxta verum originale delineata par Melchior Küssel, fol. Aug. Vind., 1655." The mode of setting out a pinnacled in 1386, by Mathias Rorizer of Ratisbon, was published by Reichensperger, Treves, 1845, and is translated in the "Detached Essays," 1848-9. An engraving about 2 feet 9 inches long from an old drawing of the celebrated fountain at Nuremberg, was published 1822-4 by Lotzbeck, of that city.

An elevation of a tower for the cathedral of St. Stephen at Vienna, 15 feet long (not the tower that was finished and afterwards destroyed, but the approved design of a second tower which it was proposed to erect), is engraved in *fac-simile* in the "Bauezeitung," seven sheets, 1841, pl. 528. At Vienna are also six large plans and elevations of both the towers of St. Stephen's church, by the Kirchen-hausmeister Gregor Hauser, which were probably made at the time of the repairs in 1819; and also the elevation of a Sakramentshaus, by Michael Fröschel, hausmeister of St. Stephen's, 1524. The north-west tower and half of the facade of Cologne Cathedral, on a parchment roll 3 feet wide and 9 or 10 feet long, found in 1814, was published 1818 by Moller, in *fac-simile*, in seven plates. The south-west tower and the whole of the facade are engraved in Willemin, "Mon. Fran. Inedit." One of the upper windows of the choir, and a small plan of the south tower; both of these, with an elevation of the second story and a section of the portal to the nave, were apparently drawn by one hand. The plan of the south tower was published in *fac-simile* by Moller: detailed descriptions of these drawings are given in Boisseree, "Cologne," 4to., Munich, 1843, p. 116-7. Moller, "Denkmaler," pl. 47, gives a *fac-simile* of a plan (at Strasbourg), which he dates thirteenth century, of a tower resembling that of Freiburg Cathedral; pl. 48, an elevation (at Strasbourg), which he dates thirteenth or fourteenth century, supposed to have been for the tower of the church at Thann, near Colmar, built 1450-1500; pl. 53, a church tower at Carlsruhe, after a drawing of fourteenth century; pl. 60-1, *fac-similes* of a plan and elevation for a tabernacle, with plan of another, both at Strasbourg, without dates, but late; and pl. 66-70, the plan and elevation of another tabernacle, dated 1462.

It is scarcely necessary to refer to the numberless architectural drawings still existing in Italy, made by the eminent followers of the Renaissance style: almost every city, and large collection, contain a number, more or less, of specimens of their talents. In England, Wren's drawings are preserved in the library of All Souls' College, at Oxford: many by the still later practitioners will be found in the library of the Royal Institute of British Architects; in Worcester College, Oxford; in the Radcliffe library at Oxford; and in Sir John Soane's Museum: the latter also contains the unique collection of drawings by John Thorpe, of the time of Queen Elizabeth.

Although not immediately connected with the precise subject of this article, it may be mentioned that not only does the Museum at Cologne possess a collection of drawings bequeathed by M. de Noel, of buildings now destroyed; that in the Town-hall of Briinn, in Moravia, drawings are collected of any old building, or of any edifice otherwise characteristic, which is about to be destroyed; that a valuable collection of plans of the churches at Vienna, made by the han-inspektor, Belsch, at the beginning of the present century, is also deposited in the magistratsgebäude; but that the French Government has published under Lenox, "Statistique Monumentale," fol., Paris, 1835, &c., details of the old structures that are from time to time disappearing in that city. Contract, Design, Example, Model, Mould, Patron, Pattern, Picture, Plan, Plat, Template.

In the portion of E which has been issued, we observe *Early English Period of Gothic architecture in England with its contemporary examples abroad; Earthenwork; Eastland Boards*, asserting that it is not clearly ascertained whether they were of fir or of oak; *Ecdiciam*, which is an interesting notice of the metal vases used for the conduction of sound in the ancient theatres; *Edinburgh; Efflorescence; Egyptian Architecture*, explained in an able manner by a concise and chronological arrangement, from the best authorities, of the works of art, wherein the student will at once see the probable position of every structure of any import-

ance in the ancient history of that people; *Elasticity; Elephant; Elizabethan and Jacobean or Revival Architecture*, which is treated generally in a different manner to that hitherto usual: thus, a table is given of the publications upon architecture during the epoch, "as a means of examining one of the sources from which those artists who had not travelled obtained their notions of the theory and details of the newly-fashionable style;" another paragraph gives the names of the surveyors and architects employed; whilst a third portion gives, in chronological order, the most noted buildings erected during the period in question. We must refer our readers and those interested in this phase of our art to the dictionary itself for further details, merely observing that the references extend from the year 1512 (the date of the erection of the palace, now the Palazzo Giurati, at Rome, presented in 1517 to the Crown of England, and which has lately been referred to in the discussions on styles) to the buildings in Edinburgh erected as late as 1632-40. Reference is made to an article in our fourth volume, and the writer concludes, "There is no work which can be said to give a satisfactory history or practical synopsis of it [the style]; the following publications consist chiefly of pictorial views, and the more architectural works are only miscellaneous collections of parts or details, without any arrangement whatsoever." The last article in this part is a good account of the *Bland Edge stone*, a very useful material, obtained from near Halifax, in Yorkshire.

We have necessarily merely pointed out the more interesting articles in these two parts of the work. Most of them are worthy of perusal for their own interest, being subjects which, as we have already stated of one of them, are treated generally in a different manner to that hitherto usual. They show the writers were aware that their space was very limited; that fresh useful matter, united with a *raisonné* of the points usually put forward under such heads, were chiefly requisite; and that references to previous authors were necessary to be added, instead of copying, or as is too often the case, misquoting by garbled quotations. They will suffice to indicate the large amount of information brought together; and it may be presumed from the forethought displayed at the commencement of the work, and the care which appears to be still afforded to it, that few terms are omitted, at all useful, in any of the divisions into which the art and science resolve themselves.

Whilst the printer has been busy, the lithographer has not been less so. There is yet a word or two to be given to the plates of illustrations accompanying the text. As far as the lettering is concerned, they have gone far ahead of the text; and we presume, until the binding up is commenced, the back letters are always open for plates to be inserted. We observe that two goodly useful volumes are already prepared, comprising the letters A and B, and C and D, a third being in course of completion. In the Parts under inspection are supplied examples of *Chimney-piece; Cinque-Cento; Door* (bronze), illustrating the article in the text, above mentioned; and *Doorway*, which were in time for the second volume; while for the next and succeeding ones are now prepared *Entrance Gate; Fountain* (two plates), a subject always acceptable; *Furniture*, which brings in three chests, the extent of ornamentation on which we can scarcely hope to see reproduced in these days; *Gate-house; Grille*, two plates, giving about twenty examples of wrought iron work, mostly from Venice and Nuremberg; *Egyptian*, some dozen capitals with remains of colour; *Font and Font cover*, the latter showing a peculiar example of a crane for lifting up the cover and swinging it aside; *Gable; Gargyle; Gathouse*; and *Half-timber House*. The subjects, generally, speak for themselves. We have only to add that they are of all styles of design, and that the lithography by Mr. Bedford is satisfactory. Besides Mr. Hussey, who kindly supplied the drawings for the three chests, other friends who have assisted this part of the undertaking are Messrs. F. P. Cockerell; W. E. Nesfield; H. R. Newton; E. H. Mar-

tain; A. McDunn; C. H. Purday; G. R. Clarke; A. Salvin, jun.; J. M. Lockyer; R. R. Rowe; Lewis Vulliamy; Octavius Hansard, the able examiner of the illustrations; F. W. Porter; T. H. Lewis; E. Falkener; J. J. Thomson, jun.; C. F. Hayward; J. T. Christopher; R. H. Shout; and E. Ashworth.

With reference to the Dictionary and to the Society, we have lately seen two letters from one of its ablest contributors, addressed to the honorary secretary for the Dictionary. Considering that they were written while suffering under a severe illness, they afford so happy a specimen of the thorough good-feeling which exists in the management, and of the active spirit still uppermost and available to render the Dictionary worthy of the profession under whose auspices it is produced, that we are tempted to place them before our readers, trusting at the same time that they may tend to draw the attention of some to the undertaking, who might otherwise overlook it.

The first communication is prefaced as follows:—"While confined to my bed, I was amusing myself with reading about the Civil Service, and the difficulty they have to conquer the spelling-book. Then I fell thinking of you, and of course my head got full of nonsense directly; so, to give it a vent, I compiled an alphabet for the expression of the A. P. S. Dictionary, and all concerned therein, yourself in particular. When we next meet you shall sing it in character:—"

A is an *Architect*, driving his pen:  
B our *Boys*, some of very small men:  
C are the *Critics*, who look rather shy:  
D is the *Dictionary*, never say die!  
E is the *Editor*, surly and grim:  
F is the *Firm*, which we oft poke at him:  
G are the *Geors*, long, tedious, and dull:  
H *Half-and-Half*, how I long for a pull!  
I 'Illustrations,' they're famous, no doubt:  
K is the *Kind Keepers*, who forge them out:  
L the *Lithographers*, always behind:  
M are 'Materials,' those we don't mind:  
N 'Nomenclature,' what work for the pen:  
O are the *Opticks*, we ordered at ten:  
P are the 'Palings,' oh! what a lot!  
Q is a *Letter*, the shortest we've got:  
R are the *Reviews*, they're always full work:  
S is our *Secretary*, out-and-out Turk!  
T are the *Tables*, our columns that swell:  
V are the *Volumes*, they're certain to sell:  
W the *Writers*, poor buffers! who plie  
On X, the 'Xpenses,' a furthing a line!  
Y is *Yoursself*, we're delighted to tease:  
Z is *Zo-o-pluruz*, alias a Frizee.  
But here come the oysters, and here comes the beer—  
Success to the A. P. S. Number! 'Hear! hear!  
Three rattling buzzas, and a finishing cheer!"

The following was shortly after forwarded, as a foot-note to the above:—

"Yes; I call him a Turk,  
For he drives us to work,  
And blows up like bricks if we venture to shirk:  
He bores for 'MS.'  
For 'Procs,' and for 'Press'  
And scolds for 'Reviews' till we're quite in distress:  
And worse than all else, (believe my narration)  
Compels us to verify 'y' quotation!  
Diodorus or Cato,  
Vitruvius or Plato,  
He'll have every word, and he won't be said nay to:  
The Latin Apicius,  
The Dutch Burgersdicius,  
Theocrisus, Pilius, Severus, Sidius,  
Pausanias or Pindar, Solinus or Varro,  
Terullian, Augustine, or Bingham, or Barrow;  
And he makes you transcribe him, line, chapter, and  
verse, or he  
Writes you to say 'your citation's too cursory,'  
And should a poor scribbler but venture to nab as his  
Own, a sang bit from the 'clouds,' or 'Ambasis';  
Or make any blunder in metre or grammar,  
By Jove! sir, he's on you, as down as a hammer;  
Nor spares you one morsel, or bit—no! nor half a bit—  
So now I'll go on with my A. P. S. Alphabet."

I have thus particularly exposed the cruelty of making the unappy writers verify their quotations, robbing them of the pleasure of quoting books they never opened.—harbarous!"

#### ON HEALTHY DWELLINGS, AND PRE- VENTING SANITARY DEFECTS IN THE HOMES OF THE WORKING CLASSES. LADIES' SANITARY ASSOCIATION.

AMONGST the various circumstances of which man is the creature, none have a more powerful influence on his physical condition than those connected with his dwelling; and in respect to the poorer classes, this influence affects him also very seriously as a moral and accountable being.

In viewing the question of "healthy dwellings" under this twofold aspect, as presenting a remedy for much wide-spread physical evil, and as pointing to the means of removing very formidable obstacles to the moral and the religious improvement of a numerous class of the community,

+ Read by Mr. Henry Roberts, F.S.A., at the South Kensington Museum, 18th July, 1860.

its double claim on the attention of the Christian philanthropist, and on the earnest efforts of all who have its advancement in any way within their power, is clearly manifest.

Believing that the influence of the Ladies' Sanitary Association cannot be directed to an object of greater importance, I felt bound to comply with the request made, that I would present, in a condensed form, the experience of more than fifteen years, during which the study of this question, with its practical application at home and abroad, has occupied much of my time. And before doing so, as a proof of cordial sympathy with the objects of the Association I have now the honour to address, it may not be out of place to quote a resolution which was proposed by me at the Congress International de Bienfaisance, held in Brussels, in 1859, and was unanimously adopted by the representatives of about twenty different countries there convened under royal authority:—

"The Congress declares that it is of public utility that the working classes be enlightened by all possible means in regard to the improvement and the keeping of their houses in good order. It declares that the instruction of the young in the labouring classes ought to comprise all which relates to the cleanliness of their persons and of their dwellings, to the benefits resulting from good ventilation, and the evils arising from humidity. Lastly, it thinks that the study of the science of preserving health is one which ought to be rendered accessible to all."

The condition of "healthy," in regard to dwellings arises out of that which is either local or structural, and may be said, in the majority of instances, to be not under the control of the occupants; or else it results from circumstances which they ordinarily have the means of changing.

Amongst the class of persons whose advantageous position usually gives them the power of choosing a residence, there are, however, not a few who, either through ignorance, or from want of consideration, are manifestly insensible to the evils they expose themselves to, in a dwelling which is unhealthy as to its locality, or deficient as to its sanitary arrangements; until the serious, if not fatal consequences, are painfully manifest in the state of their own health, or that of their family. A single illustration of this fact may be drawn from the last annual report of the Registrar-General, where, amongst other analogous cases referred to, is that of three young ladies, nineteen, eighteen, and fifteen years of age, the daughters of a lieutenant-colonel, who died in the past year at Lymcomb, near Bath, from the effects of imperfect drainage.

Such cases show that the importance of this inquiry is not limited to one class of the community,\* but that all have a personal interest in knowing what are the conditions essential to a "healthy dwelling." In endeavouring to point them out with precision and brevity, my aim will be to avoid the use of technical terms, as much as possible; and with a view to simplify the treatment of the subject, it will be considered under the three heads already indicated. 1st, as to that which is local. 2nd, as to that which is structural; and, 3rd, as to that which may be distinguished as being mainly, though not wholly dependent on the occupants of the dwelling.

**In regard to Locality.**—High and dry situations, with a free circulation of air, whether in towns or in the country, are proverbially healthy, whilst those which are low and damp, or surrounded by confined air, are the opposite. Experience affords by the state of troops when encamped, or when in permanent barracks, or in hospitals, is conclusive on this point. It is on record that the mortality of troops in Jamaica has been diminished from 120 to 20 per thousand, by their removal from the plains to the hills. And it is well known that ague, dysentery, and fever prevail in localities where the surface of the ground is naturally wet, and insufficiently drained; or where there exists an accumulation of decaying matter, of which one sure indication is the presence of an abundance of flies. Dampness of situation is also productive of mental depression, bodily feebleness, and a disposition towards intoxicating drink.

Wherever, therefore, dwellings are built on naturally wet ground, it is essential to their being

healthy, that ample provision be made for draining the soil, as well as for ordinary surface drainage, and the carrying off of surplus fluid from the house itself. This necessity is more manifest in the country than it is usually in towns, as their gradual formation and progressive increase, has generally been accompanied with surface drainage, under some form or other. Good surface drainage is, however, peculiarly necessary in towns built on an uneven surface, as is the case with the Metropolis, which has been built on low hills, in the midst of an imperfectly reclaimed swamp, and is partially underlaid by a stratum of peat. The lower levels on either side of the Thames, where the drainage has been most inefficient, are well known to have been much more severely visited with cholera than the higher parts of the metropolis. Dr. Farr tells us that, taking the mean of the cholera epidemic of 1818 and 1854, in London, nearly 15 per 1,000 of those living under 10 feet of elevation, died to 1 per 1,000 of those at the highest elevation, and that if London be divided into terraces of different degrees of elevation, the mortality from an epidemic of cholera is, in round numbers, inversely as the elevation.

The providing efficient means for house drainage as well as a good surface drainage, is a duty which in the case of towns, obviously devolves on the public authorities. The consequences of a past neglect of this duty have been recently manifested at Windsor, where the prevalence of fevers and choleraic complaints having led to an investigation, the drainage of the town was found to be very defective; whilst, on the contrary, at the castle, a separate and perfect system of drainage having been provided, no disease existed there.

In house drainage, one valuable modern improvement is the use of glazed earthenware tubes, which should invariably be kept as much as possible without the building; and especial care ought to be taken that the pipes which discharge into them are properly trapped, in order that they may not become a medium for the escape of foul air into the dwelling. Cesspools under basement floors have been the cause of sickness and deaths innumerable. During the cholera in 1849, to my knowledge, several cases, wholly traceable to this cause, occurred in one house. Whenever these latent sources of mischief are discovered they should be removed as quickly as possible. The experience of an eminent sanitary engineer leads me to believe that in many houses of the first magnitude, both in the metropolis and in the country, which are not of recent construction, this evil exists, as well as that of defective drains, causing the ground under the house to become sodden with fetid matter. The gases which originate from these sources and diffuse themselves over the dwelling, constitute one of those conditions of local impurity which exercise a powerful influence, when the state of the atmosphere is favourable to an outbreak or spread of cholera, fever, or other kindred complaints.

For an ample supply of pure water, one of the most important accessories to a healthy dwelling, the public authorities should, in the case of towns, be held responsible. The contamination of our rivers, by their being unscrupulously and at the same time most wastefully made the receptacles of sewage, has rendered them very generally incapable of supplying the neighbouring population with wholesome water. That drawn from wells is not unfrequently impure, though its sparkling appearance and freshness to the taste might lead to the contrary supposition; in towns this is generally caused by an infiltration from some neighbouring drain, cesspool, or other deposit of untrifling matter. Many such instances in the metropolis might be referred to; one was recently mentioned to me by the medical officer to the General Post Office, as having been the cause of much internal derangement to several of the employes in that establishment, and which had led to his recommending the use of Harrison's moulded carbon filter. In the last report of the Registrar-general, reference is made to a well at Sandgate, as containing 40.96 grains of impurity per gallon.

Measurements recently taken in many places have effected much good in respect both to drainage and to the supply of water. The noble example set by Glasgow, especially deserves the highest praise. The purity of the water now abundantly drawn for the supply of that city from Loch Katrine, a distance of 34 miles, and which has involved an outlay of about 1,500,000, may be judged of by the following figures, which represent the total amount of impurity in grains per gallon. In the water supplied to Glasgow from Loch Katrine, 3.16. In the water supplied to London, according to the returns for May last, by the

leading companies,—Chelsea, 17.84; Grand Junction, 17.95; New River, 18.52; West Middlesex, 20.08; Lambeth, 20.80; Kent, 21.68.

For dwellings in the country good drainage and ready access to pure water are not less essential than they are in towns, and they ought, therefore, to be made the subject of deliberate investigation before the locality of a dwelling is fixed on.

Gravelly soil is unquestionably the most healthy, and next to it one of sand. The embossing in trees should be avoided; loose soil close to the house is frequently a cause of damp, which might be remedied by a flagging of stone, covering a dry drain formed round the building. Care should, therefore, be bestowed in regard to the surface of the ground round a dwelling, as well as in the selection of a site.

The influence of aspect on the salubrity of a dwelling is too often overlooked: in preference to all others, the south should be chosen. In towns the difficulty of obtaining a sunny frontage may frequently be great, if not insurmountable; but the value of having the sun's rays for some portion of the day within the dwelling, especially in the rooms occupied by children or by invalids, should never be forgotten. I could point to a large convalescent asylum in the country, so arranged that the spacious gallery used by the patients for exercise, and where much of their time is passed, is for the greater part of the day, without the cheering and warming rays of the sun. I know not whether in this instance it was the case, but such mistakes are very likely to arise out of the prevailing mania for the choice of plans in competition, which are often made by novices and selected by incompetent judges, instead of experienced professional advice being taken.

In particular localities diseases which formerly prevailed have, under the influence of sanitary improvements, such, especially, as a free circulation of fresh air, efficient drainage, and cleanliness in the houses and the persons of their occupants, greatly diminished, and in many instances entirely ceased. This has been the case to a remarkable degree in some of the valleys of Switzerland, where the painful disease in the neck called "goltre," and the species of idiocy called "cretinism," formerly prevailed much more extensively than they do now. Remarkable instances have been mentioned to me in that country of the sad consequences to children born and reared in a low and damp ground story, whilst those in the floor above were perfectly healthy.

The beneficial results of sanitary improvements effected in several of our large towns within the past ten years are very manifest. I select three, out of nineteen returns which have been obtained. In the metropolis, the death-rate has been reduced from 25 in 1,000 to about 23; at Croydon, the reduction has been from 28 in 1,000 to 22.9; and at Liverpool, from 39 in 1,000 to 27. Knowing, however, as we do, that the normal standard is certainly not above 17 in 1,000, these results should only be regarded as a proof of our responsibility, and an encouragement to perseverance in the discharge of duty.

How greatly sanitary science has in past days been neglected, even in cases where, of all things, health ought to be considered of primary importance, may be judged of from an observation made very recently by the Dean of Christchurch, in reference to the removal of Westminster School—"Eton," he said, "is notoriously unhealthy; Winchester is in a swamp; Harrow and Rugby without water."

Before passing on to the next head, I observe, in reference to the local position of buildings in towns, that, if the streets around them are of sufficient width, and there is no obstruction to the current of air, dwellings in towns may be better ventilated when they are moderately high, than when they are low and surrounded by higher buildings which exclude a free circulation of air. Nothing can be worse in this respect than the narrow courts terminating in a *cul-de-sac*, which are so numerous in London and in many other towns, small as well as large.

The vast extent of ground in London covered by low buildings, tenanted by the poorer classes, will account for the much larger area occupied by houses in proportion to the number of inhabitants, than there is in Paris. A fact, which may suggest the practicability of increasing the provision of dwellings for working people, near their occupations, and at the same time improving their healthiness. As a practical illustration of the advantages which might be derived from the destruction of existing streets of low and miserable tenements, and the replacing them with lofty and suitably arranged dwellings for the working classes, I may refer to two streets, both of them

\* That such studies might be useful to public men is evident from a statement very recently made in Parliament, with reference to Netley Hospital, which was denounced, as the most mismanaged public affair in this country, and its site declared to be, in a sanitary point of view, most improper for a hospital. Mr. Sydney Herbert said, "that it had not been spoken of a bit too severely in the discussion, and that when the plan was first proposed, he himself protested against it, but the House did not support him;" and he added, "I adapted as our military hospitals no doubt are for their purpose, civil hospitals are as good as better. Many of the London hospitals quite escaped anything to be found in the worst military establishments of that kind."

close to New Oxford-street; one on the south side, which leads out of George-street, is the notorious Church-lane. The other is Streatham-street, which lies to the north of New Oxford-street, leading out of a continuation of George-street. Let any one take the trouble of standing at the end of Church-lane, I do not ask him to go down it, but merely to look, and then turn his steps to the neighbouring building in Streatham-street, "The Model Houses for Families," where, if he enter the quadrangle, and pass along the galleries which give access to the distinct dwellings for fifty-four families, arranged in five fireproof stories, he will have ocular demonstration of the benefits which may, without pecuniary sacrifice, be placed within reach of the working classes; and he may also, by visiting at the same time the "Model Lodging-house" for 104 single men, in George-street, learn the amount of accommodation and comfort which can be given on the self-supporting principle, for the payment of 4d. per night.

Having already noticed under the head of "Locality" that a free circulation of pure air, an efficient drainage, and an ample supply of good water are indispensable requisites to a healthy dwelling, we come now to inquire secondly, *what is essential in the structure of a dwelling to its being healthy?* 1. It must be dry. 2. Warm. 3. The number and area of its apartments must be in proportion to the number of the occupants, and a due provision be made for a well-ordered family life. 4. It must be well lighted. 5. It must be properly ventilated, and entirely free from noxious vapours of every kind.

1. In order to a house being dry, it must stand on a dry foundation; and where this is not otherwise obtainable, artificial means should be adopted, either by forming a stratum of concrete, varying in depth according to circumstances, but never less than 12 inches, or by bedding slate in cement, or laying asphaltic through the whole thickness of the wall, under the floor level. The ground floor should be raised not less than about 8 inches above the external surface, and where there is no basement story, and the floors are of wood, they should be ventilated by means of air-bricks built in the external walls, the ground being excavated to the depth of not less than 12 inches.

The walls must be weather-proof, of sufficient thickness to secure dryness and warmth. On the facilities for obtaining the material may depend whether brick, stone, or flint be used; whichever it be, good mortar is essential to dryness. In some places concrete, Pisé, or cob, with an external facing of plaster, may be employed with advantage, provided the foundation be dry. Hollow walls conduce greatly to dryness and warmth; and with stone or flint externally, a lining of brick or tile, with a small hollow space left between, is an effectual means of securing both these benefits. A glazing on the external surface of brickwork is an effectual preventive of damp, and it is to be regretted that suitably glazed bricks are not easily to be obtained at a moderate price.

Whenever, for the sake of economy, a ground-floor is laid with brick or tile, it is essential that there should be a dry bed beneath it. Hollow bricks, if well made, may, with advantage, be used for this purpose, and will prove warm and durable. In some parts of the country lime and sand floors are pretty generally used for cottages, and when properly made are said to last upwards of forty years. Stone or slate is, of course, preferable to either, in places where there is much wear. Bed-rooms ought, in our climate, to have boarded floors.

It is a false economy to use inferior or unseasoned wood in any part of a dwelling, whilst the cracks and shrinkages caused thereby are often prejudicial to health.

For the covering of roofs, tiles are generally found to be warmer in the winter and cooler in the summer than slate, and, requiring less lead, are more economical. In some situations, however, slate more effectually excludes the weather, and is, on that account, preferable. Projecting eaves should invariably have gutters, to prevent the drip, which renders the walls and foundation damp.

How greatly dryness on ship-board, which is the sailor's dwelling, is conducive to health, may be learnt from a fact stated by Captain Murray, R.N. After being for two years in H.M.'s ship *Falorous*, amongst the icebergs of Labrador, he proceeded thence to the Caracass and the West India Islands on a long cruise, and returned to England "without one casualty, or, indeed, having a single man on the sick list." After describing the special care taken to secure perfect dryness in every part of the vessel, Captain

Murray says, "I am satisfied that a dry ship will always be a healthy one in any climate."

2. The warmth of a dwelling depends not only on its aspect, its dryness, the materials used, their proper application and substance, as I have already noticed, but also on the structural plan, and particularly on the relative position of the doors and fire-places, as well as of the windows and spaces for beds; which should be so contrived as that the occupants are not exposed to draughts.

It is surprising that, with all our regard for comfort, we should not more frequently, by the use of double sashes, which are so commonly used in many parts of the Continent, endeavour to modify the effects of our variable climate, and retain more of the small portion of genial warmth which passes into the room from our wastefully constructed open fire-places. The artificial warming of buildings will be referred to hereafter in connection with ventilation.

3. It is essential to a healthy dwelling, that the number and area of the apartments be in proportion to the number of the occupants, and that suitable provision be made for all that appertains to a well-ordered domestic life. The question of the amount of space required for health being greatly dependent on efficient ventilation, will be considered hereafter under that head. Suffice it at present to say, that the scale of accommodation in most dwellings, depends in a great measure on the means and circumstances of the occupants; as these vary so much, all that I can attempt is to point out the minimum provision which should be made in the country for a labourer's family, consisting of parents and children of both sexes. There should be a small entrance-lobby, a living-room not less than 150 feet in area, a scullery, of from 60 feet to 80 feet area, in which there should be a stove or fire-place for use in summer, as well as a copper and sink; there should be also a small pantry. Above should be a parents' bed room of not less than 100 feet superficial, and two sleeping-rooms for the children, averaging from 70 feet to 80 feet superficial each, with a distinct and independent access. Two of the sleeping-rooms, at least, should have fire-places. There should also be a ventilated and well-drained closet, and suitable receptacles for fuel and for dust. The height of the rooms, in order to their being healthy, should be scarcely less than 8 feet, and even 9 feet would be desirable, but for the extra expense. With a view to ventilation, the windows should reach nearly to the ceiling, and the upper part be invariably made to open. For examples of such dwellings, I may refer to the model cottages for twenty families, built in 1852 and 1853, by the Windsor Royal Society, from plans I had the pleasure of giving to the Society: they have continued to be let at rents which, with careful management, have returned from 4 to 5 per cent. net on their cost, clear of all expenses.

To revert again to the essentials in the construction of a healthy dwelling, I add, that the smoking of chimneys, if not caused, as it often is, by the want of sufficient air in the apartment, or by bad management in the first lighting, or in the putting on of fuel, generally arises from some defect in the construction of the flue, and not infrequently from its being too large for insuring a continuous upward current. Nine inches square, or, which is preferable, 11 inches diameter, is a size sufficient for all ordinary chimneys. Especial pains ought to be taken to avoid smoke, an evil which so greatly contaminates the air, and proverbially has but one parallel in the category of domestic grievances. Of Dr. Arnott's smokeless fire-place I shall have occasion to speak hereafter in connection with ventilation.

The use of lead for water-pipes, and especially for cisterns which are to hold drinking water, ought to be dispensed with as much as possible, on account of the injurious effects produced by the chemical action which frequently takes place when the water is soft. Iron, properly varnished, may be substituted for both purposes; and for cisterns, slate is a very suitable material. The offensive smell which often proceeds from sinks of ordinary stone or of lead, renders the substitution either of slate, of glazed stone ware, or of enamelled iron, very desirable, wherever it be practicable.

4. A dwelling, to be healthy, must be well lighted—a dark house is not only gloomy and dispiriting, but always unhealthy. We know on high medical authority, that "the amount of disease in light rooms as compared with dark ones is vastly less." Light ought to be diffused over the whole dwelling, so that no dark corners be left to invite a deposit of that which is untidy or offensive.

Happy the motive which in time past led so

much to an exclusion of the light of heaven no longer exists; and though ages may pass ere the evils resulting from a vicious legislation are entirely swept away, yet the removal of the tax on windows, and of that on glass, must, amidst much to discourage those who have long and zealously laboured in the cause of sanitary amelioration, be regarded as most valuable concessions in its favour.

5. Proper ventilation, efficient warming, and entire freedom from noxious odours, constitute, with the four points already noticed, the sum total of those essentials to a healthy dwelling which are dependent on locality and structure.

The question of ventilation is of the first importance, though, judging from the neglectful indifference of multitudes, its value is far from being duly appreciated by the educated, and even by some in the scientific classes of the community. Were it otherwise, the classiness perceptible on entering many of their dwellings, the oppressive heat of the rooms, the sickening fustiness in the apartments occupied by the servants, and too frequently in those of the children, would certainly not exist. In halls and lecture-rooms, as well as in schools and other places of public resort, how often does the atmosphere become unbearable through the neglect of an efficient application of known laws. I name but one instance—that of the large room of the Society of Arts on a crowded night. Many others might be added.

In hospitals\* the want of due attention to this important branch of hygienic science has too often led to the aggravation of disease and the destruction of human life. It is recorded of one hospital that the deaths, which before the ventilation were one in six, were after ventilation reduced to one in twenty.

Mr. Rawlinson, the sanitary commissioner, when testifying to the marvellous results of the introduction of sanitary measures in the Crimea, says, "The first requisite in all cases was improved ventilation." The opinion of Miss Nightingale on this, as well as on other points which come within the scope of our inquiry, are so well known that a frequent reference to them might be deemed superfluous; I cannot, however, withhold a quotation from such eminent authority, which strengthens my general argument. Alluding to the enormous mortality of children, Miss Nightingale says, "The causes are perfectly well known: they are chiefly want of cleanliness, want of ventilation, want of whitewashing,—in one word, defective household hygiene."

It is with ordinary dwellings that our observations have chiefly to do, and when we remember the number of hours passed within doors by every human being in a civilized state, it will be manifest that the breathing of vitiated air for so large a portion of the twenty-four hours, must be as injurious as living on unwholesome food.

A remarkable proof of the influence which ventilation has on health was given some years since at Glasgow. In a block of buildings known as the barracks, which contained a population of 500 persons, 57 cases of typhus fever occurred in two months, and within the year there were about 100 cases. A medical gentleman had them ventilated by carrying a pipe from the upper part of each room into the shaft of a neighbouring factory chimney; the result was, that in eight years only four cases of typhus occurred.

The cubical space required to keep a healthy man in full vigour is a question of much importance, and one on which very different opinions have been expressed. Experience gained in poor-house dormitories, prisons, &c., has led to the conclusion that from 450 to 500 cubic feet are requisite, and that the ventilation should be such as will cause an entire renewal of the air about once in the hour. Observations made at the model lodging-house in George-street, St. Giles', which is a confined situation, satisfy me that the cubical space of 535, which is provided in the dormitories of that building for each inmate, is, with proper ventilation, abundantly sufficient to render them healthy; such was proved to be the case even when the cholera raged in the

\* "Infection acts through the air. Poison the air breathed by individuals, and there is infection. Sick people are more susceptible than healthy people, and if they be shut up without sufficient space, and sufficient fresh air, there will be produced not only fever, but erysipelas, pneumonia, and the usual tribe of hospital diseases." "In every such example the 'infection' is not inevitable, but simply the result of carelessness and ignorance."

"In solid built hospitals the progress of the cases will be very curtailed, if the space much below 1,500 cubic feet. In Paris 1,700, and in London 2,000, and even 2,500 cubic feet are now thought advisable."—Miss Nightingale's *Nurses on the Sanitary Condition of Hospitals.*

"The space allowed in the cells of prisons should not be regarded as an absolute criterion. At the Model Prison, Pentonville, there are about 800 cubic feet.

neighbourhood, and had not a single victim out of the 104 men who lodged within its walls. From this fact it is reasonable to infer that the cause of unhealthiness in the Wellington Barracks where the cubical space per man allowed in the dormitories is stated to be 500 feet, must be caused, not by want of space, but by some other existing evils, particularly defective ventilation, pointed out in the Report made to the General Board of Health by the commission on warming and ventilation.

As mistakes with regard to space may create imaginary difficulties, and either impede sanitary reform, or cause a serious unnecessary expenditure,\* I think it of use to notice an error on this point, made in a recent article on "Labourers' Homes," in the *Quarterly Review*, where it is stated that the Lodging-house Act requires an allowance of 700 cubic feet per person. On inquiring of the Assistant Commissioner of Police as to the fact, I learned "that 30 feet superficial is the space allowed to each lodger, in the metropolitan common lodging-houses, the rooms averaging 8 feet high [which is equal to 240 feet cube], and that 50 feet superficial is equal to each police constable lodged in a station or section house, the rooms on an average being 9 feet high" (which is equal to 450 cubic feet).

All dwellings should be so constructed as that they may be everywhere accessible to pure air, and free from stagnation in any part.

The state of the surrounding air has necessarily much influence on that within the dwelling, and the renewal of the latter should always be sought from the purest source, instead of the supply being drawn, as it often is, from a low, damp situation, or a confined internal court.

It is unnecessary for me to describe on this occasion, as I have done elsewhere,† the component parts of the air, or the process of its deterioration in passing through the lungs, or the other sources of impurity, and the many accessory influences in and about a dwelling which tend to vitiate the air within: some of these have been already noticed, and others will be referred to hereafter, in their proper place. The main practical question is, in what way the air which has become vitiated can be renewed with a supply of pure fresh air, without the creation of a draught injurious to the health? To do this the air must enter copiously, but almost imperceptibly, and when used, its exit should be both complete and continuous.

Ventilation is of two kinds, *natural* and *artificial*; the former being effected by means of windows and doors, with the crevices round them, as well as by chimneys and fireplaces, which are important agents in natural ventilation, and may also, by scientific arrangements, be made conducive to an efficient system of artificial ventilation, peculiarly applicable to dwelling-houses.

It must be obvious that improvements easily adopted in new are not always applicable to old buildings, but as far as circumstances allow they should be carried out from a conviction that pure air is indispensable to a healthy state of body and mind.

Windows, properly constructed, made to open at the top as well as below, and suitably placed, afford the most ready means for the natural ventilation of dwellings, besides which are the contrivances of louvers, of perforated glass, zinc, tin, &c.

Whenever a fire is lighted in a room the lower stratum of air is immediately set in movement; a current of air is established from the crevices round the doors and the windows, or from any

other openings, towards the chimney, whereby much of the vitiated air is carried off. This process of ventilation takes place in a slight degree when there is no fire in the chimney, and therefore bed-rooms are much more healthy with a chimney than without.

An independent supply of fresh air may be introduced into most rooms which have a fire, place by conveying it through a pipe or channel formed under the floor or in the wall to an air chamber constructed at the back or sides of the stove, in order that it should be there warmed before entering the room. The same, or a separate pipe or channel, may also be used for feeding the fire with air, independent of that in the room, for which purpose it should pass out at the cheeks of the stove, rather than beneath the grate, which is liable to cause a diffusion of dust in the room. Such an independent supply is calculated to prevent the chimney from smoking, as well as cold draughts passing from the windows and doors to the fire. It also renders chimney ventilating valves more certain in their action than they often are, owing generally to an insufficient draught in the chimney, which causes an emission of smoke into the room. These valves would be invaluable for the discharge of vitiated air, which is their intended purpose, were it not for this occasional ingress of smoke. The most effective means of avoiding that evil is the carrying up an independent flue in close contact with the smoke flue constantly in use: the air within it is by that means rarified, and the action of the valve rendered more efficient. Tubular flues, made double for this express purpose, are found to answer well, and have the advantage of occupying but little space.

The best remedy for an ingress of smoke, in cases where the valve is fixed in the chimney flue, is Dr. Arnott's smokeless grate, with the draught duly regulated by a contraction of the vacant space over the fire. These grates have also the advantage of economizing fuel considerably.

With regard to the ordinary grates in use, I may here remark that they are alike wasteful of heat and fuel, both of which would be much economized by the substitution of a stove projecting slightly into the room, and combining the chief advantages of Dr. Arnott's ventilating stove\* with the cheerful open fire-place.† I have seen some such stoves in use on the Continent, and believe that the only valid reason against their adoption in England, beyond the force of custom, is the difficulty—not, however, an insurmountable one—of applying them to our fire-places with their ornamental chimney-pieces, &c.

In reference to fire-grates generally I would recommend, as one of the most useful modern improvements, the forming the back and the linings with fire-brick instead of iron.

The intimate connection between warming and ventilation has led to a digression, in returning from which I would remark that the greatest difficulty to be overcome in all arrangements for natural ventilation, which provide an exit for the vitiated air, separate from that by which fresh air is introduced, is the securing that it should always thus act, and not become the medium of ingress for cold air, as is often the case, on a change of temperature in the apartment, when no artificial means to prevent it are provided.

Gas is sometimes used for this purpose, in order to rarefy the air. I have successfully applied it within a shaft or tube of wood, placed behind a square of glass.‡ The air enters through perforated zinc, having a fall-down hopper before it. The apartment, or rather series of dormitories, one above the other, thus receive from the same quarter the combined benefit of light and ventilation.

Tubes of wood, perforated with holes, or having chinks at the angles, may with advantage be fixed for ventilation in the angles of the ceilings to common rooms, or be carried across the ceilings, in which latter case, they have occasionally been used for admitting fresh air, as well as for the exit of vitiated air.§ These tubes distribute the air

\* It is to be regretted that the public should suffer from the disinterestedness of the scientific inventor of this and other valuable appliances for warming and ventilating our dwellings, in consequence of their proper manufacture and application not being secured by a patent right.

† Professor Hosking, in a lecture at the Royal Institution, suggested the rudiments of construction for a stove of this description. In his work, entitled "Healthy Homes," many valuable practical suggestions are made on warming and ventilation generally.

‡ This application was made in 1817, at the dormitories of the George-street Model Lodging-house.

§ In the appendix to Dr. Arnott's work on the smokeless fire-place, a description of the latter application of these tubes at the dormitory of the Field-lane Ragged School will be found; and in the Rev. Henry Stuart's work on the "Social Condition of Agricultural Labourers in Scotland," at folio 56, is described the mode of applying the tubes 2 inches clear, which are used in small bed-rooms with great success.

more generally, and are not liable to be closed, as is the case with Sheringham's, or the cottage ventilator made by Hart. Where, however, tubes are not used, the most simple way of introducing fresh air, apart from a window ventilator,\* is by fixing one of the ventilators just named in an external wall near the ceiling, with an air-brick outside. In small rooms with a fireplace, this addition to the usual means of changing the air, generally suffices to keep them in a healthy state. At the same time, it is desirable that there should be an opening for the escape of vitiated air near the ceiling. This is most indispensable in small bed-rooms without a fireplace. In some instances it may be effectively done by means of a pipe carried through the roof and bent at the top; in other cases, an opening may be made over the door, with perforated zinc fitted in. Perforated or ventilating glass may, in some situations, be used, and it should be remembered that where openings can be formed on the opposite sides of the room, the air will be most speedily and effectually changed.

Amongst various devices for effecting ventilation without artificial aid, is that of Mr. McKinnell, which has been much used in Glasgow, and lately in England. It combines the admission of fresh air by an outer tube, surrounding an inner tube, through which the vitiated air should constantly ascend and make its escape. The tubes are fixed in the centre of the ceiling or roof, and by a broad flange or fan, extending from the inner tube, below the level of the ceiling, and reaching beyond the outer tube, the pure air is diffused as it enters.† The certainty of a uniform action is required to render this ventilator perfect; but that is probably unobtainable without some such artificial appliances as I have now to speak of.

Artificial ventilation is ordinarily effected by the action of valves, fans, pumps, serews furnaces, stoves, or other artificial heat, including gas, and a variety of contrivances, whereby air is either drawn out or forced into the apartment. In the one case the space occupied by the vitiated air which is withdrawn, is replaced by an admission of pure fresh air; and in the other the pure air forced into the apartment causes a displacement of the vitiated air, for the escape of which due provision must be made. In both cases a just proportion between the volume of air which ought to enter, and that which should be expelled, is necessary; and in order that the fresh air may be adapted for use at all seasons of the year, means must be provided for warming it, prior to its distribution in the apartment. The best means for effecting this, is by bringing it in contact with heated firebrick, suitably arranged in stoves or furnaces. When heated iron is used for this purpose, the air is liable to be deteriorated, or, as is commonly said, burnt. Hot water, which is similarly employed, has not this injurious effect.

Nothing can be more inconsistent with a healthy system of warming than those arrangements which provide only for raising the temperature of the air already in the apartment, vitiated as it may be. Such is mostly the case when the German hot-air stove is used, and also when hot-water is circulated in pipes through the apartments. But either may be employed with impunity as an auxiliary to an open fire.

The question has been much discussed here as well as in Paris and Brussels, whether suction or propulsion be preferable as a motive power for effecting the change of air in ventilation, and after examining both systems in their practical application, the latter appears to me decidedly preferable, excepting in peculiar cases, where the power of suction may be more readily applied.

When fresh air is forced into an apartment, through suitably placed openings, it becomes more generally diffused than it does when its entrance is dependant on the withdrawal of the vitiated air by means of suction, the tendency of which is to draw the fresh air towards the point of exit, instead of leaving it to disperse and circulate freely. Suction involves the further disadvantage of settling in movement whatever noxious vapours may be within its reach.

My object in giving these latter details, which are mainly applicable to artificial ventilation, will be misunderstood if it were inferred that I would,

\* A good and clean cottage ventilator may be made with a triangular piece of zinc fixed in an upper angle of a window, and perforated in the centre, a rim being formed round it to receive a moveable cover, which may be hinged.

† Properly conducted experiments can only decide the practical value of the objection to the admission of fresh air in the upper part of the room; on the ground that the air vitiated by breathing, which ascends in consequence of its relative lightness, is in that case only diluted, and not entirely replaced by pure air. A simple test whereby the deterioration of the air could be readily ascertained is a great desideratum.

\* The Report of the Government Commissioners above referred to says, at folio 89:—"Under all the circumstances, it would be directed the attention of the Minister at War and the Horse Guards to the absolute necessity of providing more room and accommodation for the soldier in barracks; and, instead of 500 cubic feet of space, that 700 to 800 cubic feet should be allowed per man, or, as in the case of the Wellington Barracks, that only ten persons should occupy the space allotted to sixteen; and that these regulations should be enforced as soon as extra spaces can be provided throughout the whole of the United Kingdom." In a previous part of the report, at folio 92, are found the following apposite remarks, which scarcely appear to have emanated from the same mind:—"The continuous removal of impure air, as it arises, is of very much greater importance than the cubical contents of air in a room." "In the soldiers' rooms, which are constantly occupied, the amount of cubical space can be of very little importance, for how lofty soever the rooms may be, unless the heated and impure air can pass away, the space will soon be occupied by air unfit for respiration, and the greater or less size of the room will only resolve itself into a little more or a little less time before the air is brought into an impure condition." "The soldiers' rooms are about 12 feet in height, with good ventilation this might be reduced to 11 feet or even to 10 feet without disadvantage."

† In a lecture, entitled, "Home Reform," an address to working people on the improvement of their own dwellings. Published by the Labourers' Friend Society, 21, Exeter Hall.

under any circumstances, dispense with an ample provision for natural ventilation in dwellings,—at all events, until the science be more thoroughly mastered, and its practical application more simplified than the Report of the Government Commissioners on Warming and Ventilation,\* before referred to, would prove it to be.†

#### ARCHITECTS' COPYRIGHT.

THE session is now so far advanced that it is to be feared nothing will be done at present as to artistic copyright. It is desirable, nevertheless, to keep the question open, and to lead the public mind to correct views on the various points of the subject. The draft Bill for the amendment of the law of artistic copyright, prepared by a committee appointed by the Society of Arts, does not go far enough in respect of architecture, as we have already pointed out. Under the head, "Interpretation of Terms," an *architectural work* is described as

"The representation of a design for any edifice or building or any part thereof, by any plan, section, elevation, or model made by any process or processes, manual, chemical, or mechanical, either separate or combined."

And the Bill then goes on to say, in Clause III.,

"The copyright in every architectural work which shall have been executed or made by any person who shall also have been the author of the design thereof, shall mean and include the exclusive right of copying, reproducing, or multiplying the same, or the design thereof, or any part of such work, or of the design thereof, by any means, of any size, or for any purpose whatsoever; but when any building shall have been constructed, nothing herein contained shall preclude any person from making any plans, sections, elevations, or models of the same, or any part thereof, and constructing any building therefrom, provided such plans, sections, elevations or models, be made and executed, not from those of the author of the design thereof, but only from the said building."

This would positively make legal the piracy of architects' designs. Mr. Cockerell, in the evidence he furnished to the committee, dwelt, it is true, only on the injustice often done by the piracy of ideas from rejected designs in competitions. He said:—

"The copyright of design and invention in the Fine Art of architecture is especially claimed by its professors on the present occasion, their works being more exposed to piracy in the case of public competition than any other of the fine arts.

The fact that the piracy of ideas and inventions from rejected designs is often permitted to the successful competitor is notorious, and the work executed is constantly the composition of the ideas and inventions of the several competitors, without scruple, reward, or acknowledgment of any kind. To guard myself against this crying injustice, on the occasion of a great public competition, I applied to the late Mr. Long, chief of the office of the Registry of Designs under the Board of Trade, but the opinion of Mr. Long was, that the law was not sufficient to protect architectural design.

The direct consequence of this failure of protection was, in that instance, that the most important feature of my design, and of other designs in this public competition, were pirated, and put into execution in a great or public work.

It is obvious that for the removal of this scandalous injustice, for the honour and credit of this fine art, and for the due advantage of the professors, some legal protection for copyright is just and expedient; and I trust that the copyright of architectural design and invention may be fully represented on the present occasion."

Protection as to drawings, however, would not suffice either for architects or the public. Executed works should also be protected, as was set forth in the memorial presented by the Royal Institute of British Architects to the House of Lords in 1858, through Lord Lyndhurst. This memorial urged

"That architects are liable to considerable injury in the piracy of their designs and inventions, and that other parties can and do copy and appropriate to themselves such original ideas, without any benefit or remuneration to the authors.

That it is therefore desirable to afford protection to architects for the copyright of their works.

That such copyright should extend to their executed works, as well as to their publications.

That the copyright of an architect in any work executed, or in a work proposed to be executed, should not pass to the employer, except under special agreement, but remain with the architect; and that the design in the drawings and specifications prepared for the purpose should still remain so for the property of the architect.

That the execution of a building should be equivalent to registration as a work of art and science.

That no other person be justified in pirating or reproducing the same in such points as are peculiar to the author of the design, without the permission of the author.

That copyright of architects' productions should extend to the same period as is given to authors of literary productions.

Your petitioners, therefore, most humbly pray your Lordships that, in any bill introduced in your Lordships' House for the better protection of design and invention in the fine arts, provision to the above effect be made for the protection of architects, in a manner similar to that for authors and inventors."

\* It is to be regretted that this Report, with its mass of information, fails to place the subject in that clear light which was contemplated in the suggestions made by Dr. Arnett in 1849, for an investigation by a committee of eminent scientific men, comprising chemists, engineers, and physicians.

† To be continued.

The committee admit that this should be done when they say, in the "Reasons in favour of a Bill to establish Artistic Copyright," prefixed to it,— "The justice of securing copyright to all works of art, especially to those which possess design and invention, will not be disputed;" and consideration will show that the public would be benefited by letting justice be done. The brain's creation is as much a man's property as the hand's creation, and his right to the possession of it should be fully assured. What is much to be desired is, that the value of *design* should be understood, and that the right to the protection of it should be fully admitted. The means of giving this protection would speedily follow.

#### THE GLOUCESTER CONGRESS OF THE ARCHÆOLOGICAL INSTITUTE.

A GEMSE of the past has necessarily a charm for antiquaries. The announcement that Professor Willis would be at Gloucester, after so long an absence from the meetings of the Institute, was a source of considerable congratulation among the members, more especially as they could not fail to recollect that so many genial ones have left the study of the past to learn the future. The announcement seemed also to have an inspiring effect upon those who contributed papers, for they were all far above the average, and what was very important, they all possessed local interest, a point which has not always been sufficiently considered at our annual gatherings.

On Tuesday morning the Congress was inaugurated by the usual cordial expressions of welcome and the reciprocal congratulations. Afterwards the members took a survey of the city, inspecting many architectural remains, assisted by Mr. Parker, who made some explanatory remarks on the various objects. In the evening there were several papers read: one from the Rev. S. Lysons, "On Richard Whittington," a Gloucestershire man, caused some remarks. Mr. Lysons, notwithstanding Mr. Riley's notes to the *Liber Albus* of the City of London, maintains the tradition, *pure et simple*, of the great mayor and his wonderful cat. A paper from Mr. Powell, "On the Early Commerce of Gloucester," appeared more suitable to the Statistical Society.

On Wednesday the Rev. C. S. Petit read a paper "On Tewkesbury Abbey." This was illustrated by a variety of sketches, done in that gentleman's usual artistic style, of churches in Normandy and elsewhere, possessing apsidal characteristics of the period of the building of Tewkesbury. He said that he had found the greatest difficulty in sketching the tower on account "of its height and massiveness." Now, may not the converse of this have something to do with modern designers? They can sketch with the greatest ease and facility; but do they produce height, massiveness or effectiveness?

In speaking of the glass he was content with quoting from Winston, from whom the following, in these ages of rabid destruction, is worth consideration:—

"Identity of design does not always produce identity of effect, in consequence of different material being used." It would be as absurd to restore ancient glass, as to attempt to restore an ancient manuscript.

Mr. Petit was followed by Mr. Parker, who read a paper "On the Domestic Architecture of Gloucestershire."

In the Historical Section, the Rev. C. H. Hartsborne read an interesting and eloquent paper on "the Parliaments of Gloucester," in which he traced the growth of our representative system, and the development of our constitutional liberties. He paid a glowing tribute to "Domesday Book," and claimed the gratitude of students of the present time for the benefits derived from that work. He said,— "A recent report on privileges has, after a lapse of four centuries and a half, invested the last Parliament that sat for six weeks at Gloucester with fresh value. It has been appealed to as the chief authority for passing bills of supply, and upon its practice have been founded a series of resolutions marked equally by their dignity and independence, which have asserted the authority of the House of Commons to impose and remit taxation."

Alas! alas! that this should be read in a city that has been deprived for a time by the present Parliament of its political privileges, because its citizens have basely bartered their suffrages for a mess of pottage.

At the same sitting, the Earl Ducie gave an account of the discovery of a Roman villa at Tortworth.

Dr. Guest then gave a learned and ingenious

paper on "the English Conquest of the Severn Valley."

In the afternoon, there was an agreeable excursion to Tewkesbury, where Mr. Petit pointed out the peculiarities and illustrations to which the attention of the members had been called by his paper in the morning.

The usual annual dinner, for some reason, was omitted, but the president and about sixty others dined at the ordinary at the "Bell." It is difficult to say why the good old custom of the public dinner is given up. Surely the formality acts as a stimulus to those who take part in it. Why a few tokens should be proposed without any remarks, and considered sufficient substitute for the usual routine, remains to be discovered. The mayor must, however, be honoured with an exceptional notice, he having made an earnest and appropriate reply.

In the evening the members visited Highnam Court, the seat of Mr. T. Gambier Parry. This was a source of great gratification to the members, who were charmed with the works of art that Mr. Parry possesses. There was some discussion among the members as each one selected his object of admiration in accordance with his individual taste; but there was perfect unanimity on these points—the liberality of the host, and the graceful reception of our fair hostess.

On Thursday we went to Cirencester, where we were met by the Rev. Wm. Powell, who kindly undertook to give an account of the abbey and the church. As may so often be observed, those who are the best masters of a subject are generally the most cheerful and pleasant illustrators, and our worthy friend, by his humour, not only established this principle, but left upon us a lasting impression of his consideration and kindness of heart. "Long live William of Cirencester" is the wish of all who heard him.

Some of us then proceeded to Fairford Church, containing, or rather filled with, painted glass, every window being nearly complete. The conclusion arrived at was that the glass was English glass of a late period, manufactured by foreign workmen; but there was a general expression of regret at the absence of Mr. Scharf.

In the evening the sections met, and there were several papers read. One by the Rev. John Earle, on "Some Fragments of Anglo-Saxon Manuscripts discovered in the Chapter Library." That which called forth most remark was a homily upon the saint said to have most influence just now,—St. Withlin. Mr. Earle, who was formerly professor of Anglo-Saxon at Oxford, gave a clear and succinct account of the saint, and elucidated his history. But how many saints would there be in the Calendar if they were submitted to the same analytical process by a gentleman so learned as Mr. Earle?

Friday was the great day of papers. Mr. Earle was first in again devoting his knowledge to the illustration of "Some Historical Associations connected with the county of Gloucester."

Then came Mr. Richard Westmacott's paper on the Mediaeval Sculpture, illustrated by examples in Gloucester Cathedral, which perhaps caused more enthusiasm and more opposition than any other paper read at this meeting. The subject was treated with pure art-feeling and with strong love for the truth, which he maintained should be the only source of art. He stated, and brought strong evidence to bear upon the argument, that it is not right to attribute to the Reformation the decay of art in England. It was delightful to hear the response with which this statement was received, and equally delightful to find that the members have not by their fondness for the memorials of the past become converts with many young men in long black coats and no shirt-fronts who twaddle upon this theme. The professor having ended, Mr. Parker rose to enter a protest against what he considered an attack on Gothicism. He remarked that domestic architecture of the Middle Ages was of the same style as that left by the ecclesiastics, and instanced as a proof the Refectory of the Blackfriars as a sample of secular building. But in saying this without qualification, he must have spoken "in his haste," as he did upon a previous occasion during the meeting, when he was corrected by the sexton. Mr. Parker, however, can afford to make a slip: all of us cannot. The president made some remarks, but he failed to turn the stream of popular opinion away from the professor, who was again greeted with cheers. This manifestation, and the applause Mr. Hartsborne received when he delivered his truly constitutional and liberal paper, are gratifying indications that intolerance is not the necessary adjunct of antiquarian studies.

The discussion gave way to Professor Willis. Those who expected much were not disappointed: those who had never heard him before were astonished; and those who had been charmed at his undiminished power. He constructed the cathedral from its foundation with a clearness and simplicity that left an impression on his hearers that, had they to "go in" for a competitive examination, they would be able to tell stone by stone as the mighty edifice rose in their imaginations. The professor stated that he believed this cathedral and this district to have been the school of the Perpendicular style, as it was here shown of a more early date, from authentic records, than in any other spot. He had, therefore, little doubt that this style originated in Gloucester.

This day's pleasure terminated with a conversation, given by the Mayor, Mr. Nix, at the Corn Exchange, where he provided most liberally for the entertainment of his guests, and superintended the arrangements with great *bonhomie*. It was a most agreeable *omnium gatherum*. The choir from the cathedral sang glee. Dr. Bruce read a paper "On the Roman Remains of the South as contrasted with those of the North;" and one gentleman of the choir sang a Gloucestershire comic song, which provoked a unanimous encore.

On Saturday, nothing daunted with a steady downy rain, which caused the streets to be covered with one vast eruption of bubbles, we started for Berkeley. Fortunately for us, by the time we quitted the train the weather improved, and umbrellas were not necessary as we mounted those curious hybrid vehicles that are now found in the country when excursions are extemporized. What their use is at other times it is puzzling to say. The "Berkeley Vale lad" who drove ours said it was a dray, but it seemed something between a market cart and, but for the colour, a hearse with the top taken off. Our first object to visit was Wanswell,—a house built in the middle of the fifteenth century, and indicating the domestic habits of that period. From this we journeyed to the stronghold of the Berkeleys. We were allowed by the kindness of Sir Maurice Berkeley to visit the interior, which was scanned by the visitors with much critical attention. Mr. Parker explained many points of interest, and ruthlessly destroyed one tradition by saying that the architecture of the room in which Edward II. is said to have been murdered was of a later period than his reign.

We then proceeded to Thornbury, where we visited the church, that has been restored under the direction of Mr. Townsend, whose kindness and attention will be remembered as a parallel to that of Mr. Powell, of Cirencester. We then visited Thornbury castle, the most beautiful feature of which is the chimney shafts: in no engraving published has justice been done to them.

Even archaeologists require a commissariat, and this had been amply provided by mine host, of the "Swan." After doing full justice to the good things provided, we returned home, enduring a most pitiful storm with a cheerfulness that proves that antiquity and the study thereof are not "harsh and crabbed," as some suppose.

Rain again on the Monday, but off we started for Ross, whence we proceeded down the Wye in boats to Goodrich Court, where we inspected the beautiful collection of armour belonging to Colonel Meyrick. We then went to the ruins of the old castle. The sun now shone forth as if to reward our perseverance and the cheerful endurance of the ladies. The charming landscape came forth from its cloudy mantle in great magnificence. When proprietors thus allow such delightful spots to be visited, how much envy is prevented. Nature's beauties are for all, and sometimes, fortunately, the best points of view are held by individuals who do not turn the key upon you, but share their possessions with you or hold them in trust, as it were, for the good of their fellow-creatures. But, on the other hand, the liberality of a proprietor is too frequently abused. One in Sussex informed me, that a few weeks ago a party visited his place, accompanied by a black dog, who performed a cheerful interlude with the proprietor's sitting game. Let us hope that time will teach their duty to those who receive benefits in return for the kindness of those who dispense them.

We then returned to Ross, still delighted with the lovely prospect that surrounded us. We were informed that a great portion of the property around here belongs to Guy's Hospital. Thus, while the spot affords such delight to health and pleasure seekers, it is at the same time administering to the wants and relieving the afflictions of a large portion of the poor and distressed in the great metropolis.

On Tuesday the annual general meeting took place, when the report was read, and other business transacted. We then started on another excursion to Bishop's Cleeve Church, containing some very interesting specimens of Transition and Decorated Norman work; and to Winchcombe, where there is a poor Late Perpendicular church, the clergyman of which was much grieved when informed by Mr. Parker that it was built in the reign of Henry VIII. He maintained that it was built many years before, and Mr. Parker as strongly insisted upon the correctness of his statement. Local guides are not always the surest informants; for instance, an old man that we saw at Goodrich informed us that the castle was built by Oliver Cromwell.

We then proceeded to Sudley Castle, where we were received by Mr. J. C. Dent. This castle has been restored with considerable taste and propriety, and the furniture and appointments carry you back to the period of Catherine Parr, who lies buried under the chapel, which is being restored under the direction of Mr. Gilbert Scott. A niche in the wall is to contain a tomb, under which are to be placed the remains of the last Catherine of him who, according to a modern historian, so generously sacrificed himself and his feelings for the policy of the state!

After viewing all the objects of taste, and partaking of a liberal collation, we returned to Gloucester. This was the last regular day of the meeting, but a great number of members remained to accept the invitation of the Cotswold Club to visit Chepstow, Tintern, and the ancient Roman remains at Coed Itel, on Wednesday; and on Thursday to proceed to Wroxeter, under the guidance of the Rev. H. M. Search, who has taken, himself, and fostered in others, a deep interest in the excavations.

The excursions were a great success, and too much praise cannot be given to the Rev. Edward Hill, the director, for the zeal and tact displayed by him in contributing to the comfort and enjoyment of the members. One gentleman, more distinguished for his antagonism than for his authority, got up an opposition excursion, but there was not the response of a single name to the notice he appended in the reception-room.

The Museum was very good. The chief attraction certainly was the collection of rings exhibited by Mr. Edmund Watkinson, who furnished a very interesting paper on this subject.

At the general meeting, it was resolved to accept the invitation from Peterborough for the ensuing year.

This closed a pleasant and successful, and, let me hope, useful gathering. F. S. A.

STATUES AND MONUMENTS.

SOME months ago a number of gentlemen held a meeting in London, under the presidency of the Master of the Mint, to devise steps for erecting a statue of the philosopher Priestley in the Oxford Museum. The statue has now been erected on one of the corbels projecting from the pier at the south-west corner of the grand central court of the Museum, in immediate proximity to the statue of Sir Humphrey Davy, which has been presented to the University by the Marquis of Louthian. The figure of Priestley is about 6 feet high, worked in Caen stone. The sculptor was Mr. E. B. Stephens.

A monument has just been erected at Derby, in the old cemetery at Uttoxeter-road, to the memory of the late Rev. J. G. Pike, for many years pastor of the Baptist Chapel, St. Mary's-gate. The execution of the monument was entrusted to Mr. J. B. Robinson, of Derby, sculptor. The monument was raised by public subscription. It is large, and carved in the Decorated Gothic style, 24 feet in height, of octagonal form, with eight recessed and carved panels for inscription, surmounted by a carved cornice and spire with gables at the base. The stone, of which twenty tons were required in its erection, was procured from the Darley Dale quarries, and is of uniform colour.

The ceremony of laying the lower course of the obelisk to be erected, at Manchester, to the memory of the late Mr. J. A. Nicholls, F.R.A.S., has just taken place. There was present a large concourse of working men, by whom the monument is being erected. The site is in the middle of Great Ancoats-street, between the openings of Lever-street and George Leigh-street; so that the obelisk will stand most prominently in the district in which the deceased gentleman was best known as an employer of factory labour, and in which he first laboured for popular education, in connection with Sunday schools, and then as a foremost supporter of the Ancoats Lyceum. The obelisk is to be of polished grey granite, 19 feet high, with a

base 6 feet 6 inches square. The obelisk has been executed by Messrs. Pateson, of Manchester.

It is proposed to lay the foundation-stone of the Wallace Monument on the 11th September next, being the anniversary of the battle of Stirling Bridge.

WEDGWOOD INSTITUTE COMPETITION DESIGNS, BURSLEM.

TWENTY-NINE designs were received in competition for the memorial building which it is proposed to erect in his native town in honour of Josiah Wedgwood, pre-eminently "The father of the pottery." The committee, in order to ensure justice to the competing architects, requested Mr. G. T. Robinson and Mr. J. A. Hamersley to assist them in making a selection of a design in conformity with the specified requirements, and one most likely to answer the purposes desired. Invitations for a private view of these designs were issued to the subscribers, and free admission given to the general public for Friday. The designs are arranged in the large room of the Town-hall. Some of the works exhibit considerable ability, and an intelligent appreciation of the objects indicated by this competition.

The following are the mottoes of the designs: "Bise quam videri," "Think well out," "Esperiar," "Eyes right," "Wait patiently," "Volunteer," "Regardez bien," "Convenience and Economy," "Loyola non hontia," "Utilis," "Convenience," "Virtute et industria," "Esto perpetua," "In memoriam," "Maintien le droit," a device, a trefoil in a circle, "Jus supra vim," "May the arts flourish," "In memoriam," "Per ardua," a pencil sketch of an Associate of the Royal Institute of British Architects, "Wedg in wood," "Dum spiro spero," "Study," "Quidnunc," "Pro bono publico," "Hath not the potter power over the clay?" "Mens conscia recti."

NORTH RIDING INFIRMARY COMPETITION.

TWENTY-EIGHT designs for the proposed North Riding Infirmary were sent in. The first premium of 50*l.* has been awarded to Messrs. Oliver & Lamb, of Newcastle-upon-Tyne; and the second, of 25*l.*, to Mr. Hope, of Manchester.

OSWESTRY CEMETERY COMPETITION.

WE understand that Mr. Kirke Penson, of South Wales, and Mr. Smith, of Shrewsbury, have been called in to inspect the drawings. The Board properly considered they were not competent to decide. Some of the drawings have been returned to the competitors. Six are to be retained for further selection.

WORCESTER: THE OLD BANK.

THE building known as the "Old Bank" has been recently altered and renovated: it is, externally, a large example of brick and stone construction, and of Palladian character throughout, but the interior arrangements as to the plan were too restricted for the extensive business carried on in these premises by Berwick, Lechmere, & Co. Several apartments have been therefore thrown together, to form a spacious banking-room 93 feet square and 24 feet high; and other rooms have been altered and refitted, new staircases constructed, the windows enlarged and fitted with plate-glass, and Bunnett & Co.'s revolving shutters. The interior has been finished with oiled and enriched ceilings, panelled walls and parquetry floors. The mahogany counter-fronts and doors, metal desk rails, marble chimney-pieces, fenders, clock stands, &c., are highly enriched with electro-copper work.

These decorations are one of the earliest adaptations of electro-depositing to architectural embellishment. The staple products of Worcestershire—the pear and the hop—are intermingled with agricultural and other types deposited from the natural forms, and afford a pleasing variety of permanent ornamentation. The work was executed by Messrs. Wood & Son, of Worcester, from the designs and under the superintendence of Mr. John Billing, of Westminster.

METROPOLIS LOCAL MANAGEMENT ACT AMENDMENT (No. 2) BILL.—On the motion for the resumption of the adjourned debate on the third reading of this bill (Tuesday last), on the question that the bill be "now read," the house divided,—For the third reading, 23; against it, 93. The bill was consequently lost.

## ROMANESQUE DOORWAY, PALAISEAU, FRANCE.



Capitals.

## ROMANESQUE DOORWAY, PALAISEAU, FRANCE.

I SEND you sketches of the remarkable Romanesque doorway of Palaiseau, in the department of the Seine and Oise, France. It bears the date 1172, in figures of more modern date. The capitals are exceedingly well carved. Palaiseau, it may be added, is about eleven miles from Paris. The drawing was made a few years ago. M.

## THE TRAFFIC OF LONDON.

SOME noticeable statistics respecting the great traffic of the metropolis may be gathered from the evidence given before the Parliamentary Committee on the London, Chatham, and Dover Railway; the Extension to Plumco, Newington, &c.

Mr. Church, the secretary of the London General Omnibus Company, stated that the company had 640 omnibuses, and 6,600 horses in daily work, and that they employed about 3,000 men. These took sixty different routes, and the traffic receipts for the last week amounted to upwards of 13,300l. The average fare was 3½d. each passenger in twenty millions of passengers. Considering that this is but one of several omnibus companies whose carriages ply in the streets of the metropolis, it seems remarkable when we contemplate how comparatively few years have passed since these public carriages were introduced, and how rapid has been their increase.

In some parts, about thirty or forty years ago, Shillibeer's first omnibus—a singularly shapeless box-like vehicle, with very small windows, for at that time plate-glass was expensive,—might have been seen on its way from the Bank to Paddington,

the charge then being 1s. 6d. for each passenger. The first promoter must have been very sanguine if he imagined that the revenue of a single omnibus company would amount to over half a million sterling in the year.

Both Mr. Church and Mr. Hubble, the chairman of the Camberwell, Peckham, and Dulwich Omnibus Association, were of opinion that the formation of the line mentioned, or the Farringdon line, would but little affect the omnibus traffic: if anything, it would increase it.

Considering the present blocked up condition of Newgate-street, Cheap-side, Fleet-street, and some other thoroughfares, it would seem that any further increase of traffic would cause a complete stoppage, and this shows the necessity of pushing forward fresh arrangements.

## AS TO THE CENSUS.

In a recent report by the Registrar General on the health of the metropolis, with reference to the death of a child, aged nine months, at 12, Brick-street, Mayfair, from "teething," and foul drains in the kitchen (six weeks), with hydrocephalus, Dr. Drutt writes as follows:—"It may be well put on record that, although houses may be well drained, as regards the removal of refuse and water therefrom, yet the house in which they stand may be utterly undrained, and nothing more than a marsh. This is the case with the house in question, No. 12, Brick-street, and its neighbours. Underneath the kitchen-floor there are pools of water which are kept down by being every day. The site is at the bottom of a hill, and on a bed of clay; and, as I am advised, the nearest sewer is too too high a level to carry away the water which

comes to the surface." Undoubtedly this is the cause of much sickness in other quarters, and should be a warning to persons not to choose a house in a valley, or at the bottom of a hill, where the dwellings are built upon clay foundations, without the greatest care be taken at the different gradients to drain the surface.

It would be useful if, in the next return by the Registrar General, a geological map of the metropolitan district were given, showing the different soils, the gradients and elevations, number of persons, their general conditions on a particular space, and the proportionate deaths from various causes.

We see the difficulties which exist in the taking of the census. It is necessary for the comprehension of a large number of persons to render the papers as concise and simple as possible; much good might be done by the employment of an additional staff of intelligent enumerators particularly in crowded and poor neighbourhoods. From observation made in some such localities in 1851, it seemed that there was too much hurry; men unaccustomed to the particular duty were required to do too much in a limited time, and, doubtless, errors were in consequence committed.

In some places not one person in a house occupied by a number of families could either read or write, and it was a labour of time for the enumerator, often struggling against prejudice, to get at the right facts for filling in the papers; and it should be borne in mind that, in such neighbourhoods, to get correct statements is of the greatest importance.

It has been suggested that it would be of great use, particularly in large towns, to obtain the amount of the various kinds of sickness at the time the census is taken, not only in the hospitals, but also in other places. This could be easily managed in hospitals, asylums, and prisons; but, at a first glance, it seems to us that generally there would be a difficulty in getting a true statement of the diseases where the people are not well informed, and where frequently supposed infectious disorders are concealed; and in even serious cases no medical advice is called in. No doubt, however, if this return should be determined upon, the able heads who direct the registration department will find some means of carrying the matter into effect. Even if the return in this instance should not be perfect, it might be suggestive of such improvements as would produce better results on a future occasion.

## R. C. CATHEDRAL OF ST. THOMAS THE APOSTLE, NORTHAMPTON.

THE engraving represents the north-east view of the edifice about to be erected for the Right Rev. Bishop Amherst, as the cathedral church for the diocese of Northampton. It will measure 160 feet in length by 60 feet in width, and 70 feet to the apex of the roof. The material will be the yellow stone of the neighbourhood, with Portland slabs, and the remainder of the dressings in Bath. Mr. Welby Pugin is the architect.

## ARTIST VOLUNTEERS.

THE "38th Middlesex Volunteer Rifle Corps" is formed principally of artists (painters, sculptors, engravers, architects, musicians, literary men, actors, amateurs, and gentlemen in any way interested in or connected with the arts), and thus has an extra claim on us for notice. Other gentlemen are also invited to join its ranks.

The uniform is light grey with silver. The corps drills in Burlington House Gardens, and has the use of the ranges at Plumstead for rifle practice.

The following gentlemen at present hold commissions in the corps:—H. W. Phillips, captain; A. J. Lewis and J. E. Millais, A.R.A., lieutenants; F. Leighton and A. Nicholson, ensigns. The committee consists of Messrs. H. W. Phillips, John Leeb, J. E. Millais, Sims Reeves, Frederick Leighton, F. P. Cockerell, Lewis Dickinson, Alfred Wigan, A. J. Lewis, Field Talford, Alfred Nicholson, W. Richmond, J. Thomas, Thomas Woolner, W. R. Cusins.

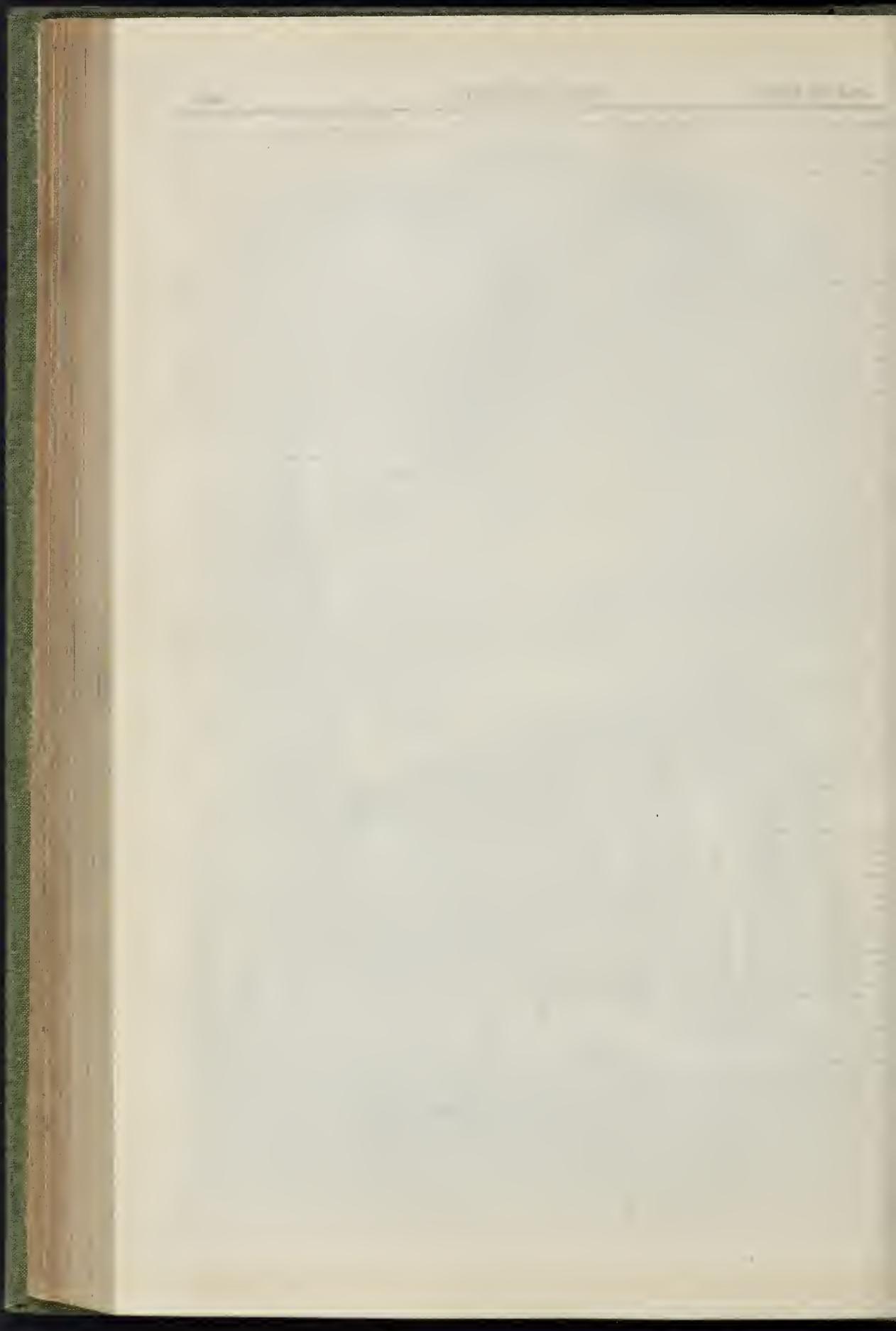
Of architects in the ranks we find Messrs. Devey, Wyatt Papworth, Horace Jones, Bright Smith, &c.

The review in Hyde Park showed how well the corps can do their duty.

ELECTRO-TELEGRAPHIC PROGRESS.—The *Exp.* of Arctic celebrity, has been despatched to the north, on a survey of the route of the proposed North Atlantic Telegraph.



R. C. CATHEDRAL OF ST. THOMAS THE APOSTLE, NORTHAMPTON.—MR. WELBY PUGIN, ARCHITECT.



IMPORTANCE OF SANITARY STATISTICS.

At the closing meeting of the International Statistical Congress, Lord Shaftesbury read the following letter from Miss Nightingale:—

"My Lord,—Pardon me for suggesting to you, first, that there must be a large amount of statistical information, bearing on the prevention of disease, in possession of the Governments of different countries; and second, that it would be of great importance, at the next meeting of this Congress, if each delegate would include, in any report to be presented, any marked examples of diminution of mortality and disease, together with the saving of cost consequent on the carrying of sanitary improvements in towns, in dwellings of the labouring classes, in schools, in hospitals, and in armies.

As, for example, it is stated to be a fact, demonstrated by statistics, that in improved dwellings the mortality has fallen, in certain cases, from 25 and 24 to 14 per 1,000; and that in common lodging-houses, which have been hotbeds of epidemics, such diseases have almost disappeared as heads of statistics, through the adoption of sanitary measures. As no one has been more instrumental than your lordship in bringing about these happy results, so no one is better acquainted than yourself with these facts.

It is also stated that in the British army large bodies of men, living under certain improved sanitary conditions, have proved a test-rate, one-third only of what the army has suffered in past years.

Would not your lordship consider it of great importance that the statistics of these and similar cases should be carefully collected and presented for comparison with the statistics of ordinary mortality?

Again, it is stated that in our colonial schools for aborigines we have, in many instances, exposed the children to the same diseases, such as while Christianizing and civilizing them. Might not this be avoided by sanitary arrangements?

Again, to take a different case, from the experience of schools, it is stated as a statistically true of some industrial and half-time schools for orphans and destitute children, that whereas formerly two-thirds of the pupils became sacrifices to vice and crime (as, indeed, is stated to be the case in some instances), the failures on account of misconduct among the pupils have been reduced to less than two per cent.

Might it not be well to consider whether these statistical results do not exemplify what may be done by application of like means?

I am encouraged to make these suggestions by the following words from the statesman Guizot:—

"Valuable reports, full of facts and sound views, drawn up by committees, inspectors, rectors and prefects, remain unknown to the public. The Government ought to draw itself with the knowledge and the expansion of all good systems, with the encouragement of all favouring efforts, and with attempts to improve them, according to our present habits and institutions. One channel alone embraces sufficient action and power to secure this salutary influence: that channel is the Press."

If facts already existing regarding the points I have mentioned above were carefully abstracted and made accessible to the public through the medium of the Congress, there cannot be a doubt of the great benefits which would accrue to science and humanity.

And if, as it is the cost which frightens communities from executing the works necessary to carry out sanitary improvements, it could be shown that the cost of crime, disease, and excess of mortality is actually greater, it would remove one of the most legitimate objections in the minds of Governments and nations against such measures."

We endorse all that is said as to the importance of statistical information bearing on the prevention of disease, and trust that the Congress will aid in making it accessible to the public.

RIDE OF THE HYDE.

It seldom happens that an extension of public privilege causes discontent such as has been manifested on the opening of the crooked horseway staked out through Kensington Gardens. The equestrian order has had ample scope hitherto in the mile-and-half course from Aspel's House to Kensington-gate; in addition to which the whole area between Rotten-row and the Knightsbridge barracks, the site of the Exhibition Palace, has been thrown open to them. Here any one might suppose that there was space enough for coursing, curvetting, carioling, and such other gambols as liberated doctors or lawyers might desire for an hour's vacation. This liberty interfered with no pedestrians, as they had the wide range of the park and gardens, and the delectable resource of miles of borders, adorned in all the luxuriance of blooming plants and flowers, besides the more sequestered, but not less valued, retirement of Kensington's lofty timber groves.

The care bestowed on perfect cultivation of the borders, as well as in the complete adaptation of the rides for the equestrians of both sexes and of all conditions, left nothing to be faulted or desired; when lo! of a sudden the crotchet of a commissioner violates the general peace, and sets all classes again by the ears! The uproaring and havoc perpetrated in the borders by a late authority ought to have admonished the present "Arbiter Sylvorum" that violent interference with popular rights is an unwise experiment; and, above all, he ought to avoid the baneful issue involved in the war of classes; for such is the result of his extended liberty to the equestrian at the expense of the pedestrian order.

By the intrusion of a tortuous ride through the very centre of the gardens, one half of these 300

acres of woodland is cut off from the other, and, moreover, a muddy or dusty arena is carried through the most sequestered parts. All this is done on the humanitarian principle of easing off the professional cares of lawyers and doctors, and perhaps for relieving the "ennui" of the noble sojourners for three months in town; but it is all set down to the laudable incentive of extending the public privilege, and of affording a thoroughfare for general convenience from Bayswater to South Kensington.

Were this the motive in reality, it would be both laudable and popular; but no, the indulgence as well as the short cut is really designed only for the upper twenty thousand—ten of the nobles and ten of the millionaires.

For the accommodation of the public, what is really required is a road cut slick across the park, or gardens and park, to pass by the already built bridge, from near the Victoria-gate, Bayswater, to the city of palaces, South Kensington; whereas the extension of the now existing spacious rides, whilst it could bring but little increased accommodation to the rolling aristocracy, must become a real nuisance to the rambling and health-seeking public at large.

The *Builder* has for many years sought to impress upon the Commissioners of Works the expediency of granting a public traverse way between the populous districts of Paddington and Tyburnin, on the north; and Knightsbridge and Kensington on the south. Here is a city in itself, for over two miles, from Park-lane to Kensington, has no line of intercommunication, except during the sun-lit hours, and then not for business, but only for aristocratic convenience!

Perhaps in a city like ours, where on either side of the river millions of the trading community are diserved, and have access only by toll-bridges, we have no right to question or inquire into matters of expediency or of public utility; or to suggest innovations which might be more conformable to the altered circumstances of the age. Yet still we are at liberty to censure any violence done to public rights for the benefit of only a very small number. It is a duty to guard the rights of the public when invaded, as also to unveil the real motive of the innovator, who would mask his proceedings under a false showing.

To give a plausible pretence for the extension of the ride, it has been alleged that the pedestrians all flock to the exhibition *au grand galop*; that they seat themselves, or lean over the bars, in admiration of the beauty or fashion, the fine horses, the feats of daring, or of graceful equitation. Good luck! what a spectacle is exhibited there on a favourable day, and in a full park! Clustered groups of parties, sometimes all of a ruck, soberly babbling, on thoroughbreds, hacks, Punches, ponies, switebails, hobtails; then in twos or threes, ambling, trotting, racing; anon a grocer, or a tailor, or a clerk (in orders or otherwise), let loose on his bled or unbarnished steed, scudding and threading the maze of quadrupeds: on such occasions, to cross is doubly hazardous for those who go afoot or astride.

But we must not omit the fair actors on the scene,—the ladies,—all habited alike in flowing broadcloth; here, indeed, the true enchantment lies. Many are handsome, or graceful, or beautiful; but they differ in array only in the colour of a feather, or the peak of a Jersey, or Gibus riding-hat. The spectators who love exhibitions of the cirque or amphitheatre have little to interest them in the display or costume, and no one will assert that Rotten-row is the arena for graceful horsemanship; in truth, the scene can have attractions only for the lover, the stranger, or the quizzier: those who walk seek the green sward, the flowers, or the shade; and, where health or recreation is the object, they avoid the motley ride.

All who remember the Parks twenty years back are conscious of the wondrous advance of beautiful grounds, as well as seats and studied improvements: they know that Sir B. Hall originated the fairy creation; but they also know who caused the last year's devastation, and they watch the suspended progress of the filtering beds and Dutch garden. Let the present authorities imitate so good an example: let them consult the wants and wishes of a swollen and increasing population; not by shamming, but by realizing useful changes and improvements; and they, too, may win and merit applause—not censure.

The universal volunteer movement has amalgamated all classes, who are progressing fast to only one simple distinction; not of equestrian and plebeian, but of cavalry and of infantry volunteers.

So slight a matter as a muddy or dusty gallop through the pleasure-grounds of William III. ought not at this crisis to be made a cause of dissension, since the peer and the squireman march together shoulder to shoulder. British liberties are typified in minute evidences, and the smallest right should be carefully guarded and held sacred, since the best security for national independence is the community of all in true conservatism.

QUONDAM.

FIELD LANE RAGGED SCHOOL.

REMEMBERING with interest, as we do, the early beginning of this establishment, it is gratifying to notice its greatly advanced and more prosperous condition. The attendance at the school is now very large, and many a destitute boy, without parents or friends, has been saved from ruin by its means. Lately several lads from this school were received into the Royal Navy in the *Fishguard* at Woolwich; they had previously attended the day and evening classes under the care of Mr. Fraser, who is to be praised for the ability and zeal he shows in carrying out an important duty. In great measure through Mr. Fraser's instrumentality, during the last fifteen months as many as 120 lads belonging to these schools have been admitted into the navy, and good accounts are given of their conduct.

TESTIMONIAL TO THE LATE HONORARY SECRETARY OF THE INSTITUTE.

THE testimonial proposed to be given to Mr. C. Charnock Nelson, in recognition of his valuable services as honorary secretary of the Royal Institute of British Architects during a number of years, took the shape of a silver vase and a drinking-cup, manufactured by Messrs. Hunt and Roskill, and was presented to Mr. Nelson in the rooms of the Institute, Conduit-street, on Thursday last, the 26th inst.

The president of the Institute, C. R. Cockerell, Esq., R.A., took the chair, and there was a good attendance of members. Mr. Sydney Smirke, R.A.; Professor Donaldson; Mr. Titic, M.P.; Mr. Wyatt; Mr. T. H. Lewis; Mr. H. Roberts; Mr. Jennings, and others, stated the various ways in which the Institute had been advantaged by the continuous services of Mr. Nelson during ten years. The chairman then in some well-chosen and feeling sentences presented to him, in the name of the subscribers, the vase and cup, which he begged him to receive as "full of his own merits."

Mr. Nelson thanked the meeting briefly but happily:—*Facta non verba* had been his motto during his period of office: *Facta non verba* let it be to the end of the chapter.

A vote of thanks to the chairman terminated the proceedings; and afterwards a number of the members went off to Greenwich, where they dined together very pleasantly.

STAINED GLASS.

*Lynn*.—The east window of St. Nicolas's Chapel has been filled in with painted glass. The artist employed was Mr. H. Hughes, of the firm of Ward & Hughes, Fifth-street, Soho, London. The window comprises medallions and rich mosaic. The lower portion of the window contains thirty-four subjects, chiefly illustrating events from the life of our Lord, which were selected by the Rev. C. N. Wodhouse. There are eighteen lower lights (in two rows of nine divided by a heavy transom), each containing two medallions, except the two centre lights, each of which contains one of larger dimensions and scale. These central and principal subjects are the Crucifixion and the Ascension; and about them are grouped others. In the tracery above are figures of the twelve apostles, a choir of angels, the celestial dove, Alpha and Omega, and the emblem of the Trinity. These are designed with reference to a cruciform plan of the window, which is a particular feature in its stonework. The ground work of the lower lights is composed of a flowing vine alternated on blue and ruby grounds.

*Congleton*.—Messrs. Edmundson & Son, of Manchester, have just completed three windows of stained glass for the chancel of the new church of St. Stephen, Congleton. The subjects are, Jacob blessing the two sons of Joseph, Joshua addressing the tribes, Job and his friends, Daniel in the den of lions, Simeon and the infant Jesus, and the stoning of Stephen.

*Doncaster*.—The testimonial window which has been put in the great east window of St. James's church, in this town, has been formally presented

to Mr. Edmund Denison, chairman of the Great Northern Railway Company, by the subscribers, to mark their sense and appreciation of his efforts to provide the company's employé's with spiritual instruction. Mr. Archibald Sturrock, the company's engineer, made the presentation, and the heads of the respective departments of the company's works at Doncaster were present. Mr. Denison suitably acknowledged the gift; and it is expected that he will assign it over to the incumbent. Mr. Denison's exertions have resulted in the establishment of schools for the children of the company's servants, and subsequently in the erection of the present edifice, St. James's church, from designs by Mr. O. G. Scott. In the design of the window there are twelve representations, embracing several incidents in the life of the Saviour and his Apostles, and some of the leading events in the history of St. James the Less, or as he is designated also St. James the Just. The first illustration is that in the principal cinquefoil on the left hand of the tracery, the incident being "St. James addressing the Council." The next is the main subject of the window, "Jesus presiding over the Council, St. Paul and Barnabas being present." In the third compartment are "St. Peter and St. James." The fourth shows "St. James praying in the Temple." Fifth, "St. James reading his epistle." Sixth, "His arraignment before the Council." Seventh, "His being led to the top of the Temple," and the remainder his death and burial; "The Adoration of the Lamb," angels, &c. Underneath the window is a brass plate, upon which is the following inscription:—"This window was done at the cost of persons employed by the G. N. R. Company, in grateful acknowledgement to Edmund Denison, the promoter of the building of this church."

#### COMPETITIONS FOR SCHOOLS IN THORNE.

THE late Richard Ellison, esq., of Sudbrooke Holme (who was one of the old trustees of Brooke's Charity), in bequeathing the sum of 1,000*l.* in augmentation of the funds of the charity, enabled the new trustees to take steps for commencing the erection of new school buildings near the site of the school at present occupied by the trustees of Travis's Charity, which, however, belongs to Brooke's Charity, and is intended to be pulled down to make way for the new erection. Architects were invited to send in designs, and the sum of 20*l.* was guaranteed for the design that should be selected. There were thirty-four competitors from all parts of the kingdom, and the total number of designs sent by them amounts to about forty. A meeting of the trustees was held on the 12th inst. to receive a report of the building committee. Four designs were selected by the committee, viz., from Messrs. T. Shaw & Son, Leeds; A. Wilson, Nottingham; Brundell & Arnold, Doncaster; and Hooker & Wheeler, Brencley. The trustees selected the design of Messrs. Shaw & Son, as the one for adoption, subject to the sanction of the Court of Chancery.

#### SCHOOL-BUILDING NEWS.

**Leeds.**—A new school for boys, in connection with the Church of St. Matthew, Leeds, has just been opened. It has been erected under the superintendence of Messrs. Dohson & Chorley, architects, Leeds, and has cost about 1,000*l.*, nearly one-half of which has been received from the Committee of Council on Education. The building stands on the north side of the church. The room is 62 feet long, by 30 feet wide, and will accommodate 230 children, exclusive of the class-room. The roof is of high pitch, and the timbers, which are exposed to view, are stained and varnished. The height, from the floor to the wall-plate, is 16 feet 6 inches, and to the ceiling, 30 feet. The new class-room is 22 feet by 21 feet, 11 feet 6 inches high to the wall-plate, and 14 feet to the ceiling. The walls are lined with dressed boarding, 4 feet above the floors. The north and south ends of the school have each two large triple light windows, with ogee heads and circular tracery windows in the apex of the gables. The west elevation towards Meanwood-street has a series of three large triple light-gabled windows, with two smaller windows on either side, and a projecting entrance porch. The old boys' school, which adjoins and communicates with the new school, through double doors, will in future be used as the girls' school, and has had a new entrance porch erected. A strip of land on the north side of the school has been procured for the boys' play-ground. The schools are in the

Decorated style, and built of Potternewton wall-stones, with sandstone dressings, and have cost, with the improvements to the girls' school, upwards of 1,000*l.* The whole of the woodwork is stained and varnished. The contractors for the erection of the new school were—Masons' work, C. Jackman; joiners' work, T. Hill; plumber and glaziers' work, J. Standish; plasterers' work, R. Branton & Son; slaters' work, W. Watson; painters' work, W. Walsh; ironfounders' work, Singleton & Tennant.

#### PROVINCIAL NEWS.

**Bilston.**—Some town improvements are in progress here. The Great Western Railway Company, who have a station in the town, are about to make a convenient approach to it through New-street, which runs into Oxford-street, and thence to the most densely populated part of the township. They are also about to give to the Town Commissioners 51 yards in front of Pipe Hall to enable them to widen and improve the street in that part of the town. On a previous occasion 15s. a yard was asked for the necessary land, but it has now been given up free of expense. The company are also about to carry a road through the orchard, near Foster's hank. They further offer to the commissioners a small piece of land and other advantages in Stafford-street, to improve the street.

**Ashbourn.**—The architect's plans, &c., for the proposed new Market Hall, have been given in for the approval of the proprietary. Two plans, each of a distinctive style and arrangement, are furnished. Included in the draft is a provision for the accommodation of the Ashbourn Literary Institution.

**Dewsbury.**—It is in contemplation to raise a Peoples' Park for Dewsbury. A sum of 1,000*l.* is offered by Mr. John Hague, of Crow Nest; and 500*l.* by Mr. Joseph Chadwick, of Northfield House.

**Hull.**—Sites have been obtained for model houses at Hull, in accordance with the desire of Miss Emma Sperling, who has given 5,000*l.* for the purpose.

**Wills.**—The mansion of Grithleton is now receiving its complement of painting and decoration, under the superintendence of Mr. Jas. Thomson, architect, for Sir John Neeld, its present possessor. This house is likely to become, from its valuable collection of paintings, sculpture, books, and minerals, one of the most attractive houses in the county.

**Sunbury.**—The chapel in this village is being restored, repewed, and fitted throughout with new windows and arches. The design is Lombardic Gothic, and includes the erection of a porch, and entire remodelling of the building. The work is being executed by Mr. Dove, of Sunbury, builder. Mr. Stapleton is the architect, who also erected chapels at Cobham and Hershaw, in the vicinity.

**Ayr.**—It is proposed to build a new Town-hall for Ayr.

#### NEW DOCKS OPENED.

**Sunderland.**—On Thursday, says last week's *Gatehead Observer*, an extensive graving-dock, which has been constructed by James Laing, Esq., J.P., Deptford, Sunderland, in his large ship-building yard, fronting the river Wear, was opened in the presence of a number of people. The dimensions of the dock are as follows:—Length, 320 feet; width at the top, 62 feet; breadth at the bottom, 44 feet; depth of water on the sill at ordinary spring tides, 13 feet; at Equinoctial spring tides, 16 feet 4 inches. The entrance is built of solid masonry, in the form of an inverted ellipsis. The other portion of the interior of the dock is formed of timber, fastened with iron bolts and straps. Instead of a gate, the dock is opened and closed by means of an iron caisson. There are three pumps, each being 10 inches in diameter, for the purpose of clearing the dock, constructed on an improved plan by Mr. George Clark, engineer, of Monkwearmouth. The dock has been constructed under the superintendence of Mr. J. G. Brown, and Mr. John Ness, manager of Mr. Laing's works. The opening was celebrated by a dinner, given to upwards of 600 of the workmen.

**Runcorn.**—The new Bridgewater dock at Runcorn has been opened. The dock is 600 feet long, by 136 feet wide, and contains an area of water space of 6,000 square yards. The entrance gateway is 50 feet wide. The dock sill is only 6 inches below the depth of water shown in Holden's tide table, as taken from the old dock sill at Liverpool. The bottom of the dock is 2 feet below the sill, thus enabling a much larger class of vessels to enter the dock than heretofore. A greater facility

will also be given in the discharging and transhipping of cargoes by the use of Sir William Armstrong's patent hydraulic weighing cranes, which are being erected on each side of the dock. A few months since the large tidal basin was completed, and the canal dock, with two locks on the canal passing into the Weaver navigation, opened, thus giving a direct communication with the salt district. This dock has been completed under the superintendence of Mr. George Forrester, the resident engineer.

#### CHURCH-BUILDING NEWS.

**Bradfield (North Walsham).**—The church here has been reopened after having undergone considerable repair and restoration. The fabric has been repaired, and the fittings renewed, nearly entirely with solid oak. The pews with which the church was formerly encumbered are replaced with open benches, and a pulpit, prayer-desk, and altar-rails have been fixed. The work was executed under the direction of Mr. R. Kitton, architect, by Mr. R. Cornish, of North Walsham. The cost of these improvements amounts to about 500*l.*

**Bridport (Dorset).**—St. Mary's Church, Bridport, has been restored and reopened. The church, says the *Sherborne Journal*, is now computed to hold between 900 and 1,000 persons; about 400 free. The roof of the new chancel (or at least the new part of it) is of stained oak, and the dressings are of the same material, supported on corbels of Caen stone, with carved angles. The walls exhibited a specimen of fresco paintings, consisting of lilies, passion flowers, &c., on a drab ground, with a border of blue and gilt. The same stained window has been used, and twining around it was also a fresco painting of the emblem of the Lord's Supper—in the form of ears of wheat around which the vine was twining, laden with bunches of its fruit. The removal of the stained glass had been entrusted to Messrs. Lavers & Barrard, of London. The organ has been removed from the west end of the church (the window of which it formerly blocked up), to the north side of the chancel, and the choir has also been removed thither. At the west end of the church, two additional arches have been raised on either side, and the nave has consequently been lengthened above 30 feet. The whole of the masonry consists of local stone, with Hamhill dressings. The cost of renovation is over 3,000*l.*, the greater part of which has been realized by subscriptions; but there is yet a deficiency of some four or five hundred pounds.

**Ashbrittle (Wellington).**—A chapel and school have been opened at the tything of Greenham, parish of Ashbrittle, between four and five miles from Wellington. Mr. H. Davis, builder, Taunton, has carried out the contract. The chapel, which is capable of accommodating from 150 to 200 individuals, is in the Early English style, with apsidal chancel; the walls of the rubble-stone of the neighbourhood, and Han stone dressings. A tower of Bath stone decorates the north-west angle; with spirelet surmounted in finial; a gilded metal cross, and a helvy. The interior of the building is lofty, compared with its size. The apsidal chancel at the east end is laid with encaustic tiles, and is separated from the aisle by a communion screen executed by Mr. Alfred Stansell, of Taunton. Over the altar are three lancet windows of stained glass, presented by the Rev. Mr. Robinson, formerly curate of Ashbrittle. They have been executed by Messrs. Lavers & Barrard, of London, and are representations of the command of our Saviour to His disciples,—"Feed my lambs." The whole of the windows, with the exception of the triplet at the west end, are of stained glass, and at the expense of the Rev. Mr. Robinson.

#### THE THREATENED DESTRUCTION OF THE HEREFORD TOWN HALL.

The western midland district seems just now particularly rampant in its destructive propensities. It is only three or four years since the beautiful Town Hall at Leominster—one of a series of beautiful and most interesting timber structures for which that district is so famous—was rubbly removed by the authorities of that town. Its actual existence has happily been prolonged, owing, I believe, to its having been purchased by a private individual, and re-erected in the outskirts of the town. A month since the archaeological public were dismayed by the report that the Dean and Chapter of Worcester,—the natural guardians of the ecclesiastical antiquities of their city, but doubly so of those of their own precincts—were about to decree the demolition

of the "Guesen Hall" of the ancient monastery, one of the finest specimens existing of the halls and timber roofs of the fourteenth century. This seems, happily, to be a premature alarm, and it is earnestly to be hoped that this noble monument is preserved *sine die*. We are, however, denied the satisfaction of thinking that this district is settling down into a state of conservatism of its antiquities. A third hall is, we find, now endangered. The very curious and (so far as it is preserved) beautiful Town Hall of Hereford is now threatened, if not actually condemned. I know this building well, and can speak most strongly of its value and interest, and can assure the inhabitants of Hereford that if they carry out what they threaten, they will deprive their city of an object of interest second only to their cathedral. I most earnestly wish that this act of deliberate vandalism may be averted through some timely influence, and that the notice of these repeated proofs of the want of appreciation of our national antiquities on the part of those who ought to view themselves as their guardians will influence others who have not yet ventured to hint at the destruction of their venerable but helpless wards.

GEO. GILBERT SCOTT.

\* We drew attention to this regrettable proposition last week, and protested against it. It is to be hoped that the authorities may yet be induced to abstain from inflicting the contemplated injury. The council of the Institute of Architects, we believe, have taken some steps in the matter.—Ed.

NUISANCES IN MARYLEBONE.

NOT only are the seasons this year out of place, but the municipal sanitary regulations of this extensive parish (Marylebone) set up defiance as regards the supposed imperative removal of the manure and other refuse in the various mews, twice a week, as posted up at the entrance of each and every yard. Overlooking one of these yards, I have noticed from week to week an increasing accumulation until the stench has (even with this autumnal weather) become quite offensive. On remonstrating with the offenders, they simply tell you they *cannot get it taken away* by offer of payment, the carts being so occupied. This I believe is all moonshine, as the market gardeners, who now daily run their carts to town with fruit, must have empty carts on return, and for their produce are indebted to these very nuisance-heaps. The parish authorities, I contend, ought to see their orders enforced, and I trust they will do so, but there is nothing like the press. The dust carts seem also to be very scarce: for some days past I have in vain endeavoured to find one passing; so what with dust and dung we are thoroughly stench'd up.

PUBLICO.

FLAT-ROOFED COTTAGES.

SIR,—In a recent number you mentioned that the plans of the cottage designed by Mr. Stevens were issued by the Society for Improving the Condition of the Labouring Classes. As I presume that its arrangements must be therefore considered excellent, I venture to ask what may be the advantages of the flat roof (its most striking peculiarity). Such a departure from the ordinary course of construction would hardly be ventured on without it presented some important advantages.

The following points strike the mind as likely to be those in which such a roof would be decidedly inferior to a sloping one:—

First. Since the protection from wet depends entirely on the water-tight character of the materials, it will always be liable to leak from any defect in the joints.

Secondly. If the roof be quite sound still the least stoppage in the gutters will make the roof a pool, which must render the walls very damp.

Thirdly. The roof, being flat, will always be liable to injury from persons walking on it, the accumulation of snow, &c.

Fourthly. If the bricks are of at all a porous character, the walls, not being protected by the roof, will be much damper than when screened by eaves, and would, under any circumstances, require a good coping; and,

Lastly. Flat roofs are intensely ugly. If, however, a roof of tiles laid in cement can be rendered quite watertight, such a roof might often be advantageously substituted for lead in those positions of the better class of houses in which a flat roof may for various reasons be desirable. Perhaps some correspondent will state the result of experience on this point.

C. D. S.

THE TEMPERATURE OF THE WATER IN STREET FOUNTAINS.

A CORRESPONDENT of the *Builder* remarks that the water of the fountains is often unpleasantly warm at this season of the year. This may be accounted for by the circumstance that in many instances the filter for the water is placed in situations where the sun shines on it. The filters are generally of small size, and in consequence the water gets unpleasantly warm. Some of the fountains which are placed in the thoroughfares are designed in the form of an urn, from which the water slowly trickles: in other instances the filter, of small size, is placed in a wall on which the sun's rays rest for several hours of the day. This seems to show that change is needed: the situation chosen for a fountain should be considered, and means used to place the filters in well-shaded situations. The water, however, which is delivered from the companies' mains should not require filtration when it is delivered either into dwellings or to the street fountains.

In addition to the falling above referred to, the artistic designs of the greater number of those useful features of our streets are in most instances unpleasant to the sight,—a matter to be regretted. A. B.

BUILDERS' TENDERS AND ARCHITECTS.

SIR,—Some months ago, the architect of one of the incorporated societies wrote to myself and three other builders requesting tenders for a parsonage house. Tenders were accordingly sent in to the clerkman of the parish, who forwarded them to the architect; and I understand that, when they were opened, mine was found to be the lowest, but not commensurate with the price made to me. On the contrary, the architect subsequently applied to two other builders, and one of them whose tender was as I have heard 100*l.* below mine is, I find, now engaged in doing the work. I shall be glad of an opinion as to whether it was competent for the architect to reject my tender, and to act as I have described. A BUILDER.

\* What the legal position of the parties in this case may be, we cannot pretend to say on such slight *ex parte* information. In justice, if a builder be invited to tender without any proviso, and his tender be the lowest, he ought to be employed to do the work, or be otherwise remunerated.

TOUTING SURVEYORS.

MR. EDITOR,—Can you find a corner in your valuable journal to expose the disreputable practice now in vogue with advertisements for contracts, by a class of men calling themselves surveyors, who are nothing more, in most instances, than bankrupt builders, bankrupt builders' clerks, or their foremen, who have during their reckless career with their former employers picked up a little from attending on legitimate men of business in their vocation as surveyors. I am induced to allude to the present system adopted by this class from the circumstance that occurred at the Vestry office of St. — the week before last.

Two parties presented themselves to take out quantities for some schools. The first party had canvassed, and obtained about, I suppose, twenty or thirty names attached to a list (of course all sorts and grades, from Jay down to packing-case makers, &c.): the other superseded this list by a great number, which, on inspection, appeared almost all in one handwriting. The builders (1 for one) objected to the papers, and proposed for the lists to be set aside, and to be put in the hands of a surveyor, which was acted on. The one selected went to work, it appears, in spite of the other having the majority in names; but the best of the joke is, that these touting gentlemen had to dab down deposits of a couple of guineas for each name they introduced, which sum was to be returned on the receipt of a *bona fide* tender being sent in, but if not it would be lost. I think—say out of forty names—that scarcely a dozen will be given in, which will serve these impostors of the profession perfectly right; for no respectable, responsible surveyor has the least chance against this host of touters if he wait at home for business as it was formerly carried on; *i.e.*, by the builders all meeting together and voting by ballot, thereby employing a proper, competent, and responsible party.

Cannot you further aid the profession by advocating a Surveyors' Institute, and thereby block out these broken-down builders, bankrupt builders' clerks, and I know of some who were plumbers and glaziers, and others, I suppose, jawbrokers? A BUILDER.

BUILDERS' BENEVOLENT INSTITUTION.

The thirteenth annual meeting of the subscribers and friends of the above charity was held on Thursday, at the Loudon Tavern, Bishopsgate-street, for the purpose of receiving the report for the past year; for the election of president, treasurer, directors, and auditors for the year ensuing; and for other matters connected with the welfare of the institution. Mr. George Bird (treasurer), in the unavoidable absence of Mr. George Spencer Smith (president), occupied the chair.

Mr. A. G. Harris (secretary) read the following report:—

Although the past twelve months, from various causes, has not been a flourishing period for the building trade, the directors have the satisfaction of informing their friends and supporters that the cause of benevolence has not suffered in consequence: on the contrary, there is an increase both in subscriptions and donations; and they do hope that this gratifying increase, under such circumstances, will stimulate them to still greater exertions, so that the funds of this deserving charity may be yearly augmented, as they ought to be, considering the numbers

representing the interest connected with the trade, and the great necessity for its existence too painfully evinced in the large number of applicants who were unsuccessful at the last election in May, 1859, and who were now anxiously looking forward to be elected at subsequent periods, whenever the funds of the institution will permit such an augmentation.

The directors take the opportunity presented by this being the last half-year of the subscription, to offer their grateful thanks to Mr. Charles Lucas, the proposer of the scheme, and those gentlemen who so generously responded to it at the dinner in 1855, in guaranteeing for five years an annual subscription of 10*l.* 10*s.* each; by so doing, the satisfaction remains with those gentlemen of having made happy and comfortable a number of their distressed brethren who otherwise would have lingered on in disappointment and expectation.

The subscriptions and donations for the past year amount to 1,817*l.* 6*s.* 6*d.*. Annual subscriptions, 858*l.*; donations, 574*l.* 6*s.* 6*d.*; and 429*l.* 0*s.* 7*d.* stock has been purchased in the per cent. Consols—369*l.* 10*s.* 7*d.* for the relief fund, and 387*l.* 4*s.* stock for the building fund. The total amount of stock now standing in the names of the trustees is 7,111*l.* 7*s.* 9*d.*, being 4,947*l.* 15*s.* 8*d.* for the relief fund, and 2,164*l.* 12*s.* 1*d.* for the building fund, with a balance at the bankers' of 419*l.* 2*s.* 5*d.*

An election of three pensioners, two males and one female, was held at the Loudon Tavern, on Thursday, 24th May last, when Mr. Goodfellow of Plymouth, James Oliver, and Katherine Edmunds, were the successful candidates.

Three pensioners have died since the last report—Robert Manning, elected February, 1853, died August, 1859; J. St. George, elected May, 1857, died October, 1859; Harry Chalmide, elected November, 1855, died January, 1860.

The amount paid in to the bankers by Mr. Joseph Bird, the honorary secretary of the ball held at Willis's Rooms, St. James's, in February last, was 124*l.* 1*s.*, being an increase of profit of 25*l.* 6*s.* 6*d.* over the preceding year.

The annual dinner, which took place at the Loudon Tavern, on the 27th October, 1859, gave an addition to the funds of the institution, in the shape of subscriptions and donations, of 375*l.* 16*s.* 6*d.*

In the appeals which have at former periods been made to the profession, trades, and the public, by whom this charity is supported, the directors imagine that almost every topic of explanation as to its object, or inducement towards its support, has been urged or explained; they therefore, in this report, have confined themselves to the statement of accounts, and progress of the institution; and simply stating that, at the election in May last, there were thirteen unsuccessful candidates (and several applications since), all urgent and distressing cases, many of whom were formerly in possession of ample means, and are now, through misfortune, obliged, in the decline of life, to seek charitable aid of their more fortunate brethren; and the directors hope that such aid and assistance will be given, as to enable them to have another election in November next, and place some of the number out of the reach of poverty and distress.

In conclusion, the directors are convinced that the success of this charity will stimulate to further exertion, and that the public patronage so liberally bestowed will be heartily responded to by those more immediately interested in the welfare of the Builders' Benevolent Institution.

The directors have the satisfaction of announcing that Mr. George Pucknett has kindly consented to become the president of the institution for the ensuing year.

Mr. T. Cozens (the founder of the institution) moved the reception and adoption of the above report, with the recommendation that it be printed.

Mr. E. Richardson seconded the motion.

The report was then unanimously received, and the terms of the motion agreed to.

The balance-sheet was next read, showing—balance of cash in hand from last year, 218*l.* 4*s.* 6*d.*; ditto in the hands of the secretary of the Brighton branch, 47*l.* 12*s.* 8*d.*; which, together with the subscriptions and donations, amounting to 1,688*l.* 0*s.* 11*d.*, made a total of 1,914*l.* 8*s.* 1*d.* On the other side it was shown that after all the incidental expenses were defrayed, a balance was left at the bankers' of 419*l.* 2*s.* 5*d.*

The above having been unanimously accepted, The Chairman, in referring to the report, regretted the loss which the institution would sustain by the ceasing of the annual subscription of ten guineas each from the gentlemen who guaranteed that amount for five years, at their dinner in 1855. He, however, had some pleasure in finding that the annual subscriptions and donations had increased, and which he hoped would continue to increase to such a degree that they might be enabled to have two elections a year instead of one: he considered that they ought to have two elections, for he was sure it was painful to see so many of their poorer brethren who, having become applicants for the benefit of their institution, were obliged to retire through non-success in May last, to await the result of the next opportunity. In conclusion, he would call upon the builders generally to come forward and assist in obtaining a second election, in each November, as it was originally intended; and as now the strike was over, and confidence restored among them, he requested them to come forward and assist in advancing the charitable undertaking.

Mr. T. Cozens could not help feeling that the lapse of the five years' guarantee by Mr. Lucas and the gentlemen who had kindly taken up the offer, was a serious loss; but he hoped at their next dinner some other well-disposed person would make a similar offer.

Acknowledgments were then made to the various officers for their services for the past year, and a general expression that they would continue to perform those duties, which had given the highest satisfaction. Mr. George Plucknett was elected president for the ensuing year.

The other business having been disposed of, a vote of thanks to the chairman for his general interest in the welfare of the institution concluded the proceedings.

### Books Received.

*Specimens of Medieval Architecture, from Sketches made in France and Italy.* By Wm. DEXES NESFIELD, Architect. Nos. 1, 2, and 3. Day & Son, Gate-street, Lincoln's-inn-fields.

It will be sufficient praise with those who know Mr. Norman Shaw's excellent "Architectural Sketches from the Continent," to say that this work which has been commenced by Mr. W. E. Nesfield, promises to form a worthy companion, and valuable continuation of it. Mr. Nesfield is a very good draughtsman, and in the buildings of the thirteenth and fourteenth century, in France and Italy, he has excellent subjects. The numbers now before us include drawings from Ardennes Abbey, near Caen; Cigny Abbey; the Church at Bernieres; the charming arcade above porches, west front, of Amiens Cathedral; Leon Cathedral; Coutances Cathedral; Mont St. Michel; Chartres Cathedral; and others.

It would be a pleasant task, hereafter, to write a book to accompany them.

Mr. Nesfield's work is being produced at the establishment of Messrs. Day & Son, and will consist of twenty monthly parts, each containing five plates. We can fairly recommend it.

### Miscellaneous.

**A STRIKE IN LOMBARDY.**—A communication in the *Messenger du Midi* states that the operatives in Lombardy are striking for an advance of wages. The printers began, and their example was soon followed by the masons and smiths, who have compelled employers to accede to their demands. Domestic servants afterwards turned out, and demanded to be paid in francs instead of Milan lire of 70c. each. At Modena and Bologna the market people tried to raise their prices, and the consequence was that a number of disorderly boys joined the servants in an attack on the provision stalls, and the pavement was soon covered with broken eggs, fruit, and vegetables. At Como there are nearly 4,000 persons usually engaged in the silk manufacture, who have all struck for higher wages, and, as they have nothing to live on, the town is obliged to feed them.

**THE REAPING MACHINE KNOWN TO OUR CELTIC FOREFATHERS!**—Truly, there is "nothing new under the sun." A correspondent of the *Gloucester Chronicle* thus writes as to reaping machines:—It may perhaps be interesting to you and to your readers to learn that those "utter barbarians," as our British ancestors have been wont to be called, were before us in many of those inventions which are supposed to be the result of modern ingenuity. I am not prepared to say that they had the steam plough, but that they had reaping machines there can be no doubt in the minds of those who read the following much-overlooked passage of Pliny, who wrote between the years 60 and 70 of the Christian era:—

De Messis et Tridico.  
"Messis spicis ratio varia, Galliarum latifundis, valli pregrandes dentibus in margine infensa duabus rotis per segetem impelluntur, juncuntur in contrarium juncto, ita direxerit in vallum eadent specie."

"Of reaping itself there are various methods: in the broad plains of the Gauls, enormous machines with teeth set in a row, placed on two wheels, are driven through the standing corn, a horse being attached to it in a contrary way to the usual mode of attacking horses. Thus the corn, being cut off, falls into the furrow."—*Pliny's Natural History, Book 18, chap. 30.*

Some question may arise whether or we should translate *vallum* as it occurs in the latter part of this sentence differently from the sense given that word at the beginning, *vallus* being a van or machine (see Ainsworth's Dictionary), and *vallum* being a trench or furrow. If we adopt the latter translation, then it follows that our ancestors had which was with such difficulty effected in those of modern construction. If, on the other hand, we translate it as the machine itself, then they had accomplished that which our modern inventors have not yet succeeded in, for they must have made the machine not only to reap, but to carry away the corn.

**PROPOSED STURGE MEMORIAL, BIRMINGHAM.**—It has been decided that a limited competition shall be invited for designs for the Sturge memorial. Three sculptors will be requested to send in models or designs for a statue and fountain. The funds at the disposal of the committee fall short of the amount required.

**VOTE FOR PUBLIC BUILDINGS.**—In the House of Commons, the other night, the sum of £119,523/10 was asked for, for public buildings. Mr. Midway moved that the vote should be reduced by the sum of £1200.—an item stated to be for the expense of a house to contain the Wellington funeral car, which he thought was unworthy of having money expended upon it. By whom such a thing was designed he knew not. Lord John Manners always objected to questions of taste being submitted to that House. The car was used upon a memorable and national occasion, and it would be desirable, when it became necessary to remove it, there should be a proper place provided for its reception. Mr. Joseph Locke regarded the proposed institution as a folly. They would have to provide for the keeping, warming, and cleansing of this new building, and, as a body of practical men, he called upon the house to reject the vote. Mr. Cowper said he quite felt the difficulty of the occasion. Here was a car used on a memorable occasion, and it was owing to its associations with the remains of that great hero, who was held in honour in this country. There was nothing more visited in London, or in which greater interest was manifested by the people generally, and he did not think that either the people or the House would like it to be broken up. Lord Claude Hamilton suggested that the car might be taken to the Tower. Mr. Cowper would be very sorry if the car was not placed in a proper situation, but as the opinion of the House was against the vote, he would withdraw it. The item was then withdrawn.

**WALLASEY LOCAL BOARD OF HEALTH.**—The address of the chairman, Mr. H. Pooley, of Home Croft, Birkenhead, at the first meeting after the election, 1860, has been reprinted from the *Liverpool Mercury* of July 6. We extract a few particulars from it:—The footways leading to and from the Egremont and Seacombe ferries have been laid with flags, to the great comfort of pedestrians. During the past year 9,600 yards of road have been formed by the Board in the owners' default, and 214 yards by the owners voluntarily. The sanitary provisions of the district have received continued attention. Main and branch sewers have been considerably extended during the year: the respective systems of sewerage which have their outfalls at Seacombe and New Brighton approach their completion so far as present dwellings require. The main drain, recently completed, passing through the village of Liscard to Seacombe has effectually delivered Liscard itself from the dangerous and long-standing nuisance of having its entire sewerage carried into tidal ditches which were the only recipients of the house-drainage of the neighbourhood. House-drainage is keeping pace with main-drainage: 120 private drains have been admitted into the sewerage during the year. The principal sanitary undertaking is the procuring of an abundant supply of wholesome water, and its economical distribution to every house. In this they have made considerable progress. The sinking of the well at the Hooks has proceeded satisfactorily so far as regards the main object. The water, as had been prognosticated by the engineer, is found to be vast in its abundance and excellent in quality: in fact, so large is the supply that the men have been "drowned out" and difficulty and delay have been occasioned solely by that result. The present yield is 30,000 gallons per hour, which is equal to the supply of 30,000 persons at the largest standard rate, or 20 gallons per day for each—that is to say, equal to the wants of very nearly thrice the present population. The water possesses all the brilliancy and purity of the ancient supply of Liverpool, with considerably greater softness. The water-tower at Liscard is raised to nearly the height required to receive the iron tank—that is, 91 feet from the ground, and the tank itself is ready for erection. The workmanship, it is said, is sound, and the building will not only be complete for its destined purpose, but will, it is hoped, furnish, in its many stories, accommodation for a public library, reading-room, and the nucleus of a museum. The water-mains are being actively laid down along the principal thoroughfares. The gasworks were completed in November last; and gas mains are now laid down along the chief roads and streets. It was considered good policy to fix the price of gas low, and therefore it was struck in the outset at 5s. per 1,000 feet.

**RESTS FOR THE WEARY.**—The introduction of these useful accommodations in England and Scotland has led to their introduction into Ireland. The *Belfast Newsletter* states that one has been erected near Carrickfergus, another near the village of Eden, and two more are to be placed between the latter and Larne. "The one near Carrickfergus, adds the *Newsletter*, is 12 feet long, and we lately saw seven persons seated on it at once."

**LONDON SHOP ARCHITECTURE.**—The new premises constructed for Mr. Emanuel, the jewel merchant, in Brook-street, Hanover-square, are handsome, lofty, and well appointed. The cases and other woodwork are of mahogany chromised, tastefully ornamented. A large glass roof at the back gives light in the day, and gas in "sun-burners" illuminates at night. Externally the building is of brick and stone, displaying the features of the style called Jacobean. Mr. Parnell (one of the architects of the Army and Navy Club) was the architect at Mr. Emanuel's, and the work was done by Messrs. Jackson & Shaw.

**BUILDERS' DINNER.**—Sir: The annual dinner of the firm of Mr. John Kelk took place on Saturday last, at Rosherville-gardens, Gravesend; and, notwithstanding the difference of opinion that last year existed amongst the men, all estrangement was entirely obliterated to give way for a thorough unanimity of feeling. A slight disappointment was manifested, that neither Mr. J. Kelk nor Mr. Taylor was present, but that was, in a measure, obviated by the presence of Mr. Wm. Hearn, and other officials of the firm. The chairman announced that Mr. Kelk had given the handsome sum of 30*l.* for the men to enjoy themselves with, which they undoubtedly did. I hope, sir, you will kindly give this a corner in your valuable journal.—BEN JACKPLANE.

**THE KENT COUNTY SURVEYORSHIP.**—At the adjourned annual session for the county held on the 17th inst., the appointment of a county surveyor in the place of Mr. Whichecord, deceased, was proceeded with. It had been resolved that the order of General Session made in October, 1859, should be adhered to. This order, after defining the duties of the county surveyor, increasing the salary from 200*l.* to 250*l.* per annum, and including travelling expenses, and provided the following allowances, namely, 3*l.* per cent. upon all works sanctioned by the Court, such as lock-up houses, alterations or additions to county prisons, repairs to county bridges, in cases where the amount expended was 200*l.* and upwards. Where the amount laid out was less than 200*l.* then the usual architect's commission of 5*l.* per cent. would be allowed. Upon all plans and specifications drawn or made out, where the works were not carried on, there would be an allowance of 1*l.* per cent. upon the estimated amount of outlay required. The gentlemen proposed as candidates were Mr. Martin Bulmer, of Maidstone; Mr. Blandford, also of Maidstone, partner of the late Mr. Whichecord; Mr. John Hooker, of Brenchley; Mr. Messinger; and Mr. F. Fick. The result of the voting was that Mr. Bulmer was appointed, by a majority of thirty, to twenty-one for three of the other candidates.

**FOOTPATHS: BLUE BRICKS, RAGSTONE, BOLLERS, SHINGLE.**—The question of footpath manufacture is in agitation at Birmingham,—the worst paved town in England," as the local *Journal* calls it. First, says this paper, "we have the controversy of blue bricks *versus* Rowley rag, and then comes a denunciation of the pathways in Edgbaston. As to the bricks, we cannot profess greatly to admire them, whether red or blue, since their use must necessarily exhibit this town as one unshod or unwilling to afford the expense of lagging. But they are vastly superior to the horrid bollers which now render our footpaths impassable, and are, in respect to the important quality of smoothness, at least as good as fragments of rag stone. An abominable nuisance is the shingle with which our suburban footways are covered. In summer it renders them useless, from the pebbles becoming loose and excruciating to the feet, while in winter it is converted into a superficies that can only be compared to turtle soup. Should any reader be sceptical on this subject, he has but to visit one of the main routes in Edgbaston, where he will find the wayfarers universally making for the horse-road, as the only portion of the thoroughfare that can be traversed with comfort." It is not in Birmingham alone where the nuisance of shingle footpaths is to be met with. They still exist about the suburban streets and paths of the metropolis, as at Battersea, Hackney, &c.; and the assertion that they cause foot passengers to turn out to the horse-roads is strictly true here as at Birmingham. The subject, however, as we lately noted, is receiving attention at Hackney.

**STREET RAILWAYS FOR GLASGOW.**—At a recent meeting of the City Council, a formal application from Mr. Train for permission to lay down rails for his patent cars in some of the principal thoroughfares of Glasgow was read. The application was at once agreed to, and Mr. Lang instructed to communicate with Mr. Train to that effect.

**BRISTOL FINE ARTS' ACADEMY.**—The sixteenth annual meeting of the subscribers and friends of this Academy has just been held at the Exhibition Hall of the institution, White Ladies-road. The attendance was far from numerous. The report stated that the committee of management continued to give their sedulous attention to the development of the objects contemplated by the Academy, with (as they believed) a fair prospect of success, and they considered its prosperity to be now established on a firm and secure basis. The Life Academy had continued to offer to the artist members and students great opportunities of advancement in art, during its usual sessions, which had been conducted by the artists according to the rules laid down by the committee, and had been regularly attended during the winter months. The Antique School and Model room had also been much frequented, proving that the students duly appreciated the advantages thus offered. The committee regretted that a heavy debt still remained to be settled on account of the building, amounting to about 1,300*l.* The report was adopted.

**DOCK WORKS AT LIVERPOOL AND BIRKENHEAD.**—At the last meeting of the Mersey Docks and Harbours Board, Mr. Hartley, engineer to the Board, laid his annual report before the meeting. From this document it appeared that with regard to Liverpool works the expenditure from the 25th of June, 1859, to the 25th of June this year, had amounted to 122,257*l.* 8*s.* 7*d.*; general repairs had been effected at a cost 90,422*l.* 8*s.* 7*d.*; and this was inclusive of stock, 16,495*l.* 1*s.* 3*d.* The inland-carriers and half-tide docks were in rapid progress, and the gates and machinery in preparation. The excavations of the steam-dock to the east of Huskisson Dock were proceeding, and the foundations of the south wall had been commenced. At Birkenhead the great float was rapidly approaching completion, and the whole of the north wall (2,366 lineal yards) was now finished except the coping, 1,059 yards having been built within the last twelve months. Great anxiety and annoyance had been experienced by the constant giving way of the walls on the south side of the float, and, to a great extent, these walls had been either strengthened or rebuilt. This, together with the difficulty of procuring good and efficient masons, had considerably interfered with the general progress of the works. The expenditure at Birkenhead had been 334,401*l.* 16*s.* 11*d.*; the restoration of the walls had cost 37,014*l.*; repairs, 4,402*l.*; and inclusive of stock, 13,370*l.* The report was adopted.

**THE DRINKING-FOUNTAIN MOVEMENT.**—At Devonport, Mr. Gill, plumber, has had entrusted to him the work of erecting the drinking-fountains presented to the town by Mr. J. R. Jeffery, of Liverpool. The Devonport Water Company are about to erect two fountains, one at the head of Fore-street, and the other at Newpassage-hill.—At Sheffield, the Red Hill drinking-fountain has been opened. It is located in the middle of the broad part of Broad-lane. The structure is in the Italian style, and is the joint gratuitous production of two young townsmen, Messrs. R. G. Smith and Thomas Bradley. The lower portion is of Brincliffe edge stone, and the upper from the Darley Dale quarries. On the principal front to the west, is the fountain, which is ascended by two steps. From this level the fountain is erected upon a square base. From the base rises a pedestal, in the front of which is a niche containing a bronze ornamental shell, out of which the water flows in two streams into a white marble basin. Round the corvo is the inscription, "Whosoever drinketh of this water shall thirst again." On the east front are corresponding steps, and in the pedestal are fixed a barometer and thermometer, manufactured by Messrs. Cutts & Co. On the north side is a semicircular seat, with the inscription, "Rest for the weary;" and on the pedestal is a medallion of James Montgomery, the gift of the council of the School of Art. On the south side is a cattle trough. The whole is surmounted by an ornamental pillar and lamp: the casting of the pillar and shell ornament are the gift of the Mayor, the lamp being the present of the Police Commissioners. The contractor for the whole is Mr. Alderman Mycock. The entire cost of the erection is 85*l.* 9*s.* 3*d.*, of which sum 65*l.* has been subscribed.

**ANOTHER CHANNEL-CROSSING SCHEME.**—Dr. W. H. Brown (formerly one of the lecturers at the Napoionic and Polytechnic) is said to have devised a method of transmitting parcels under water across the Channel with great celerity; so that deliveries of goods and letters can be effected on both sides several times in the twenty-four hours. A company is being formed, it is said, to carry it into effect.

**NEWS FROM CANADA.**—The Crystal Palace at Montreal will soon be completed: it is considered by the Canadians to be quite an imposing building, which will admit of a good display of Canadian industry and her agricultural and mineral productions. At Toronto the arrangements made for the royal visit are on an extensive scale. The Hamiltonians have erected their Crystal Palace, where the Upper Canada Annual Provincial Exhibition is to take place. The Commissioner of Public Works has visited the Exhibition grounds, and expressed himself highly gratified with the magnitude of the arrangements which are being made. The commissioner, afterwards visited London, that rapidly growing city in the western peninsula of Upper Canada. Everything indicates the great anxiety of both Government and people to give a worthy reception to the Prince of Wales. Montreal has subscribed between 30,000 and 40,000 dollars to provide for the reception of the royal guest. The Grand Trunk Railway Company will put forth great exertions on the occasion. The street decorations at Montreal are to be on a grand scale. The artist employed is Mr. Spence, brother to the English sculptor of that name, now at Rome, and also to Mr. James Spence, C.E., for some time in the service of the Grand Trunk Railway Company's contractors.

**THE ENLARGEMENT AND REDUCTION OF ENGRAVINGS, MAPS, &c., BY A CHEAP PROCESS FOR PRINTING.**—A very simple and ingenious process was shown to us the other day, at the "Electro-printing-block" Company's premises, in Burleigh-street, Strand. What we saw was but a portion of various processes, we believe; but we shall speak chiefly of what took place under our own eye. A sheet of vulcanized rubber, prepared in some special way it was said, and coated with an elastic composition on which had been printed a copy of an engraving, was fixed to an iron framework with hooks and rings attached to small iron bars, crossing so as to form a square, and by means of screws the rubber sheet was stretched, according to a graduated scale, until the inked impression had attained certain increased dimensions. The whole being fixed, was then taken to a lithographic press, and the rubber laid with the inked side on a clean lithographic stone, and passed repeatedly through the press. The inked impression was thus completely transferred to the stone, and from that in a few minutes an impression of the enlarged engraving was worked off. This impression we examined with a magnifying-glass, comparing it also with an unenlarged copy, and certainly it displayed not the least rotteness or comparative imperfection, but was, on the contrary, quite as good as the unenlarged one in every way: nor did it seem to be in anywise distorted, although it does seem clear that minute differences in the amount of the stretching, from the central point of rest outwards towards the squared circumference, must exist, and must hence produce minute though it would appear inappreciable distortion in the enlarged impressions taken by such means. However this may be, a pair of compasses seemed to show that round the circumference at least of the rubber, which was marked with equidistant lines, the enlargement was equable in all its parts. Moreover, the sheet of rubber was thin, and very elastic, and easily stretched, and seemed to be of uniform thickness. Another process exhibited was the converse of the first, namely, reduction: but in this case it happened to be the reduction of a portion of a page of the *Times* of that day. The rubber sheet in this case had to be stretched beforehand, and relaxed after the impression was stamped on its elastic coating. The diminished copy was quite as vivid as the original. In this case another process, which we did not witness, was said to have been used in obtaining the first impression: of course it was not from the *Times* types. A piece of a copy of the *Times* had been cut out and submitted to a simple process of maceration in a bath, and an impression was then taken off it on a lithographic stone, and thence it was impressed upon the stretched rubber sheet for the reduction. This process is not quite new. Engravings can be so transferred, it seems, and the original copy be none the worse. The economy and other advantages of such processes as those described are obvious.

**ST. STEPHEN'S, VIENNA.**—To judge from the preparations in progress, the demolition of the steeple of St. Stephen's, in Vienna, will be finished by the end of the year 1861, when the building of a new one up to the height of 56 yards, after the design of the artist Ernst, will be commenced.

**INLAID SLAB-TOMBS.**—To the notice you gave in your last of the inlaid tablet of Mr. J. M. Lockyer, in the church at Moulsham, I beg to add that there is no doubt as to the extensive use of scagliola for pavements, slab-tombs, the ornamentation of marble columns, &c., in Italy, especially in Florence, the cradle of scagliola work; where, till lately, there was in the academy a government school for teaching the art. But the only point I particularly want to rectify in your notice is the belief that marble is so much harder than scagliola. I have continually worked scagliola, from an inlaid flower to a pavement, and can assure you that it is as hard as the hardest marble. —GUSTAVO GEORGI.

**PROPOSED CONCENTRATION OF THE LAW COUETS.**—The report of the Royal Commission is unanimously in favour of the Attorney-General's scheme for appropriating the entire space between Carey-street and the Strand. In spite of this the Board of Works is laying out some 30,000*l.* in acquiring and repairing some very old and dilapidated property in Doctors'-commons for the use of the Probate Court; and, further, it has given notice to purchase the freehold of a property let on lease, of which about eighteen years are unexpired. The report states that the unclaimed suitors' fund, with the exception of 16,000*l.* to be provided for out of the consolidated fund, will be quite sufficient to cover every expense.

**THE LION AND THE UNICORN.**—James I. was the first who united the lion and the unicorn heraldically, adopting the latter beast from the supporters of the Scottish sovereigns. The conjunction of these animals on an ecclesiastical vestment of the period of the Reformation must be attributed to religious symbolism rather than to any heraldic arrangement; the lion typifying fortitude and strength, while the unicorn is emblematical of fortitude and chastity. As such the former may have reference to our Lord "the Lion of Judah," and the latter may be an emblem of the Hessed Virgin Mary. The tradition with regard to the unicorn, that it would never be caught, except by a virgin, and that if its skin was at all defiled it pined away and died, is well known. Its captive was a favourite subject with the Medieval artist. I have before met with these animals as a powdering for a vestment. I think among the inventories in Sir William Dugdale's "History of St. Paul's,"—G. W. W. MINNS.—From "Notes and Queries."

**UNDERGROUND RAILWAY.**—Sir: I think the following scheme, if it could be carried out, would be of great utility. My idea is for a company to be formed to construct a railway from London-bridge to Bayswater and Kensington, by the following means: the company to undertake to embank the Thames from London-bridge to Westminster-bridge, the embankment to include, besides a railway, the low-level sewer for that distance, and a promenade for pedestrians. In return for this undertaking, I would allow the company to construct an underground railway along Birdcage-walk to Buckingham-gate, where a station might be made; from thence to carry the line in front of Buckingham Palace, up Constitution-hill to Hyde-park-corner (another station), across Hyde-park to Gloucester-gate, where a very few hundred yards under streets would join it to the Great Western Railway. From Hyde-park-corner a branch might be made, also along the road running parallel with Rotten-row to Kensington, where, again, a very short distance under a newly-formed road would connect it with the Brompton Museum. I would grant the underground privilege at a peppercorn rent for a certain term of years, and on condition that the surface should be left exactly as found. These lines would connect very populous districts with the centre and many other parts of London along the line. The parks would be made more accessible to people living in the City, many of whom, I believe, know very little of the beauties of Kensington-gardens. I hope you will excuse me, sir, if I have trespasses unnecessarily on your time.—A WORKING MAN.

**THE LLANGWENNY BRIDGE.**—I observe in the last number of the *Builder* a notice of this bridge, in which the names of the contractor and clerk of works are mentioned, but not a word about the engineer. I think it an act of justice to state that the bridge was designed, and the whole of the calculations made, by Mr. T. Dyne Steel, civil engineer, of Newport and Abercromby.

SHARPEHOLDER.

**OPENING OF A PRESBYTERIAN CHURCH AT WHAU, NEW ZEALAND.**—This place of public worship has been formally opened by the Rev. John Macky, of Otahuhu. The site, which comprises about three acres of land, is the gift of Mr. John S. Adams, of Sydney, and his sister, who resides at Edinburgh. There is ample room for a manse and school-room in addition to the church, and, if the district advances as rapidly as it has done within the last few months, these additional buildings will be soon required: meantime, the church is to be used for the purpose of a school.

**THE WELL AT CLERKENWELL-GREEN.**—At a recent meeting of the Vestry Board of Clerkenwell, it was reported that the capacity of the pump on Clerkenwell-green was tried on the 2nd of the present month: it yielded only three loads; on the following Tuesday, to two p.m., three loads, after which there was abundance; on Friday, the 5th instant, fifteen loads; on Monday, two and three-quarters; Saturday, 7th, only fifty gallons; on Tuesday, the 10th, there were eight loads. This water supply seems to be connected with that of Messrs. Nicholson's distillery. Mr. Foster, in seconding a resolution in connection with this matter, much regretted that the Board had ever depended for any part of its supply on a private firm: considerable expense had been incurred to run drains into the well: at the same time there were complaints in some places of too much water. Although useful for the purposes of street-watering, wells into which drains are cut through crowded neighbourhoods should be avoided for domestic use.

**SAN FRANCISCO.**—A Californian paper says:—The congregation of the Church of the Advent (Protestant Episcopal), propose to build a church that will be an ornament to the city of San Francisco. The congregation has a lot, 70 feet by 165 feet in size, on the south side of Howard-street, extending back to Tehama, and bordered on one side by Bachman and on the other by Jane-street. It is probably the only lot in the city which is bounded by a street on every side. Mr. Wm. Patton, architect, designed a building, and we understand that his design is accepted. The style of architecture is the Early English, and the plan of the building is an exact copy of the church in the town where Sir Isaac Newton was born. The size of the church on the ground is to be 70 feet by 94 feet. On the left side will be a steeple 150 feet high. The body of the church will contain 616 seats, and the gallery 324. The material is to be a gray stone, probably from Angel Island, the stones along the corners having a reddish tinge. The cost will be about 20,000 dollars.

**THE WORCESTER MODEL DWELLINGS ASSOCIATION.**—The annual meeting of this association has just been held. The association was established six years ago, to provide healthy and well-arranged dwellings for the labouring classes, and a large quadrangular block of houses was accordingly erected in Cooken-street. The report sets forth that, in consequence of necessary repairs and the increased rates paid upon houses, there was still a small balance against the institution, nor was any dividend likely to accrue for some time to come. So far as a return for capital was concerned, the experiment had failed; but the results, in a moral and sanitary point of view, had been most satisfactory. All the houses had been full during the year, and the conduct of the tenants good, the arrears of rent not being more than two guineas. Only three deaths, in a population of 131, had taken place during the year, of which two were from decline, and one from extreme old age.

**PUBLIC PARKS AND PLAYGROUNDS.**—The new act, now in force, provides for local improvements beneficial to the health and comfort of the people. The ratepayers of any parish maintaining its own poor, the population of which, according to the last account, exceeds 500 persons, may purchase or lease lands, and accept gifts or grants of land, for the purposes of forming any public walk, exercise, or play ground, and to levy rates for maintaining the same, and for the removal of any nuisance or obstruction to the free use or enjoyment thereof, and for improving any open walk or footpath, or placing convenient seats or shelter from rain, and for other purposes of a similar nature. The act may be adopted in boroughs. After the adoption of the act a meeting of the ratepayers is to take place to make a separate rate, and such rate is to be agreed to by a majority of at least two-thirds in value of the ratepayers assembled. Previous to any such rate being imposed a sum in amount not less than one-half of the estimated cost of such proposed improvements shall have been raised by private subscription or donation. The rate is not to exceed sixpence in the pound.

**BUCKS ARCHITECTURAL AND ARCHAEOLOGICAL SOCIETY.**—The annual meeting of this society was held at Newport Pagnell on the 17th instant. There was a crowded meeting, and sixty new members were admitted. The chair was occupied by Mr. C. G. Du Pré, M.P. The business of the day having been disposed of, a paper, "On a Double-faced Brass in Stowe Church, with a few general Remarks on the Desecration of Churches," by Vice-Admiral Smyth, was read by the Rev. C. Lowndes. A variety of interesting information was given in the paper with regard to brasses and monumental tablets, the writer justly remarking that every one should be interested in the preservation of such memorials. The importance of the careful preservation of monuments was illustrated by the well-known instance of the value of them which occurred in the recent trials concerning the Shrewsbury peage. Much might be done by the churchwardens, under the direction of the clergy; and, with an eye to their preservation, it was advisable that all monuments, records, &c., should be regularly taken in stock. Good rubbings should be taken of brasses and inscriptions, as much greater accuracy was by that means ensured. Two papers were then read by the local secretary,—"On Lavendon Priory," and the other "On Tickford Abbey." The museum, which was open from Tuesday till Thursday inclusive, contained many objects of interest, and was largely contributed to for the occasion.

**SANITARY STATE OF ST. HELENA.**—Few towns in Lancashire have progressed with greater rapidity within the last dozen years than St. Helens. It is the seat of numerous chemical works, copper works, foundries, plate glass, sheet and crown glass, and a number of bottle works. The immense quantities of coal found in the district, and the subsoil so prolific of good clay and sand, have, no doubt, contributed to encourage the growth of the town, and the numerous works around it. Mr. M'Nanus, the town surveyor, by order of the commissioners, has just completed a report on the sanitary state of the town, and on the water-works, from which it appears that the area within the limits of the town proper is about 630 statute acres; the population about 23,000 inhabitants; but the whole neighbourhood on the south and east of the town is densely inhabited, and studded with numerous works of various descriptions. Notwithstanding the rapid growth of the town, sanitary works have not been neglected by the inhabitants, there being at present upwards of eleven miles of public sewers. Various modes for deodorizing sewage are pointed out in the report. It does not recommend the covering of the brook which runs through the town and at present receives the drainage of the town and surrounding district, comprising an area of several thousand acres. Within the town limits there are seven miles of adopted streets, and seven miles unadopted. The report enters at some length into the mode of cleansing streets, backyards, courts, and passages, with examples of the methods of street-cleansing resorted to at various other towns. The water-works report states that to meet the requirements consequent on the rapid growth of the place, more reservoir space should be secured; that twelve times the area of the present reservoirs would be wanted to secure the rainfall due to the watershed of the district. There is a total of upwards of twenty miles of water-pipes.

For the erection of a parochial infant school, at St. Barnabas, Homerton. Mr. Edineston, architect. Quantities not supplied:—

Asby & Sons	£786 0 0
Perry	665 0 0
Lawrence	575 0 0
Norris, Brothers	487 0 0

For repairs to the exterior of the church of St. Augustine, London. Messrs. Tress & Chambers, architects:—

Axford & Co.	£540 0 0
Hutchinson	540 0 0
Wills	484 9 6
Fenris	457 0 0
Holmes	435 0 0
Brown & Co.	359 0 0

For new schools, Ewell. Messrs. Ailen, Snooke, & Stock, architects:—

Tolland	£3,500 0 0
Myers	3,300 0 0
Hall	3,301 0 0
Robinson	2,099 0 0
Rider	2,789 0 0

For new houses, stables, &c., Weybridge:—

Seagrave	£3,669 0 0
Macey	2,970 0 0
Myers	2,859 0 0
Patman	2,666 0 0
Scott	2,493 0 0

For new offices, Wellington-street, Strand. Mr. Withers, architect:—

Holland	£3,237 0 0
Myers	2,824 0 0
Rowland	2,760 0 0

For alterations and additions to Buscot Park, Oxon. Mr. Coudy, architect:—

Glasscock	£12,350 0 0
Mansfield	14,200 0 0
Panison	15,739 0 0
Holland	15,555 0 0
Myers	11,667 0 0
Troopole	11,018 0 0

For the restoration of Newton Church, Glamorgan. Messrs. Pritchard & Seddon, architects:—

Rees & Roderick	£995 0 0
Jarvis	654 13 0
James	610 0 0

For alterations and new shop-front, King's Head, Newington. Mr. Wm. Nunn, architect:—

Gallienne	£374 0 0
Wills	233 0 0
Day	225 0 0
Bennett (accepted)	220 0 0

For farmhouse and outbuilding, at Stoke Lacy, Herefordshire. Mr. Kempsom, architect:—

Leighton	£2,342 0 0
Howers	1,651 0 0
Nottingham	1,300 0 0

For building two houses, at South Norwood. Mr. J. C. Paines, architect. Quantities supplied:—

Fenny	£1,560 0 0
Henshaw	1,448 0 0
Thompson	1,424 0 0
Harding	1,300 0 0

For building warehouse, for Mr. Sheppard, Borough. Mr. Waite, architect:—

Downs	£1,433 0 0
Fowler	1,417 0 0
Carter	1,395 0 0
Coleman	1,395 0 0

For building eight cottages, at Hereford. Mr. J. H. Ewins, architect:—

Morgan	£670 0 0
Mason	650 0 0
Lec (accepted)	640 0 0

For Gelly Gaer Parsonage, Glamorgan. Messrs. Pritchard & Seddon, diocesan architects. Quantities by Mr. Charles Poland:—

Griffiths, Newport	£1,190 0 0
Moore	1,129 0 0
Griffiths, Cardiff	1,100 0 0
Parry	962 0 0
Bolt (accepted)	959 0 0

For painting, &c., Hanover Chapel, Peckham. Mr. J. G. Stapleton, jun., architect:—

Fennell	£178 0 0
Brighton	179 0 0
Chamberlain	146 0 0
Smith	137 0 0
Gates	120 0 0

For Barnsley sewerage works, Contract No. 2. Mr. John Richardson, engineer:—

Buxton	£1,650 0 0
Moxon	1,585 0 0
Robinson	1,530 0 0
Royds & Whittle (accepted)	1,215 0 0
Barker	625 0 0

For sundry alterations at the Grand Junction Arms, Præd street, Paddington, for Messrs. Truman, Hanbury, & Buxton; quantities supplied:—

Scott	£713 0 0
Brake	693 0 0
Stoner	642 0 0
Marr (accepted)	621 17 0

**TENDERS**

For new chapel, Wokingham, Berks. Messrs. Poulton & Woodman, architects, Reading:—

Lecture room.	
Lewis	£2,069 19 6
Martin	1,976 13 9
Gray	1,895 3 6
Cooper	1,770 0 0
Sheppard	1,698 0 0
Orton & Child	1,649 0 0
Matthews	1,517 0 0
Wells (acc'd.)	1,470 0 0

[Materials from the present chapel, in addition to the above.]

For a cottage, at Crowtham-common, Hants. Messrs. Tress & Chambers, architects:—

Stevens & Co.	£1,369 10 0
Charlton	994 10 0
Martin, including plate glass (accepted)	993 10 0

For alterations and additions to premises, Robert's-mews, Hampstead-road. Mr. J. Tanner, architect. Quantities supplied:—

Axford & Co.	£913 0 0
Mann	899 0 0
Elston	499 14 0
Turner & Sons	499 0 0
Patman	458 0 0
Afry & Bellingham	459 0 0
Taylor	415 0 0
Sweet	405 0 0

# The Builder.

VOL. XVIII.—No. 913.

Rambling: Broadhurst, Sussex.



**B**ROADHURST (we were told) "was the residence of the excellent Archbishop Leighton: it was a good house once, but there is nothing left now worth seeing." "Don't take their word for it," said an enthusiastic friend, who knows that things are sometimes visible long after they have disappeared, if looked for with the mind and the heart as well as the eyes. "Let us see for ourselves." And so being hard-by, and the sun at last smiling, an event in England, we went. It certainly is agreeable to be able to say with something like truth,—

"'Tis summer, joyous summer time,  
In noisy towns no more abide;  
The earth is full of radiant things,  
Of gleaming flowers and glancing wings,  
Beauty and joy on every side."

We have not yet full summer, but it promises to come; and when it does come we shall enjoy it the more for its coyness.

Reaching Broadhurst, we found it quite true that comparatively little is to be seen there; but it has many points of interest, and is full of suggestiveness. A poet asks,—

"Hast thou not oft, in unrequited ground,  
A region full of wild enchantment found,  
Which stays your steps; and e'en when left behind,  
With its sweet memories cheers the pensive mind?"

Now Broadhurst is not a region of "wild enchantment;" nevertheless it "stays your steps," for it speaks of man's labour and care which have been useless; of hopes, and fears, and affections that have passed away; and of the ever-enduring hountfulness of Nature, ever fresh, ever varying. Nature, it may truly be said, is preserved by her elements in a perpetual youth; and so this earth will never want her worshippers. Again, although not ancient, Broadhurst is old; and antiquity gives a charm to the commonest things. Objects seen through the haze of centuries are increased in importance, refined, and made picturesque. Time the healer, Time the avenger, may also be called Time the consecrator.

The name itself is suggestive. Hurst, or hirst, as our dictionary shows, signified amongst our Saxon progenitors a forest or grove, and when we hear of this Broadhurst, and of Hawkhurst, and Wakehurst (quaint old house), and Buckhurst, and Ashurst and Crowhurst, and Penshurst and Goudhurst, and Ticehurst and Hurst Monceaux, and Hurst Pierpoint, the leafy, and, moreover, stumpy condition of this part of pleasant Sussex county is pretty plainly indicated.

Broadhurst (or more properly Bradhurst, but we retain its now usual title), was built by Richard Michelborne, in the early part of Elizabeth's reign. The family resided here till his grandson, Sir Richard Michelborne, having married a Campion, of Combwell, removed to Stanmer, about the year 1610. Broadhurst was then let to the Lightmakers, and Edward of that name married Archbishop Leighton's only sister, Saphira, which led to Leighton's residence there.

Robert Leighton, in troublous times, gained a reputation for piety, ability, and moderation. Amongst other anecdotes of him one is recorded which is characteristic. The Scottish clergy, it

appears, were occasionally asked in their assemblies, "Whether they preached to the times?" When the inquiry was put to Leighton, he said, "While all my brethren preach to the times, suffer me to preach about eternity." When toleration was better endorsed than it had been, he accepted the archbishopric of Glasgow. Contention, however, still prevailed, so he resigned his office, and retired to Broadhurst, where he died in 1684. Bishop Burnet bears testimony to his power as a preacher. During Leighton's sermons, he writes, "I never once saw a wandering eye." Of how many divines can this be said now-a-days. Leighton was buried in the Church of Horsted Keynes, close by, where until lately his name was recorded by a slab only. Now, however, there is an altar-tomb to his fragrant memory, outside the church, on the south side of the chancel. In this church, it will be remembered by our readers, there is a miniature, cross-legged effigy of a knight in mail, concerning which something has been written. It is a cross-church, and the body of it is Early English, but the tower at the junction of the nave and chancel is that of the Norman church which preceded this, and retains the small semi-circular arches below that opened into the nave and transept. The transept of the later church is built to the west of the old one.

When Leighton lived at Broadhurst it was a good house;—one of those of which Mrs. Hemans sings,—

"The stately homes of England,  
How beautiful they stand!  
Amidst their tall ancestral trees,  
O'er all the pleasant land."

But it fell into decay, and being too large for a farm-house, was partially taken down in the middle of the last century. A portion, however, still remains; and the foundations of the centre and destroyed wing, as well as the stately terraces, can still be seen. The part left, which shows some bold chimney shafts,—stone below and brick above,—includes the kitchen with its yawning fireplace and crane-suspended cauldron. One hettemost room is panelled, and there are some plain stone chimney-pieces of the original period. The stairs of this portion are of whole-timber squared, and the necessity of self-protection (in the absence of the rural police) is shown by the occurrence on the staircase at different heights of weighty wooden flaps which close the whole opening, can be secured by bars when down, and would resist a powerful attack. The chief charm of the place, however, is certainly outside.

"In every garden," says Sir W. Temple, "four things are necessary to be provided,—flowers, fruit, shade, and water; and whoever lays out a garden without all these, must not pretend to it in any perfection."

These, it is evident, were all provided at Broadhurst. The general aspect of the terraced ground recalls strikingly Bacon, and his essay "Of Gardens." "The garden is best to be square," saith he, "encompassed on all the four sides with a stately arched hedge," the hedge raised up on a bank, "not steep, but gently slope, of some 6 foot, set all with flowers." What we have before us could not be described more correctly than with these words. And then at the side there are "some fair alleys" to give a full shade, and at the end there is what he further asks for,— "a mount of some pretty height, leaving the wall of the enclosure breast high, to look abroad into the fields." At the opposite corner to the mount, and on the terrace, we find what was once and might easily be made again a delicious summer house, formed with yew trees, tall and graceful, and admitting a beautifully attenuated light. It is sadly desecrated just now, and needs the care of some lover of the beautiful.

Beyond are the fish-ponds. The strict observance of Lent and other fasts in early times, induced a great consumption of fish. In ancient accounts remaining, enormous quantities are entered as having been bought for use in English houses. Even after the Reformation fish was greatly eaten. Necessarily, therefore, in the days before railways and mangel-wurzel were, fish-ponds, the nests especially of carp and tench, were indispensable adjuncts of a good residence, and

these are not wanting at Broadhurst. There would seem to have been several, with one pool, perhaps, for lathing. Just such a cool retreat as Thomson's Musidora sought, when,

"Warm in her cheek the sultry season glow'd,  
And, robed in loose array, she came to bathe  
Her fervent limbs in the refreshing stream."

Our ramble of pen, however, has lasted long enough; but before we stop we will venture on the suggestion, that Broadhurst should again be made into a tasteful residence.

Englishmen seem to have a natural love for trees, fields, and flowers, and catch at the first opportunity to possess a greenery of their own, whether it be the overlooked and wall-bounded parallelogram of the suburban "semi-detached," or, happier fate, a thousand acres in a ring-fence. It would be easy at Broadhurst to get the agreeabilities of antiquity without long waiting.

Old growing trees in a desired spot are amongst the few things that money cannot produce. Castles may be raised, ruins may be run up, hills will arise, and rivers may be led to follow fresh courses and flow to the newly-built walls at the drawing of a cheque; but the leafy monarchs of the wood are not to be had in that wise; all the wealth of Threadneedle-street cannot conjure up a grove of oaks; it must be waited for or gone to.

Sussex is very different now from what it was. Dr. John Burton, in his Latin and Greek *Iter Susseciense*,\* gives a lively idea of the inaccessibility of Sussex a hundred years ago. He cannot speak often enough of Sussex mud, and suggests as a reason why "the women and all other animals [polite pundit] are so long-legged in Sussex," that pulling the feet out of so much mud by the strength of the ancle stretches the muscles and lengthens the bones! Sussex indeed, he says, in another part, being so hard to ride or drive through, has earned a bad name in this respect, and passed into a proverb, so that any difficulty hard to get through may be called "the Sussex bit of the road." It is clear, in fact, that Sussex, until recently, was an unapproachable and uncivilized place. Thanks to the locomotive, however, *non avens changed tout cela*, and many of its nooks and corners and beautiful elevations are becoming occupied. Nevertheless, as everything depends on the frame of mind in which a place is viewed, and what may be called the motive-power in the viewer, it is quite possible that all would not be so much interested with Broadhurst as we have been.

## ON HEALTHY DWELLINGS, AND PRE- VALING SANITARY DEFECTS IN THE HOMES OF THE WORKING CLASSES.†

LADIES' SANITARY ASSOCIATION.

Having considered that which is local and that which is structural, I come now to notice that which is in the main, though not wholly, dependent on the occupants themselves, to constitute a healthy dwelling, external and internal cleanliness, and a proper use of structural arrangements.

External cleanliness, which includes the cleaning away of all dirt and refuse, as well as the scavenging the streets, must in towns be provided by the local authorities, and every clearance ought to be with sufficient frequency to prevent any accumulation in the dwellings.

The most suitable provision for rendering a dwelling dry, or for its efficient ventilation, will not secure the health of the occupants, if there be, either around or within the abode, an accumulation of dirt, whether in a solid or liquid state. Houses may, to all appearance, be very desirable dwellings, but if there be defective drainage, or cesspools within their precincts, or untrapped and foul sinks, there is no safety for the inmates. Nor can the close proximity of stables, and of dung-heaps, their indispensable adjuncts, be a matter of such indifference as might be supposed from the practice so prevalent in the most wealthy parts of the metropolis, one inevitable effect of which is, that in the summer many windows which should be opened for ventilation, remain closed, in order to exclude the noxious fumes of the stables.

Neglect of sanitary laws is as much manifested

\* Learnedly set forth by Mr. Blaauw in "Sussex Archaeological Collections," vol. viii.

† See p. 474. By Mr. H. Roberts, F.S.A.

in the country as it is in towns and on the Continent, not less than it is in England. It would be easy to point to spots where the air is unrivalled for purity, and the scenery around of surpassing beauty; and yet such are the accumulations about the dwellings that it is often difficult to enter the doors without wading through a stream of filth, alike offensive to the sight and to the smell. Can it be matter of surprise if such violations of the known laws by which God regulates the health of his creatures, be visited with sickness and premature death? With equal certainty as to the issue, we may predict that those who live in close proximity to black and stagnant pools, to foul ditches, or to sluggish open drains, will periodically suffer from fever or dysentery, as we do that the house in flames will be consumed, if the destructive element be not extinguished, or that the neglected garden will be overrun with weeds and become a wilderness.

In the houses of the wealthy, all that, as matter of daily routine, concerns their cleanliness, and their ventilation, is in the main, left to the care of servants; and often through their ignorance, rather than their culpable neglect, the health of the family, and especially that of the younger children, is very seriously injured, without the slightest apprehension as to the cause.

Were it necessary, numerous instances might be cited in proof of a fact which is calculated to arouse even the most self-indulgent, and to induce them to co-operate in the diffusion of sanitary knowledge for their own sake, as well as that of their neighbours and dependants. To such persons the study of much that is contained in Miss Nightingale's instructive notes on nursing, might be of great advantage; and I could earnestly desire that in a suitably abridged form, the valuable practical directions with which it abounds, were widely-circulated amongst female servants, who would, doubtless, receive with merited attention, the instruction of a lady whose name is so universally known and respected.

Amongst the middle classes, many would contribute less grudgingly than they now do to the cost of public sanitary improvements, and even urge their extension, if they were better acquainted with the laws of health; whilst they could not fail of deriving especial benefit themselves from a practical knowledge of such of them as relate to in-door life, whether it be that of the dwelling-house, the manufactory, or the workshop; in all of these the advantages of cleanliness and good ventilation, are of paramount importance, whilst in each case the same general rules are applicable. There are, indeed, but few places where proper ventilation is more needed than it is in those hives of human industry, where large numbers of working people congregate for many successive hours, partly by gas-light, which in itself greatly vitiates the air.

Descending to the lower stratum of the social edifice, we cannot doubt, that a knowledge of the intimate connection which exists between physical suffering and the want of cleanliness in the house, or in the person, would be instrumental in restraining many who gradually yield themselves up to habits which end in a reckless fatuity, and lead them to the beer or the spirit shop, for the means of stimulating their enfeebled energies, or of satisfying the craving produced by the want of pure air. The first step in the downward course usually begins with want of cleanliness; disease and vice follow in succession.

The difficulties with which working people have to contend in regard to their dwellings, in most thickly populated towns, are very great. Indeed, there is no social or political grievance in the removal of which they are more deeply interested than they are in being freed from the hardship of having to live in the midst of filth, foul air, and pestilential exhalations. The organization of such an agitation amongst them as would lead to their feeling how much they are concerned in all the essentials of a healthy existence, is heartily to be desired. To such an agitation, as was said by the Right Hon. Wm. Cowper, at the late meeting on social science held in Bradford, "a cry for a new charter might succeed, and certainly would not be treated with disdain, if the five points of that new charter were to be pure air, pure water, good drainage, unadulterated food, and open spaces for exercise." To which I should desire that "healthy dwellings" were added, as a right which those who cannot protect themselves, are entitled to claim at the hands of the Government, on precisely the same ground as the community at large seek protection from fraudulent weights and adulterated food. "As yet the necessity of protecting life from the influence of poisonous dwellings has not practically been ac-

nowledged, though the principle is in the statute book."

The striking contrast which the homes of large masses of our working population present to all that is essential in a healthy dwelling, renders them not only a painful study, but also a just cause for national humiliation.\* I have felt it to be such when endeavouring on the Continent to press attention to those sanitary ameliorations which are in all countries so greatly needed. It is true that England has taken the lead in associated practical efforts for the improvement of the dwellings of the labouring classes,† and that, for several years past, individual efforts have been made by some of the most exalted in station and social position. Legislative measures have also been adopted with the same end in view; but these being chiefly of a permissive character, but little, comparatively, has been effected in producing any marked improvement in the domiciliary state of the masses of our working population in towns; if we except the state of the common lodging houses, which, under the operation of a compulsory Act, have been very greatly improved.

No words of mine can so vividly present a true picture of the scenes which may be witnessed within a short distance of our own doors, as those of the Earl of Shaftesbury, in a preface to the published report of a very remarkable address lately delivered by his lordship in the House of Lords. "The domiciliary state of whole legions of our fellow citizens has been with me, for some time, a subject of observation and inquiry; and I do not hesitate to assert that it lies at the root of nineteen-twentieths of the mischiefs that we seek to redress. Not only the actual dwelling, but the situation of it, the character physical and structural of the locality, whether it be street, or court, or alley, or some deep, dark, and poisonous recess, never penetrated, except by its own wild and unknown inhabitants, must be included within the term 'domiciliary state;' and in those places,—low, narrow, with a death-like darkness, impervious to light or air (the work of greedy speculators uncontrolled by law)—are aggregated all the fearful influences that breed evil, and neutralize good wherever it seeks to establish a footing among those neglected classes. Fever and disease of every kind prevail: a poor standard of physical strength, the result of the fetid atmosphere they inhale by day and by night, deprives them of power to do able-bodied work; while loss of energy and depression of spirits drive them to seek life and support in vice and intoxication."

"Their modes of existence are sometimes diametrically opposite. A large mass is found in the perpetual din and whirl of close-packed multitudes. A smaller, in the remote and silent retreats of filth and pestilence (through which no thoroughfare passes), dwells in a kind of savage solitude, seldom emerging by day from their bidding-places, and rarely visited. But whether in great or small numbers, whether in the most active or the most tranquil quarters, all are equally shut out from the possibility of domestic life. A dozen families in a single house, though barely sufficient for two; as many individuals of both sexes and of all ages in a single room, the common and only place for cooking, washing, and sleeping; the want of fresh air, the defect of water, of every decency, and of every comfort, give proof enough. We need not wonder why the gin-shop and the tap-room are frequented; why the crime of incest is so rife; why children are ragged and ignorant, and the honest dignity of the working man's home degraded or forgotten. These poor people, by no fault of their own—for they did not create the evil, nor can they remedy it—are plunged into a social state which is alike dishonourable and unsafe to our common country."

† It should be supposed that the evils which, thus photographed by a master hand, present

\* A well-known American writer says of England,— "The pauper lives better than the free labourer, the thief better than the pauper, and the transported felon better than the one under imprisonment."—a contrast which could not have been drawn until, through the philanthropic labours of Howard, "the gaol fever" had been banished from the precincts of our prisons. We learn now, from the annual report of the Brixton Prison, that, in 1857, whilst the needlewomen of London died at the annual rate of 34 in 1,000, the death rate of female prisoners, who were healthy on their admission into that prison, was for the same period, only 13·6 per thousand;—a rate singularly coincident with that in the model lodging-houses of London to which I have referred.

† In a paper on the "Improvement of the Dwellings of the Labouring Classes," which is published in the transactions of the National Association for the Promotion of Social Science, at the meeting held in Liverpool, 1845, I have dwelt at some length on the efforts made in England, as well as on those in other countries.

dark a picture\* of human wretchedness, only exist in the metropolis,† I will give two or three examples of the state of things in our provincial towns, after first quoting from a recently-published work by a lady whose Christian efforts have brought her much into personal contact with a western suburb of the metropolis. My own observations lead me to know that her experience is but an illustration of what may be met with in many other spots round London.

Mrs. Bayly, in "Ragged Homes, and How to Mend Them," justly says,— "One of the greatest obstacles which meet those who are striving to improve the homes of the poor is the construction of dwellings. There are whole streets of houses in this neighbourhood whose appearance gives you the idea that they were originally designed for a higher class of people; and yet the builder must have known that the supply of such houses was already much beyond the demand, and that if let at all, the inmates must be poor. Nothing, however, adapts them for this class of inhabitants. Five or six families may occasionally be found in one such house, with no more provision for health, comfort, and decency, than ought to be made for each one. The houses professedly erected for the poor are still more deficient. They are sometimes built below the level of the road, so that the drainage is to them, instead of from them. The basements are consequently fearfully damp, and the whole atmosphere in every part of the house is impregnated with the effluvia from the stagnant sewage."

"The materials used in buildings are so bad, and the workmanship so inferior, that the floors are always loose, and every thing seems constantly getting out of order. We have whole streets of small six-roomed houses, let out entirely to the poor; so that three families frequently live in one house. There is no outlet to the air at the back of these dwellings, either by door or by window. One long blank wall is all that is to be seen. Frequent illness prevails among the inhabitants of these streets, and I can never forget the scenes presented there during the visitation of the cholera."

After mentioning a case of horror, alas! too much like others frequently occurring in these inhuman abodes, and which, if they were only represented in wax, as the ravages of the plague are in the museum at Florence, we should turn away from them with a shudder, and never forget them; the writer depicts with so much feeling and clearness the necessary results of a state of things which, those who have long thought on the subject are increasingly convinced can be remedied by no other means than such Government interference as would effectually counteract the reckless ignorance and the heartless cupidity of the owners of such property, that I cannot abstain from quoting another passage. "I sat down, as soon as I reached home, and wrote a letter to the editor of the *Times*, describing the scenes I had witnessed that morning, calling his attention particularly to the construction of those houses; and then asked, in the bitterness of my heart, if, with all our extensive and costly paraphernalia of government, nothing could be done to stop this awful waste of comfort, health, and life. The importance of the subject at once commended itself. The narrative not only appeared, but was backed by every argument and appeal that the talented pen of the editor could bring to bear upon it. But there it ended: no steps have been taken to make the construction of such dwellings contrary to the law of the land. Many fathers, mothers, and children, too, have since died in those streets; only in these cases by lingering fever, instead of by sudden cholera. Surely the cries of distress must have ascended again and again, and have entered into the ears of the Lord of Sabaoth!"

"But there is a still darker side to this grievance. The death of a few is less calculated to excite our compassion, than the miserable, lingering existence of the many. When I see the little boys and girls playing before the doors, often with crooked backs, or crooked limbs, with emaciated forms and faces, if not with still more unmistakable marks of disease, I cannot help thinking—Are these boys to be our future working-men, upon whose sinew and muscle we are to depend for cultivating our soil, constructing our railways, sinking our mines,

\* Must not the mere remembrance of such a picture as this restrain us from yielding an unqualified assent to the words lately uttered by one of our most eminent statesmen—"This country is making most wonderful progress in everything that constitutes national greatness and prosperity?"

† The illustrated and very graphic descriptions given by Mr. Godwin in a recent work, entitled "Town Swamps and Social Brides," may mislead those who are at all sceptical on this subject.—H. R.

and defending our country; and are these girls to be the mothers of the next generation?"

On the state of the lower class of dwellings in our provincial towns we have the evidence of innumerable official reports. In one of them we learn that "at Leicester the worst houses are to be found in the old quarters of the town; they are the habitations of the working classes, and the poor, and are family both in arrangement and structure. For instance, there are eleven houses of one room each, at first used as pigsties, but the speculation failing, they were converted into dwellings, each 14 feet by 10 feet, and 6 feet 6 inches high, with an average of five persons in each room.

Of Swansea we know, on the authority of the mayor, that in a sanitary survey of the epidemic districts there were found in five consecutive cottages in one street, seventeen, thirteen, eight, ten, and twelve inhabitants; each house had two sleeping apartments, the largest, 10 feet by 8 feet, the other only 8 feet by 6 feet, giving a total of sixty inhabitants shut up in ten rooms, not too large for the requirements of ten persons; and, as a necessary consequence, some form of disease was always present.

In the town of Hertford, out of 294 court-yards or alleys close and confined, without entry from the main street, and mostly terminated by a *cul-de-sac*, only thirty-two have any outlets at the back made for ventilation. Referring to such places, it has been remarked by Mr. Rawlinson, that "in the towns formerly occupied by an agricultural population, and afterwards adapted to receive an increase of artisans and manufacturers, it is universally the custom to convert old and decayed manor-houses or other buildings of any extent into a number of dwellings; but the requisite attention to sewage, ventilation, and other accommodation demanded by the increased number of inmates seems quite forgotten, and they are left to make the best arrangement they can for themselves, when, in fact, the most careful supervision should be exercised by the proprietors. In another report, the same gentleman, after naming ten northern towns, says, "There are blocks of houses and tenements which no remedial measures can ever make healthy dwellings, because the construction prevents free ventilation, and the sun can never shine within the crowded area, or even the light of day break the crowded night in which many of the poor at present exist."

The physical result of such a state of things, wherever found, has been already spoken of, and may be illustrated by a single example, taken from the Report of the Assistant Commissioner to the Metropolitan Police made in March, 1859: "The occupant of one room said, 'I was a strong healthy man when I came into this court four years ago; now I am fast sinking into the grave. I have scarcely had a day's health since I have been here.' Viewing the results in their moral and religious aspect, the present Bishop of Ripon, when rector of the parish of St. Giles's-in-the-Fields, thus wrote: 'The physical circumstances of the poor paralyze all the efforts of the clergyman, the schoolmaster, the Scripture reader, or the City missionary, for their spiritual or their moral welfare. \* \* \* Every effort to create a spiritual tone of feeling is counteracted by a set of physical circumstances which are incompatible with the exercise of common morality. Talk of morality amongst people who herd men, women, and children together, with no regard of age or sex, in one narrow confined apartment! You might as well talk of cleanliness in a sty, or of blimp purity in the contents of a cesspool!'"

A scene in Lisson-grove, the north-western St. Giles's of the metropolis, is thus described by a lady, the well-known author of "The Missing Link."—"The heart sickens at the sight of degraded lads and girls, lost to every sense of decency; and one can only ask, Where were these brought up, and whence do they swarm forth, to mock the God of Heaven, and defile the air they breathe? Whence? Let those who know them lead you to their homes, or truly their 'dens'—back kitchens, 8 feet square, with broken floor and window—where the mother, drunk, sits on an old tin kettle in the midst; she has on one garment and a tattered shawl, but her baby has nothing; and a three-year old child, crippled by a fall from a chair, and with one eye cut out, has nothing; or to rooms where each corner has its family, and where one lies dying of starvation and another of small-pox. Such is the close of life to thousands in London. City missionaries and Scripture readers know it; medical men know it; the clergy know it; but the gulf of misery is immeasurable, and it is given up in despair. These

homes make these people, generation after generation. Would it have been thus if the Christian women of London had long ere this found their true mission, and fulfilled it? Mothers make homes, and mothers make 'dens.'"

I offer no apology, in addressing a ladies' association, for having quoted at such length the writings of two ladies, who devote both time and talent with so much Christian zeal to the carrying into effect their well-devised plans for promoting the temporal as well as the spiritual benefit of their suffering fellow-creatures. In regard to such efforts, I most cordially agree with an eminent clergyman in the north, Dr. Guthrie, when he says,—"The grand and only sovereign remedy for the evils of this world is the gospel of our Lord Jesus Christ. But he rather binds than helps the cause of religion who shuts his eyes to the fact, that in curing souls, as in curing bodies, many things may be important as auxiliaries to the remedy, which cannot properly be considered as remedies. In the day of his resurrection, Lazarus owed his life to Christ; but they, that day, did good service, who rolled away the stone. They were allies and auxiliaries."

The prevailing sanitary defects in the homes of our rural labouring population have yet to be noticed. Although much has lately been done by many land-owners to improve the cottages on their estates, and instances might be named in which a sense of duty, in this respect, has been manifested by a princely and, at the same time, judicious expenditure; it is a lamentable fact, that there are but few counties where there are not a great many cottages around which the external air may be good and circulate freely, but their aspect is such, that the sun's rays never enter the dwelling, or the site is remote from good water, or the drainage defective. The walls, the roof, or the floor, perhaps all of them, admit the external humidity. The windows are badly constructed for the purposes of light and ventilation. The rooms are very low, and too few in number, for a family; indeed, it is rare to find more than one or two bed-rooms in an old cottage, although three are evidently indispensable to the health and moral habits of a family with children of both sexes.

In some instances which have fallen under my own observation, I regret to say that the want of judgment in the selection of plans has led to the building of cottages, more particularly in the neighbourhood of manufacturing towns, which by no means combine all the requisites of a healthy dwelling. In other cases an unnecessarily heavy expenditure has been incurred, whereby an imprudence is created that even under favourable circumstances, the moderate return of 3½ to 4 per cent. clear, cannot be obtained from well-built cottage property.\*

This is not a suitable occasion for entering at length on the important question of pecuniary return for capital invested in the improvements of the dwellings of the labouring classes; were it so, I might quote the words of the Duke of Bedford, and other distinguished landowners, who have placed its hearings, with regard to the proprietors of land, in their true aspect; and I could show, that from 4 to 5 per cent. clear of expenses, and in some instances a higher rate, has been realized in towns, from newly built improved dwellings, in a sufficient number of instances, to prove that, with the exercise of a sound discretion and careful management, a return may be obtained which is about equal in per-centage to the average profits of the nine great railways diverging from the metropolis.

It would, however, be unreasonable to expect that those who, whatever may be their zeal in the cause, have not the requisite knowledge, can themselves conduct with pecuniary success undertakings which are so practical in their character. With great justice and feeling does Miss Nightingale say, "What cruel mistakes are sometimes made by benevolent men and women in matters of business, about which they can know nothing, and think they know a great deal."

As bearing on the question of pecuniary return, I may add, that one important result which would inevitably follow the legal enforcement of a good sanitary state in all dwellings let in apartments to pay a low weekly rent, must be that

\* Benefit Building Societies present an important machinery for providing improved dwellings for the working classes, and any judicious advice given to the members, in the selection of their plans, may essentially contribute to the acquisition of a "healthy home." In many places on the Continent, societies have been formed by philanthropic persons to build suitable houses, and to afford facilities which enable the working classes to become the owners of their own dwellings; the parties advancing the money being satisfied with four per cent. interest, and the security of a sinking fund to pay off the capital.

those who now obtain a large profit out of the necessities of the poor, would be forced either to effect the much needed improvement of the dwellings themselves, or to part with them on equitable terms to those who might be willing to make the necessary outlay, in anticipation of a reasonable, but not extravagant return. At present such property, if sought after, can only very occasionally be obtained at a price which, with the heavy expenses of repairs, and the maintenance of old buildings, will yield a fair rate of interest.

It is gratifying to know that the results of all the efforts made to improve the homes of the working classes have, in regard to the occupiers, been most encouraging. In order to show how greatly employers of labour may in this respect promote the welfare of their dependants and their families, I instance two cases which, though they differ greatly in many respects, are both calculated to stimulate and encourage to similar efforts for the relief of those who, through the wretchedness of their homes, are sunk into a reckless state.

Lord Palmerston, in addressing a meeting lately held at Romsey, said, "When a cottage is in such a ramsackle state, that it is impossible for the wife to keep it clean, she becomes a slattern, everything goes to ruin, the man is disgusted, and flies to the beer-shop. If, on the contrary, the wife feels that she can, by a little exertion, make the cottage decent and respectable, she does so, and then the man enjoys the comfort and happiness of his home, stays away from the beer-shop, and the sum of money he would spend in liquor goes to the benefit of his wife and children. I had an example of that in a double cottage of my own. It was in a dreadful state; the walls were not airtight, it had a brick floor, a bad roof, and everything uncomfortable. The people who occupied it were slovens and slatterns, and quarrelsome ill neighbours. At a small expense it was made tidy; boarded floors were put down; a little porch erected, with a wood-house and other conveniences, and from that moment these people altered entirely their character, altered entirely their conduct, became well-conducted people and good neighbours, which they had never been before. \* \* \* Depend upon it, a very great deal can be done at a moderate expense towards making old cottages decent and comfortable."

The other case was mentioned to me in Paris, when inquiring as to the disposal of a legacy of 50,000 dollars left by the late American ambassador, Mr. Abbott Lawrence, for building model houses in Boston. My informant, Professor Beck, of Harvard College, U.S., as a practical illustration of the benefits resulting from individual efforts, said, that "shortly after engaging an out-door servant, who was a native of Ireland, I had much reason to complain of neglect of duty, and learnt indirectly that the man was intending to abandon his wife and children. A serious conversation with him, and a representation of the cruelty and wickedness of his conduct, led him, without attempting a justification, to acknowledge, after some hesitation, that he felt discouraged; he was desirous of keeping his family in a respectable condition, and educating his children, but he was obliged to keep them in a miserable neighbourhood, occupied by people of the lowest character, who, old and young, gave themselves up to intemperance and other vices; he found it impossible to prevent the evil effects of such a neighbourhood upon his family, especially his children; he had not the means of procuring a better habitation, and did not know what to do. This conversation having directed my attention to the importance of proper dwellings for this class of people, and entertaining in other respects a favourable opinion of the man, who had received a good common school education, after some reflection I proposed to him, that if he could find a small piece of land in a respectable neighbourhood, I would advance the money for its purchase and for the building of a suitable house. He seized the proposition with great eagerness; he found a piece of land, and a house was built. This change from a bad to a good dwelling was the saving of the man and his family. The house is so large that he lets a portion of it to one or two other families. The rent thus received is more than sufficient to pay the interest of the debt, and the surplus of his wages has gone to paying off the principal. The man remained in my service eight years, until I left to make a tour of two years in Europe. The prosperity of the man continues. His habits of industry and thrift are confirmed."

After instancing these two cases of a successful application of remedial measures, it may be useful, in closing, to recapitulate briefly the various

means, through the use of which, the dwellings of our working population can be rendered "Healthy Homes."

They may be ranged under the three heads of—Government measures; the action of public bodies, of the employers of labour, as well as of voluntary associations; and personal influence.

In England, where every man's house is said to be his castle, legislative interference can only be anticipated to a very limited extent, beyond the enactment of general sanitary laws, and those which are strictly of a permissive character, or calculated to favour the action of individuals and of associations, in providing improved dwellings. A step further in advance, one which has proved most successful, has been taken in the regulation of common lodging-houses, and not until the same principle is applied to the enforcing of a good sanitary condition, with suitable arrangements in all tenements in towns and cities, can it be anticipated that the miserable dens,\* in which large masses of our population at present herd, will be cleared of their filth, and rendered fit for the occupation of human beings. Within the jurisdiction of the corporation authorities in the City of London such a power was conferred in 1851, and is discreetly exercised under the supervision of the Medical Officer of Health, to the great benefit of the poor, and a marked diminution in the returns of mortality, which have fallen since that date from 25 to 23 in 1,000.

By a standing order of the House of Lords, provision has been made for ascertaining the necessity of enforcing the construction of suitable dwellings for the working classes, in lieu of such as may be demolished, under powers granted by Parliament for the carrying out of public improvements, or the works of large companies, such as docks, railways, &c. The non-enforcement of such an obligation, has led to incalculable misery and evils in our own metropolis, as well as in that of a neighbouring country.

Legislative interference is also much needed to provide a remedy for the evils arising out of the selfish system pursued in some "close parishes" of pulling down cottages, in order to obtain relief from a burden, which is thereby thrown on a neighbouring parish.

The building of small houses on undrained ground, and without proper sanitary arrangements, should, as a fruitful source of sickness, and consequent expense to the public, be entirely interdicted.

Public bodies, including many departments of Government, railway, and other commercial companies, as well as the regular employers of working people generally, whether they be agriculturists, manufacturers, owners of mines or quarries, have it in their power greatly to promote the well-being of those whom they employ, by caring for their domiciliary condition, and by either providing suitable dwellings for them; which may generally be done, with ample security as to the cost, or by aiding them to form amongst themselves well-constituted associations for the carrying out of that object. In other instances existing dwellings may, as we have shown, be greatly improved at a moderate cost.

The construction of model dwellings, by associations formed for that purpose, as well as the renovation of old houses, have proved in some places of great value as an experimental and pioneering movement, irrespective of the immediate benefit conferred on their occupants, and their immediate neighbourhood. The pecuniary return, of necessity greatly depends on the judgment and care exercised in the selection of sites, and in the arrangement of the plans, as well as on watchful and economical management.

The practical results of the personal interest taken in this object by His Royal Highness the Prince Consort, in connection with the Great Exhibition of 1851, have been manifested in several instances by the providing accommodation for married soldiers; a want which led the late Duke of Wellington to object to the placing the model houses in the barrack-yard, lest they should cause dissatis-

\* I well remember seeing repeatedly in the metropolis a room about 22 feet by 16 feet, the ceiling of which could be easily touched with the hand, without any ventilation excepting through some half-patched broken squares of glass, and in it were constantly lodged from forty to sixty human beings, men, women, and children, besides dogs and cats. The lodging-house Act has in this case operated a great reformation, but the want of power to extend its regulations further leaves a mass of untouchable filth and misery; for, as is said in the last Report of the Assistant Commissioner of Police, 1859, "All the evils which that Act was intended to remedy still exist, almost without abatement, in single rooms occupied by families, single rooms so occupied being exempt from the operation of the Act."

faction in the army. During the present session of Parliament 30,000, have been voted for this object. Amongst many examples of houses built after the general plan of those in the Exhibition, is an entire street, near the Shadwell station, on the Blackwall Railway, built by W. E. Hilliard, Esq., of Gray's Inn, who has the satisfaction of having replaced a miserable range of dwellings with "Healthy Homes" for 112 families, which return him between 6 and 7 per cent. clear, on the outlay of about 14,000.

With regard to personal influence, if ladies throughout the length and breadth of the land, would individually make themselves acquainted with the domiciliary condition of the working people in their own neighbourhoods, and would sympathize with them in their difficulties in this respect, a task vastly more easy than that to which ladies have devoted their time and talents with so much zeal and wisdom, in visiting our prisons and hospitals; the sights they would witness, and the reflections which must arise therefrom, would compel them to exert all their influence in promoting the greatly-needed reform.

Although the power of aiding directly in the removal of existing structural defects in the dwellings of the poor, is not very generally possessed by ladies, their influence may be exerted with the greatest benefit in pointing out to the necessity for, and in persuading them to carry into operation, those remedial measures which have already been referred to. There is, moreover, a field for the exercise of influence in which ladies may labour, and have done so most efficiently. They can impart instruction, can exhort, encourage, stimulate, and, above all, can manifest that sympathy which shines with such attractive lustre in the crowning grace of Christian charity.

Amongst those practical duties, of which the necessity and advantages may be pointed out to the wives of working men, one of the first in importance is, that she should be "a keeper at home," and attend to her household duties as well as to her children; for without this, a dwelling may possess all the conditions essential to health and morality, and yet the occupants be comparatively little benefited by its advantages.

Ladies can exercise a personal influence, by either teaching, or causing to be taught, the benefits resulting from a free admission of pure air, of personal and household cleanliness; and they can facilitate the obtaining of such articles as whitewash, brushes, and ventilators, as well as the mending of broken windows; they may also enforce, more especially on wives and mothers, a careful attention to the many details which conduce so much to health and domestic comfort, and render home attractive, rather than repulsive, to husbands and sons. They can likewise be instrumental in promoting those habits of temperance which enable husbands to expend on home comforts "the fool's pence" whereby the publican is so greatly enriched, to the impoverishment and incalculable injury of the labouring classes.

Ladies have, by the bestowment of premiums and rewards for the best-kept cottages, in many places conducted to the health and the comfort of their occupants. They have also exercised a most beneficial influence, through personal intercourse, and what has been aptly called, "Mothers' meetings," conducted in a spirit of Christian kindness, with the aim of teaching the poor to help themselves.

The obligations of the Divine command, "Thou shalt love thy neighbour as thyself," have been further recognized by ladies in the organization and in the personal superintendence of a female agency, which combines a social, or domestic mission with the carrying to the dwellings of the masses of our town population that hook, in regard to which, experience proves that the heartfelt reception of its sacred truths, is the best security for a lasting abandonment of those evil ways which deprive so many the enjoyment of a "Healthy Home."

With such numerous examples of effort in various directions, it can scarcely be necessary to add, that but few who, actuated either by a sense of Christian duty, or by the lower motives of self-interest, or of patriotism, sincerely desire to improve the homes of the working classes, can fail of finding some suitable channel through which to promote this important and much-needed object. If any remarks or suggestions I have made should contribute thereto, my aim in offering them for consideration will be answered.

HUNGERFORD BRIDGE FOR CLIFTON.—Of the 35,000, required for the completion of the suspension bridge at Clifton, Bristol, nearly 30,000, have already been subscribed.

#### THE STUDY OF CLASSICAL ARCHEOLOGY.

"ANNALS" OF THE FRENCH INSTITUTE.\*

The other day we fell upon an article in a number of the *Journal des Débats*,† which contains some observations on the study of classical archaeology, not without value in these times, and can scarcely fail to interest many readers. It is a memoir written by M. Ernest Vinet, a distinguished French savant and archaeologist, on the *Istituto di Corrispondenza Archeologica di Roma*. It is interesting as showing the state of archaeology throughout Europe, for the members of the Institute are not confined to Rome, but are selected from every country of the civilized world. M. Vinet gives a *résumé* of the labours of the Institute and its members, and although he has doubts of England generally, he mentions individual investigators in complimentary terms. It must be remembered that he is speaking only of classical archaeology, a subject about which our Medieval antiquaries care little. In Germany and France, Medieval antiquities are studied by a certain number with as great zest as here in England; but in those countries classical archaeology is still considered as the great occupation of men of learning. Gerhard and Pausanias, Bunsen and Lepsius, Ritter and Kiepert, Müller and Wüchelmann, of the one country with Quatremère de Quincy, Raoul-Rochette, Hittorf, Letronne, Lenormant, Laborde, Texier, and many more in the other, are names which are familiar to us all, and will remain so in future generations. In Italy, archaeology is confined to classic times, in consequence of the wealth of material which lies at their disposition. Vases, bronzes, marbles, turn up on every side. To cite names would be useless, for each antiquary is a lover of the *bell' antico*. It would be worth while for our county archaeological associations to consider whether it would not be well for them to devote some small portion of their journals to this noble study; for while it is the province of inspiration only to look into the future, it is in the power of every man to gather experience and lessons from the past. However we may sympathize with Medieval antiquities, let us beware lest we forget or despise those "*Ingeniorum monumenta quæ seculis probantur*."

The work in question, written partly in French and partly in Italian, holds a marked position among the most useful and most beautiful books in the library of the artist and of the man of letters. Commenced thirty years ago, the publication now consists of thirty volumes. An extensive atlas forms part of it, and under the title, "*Monumenti Inediti*," includes numerous plates, which reproduce with fidelity the greater portion of the most remarkable monuments which have been recovered during a quarter of a century by excavations in all classical countries, but especially in Italy. The text is a mine of research. Without this collection it would be impossible to grasp the entirety of archaeological studies and to follow their progress. Strange to say, however, the notice to which we are referring is the first given to it in a French journal. Let us follow M. Vinet. Speculation did not create these Annals; book-making had no part in them. The idea, so happily realized in them, descended from a higher source. Some fervent worshippers of antiquity, some great personages from the two aristocracies of birth and intelligence, the heir-presumptive to a crown, these were their founders. Nor must we forget the ardent initiative taken by M. Gerhard, member of the Academy of Berlin, and one of the most worthy representatives of German science.

The idea of a publication to unite in itself all contemporary archaeological researches, is not a new one. Three archaeologists of renown, Boettiger, Schorn, and M. Welcker, and the celebrated antiquary Ghattani, some time since, and separately, entertained the notion. But ever a too exclusive policy, too limited means of information, or, more than all, the extreme difficulty for learning and talent by themselves to support such an enterprise, placed an obstacle in the way of the complete success of these publications. And yet, when one contemplates the condition of archaeological studies, the necessity for a creation of this kind is very evident.

Since the day when a charming enthusiast, within the walls of that Rome which he adored, produced the "*Histoire de l'Art*" and the "*Monumenti Inediti*," foundations of two recent studies, æsthetics and the interpretation of monuments

\* Benjamin Duprat, Paris, Rue Cloître St. Benoît No. 7.  
† January 22nd, 1860.

*Figurés*.—since that epoch, memorable for ever in literary history, materials for archaeology have increased tenfold; the treasures, heretofore concealed by the ashes of Vesuvius, have not ceased to accumulate within the walls of the Neapolitan Museum; the exquisite principles of Classic architecture have been displayed in all their beauty. To artistic and free Europe, England has revealed Phidias; skilful antiquaries have visited every spot of Greece, marking with pious care upon that land thickly strewn with ruins, the site of many a once famous, but now obliterated city; others have travelled through Asia Minor, recognising everywhere the Hellenic taste, though under unexpected aspects: in giving to us the key to Egyptian hieroglyphics, in raising to the veil which envelops a civilization which seems to have had no infancy, a philologist of genius has conquered the kingdom of the Pharoas in the name of French science.

Assyria, that other enigma, has permitted us to look upon palaces as ancient as the Bible, and whose walls are covered with a writing which still awaits its Champollion; and, lastly, pagan Italy has yielded to us her soul in delivering up to us the secret of her tombs.

It was at the critical moment when this grand scientific movement, inaugurated by Winckelmann, was in all its force in Rome, between the years 1825 and 1828, that the creation of the "Annales" was projected by M. Gerhard and his friends. Thanks to them, light for the first time was shed over all portions of monumental antiquity; thanks to them publicity, so difficult and so confined in this branch of study, has become extended and easy. Scarcely was their project known, than immediately all the high celebrities of learning grouped themselves around this pleiad of antiquaries; and the formation of the Institute of Rome was the speedy result of this noble eagerness.

"Annales et Bulletin de Correspondence Archéologique," such was the title of this new collection, henceforth directed and supplied by a whole academy, or rather by the entire learning of Europe, whence it daily demanded and received some fresh fact, text, or idea. To register the results of excavations was the primary object; the secondary was to discuss those ancient monuments already discovered, but wrongly or inadequately interpreted, and still more to describe briefly all those which classic soil delivered up, day by day, to antiquarian criticism, preparatory to their being studied more minutely at leisure. One branch of this study, till then much neglected, archaeological topography, and another study equally interesting, to which M. Bockh had just given a brilliant start, epigraphy,—in a word, numismatics and glyptics, that is to say, a whole host of details and small problems, these found a place in the "Annales." The lively impulse they received has not been forgotten. Each month the "Bulletin" comes to inform the reader of the daily movements of the science, and on each anniversary of the birth of Winckelmann, marks the progress that has been made. Each year, the "Annales" discuss before the learned public, some delicate point, with all that majestic solicitude so perfectly rendered by Gerard Dow, in his "Gold-Weigher."

I lately read the first list of the members of the Institute of Correspondence,—the list of our former colleagues. At the head appears the name of Frederick William, then Prince of Prussia, and protector of the Institute. How forcibly this name speaks of the elevated and liberal taste of the reigning families of Germany! K. Othfried Müller and Letronne, Boettiger, Hirt and Millingen, Sir William Gell, Raoul-Rochette, Ehlersch and Quatremère de Quincy, Dodwell and Brönsted, Nibby, Schorn and Panofka, and, finally, Messieurs Bockh, Welcker and Guignaut, appear as members of this ultramontane academy. Two artists, large appreciators of the ancients,—Thorwaldsen and M. Hittorff,—also placed their names upon this list, where I regret to miss those of so many of their fellows. Amongst the honorary members three names have filled me with esteem,—those of William Humboldt, William Schlegel, and Chateaubriand.

Rome, where the breath of antiquity so forcibly stirs our souls, has become the definite abode of the new academy. On the Tarpeian Rock the Archaeological Institute has established its penates, and there have they been saluted by all the lovers of science during thirty years.

The same year in which this Society entered upon a path which it has traversed so honourably, and at such enormous sacrifices, fortune accorded it a marvellous discovery, which has been compared to the excavations of Herculaneum and Pompeii. Not far from Cornetto, in a pestiferous

plain traversed by a torrent which flies with rapidity towards the Thyrrian Sea, near to a venerable bridge shown between two wild banks, Ponte della Badia, six thousand Etruscan tombs have been opened from the year 1825 to 1829. To tell all the wonders that have been found in the necropolis of Vulci would be impossible. Bronzes and jewels, of exquisite workmanship, were scattered about in the midst of homes in these funeral retreats, which had been spared as by a miracle. Four thousand vases which attest the ardent desire of the ancients to decorate the dwellings of the dead; yes, four thousand vases! as beautiful for the most part as the graceful amphora of Nola, have been restored to the light of day. Fine clay, delicate varnish, elegant and varied form,—nothing was wanting to these fragile *chefs-d'œuvre*, which are alive with multitudes of figures. These compositions bear the reflex of different epochs and of divers styles; but in them the gods and heroes of antiquity play an important and undisputed part.

The fine memoir of M. Gerhard upon the Vulcian vases, "Rapporto intorno i Vasi Volcenti" ("Annales," 1831), produced a profound sensation in the scientific world. By what miracle, it was asked, were 4,000 vases, covered with Greek inscriptions, buried in the cemetery of an Etruscan village whose very name was scarcely known to history? With the exception of some Italian antiquaries, for whom these treasures of Greek ceramic art represented "the most ancient monuments of Etrusco-Pelagic worship,"—for it is thus the Prince of Canino expresses himself,—all the masters of science verified the Hellenic character of the vases of Vulci. Still, upon the question of origin, they were far from being of one mind. The presence of these vases,—did it prove the establishment of a Greek population living an Athenian life within the walls of Vulci? or even the existence in this town of a colony of Athenian potters? Or, again, was it an indication of a very lively taste for painted vases amongst the Etruscan aristocracy, causing them to send for them from Greece and Southern Italy, thus, as it were, forestalling in the paths of luxury and love of foreign productions our modern manners of Chinese and Japanese porcelain?

K. O. Müller, Raoul-Rochette, Millingen, M. Gerhard, Bockh, Welcker, and others, shared in this discussion, which was hotly contested in the "Annales et le Bulletin." Such questions may appear futile to the gay world—to drawing-room loungers, particularly in France, and more especially at the present time; but the learned perceived in them something more instructive than secondary details. They saw therein curious revelations concerning the economic and social state of the old world,—incomplete divergent revelations, but precious withal, touching as they do upon questions respecting which the most absolute silence reigns; but when the science of illustrated monuments shall have made still further progress, who can say that these revelations may not become transfused with light? Truth is willing to be a long time looked for, and criticism has penetrated many other mysteries.

By this wonderful discovery at Vulci, the imagination of all was excited; and therefore the attention of the editors of "Les Annales" was directed, through several years, upon painted vases. What an extended field of study is that of ceramic art! How it has enlarged under the double influence of scientific research and commercial avidity! Their efforts have combined to excavate all the burial-places of Etruria, of Southern Italy, of Sicily, and of the Greek continent. "Henceforth," wrote M. Bunsen, Prussian ambassador to the Papal seat, and at the same time the learned secretary of the Institute of Rome, and worthy successor of M. Gerhard, "henceforth, no one may hope to study with profit this class of monuments, and to speak of them authoritatively, without first consulting our collection." How few people imagine that upon the 50,000 vases found during the last century, and incorrectly called Etruscan; that upon these water-pots, these cups, these amphora, whitened with dust in the cabinets of the curious; that upon this pottery of such monotonous aspect, the heroic and religious myths of Greece unfold themselves to an inconceivable extent! Frequently these lines, so pure, this ease, full of grace, this ravishing caprice, all this flow of youth and beauty, screen from uninitiated eyes the free creations of pantheism, and the ideas of the ancients upon the forces of nature, and on death.

In these simple sketches, which a mercantile pen has let fall, the symbolic school, and the learned and gentle Creuzer, its illustrious chief, have more than once sought the light trace of pagan spiritualism. The enigmatic figures which

group themselves around the large vases of La Pouille, those grand and confused representations of the gods of Erebus and of the Furies, may well have seemed to them the mysterious formulae by which the ancients revealed their thoughts upon man's destiny after death. We admit that some tendencies, impressed with a certain mysticism, have glided into the excess of those monuments of serene antiquity. But, on the other hand, they have been pointed to with vivacity by a rival school, of which Voss and M. Lobeck arduous representatives. But have not the critics gone too far? If, as some philologists think, the treasures of Greek art, that art so clamring and so pure, merely express puerile ideas; if those divine marbles only portray gross appetites, the complete want of sympathy between the form and the idea, this eternal contradiction is most intensely to be deplored; it were indeed a veritable dishonour to the human mind.

Towards 1835, antique topography took the first place in the "Annales et le Bulletin." The Pontifical Government had been eight years previously to clear out the mass of ruins which separates the Capitol from the Coliseum. These excavations brought valuable results. Thus the discovery of the pavement of the Via Sacra led to the recognition of the ancient limits of the Forum. The study of this celebrated spot is full of difficulties. To mark upon the sward which springs up between the ruins the spot where the kingly people crowded together to listen to its tribunes, and to call by their real name all the illustrious remains that ages have accumulated in the Campo Vaccino, may be regarded as one of those labours that the most courageous sagacity and the soundest erudition alone may dare to undertake. Many antiquaries have exercised their powers upon this delicate subject. We will cite Nardini, Féa, Gial, Nibby, Canina, and more recently, M. Becker and Henzen. In a previous volume of the *Builder* our readers have had particulars of their various theories.

To the efforts of the antiquaries must be joined those of artists: fine restorations, admirably conceived, have been proposed by the architects. While with so brave a hand Niebuhr rebuilt Roman history, this great critic dreamed over a restoration of the Forum. But the earth still hid in part the monuments which could have guided him. Admirer and friend of Niebuhr, and prompt to profit by a fortuitous circumstance, M. Bunsen has wished to conclude the sketch commenced by a bright intelligence. This remarkable attempt, the work of a mind at once large and enthusiastic, is summed up and made clear in carefully studied plans. Not only does it embrace the Forum of the republic, but also includes all those constructed by the emperors. Doubtless it is hypothetic on several points; but, as it is an authority on others, as it occupies an elevated rank in the "Annales," we ought to pause before it.

The Forum of the republic (*Forum vetus*), covered originally with trees and shops, developed itself in a valley closed by three hills, the Capitoline to the west, the Palatine in the south, and the Velia to the east. All the space comprised between the arch of Septimius Severus, placed at the foot of the Capitol and the temple of Faustina, situated at the base of the Velia, now crowned by the triumphal arch of Titus,—all this space, we repeat, was occupied by the Forum. Spacious enough at the west end, it narrows considerably in the east. The figure it takes on paper is that of a truncated pyramid, of which the base lies at the foot of the Capitol, and the summit at the foot of the Velia. This form was given to it by the divergence of two streets, which descended from the Velia, in the direction of the Capitol. They founded it on the north and south throughout its entire length. These two streets isolated the Roman square from the temples, the Basilica, and the Senate-hall, which surrounded it, and ranged themselves along their façade. The northern street was called the Via Sacra—*summa via Sacra*; it was by this street that the triumphant warriors entered the Capitol; the southern, *summa Velia*, which passed at the foot of the Palatine. Two transverse streets crossed the former, the one to the east marked the limits of the Forum, as high up as the temple of Faustina; the other to the west, and nearer to the Capitol, divided the Forum; this was the *Clivus Sacrus*. In the portion comprised between this street and the temple of Faustina, the Forum changed its name; it was called Comitium. There, in fact, were held the *comitia*.

This Comitium, which a great epigraphist, M. Henzen, places at the foot of the Capitol ("Annales," 1844),—why, we will not say here—this Comi-

tium constituted the most important part of the Republican Forum; or, to speak more correctly, it was a second Forum,—whereas the former, the Forum of the plebeians, was merely a market. The Comitium belonged to the patricians. It was for ages the political and religious sanctuary of the Roman people. The Forum of the plebeians had, doubtless, also its days of glory. The vine, the olive, and the fig-tree, which the Roman labourers had formerly planted—those happy symbols of Italian culture—in later times threw their broad shade over many a stormy discussion.

The Comitium, open on all sides, was raised upon a flight of steps, and was protected by an immense *valerium* from the effects of sun and rain. The tribunal of the pretor and the tribune of harangues characterized the Comitium. They here called to mind that justice and eloquence were the two grand supports of the Republic. A semicircular alcove, with the judge's seat at the far end, such was the tribunal. As to the tribune, its form recalled the ambo—[rather, suggested]—that peaceful pulpit whence, in Christian Basilicae, the Epistle and the Gospel were read to the people during the celebration of mass. The tribune, according to M. Bunsen, presented the appearance of a little temple, the façade of which should be ornamented with six rostra, or prows of vessels. It was surmounted by a platform, which was sufficiently capacious to allow the orator to walk a few steps either way upon it. It is at the extremity of the Comitium, on the border of the *Clivus Sacrus*, facing the Capitol, that the tribunal of harangues must be placed. The reason is obvious; from this spot the voice of the orator could be heard by the plebeians who were listening to him in the Forum.

One day, in the most flourishing epoch of its aristocracy, Rome saw a novel spectacle in this tribune. Instead of addressing himself to the senators, who from the neighbouring balcony of the *curia* joined in the debates, an orator, Licinius Crassus, wishing to carry a project of democratic law, turned towards the people assembled in the Forum, as if they alone had a right to pronounce an opinion on such a subject. This light cloud in the clear horizon presaged the coming storm, and ushered in those fearful convulsions which were ultimately to crush the Republic. Twenty years later, a man superior by his talent, but whom impetuosity carried beyond all limits, was debating in the tribune of the Comitium, holding a shuddering people in thrall beneath his words of fire. This was Caius Gracchus! In the later times of the civil wars, at the moment when the horror of this struggle between colossal factions was at its height, Anthony ordered the head and hands of Cicero to be fastened to the *rostra* of the tribune. Fortunately for the Comitium, the tribune had changed its position; in his attempts to annihilate republican forms, Cæsar, three months before his death, had caused it to be transported to the Forum, which he wished to restore.

On such questions as these, and a hundred other subjects, the publications of the Archaeological Institute shed a light: witty discussions by Letronne; polemics from Raoul-Rochette, fertile in suggestions; remarkable works by Messieurs Borghesi and Cavodon, Philippe Lebas and Rathgeber, Canina and Lepsius; continual investigations by the indefatigable Emile Braun,—who, wonderfully learned in comparative archaeology, was prematurely taken from the study he loved—are all recorded in the collection which we are recommending to the attention of all men of study.

They will also find therein the philosophic researches of a great philologist, M. Welcker, and those of Panofka brimful of Pausanias; daring but ingenious observations of a scholar not long since suddenly raised to archaeology; more than one proof of the happy perspicacity of Messrs. De Sazley and De Longperrier; and, lastly, the conscientious descriptions of M. de Witte. It is a matter of astonishment that this deep philology, this notable movement in these novel paths of criticism should not have penetrated more intimately into the enlightened portion of the French public. Those whom their vocation leads to æsthetics and archaeology could not possibly have more profitably reading. What sources of preparation for studies whose beauty and usefulness have been so often denied! Assuredly if ever ancient genius makes its extraordinary power apparent, it is in its art-ornaments; there, above all, shines forth its incomparable spontaneity; if it ever attains to a sublime perfection which has never been equalled, much less excelled, it is still in these we find it. There are faults in the Iliad; the Parthenon is exempt.

Which of the twain, Livy or the Coliseum, speaks to us the more eloquently of Roman greatness?

M. Vinet goes on to discourse briefly of the present situation of the sciences in question. Archaeology flourishes still in Italy. Long time past Messrs. Borghesi and Cavodon, and more recently M. Minervini, acquired for themselves well deserved celebrity in this class of study. As of old, it is still towards antiquity that the intellectual activity of Germany is turned. At the present time, professors and students, all or nearly all contributors to the "Annales," follow in the steps of Messrs. Welcker and Gerhard, whom thirty years of scientific research have failed to weary. To unite, as closely as may be done, philology and archaeology, such is their aim, and they are right, for if it be true that the complete spirit of antiquity can only be obtained by the study of its monuments, so in many instances these only tell their secrets to philologists. Of what has been done by ourselves the reviewer speaks thus:—

Can archaeology acclimatise itself in England? ( ) Up to the present time it reminds us of those exotic plants whose somewhat sickly branches can only expand themselves under the greatest care and trouble. Nevertheless I have confidence in the veteran ardour of Mr. Cockerell, in the profound knowledge of Mr. Birch, in the delicate tact of Mr. Newton, and in that swarm of accomplished travellers at the head of whom march Messrs. Leake, C. Fellows, Hamilton, and Falkener; and I have faith in the influence of a museum without a parallel.

Of some here mentioned by M. Vinet, Leake and Hamilton, we must now unfortunately speak in the past tense. Others might worthily be named in addition.

In France the actual state of archaeology is alarming. Far be from me the thought of daring to condemn the study of Romanesque and Gothic art; this study is too grand. It has given us, among many valuable treasures, the precious monographs of M. Vitet. But this very legitimate passion, this love for our national ruins, as was proved by the recent discussion on Alesia, these varied researches to which the Antiquarian Society of France gave so happy an impulse, have given birth to an error sufficiently grave, to make it necessary to endeavour to remove it. Misled by the rapid progress of Medieval archaeology, and by the numerous well-informed persons who conscientiously study the cathedrals and castles of their particular province, the general public, who concern themselves but little about these matters, have imagined that this scientific avocation has been made everywhere alike. Thus, according to them, the great field of archaeology employs an army of labourers. Alas! this is far from the truth! With the exception of one small group composed of members of the Institute, to whose worth in particular foreigners pay just homage; with the exception of some first-rate explorers, a few artists of a great school, and two or three unknown men of science, no one in the country of Montauban, even among literary men, seems to feel the least interest in figurative antiquity.

This is a remarkable fact, but its explanation is found in our modern styles of literature; that feverish activity, that desire for incessant production and appearance before the public, cannot brook long and often sterile studies of antiquity, and forced application to difficult research. Men fear this patient and painful labour, this alchemist-like working, unsupported by the encouragements of the outer world, which is removed thousands of leagues from such trains of thought. What an amount of reading before being able to write a single line! What immense preparatory study! Buildings, statues, vases, medals, inscriptions, the antiquary must see all, study all. In a science where so much is left to hypothesis, where induction plays so important a part, it is only by the careful comparison of monuments one with another, that their true significance can be divined. Now that their number has so wonderfully increased, the effort should indeed be proportionately great.

An eminent writer, M. Ernest Renan, a short time since mentioned the following portrait, drawn by M. le Maître; it is that of *Moderne Science*, whom the author of the "Soirées de Saint-Petersbourg" represents, "with his arms loaded with books and instruments of all sorts, pale with work and night-watches, dragging himself, panting, and stained with ink, along the path of truth, as he droops towards the earth his forehead furrowed with algebra." Archaeology I should have to personify with a magnifying-glass in her hand, gazing around on the sublime relics which are her delight. I would especially take care to seat her beneath a gilded canopy, and for this reason:—

In spite of the strictest union with the scholar, she always keeps a pleasant smile for the rich and well-read amateur. The sacrifices this science exacts are sometimes too costly to allow her always to content herself with the somewhat ragged mantle of philosophy. This, to my thinking, her weak point, has in many instances drawn her towards intelligent luxury, that of an enlightened aristocracy. To speak more correctly, the taste for art, the elegant culture of the mind, has attracted to her persons of high condition. One of the privileges of archaeology is to please great personages: the Count de Caylus, the Earl of Arundel, Lord Pembroke and Sir William Hamilton, M. de Choiseul, Gouffier, and Cardinal Albani, Baron de Stosch and the Duke de Blacas, Count Alexander de Laborde, whose scientific ardour lives again in his son, the Count de Clarac, who has given his fortune in exchange for the gratification of publishing a great work, and a hundred others, bear brilliant testimony in favour of the liberal inclinations of the higher classes. The Duke de Luynes, whose generous hand has so nobly supported the "Annales,"\* is the latest shoot of this noble race of connoisseurs, a race which dates from the Medicis. No one is ignorant of this fact: their palace at Florence was the cradle of archaeology.

An optimism, very honourable in its principles, will perhaps raise a doubt as to the justice of these observations, and will deny the decadence of a study which is much more important than is commonly believed,—a decadence only too real in our own country. If so, the reply is easy: in a town containing a million souls, commands M. Vitet, in the midst of that intellectual sun whose rays spread throughout the entire world, a collection considered by the whole of Europe as the most learned organ of archaeology, has not twenty subscribers.

#### ACCIDENTS IN MINES AND SEA-BOUND VESSELS.

DURING the last half-century many remarkable changes have been made. While science has wonderfully advanced, and steam and mechanical aids have been used to give increased power, safety, and facility to the manufacture and transit of various goods and products, it is a lamentable consideration that during this period wholesale loss of life has been constantly taking place. In considering this important subject, it should not be forgotten that not only in coal mines, but in our great emigrant and other ships, and also in our manufactories, the number of persons engaged has vastly increased, so that large numbers are exposed to the risk of a single calamity.

Notwithstanding, as regards our shipping, that lighthouses have been raised in places of danger, charts and other matters of this description have been improved and corrected, while the intelligence of the commanders, officers, and crews of both steam and sailing vessels has been much improved, yet from time to time we read of the tragedy of several hundreds of our fellow-creatures being suddenly buried in the sea, and but few left to give even an imperfect account of the catastrophe.

While admitting the sudden and terrible dangers of the sea, it is certain that a great deal might be done to lessen danger in this direction. In formidable parts of our coast the harbours of refuge now in progress will save life. More, however, will be wanted. Hundreds of lives are lost by the imperfect machinery by which boats in the time of danger are lowered from ships. Iron ships need consideration as regards their arrangement and strength for the support of machinery. The formation of an institute of ship-builders may be the means of causing good; and, moreover, there is still a rare field open for the advancement of the education of them "that go down to the sea in ships, and occupy their business in great waters;" and also in the nice adjustment and more general use of those instruments on which the safety of crews, passengers, and valuable merchandise depends.

In coal mines, as it seems to us—and we say so both from personal observation and after hearing the opinions of both managers of mines and workmen in them—with far greater certainty could even a large per-centage of the lives of

\* In 1856, to make up for the delay in the continued publication of the Roman direction, the members of the French section updated themselves provisionally to publish new "Annales" until the Institute at Rome should be in a position to continue its work. Two volumes only were produced—1856 and 1857. The editing was confided to a committee composed of Messrs. de Quincey, president; the Duke de Luynes, vice president; F. Lajard, Ch. Lenormant, Letronne, Raoul Rochette, and J. de Witte.

those engaged he saved than of those employed at sea. In considering these matters, it is worth while to look back. In former times, in the best coal districts, scarcely any care was taken touching ventilation. About the year 1816 (forty-four years ago) a writer of good authority says, the miners were afflicted with various disorders, owing to their breathing the heavy, unwholesome air which lodged in some parts of the pits; and it was a common occurrence to find numbers of workmen in a sitting posture, their heads resting on their knees, seemingly asleep. On attempting to rouse those seemingly sleeping ones, they were generally found fixed in that position in the rigid stiffness of death. This did not always occur in the mines, but the poison there inhaled into the lungs acted frequently on their arrival at the bank. In the Forest of Dean, not fifteen years ago, the surgeon of a large district, whose duty it was to attend to the health of miners, told the writer (and this was confirmed by many of the men) that the most common illness was caused by inhaling this description of gas—the pitmen called it the "blind,"—which lodged in the stomach, causing the most violent pain, that could with difficulty be removed by strong purgatives and other means. In that part there are many small collieries carried forward by means of a small association of miners, with but little capital, who, by being horn within the margin of the forest, have a right to commence works of this description. In many of these instances the arrangements are of the most primitive description; the machinery is imperfect and dangerous, and the ventilation still more so.

Formerly, even in the large collieries of Northumberland and Durham, there was no registration of the extent of the coal which had been excavated, and it was by no means rare to have lawsuits and other disputes, arising from coalmen interfering, sometimes from ignorance, with the royalty of others. In this careless manner of working, many lives were lost by cutting into some exhausted pit filled with water, which rushed forth, causing death and destruction with it. On one occasion the water, owing to some such cause, came suddenly into the working of a pit near Newcastle-upon-Tyne. There were upwards of one hundred men and many horses employed at the time. Machinery was erected for the purpose of clearing the pit of water; but the process was so slow, that all chance of saving life was given up. It was, however, suggested by many that, by the opening of a shaft which had been closed, but which communicated with a higher portion of the coal seam, the men might be reached, and perhaps fortunately saved. When the pit was cleared, it was found that, if what was suggested had been carried into effect, lives might have been saved. The men and boys had fled to the high parts just mentioned,—there they had subsisted by various means, huddling them carefully, and keeping a record of the time of their terrible imprisonment; and it is supposed that some of those poor fellows had existed for three weeks. Not one, however, was found alive to report the sad tale.

Formerly baskets formed of very strong twigs were used for the purposes both of raising the coal and lifting and lowering the men and boys: hundreds of accidents have happened by the upsetting of these baskets called "corves;" now, however, strong square boxes are passed in grooves from top to bottom with much greater safety.

Steam-engines of vast power are employed, which in a measure prevent danger from water, and the system of mine-registration will prevent many of the former accidents. As is the case at sea, both the managers of mines and those who work in them have advanced in intelligence. The "Davy lamp" has been introduced with good effect, notwithstanding that sudden and lamentable accidents are of frequent occurrence. We believe that the safe and proper ventilation of a coal mine, in nine cases out of ten, is quite a matter of skill and cost, and fear it must be admitted that when the last fatal accident occurred, which struck with sudden death eighty human beings,—changing them in a few instants into charred and shapeless masses, so that some could only be recognized by the buttons on some little article of clothing which might be left upon them—it had been distinct warning for some time before: even on the very morning of the explosion, several men refused to go to work, and by that means saved their lives. In the case of railway accidents the companies are made to pay large sums for neglect, or deficiency of machinery which may be the cause of damage; and if the same arrangements were made in the case of accidents such as that we have alluded to, that

lives and limbs should be paid for so as to afford the means of subsistence to the widows and orphans, such appalling accidents would be of very rare occurrence; improved methods of ventilation would be introduced, and care taken not to neglect the warnings which are generally given of such calamities; in some cases they are caused by the carelessness, ignorance, or foolhardiness of the men. One such act endangers many lives, and such heedlessness should be punished as a crime. As matters now stand those belonging to the miners who are left behind, are objects of public sympathy—and which it is hoped will be shown in a substantial shape, for it should be remembered that while we are enjoying our cheerful fires at home, industrious workers are delving in darkness and danger. Moreover, when such accidents occur, no Deal boatmen more bravely venture on the stormy sea for the purpose of saving life, than do the pitmen enter the burning shaft and stifling working, to endeavour to save their fellows.

**BRUSSELS PALACE OF JUSTICE COMPETITION.**

We hear from the Legation that the Belgian Government has postponed till the 1st of October next the day for the reception of the designs for a new Palace of Justice at Brussels.

**OSWESTRY CEMETERY COMPETITION.**

We are informed that the first premium has been awarded to Mr. Hans F. Price, architect, of Weston-super-Mare.

**HEREFORD IMPROVEMENTS COMPETITION.**

We understand that the Town Council Improvement Committee have received about a hundred designs from architects in various parts of the country, for a clock tower in the High-square, and a clock turret over the market entrance in the High-town. The Committee have made arrangements for the public exhibition of the designs, in the Assembly-room of the Shire-hall.

**THE ART-UNION OF LONDON COMPETITIONS.**

The exhibition by the Art-Union of London, which will open on Monday, will be more than usually interesting, inasmuch as it will include, besides the works of art selected by the prizeholders, the outlines illustrative of "The Idylls of the King," sent in reply to the offered premiums of the association, and the statuettes illustrative of English history, submitted under the same circumstances. The council have not made a decision in either case, preferring to submit the designs first to public criticism. Of the outlines there are forty-two or forty-three sets, each consisting of about a dozen drawings,—nearly 500 therefore in all.

The statuettes are fewer in number, only eleven having been sent in. These represent "Alfred in the Danish Camp" (a group of three figures); "Edward and Eleanor," "The First Prince of Wales" (King, Queen, and Prince); a second "Alfred and the Danes" (two figures); "Queen Eleanor and Fair Rosamond;" Lord Macaulay (a seated figure); British Children ("Non Angli sed Angeli"); "Martyrdom of Margaret Wilson;" "Lady Godiva," and two statuettes of Oliver Cromwell. The choice will lie amongst the three or four first-named.

We have already given a list of the pictures and sculpture purchased by the prizeholders.

**BUILDERS' AND CONTRACTORS' HOISTS.**

A GREAT saving of human labour is effected by a new form of hoist introduced for the use of builders in this metropolis. Hod-carrying up long ladders is a depressing occupation, though an elevating movement. The mechanical hoist should, therefore, be encouraged throughout the metropolis, and in many provincial towns we think that even the human labour of the mechanical hoist may be lessened by the use of water as a balance-weight, making the huge steam-engines of our water-works lift bricks, mortar, stone, cement, iron, timber, slates, or any other material up to the full elevation of the effective head. The working cost of pumping each 800,000 lbs. of water 100 feet high is only 1s. (as see Mr. Quick's published returns). If we consider that a brick weighs 8 lbs., this is equal to 100,000 bricks,

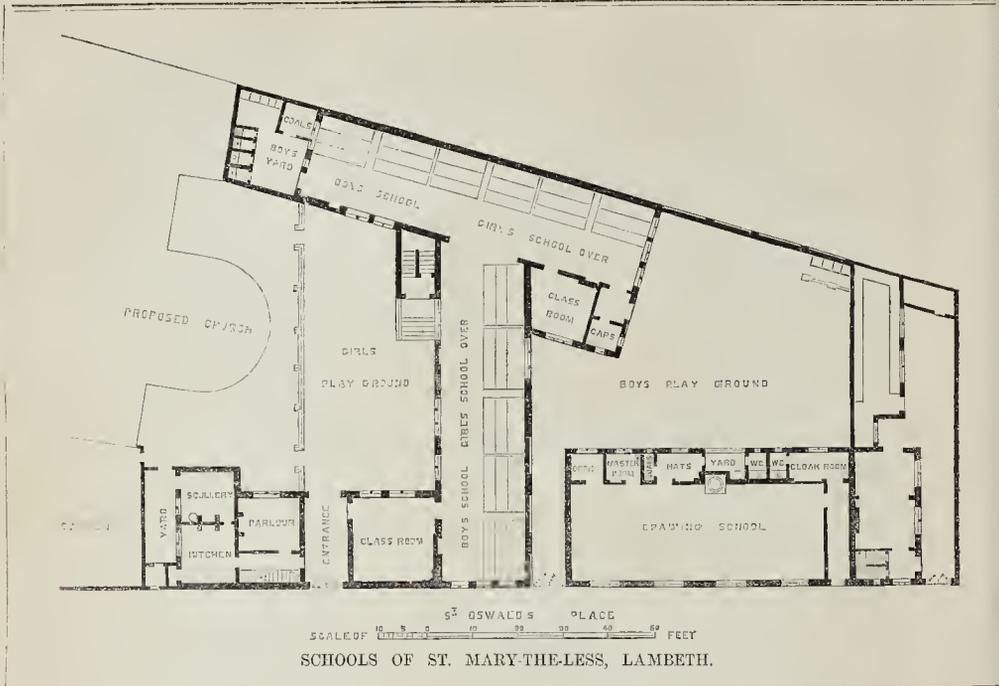
lifted 100 feet. The companies cannot sell water at the price indicated; but supposing we say 6d. per 1,000 gallons (water, in bulk, is sold at 3d. per 1,000 gallons to railway companies, &c.), then 8,000 gallons of water, charged 6d. per 1,000 gallons, will, at a cost of 4s, lift 1,000 bricks 100 feet high, by means of a water-balance hoist: at 3d. per 1,000 gallons, the cost will only be 2s. Some of the water may be used for lime mortar, and for other purposes. We give the idea, and leave the application to the users of power.

**THAMES EMBANKMENT COMMITTEE.**

THE Thames Embankment Committee have presented their report, and it has been printed. The *Observer* says of it:—"There is some reason to hope that, after all, something will be done towards effecting that most desirable object, the best means of providing for the increasing traffic of the metropolis, by the embankment of the Thames. The committee have carefully considered the several plans which have been brought before them with a view to the embankment of the Thames, and they have received much valuable evidence on the subject. In connection with the matters referred to them they have considered it necessary to inquire into the mode proposed for constructing the low-level sewer about to be made by the Metropolitan Board of Works, and they found that if that sewer were carried under the Strand and Fleet-street it would cause a vast amount of injury to the trade and traffic of the district, which it is scarcely possible to estimate. The importance of providing for the construction of the low-level sewer in connection with the embankment has been recognised by the various engineers whose plans have been submitted to them; and provision is made in all these plans for constructing the low-level sewer along the foreshore of the river and within the embankment. The committee have had many plans before them, out of which they have agreed to select the three presented by Messrs. Bazalgette, Bidder, and Fowler, civil engineers. All of these comprise the plan of including in the embankment the low-level sewer on the north side of the Thames, the embankment to extend from Westminster to Queenhithe—that is, from Westminster-bridge to London-bridge. All the plans comprise a railway and a roadway—in two of them on the same level, and in the third on different levels. The wharfs are not to be interfered with, but, on the contrary, to be improved by the construction of docks and other facilities within the embankment. The committee has rejected the proposition to attempt to make it a public company, and recommended that, as the Legislature have already intrusted the main drainage of the metropolis to the Metropolitan Board of Works, by the 21st & 22nd Victoria, cap. 104, sec. 11, and armed them with powers to deal with the foreshore of the river in connection therewith, the construction of the embankment should also be intrusted to them. They recommend that, in aid of the funds already voted for the sewer, the coal and wine duties, which are to expire in 1861, should be renewed for a limited time, and the proceeds be applied to the expenses of the embankment. The whole expenses of the embankment, including sewers, &c., are estimated at 1,000,000. One-fourth of this at least would be the cost of the length of sewer to be made. Indeed, it would be much more if it ran under Fleet-street and the Strand. The rest is to be raised by the renewal of the 8d. and the 1d. coal-tax, and the wine duty of 4d., from which an annual sum of 100,000, may be expected, and the committee recommend that the cost of the embankment should be a first charge upon these duties.

From the simplicity of the proposition, and the manifest—indeed, the pressing—necessity of the scheme, we are glad to see a prospect of its being carried out at length. The money can be easily raised in the manner and in the proportions proposed."

**BUILDERS' DINNERS.**—Sir: The workmen in the employ of Mr. George Smith, of Gillingham-street, Finsbury, held their seventh annual dinner on Saturday last, July 28, at the Crystal Palace. The men, 220 in number, sat down in the south wing dining room; Mr. Spencer Smith presided, supported on the right by his father, Mr. George Smith, and on the left by Mr. Whices, the shop-foreman. The usual loyal and other toasts were drunk, and the greatest conviviality and good feeling prevailed. Several tradesmen connected with the firm attended. Your notice of the above will oblige,—J. C.



## SCHOOLS IN VAUXHALL.

DISTRICT OF ST. MARY-THE-LESS, LAMBETH.

THESE schools (which we here illustrate) are being created for the benefit of a large poor district parish in Lambeth, lying east of Vauxhall Bridge, and bordering on the river: it forms part of the Manor of Kennington, and belongs to the Duchy of Cornwall. Nine years since the two existing church school-rooms were closed from want of funds to keep them open, and their broken windows and desolate appearance presented a complete picture of poverty and decay. The late incumbent re-opened these schools, and they were speedily filled with children. Since he left the parish, three rooms (one of them had been previously used as a Mormonite meeting-house), have been hired or borrowed, and all are now so crammed with children, as to be unhealthy in hot weather. It is to remedy this evil that the new schools are being created. The district is one of the very poorest in the metropolis. Its present population is 15,000, of whom the collector says not ninety are assessed for income-tax, and of this small number more than a fourth are publicans. Vauxhall Gardens, which are within the limits of the district, are now being built over, so that in a short time the population will be most materially increased.

The drawing-school was opened nearly six years since by the present incumbent, shortly after his appointment to the parish. It was designed for the benefit of the many artisans engaged in the building trades, and as engineers or potters, by whom the neighbourhood is peopled. It has been pre-eminently successful in accomplishing its design, and is probably the only Art-School in the metropolis which draws the great majority of its pupils from the ranks of the artisans. This school has more than 150 students on its books, and an average attendance of considerably more than 100. For the last three years it has been quite self-supporting. The students assemble in the parochial school-rooms, both of which have now been opened for them, but the inconvenience and many practical evils which arise from having to use rooms that have been crowded all day with children are so great, that it has been felt for some time that the school cannot continue in its present high state of efficiency, or retain the more advanced pupils which itself has trained, unless a separate building can be provided for its accommodation. The Prince of Wales laid the first stone of such a building on the 27th of June, as we stated at the time, but several hundred pounds are still needed for its completion. It will be scarcely creditable to the many wealthy employers

of labour in Lambeth and Southwark, where men enjoy the benefits of this school, and whose labour is rendered more valuable by the instruction they receive in it, if such a work is permitted to languish for want of the funds which are necessary for its speedy completion. The incumbent of the district, the Rev. R. Gregory, St. Mary's Parsonage, Lambeth, is the treasurer of the fund.

The schools are being built of stock bricks, both inside and out, relieved by red brick bands and arches over windows and doors. Bath-stone bands are also introduced, and all window-heads are in Bath stone. The columns, forming mullions to most of the windows, stand clear of the sashes. There are four large school-rooms; two for the boys, on the upper floor; and two for the girls, on the ground-floor; and there are also four class-rooms. The whole affords accommodation for full 700 children. A playground is provided, as shown on the plan, for the boys, and one also for the girls.

The contract for the parochial schools amounts to 3,265*l*. The builder is Messrs. B. Colls. The tender for the drawing school is 500*l*.

The whole is being erected from the designs and under the superintendence of Mr. John L. Pearson, architect.

## ANCIENT AND MODERN PENMANSHIP.

GREAT is the difference between the clerly penmanship in the body of ancient deeds and the rough, rude, and often illegible signs of those famous men of the sword whose functions in the Middle Ages were so much in demand; and it may be remarked that in those days when the circumstance of having a pen in hand must have been a remarkable event in the lives of the great men of the community, the penmanship of the few learned clerks was noticeable for its beauty, and also for its correspondence, to some extent, with the contemporary style of architecture.

The effect of the introduction of Italian architecture may be traced both in manuscripts and books. Many of the specimens of the handwriting of Queen Elizabeth are singularly beautiful, and show much variety. There is the small Italian hand, which was used when writing, as princess, to her dear cousin and king, Edward VI., and on other complimentary occasions; a more vigorous style for state purposes; and a very large hand, which combined the Gothic with the Italian, which "Good Queen Bess" used when she threatened to unroof a bishop.

Looking at ancient documents of a time when being obliged to resort to the use of a cross for a

signature was not considered disgraceful, even to the nobility, it is curious to notice the great variety of the crosses, and the different degrees of artistic skill which are shown in them. As the practice of writing became more general, the use of the cross became less so; and, although many could not write their entire name, they managed to sign with a letter, or a peculiar form or flourish which had some resemblance to one.

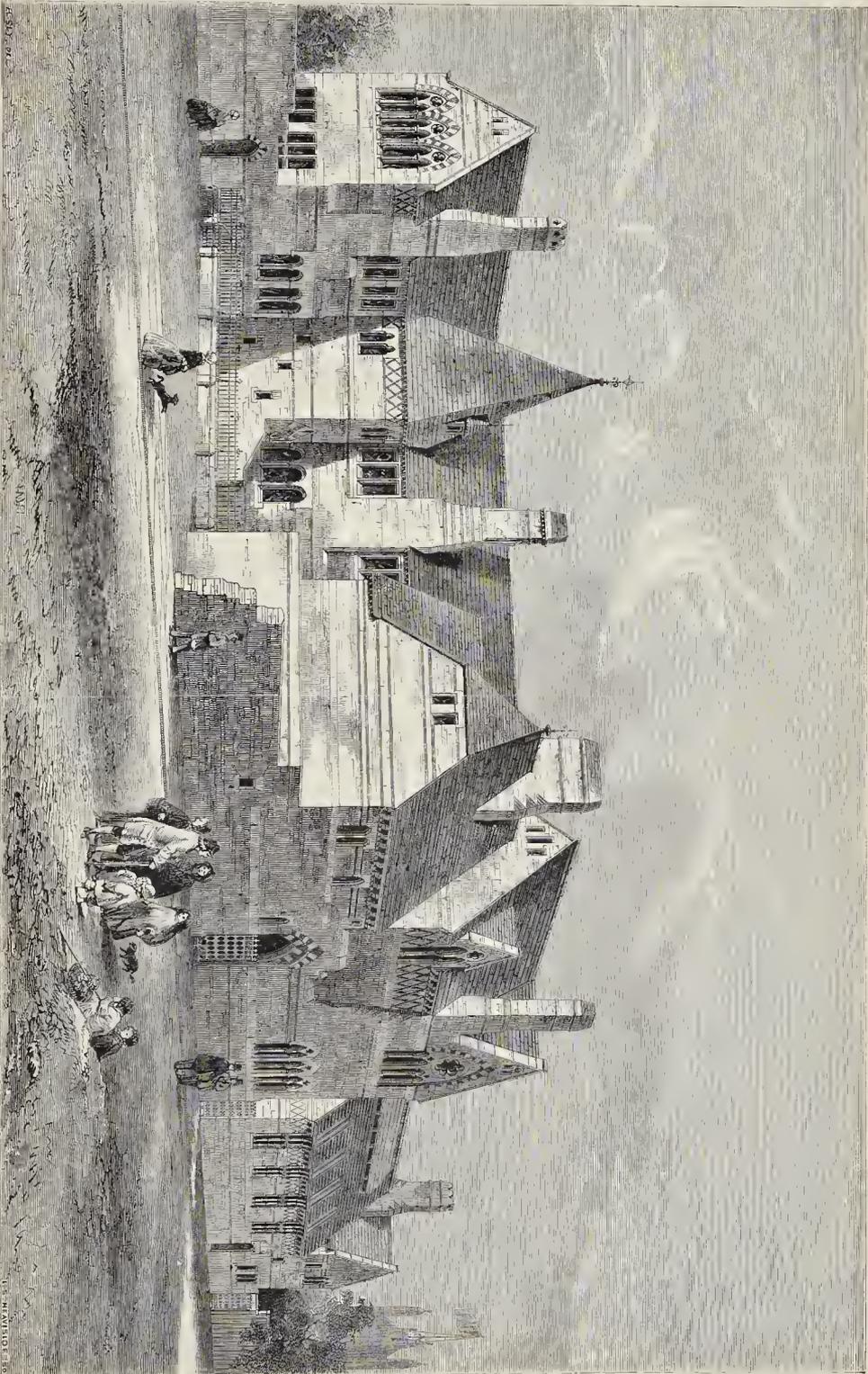
In a collection of autographs of the relatives of Shakspeare, published by Mr. Halliwell, a great variety is shown. Agnes Arden's signature resembles the letter U, such as would be made by a schoolboy who had just got out of his "pot-hooks." John Shakspeare signs with sword-like crosses, so firmly and vigorously marked, that one can fancy, if opportunities had offered, that this hand might have been cultivated into that of the skilled draughtsman. Others of these signs are crosses surmounted by circles, and some show imperfect attempts at regular signatures.

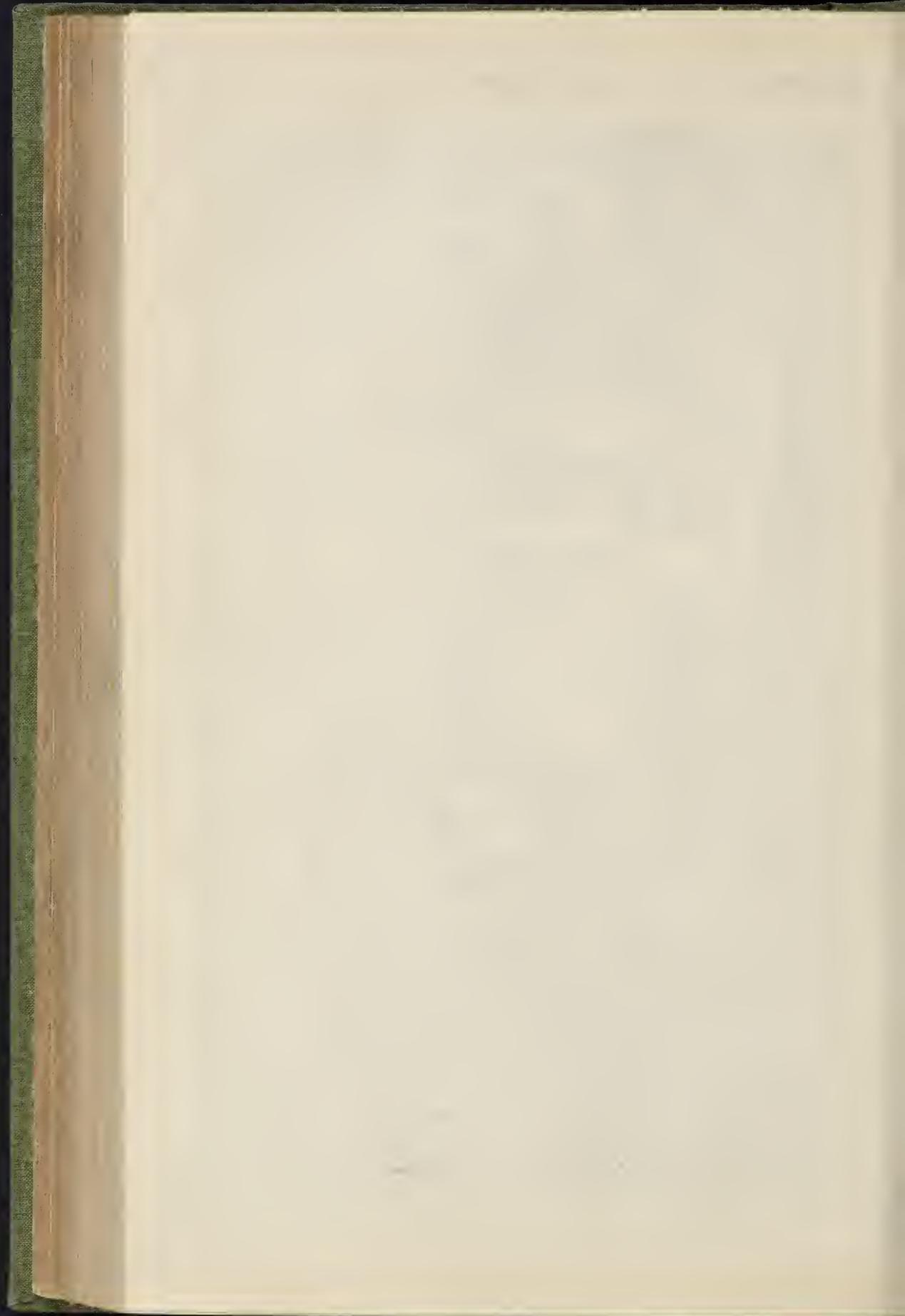
Remembering the systems of book-keeping and accounts which are now required for successful trade, it is difficult to understand how business, to any extent, could then have been carried on. Tallies kept by notched sticks, with certain hieroglyphics for the different goods, were much used instead of books; and no doubt those instruments were produced by many of the traders of London and elsewhere, with as much gravity as a regular bill at the present day.\*

In the reign of George III., when education had become more general, the crosses of those who could not write, lost the distinction and artistic character of older times, and the large bold round hand corresponds in style with the buildings and furniture then in use. This writing, although without much beauty, has, notwithstanding, the merit of distinctness. In these railway times, with the exception of book-keepers in banks, and clerks in merchants' offices, few seem to have time to trim their letters. Few artists write a good hand. Physicians' prescriptions are often as difficult to decipher as ancient hieroglyphics; and it must be confessed that writers for the press are not generally remarkable for either the distinctness or beauty of their manuscript. As regards artists, the practice of handling the brush and pencil is not favourable to graceful penmanship; and in respect of the literary profession, it is generally difficult for the pen to keep pace with the thoughts, to say nothing of the fact, that time often presses.

\* At the beginning of the present century, in the case of a disputed account, in a town in the north of England, the door on which the account had been kept with chalk, was produced in court.

SCHOOLS OF ST. MARY-THE-LESS, LAMBETH.—MR JOHN L. PEARSON, ARCHITECT.





**THE GOLDEN LANE BURIAL GROUND.**

We have before now referred to this place since the closing of the ground by the Parliamentary enactment, remarking upon the removal of the grave-stones and other memorials of the dead: by chance we recently paid another visit, and strange was the scene of dilapidation and neglect which was witnessed. The stuccoed chapel, of Strawberry-hill Gothic design, has fallen into outward decay. A large sign-board announces that part of the interior has been converted into a manufactory. A large part of this building seems to have been a casing of plastered brick-work, raised for show. This is now plainly visible. Above the porch is a board, similar to those which announce that "building sites are for sale." The trees are in ill condition, and serve in many instances as posts for clothes-lines: the "washing" flutters in the air: the ground is broken, and covered with various matters: squalid-looking children, who have by some means obtained admission, are playing at various games: some little gambling goes on,—and part of the ground seems to be a depository or standing-place for carts; near which, is a large boiler of a steam-engine. A suspicious-looking hoarding of wood has been drawn across part of the ground, which contains a large portion from the general view. Words would, however, fail to convey an idea of the unpleasant appearance of the place. All signs of human burial have vanished, and yet how large a number of bodies have been here deposited. Extraordinary sums have been paid for the use of this land in trust, for a purpose which has not been fairly carried out. On one side of the entrance-gate is a painted board, which is so much defaced with handbills of a miscellaneous description, that it is with difficulty that the following words can be deciphered: "Two tiers of large dry vaults are to be let." Have there once been human remains lodged here? and if so, where are they now?

Seeing a stranger noticing the place, several persons who were accidentally passing,—some of whom had relations buried here,—remarked upon the shameful desecration. One woman said that her husband, son, and other relations lie there, or rather perhaps did, all traces of those marks by which the site of the interments could be identified having been removed. Another complained of the hardship, and said that the poor had natural feelings as well as others.

Can it be intended to build upon this spot, which is so thickly crowded with the dead? As we have before said, such a transaction would be a gross act of injustice. Many graves have been paid for, and should be held as sacred, as any lauded or household property. Many hundreds of persons have also paid sums of money for the consideration that the remains of their relations should be allowed to rest in decency.

In a crowded neighbourhood like this, where other evil conditions exist, this burial-ground should be carefully looked after by both the Government and parish authorities; for, as has been shown in some other instances, the law in its present state is sufficient to prevent, to a great extent, the dismantling of graveyards,—at any rate, the wholesale opening of graves for building purposes, even if they are the property of trustees or private companies.

**THE BELL FOUNDRY OF GLOUCESTER.**

In the course of a paper on this subject, read at the Congress of the Archaeological Institute, the Rev. W. C. Lukis said, the Gloucester bell-foundry had not been surpassed by any others even if it were not unrivalled in England. It ranks at least in the first-class with that of Salisbury, which was established as early as the reign of Henry III., about the year 1260, while a foundry existed at Gloucester in the reign of Edward II., and was conducted by a master founder, whose reputation spread far and wide. "Master John of Gloucester" was so renowned a founder that the monks of Ely sent for him during the reign of Edward III., in the year 1346, and he cast four bells for them, the largest weighing 7,000 lbs., bringing copper, tin, clay, and all other necessary materials for the work. "How vast the undertaking must have been," said the lecturer, "when some eight or nine tons of metal, at least, were conveyed a long distance, over bad roads, to that isle, which at that time must have been very difficult of access! Must we not feel and own that even with all our grand ideas about Big-Bens, and all the appliances of modern days, we have to sit at the feet of such a skilled master as John of Gloucester?"

Master John's successor in the foundry is supposed, from a seal found in the Thames some years since, to have been "Sandre of Gloucester," and Mr. Lukis says that if Master John and Sandre of Gloucester were not one and the same person, then he has no doubt that the second bell in the peal now in the cathedral tower was cast by him. The next bell-founder known was one William Henshaw, about whom Mr. Lukis was jocose. "The bell-founder has made his exit, and left two wives behind him to represent him. If one wife is 'a better half' two wives must make more than one husband, and consequently in Alys and Agnes, wives of William Henshaw, whose portraits in brass may be seen in St. Michael's Church, we have rather more than campanologists looked for—but not more than their gallantry and good taste would find fault with or despise. If they have missed the founders, at all events they may see his *Belles*." Mr. Lukis thinks the fifth and sixth bells in the cathedral, and also the small curfew bell at St. Nicholas Church, were probably cast by Henshaw, who lived in the house now occupied by Mr. Ferry, Eastgate-street, and his arms still remain in painted glass. The next bell-founder known was Abraham Rudhall, whose family carried on the bell-foundry from 1626 to 1828, when the foundry ceased, and Mr. Mears took up the Gloucester business.

**DESTRUCTION OF HOUSES BY LIGHTNING IN PIMLICO.**

In Sutherland-street, Pimlico, near the Wooden Bridge, two houses—four stories high—were struck by lightning on Saturday night, about six o'clock, and although at the time it was not anticipated any serious damage had resulted, subsequent events established the fact that the electric force had shaken the houses to the foundation. About eleven o'clock the two houses had fallen into a heap of ruins. The front walls had fallen inwards, dragging with them the back walls, and the whole presented a complete mass of ruins. A third house adjoining is left standing, but is injured.

Hoop iron bond was used throughout. Could this have had anything to do with the disaster?

**PROVINCIAL NEWS.**

**Bishop Storrford.**—The first stone of the intended new residence for the head master of the High School here has been laid by Mrs. Archer Houlton, the wife of the president. The estimated cost of the ground, which contains upwards of five acres, and of the house and offices necessary for the accommodation of sixty boys as boarders, is about 3,500*l*. As large a part of the sum as possible must be raised by subscription, and the remainder will be provided by gentlemen who have consented to become personally responsible for the whole amount required. The head master will pay, as rent, interest for the amount not raised by subscription, also an annual sum, to be agreed upon, to form a sinking fund. The subscription list appears to have approached 1,000*l*. Mr. Murray is the architect.

**Ashtown.**—On the 19th ult., the designs for the Market Hall and Assembly Rooms were laid before the shareholders. After inspecting them, a design in the Italian style was selected. The ground plan, says the *Derbyshire Advertiser*, will form accommodation for butter dealers, greengrocers, and other parties frequenting the market, with a small corn exchange. The second-floor contains a concert-room, 65 feet by 27 feet, with platform, and cloak and ante rooms. The front view of the building, which is of stone, presents a centre door, and five windows with balcony. The architect is Mr. Wilson. The tenders have been advertised for.

**Bristol.**—The foundation-stone of a new work-house for the Bristol Union was laid at Stapleton on 26th ult. The arrangements of the new buildings have, in a great measure, been regulated, as far as their position is concerned, by the existing buildings, which are to remain and be incorporated with the new. The present range of kitchen buildings, for instance, is converted in the new plan into apartments for the master and matron, store-rooms, officers' kitchens, bread-rooms, &c. The general plan of the structure may be thus described:—"We have first what are termed the 'entrance buildings,' which stand close to the road, and contain the entrance gateway, with the turret above, the porters' rooms, store-rooms, female receiving and probationary wards, bath-rooms, and vagrants' wards on one side; and on the other a committee and ante room, and the various receiving and probationary wards, &c., for

the men. Passing from this building, along a railed-off road, which divides the old men's and women's airing-yards, we reach the "main building, in which the greater portion of the inmates are lodged, and which contains the officers' as well as the culinary apartments, and store-rooms. On entering this building, we have a passage running directly through it, branching off right and left, and dividing the men's from the women's portion of the house. The day-rooms and dormitories of the aged and infirm of both sexes are placed facing the south; the floors of their rooms are boarded; they have separate staircases, lavatories, and comfortable and well warmed and ventilated apartments. The able-bodied paupers are placed on the north, east, and west sides of the house—every class being separate, and the wards, as well as the airing-yards, being inclosed, those of either sex of bad character by walls 10 feet high. Their wash-houses and workrooms are also separate. A large room is provided on the side of the women's wards for the nursery and attendants. The female infirmaries are also located on this side. At the end of the central passage before alluded to is the dining-hall, about 41 feet by 75 feet. Adjoining this are the kitchen and scullery, and other offices, and immediately behind it the engineer's room, heating apparatus, boiler-room, coals, &c. The workshops and washing and drying rooms are placed at the northern extremity of the yards, of which they form the boundary. The infirmary stands at the north-west corner of the ground, and is approached by a road of its own, after leaving the common entrance. This building is divided, as are all the others, into two distinct portions, appropriated for male and female patients; the surgical cases being placed on the ground floor, and the medical and sick on the upper floor. Baths, lavatories, water-closets, rooms for surgeons, nurses, &c., are included in this building, and care has been taken to insure good ventilation. In the whole of the buildings, accommodation is afforded for over a thousand inmates, exclusive of the present children's wing. The general plan of this workhouse bears some resemblance to similar buildings, erected by the same architects at Norwich and Lynn, in Norfolk. The elevations are designed in a plain and simple style. The upper floors of the house are almost wholly appropriated for dormitories. It is intended to warm the building by the same apparatus which will perform the cooking. The contract was taken by Mr. Thomas Brooks, of Bristol, for a trifling under 16,000*l*; and the architects are Messrs. Medland and Maberly, of London and Gloucester.

**Manchester.**—Mr. A. Waterhouse, architect, has prepared plans for various alterations and improvements at the Concert Hall. A new entrance, says the *Courier*, will be made in Lower Mosley-street, which will obviate the crushing that takes place at the Peter-street entrance. There will be a new entrance for performers in Concert-buildings. An extension of 3 yards will be made to the hall near the Casino, to furnish a library, a new staircase for the performers, and a committee-room, in place of the present one, which will be taken to make the new entrance for subscribers. The orchestra is to be remodelled, and extended to nearly the width of the hall. The performers will have a central entrance to the platform and orchestra, but there will still be a door at the back, to facilitate leaving. The panelled ceiling will be continued over the orchestra, with an additional sunlight. The interior will be redecorated. There was a proposal made to rebuild the front.—The city magistrates have notice to quit their present court-house in Brown-street, on the 29th September next, the whole of the building being required for the post-office. As a temporary court-house, a large building, belonging to Mr. Falkner, in Bridge-street, formerly a draper's shop, has been leased, and, under the direction of Mr. Lynde, the city surveyor, Messrs. Travis & Manganal, the architects, will draw plans to turn it into a court-house with all possible speed. The building comprises an area of 750 square yards, with three stories and a basement. The facade of the building will be plain Italian in style, the shop-fronts being removed, and the upper part remaining as at present. It is expected that a court-house and a town or city hall will be built at a future time.

**Arundel.**—The school now being erected by the Duke of Norfolk at Arundel, from the design of the architects of his grace, Messrs. Hadfield & Goldie, is rapidly progressing, and will be roofed shortly. It is of brick, with facings of Yorkshire stone, and forms part of a pile of building intended hereafter to supply fully the religious requirements of the Roman Catholics of the town and

neighbourhood. Mr. Bishby, of Littlehampton, is the contractor.—The extensive and important works at the castle are beginning to develop their grand proportions. We hope to give a more detailed account hereafter of the chapel, gateway, and staircase, which form the principal features of Messrs. Hasleld & Galdie's design. Mr. A. Pearson is the clerk of the works.

**Kilno.**—The new building for the Bank of Scotland is now all but completed, and the new bank office has been opened for business. The building stands on the site occupied by the old bank, and is in the Italian style of architecture. The front to the Wood Market is occupied by the bank itself, and the agent's house enters from Abbey-row. There is little ornamentation on the exterior of the building. It is plain, and substantial; but forms a prominent feature in the street in which it is situated. The bank is entered through a large porch, and the main building is thrown back a few feet from the line of the street. A railing traverses the entire length of the building, and at the entrance to the porch are placed two large lamps. The architect was Mr. John Burnet, of Glasgow; and Mr. Robertson the builder.

**Dundee.**—There is a local rumour that 15,000*l.* have been put down by one of the merchants, for the purchase of a people's park in Dundee.

**Coleraine.**—The newly-erected building for the Coleraine Academical Institution has just been inaugurated, as appears from a report of the proceedings given, together with an engraving of the building, in the *Coleraine Chronicle*. The Institution is intended to accommodate about 40 boarders, and as many as 150 day pupils. The principal of the Institution has apartments in the southern wing of the building, which also contains the kitchen, pantries, &c., required for the boarders. The middle and northern portions are devoted to the educational uses of the Institution. This is surrounded with five acres of land—the gift of the Worshipful Company of Clothworkers—which it is intended to lay out in ornamental patches of shrubs, &c. The building is a plain structure, designed by Mr. Farrell, of Dublin. The gross contract was divided into two portions 1,708*l.* 1*s.* 10*d.* and 943*l.* 18*s.* 8*d.*; the first sum for the covering in of the building, the second for its complete finishing.

#### STAINED GLASS.

**Gloucester Cathedral.**—Messrs. Clayton & Bell have now completed the erection of the Gniez window in this cathedral, according to the local *Chronicle*. In the centre light is depicted the coronation of Henry III. in Gloucester cathedral, the western department representing the Bishop of Bath and Wells, surrounded by the barons, officiating at the coronation. Exception has been taken to the drawing of the features of the youthful king, as being deficient in expression. In the eastern division of the window the principal figure is that of Hubert de Burgh, from whom the Gniez family derive the name of Elmore.

**St. Mary's, Walspool.**—It is in contemplation to place a stained-glass window in the chancel of St. Mary's Church, a design for which has been submitted for approval by Mr. Wailes, of Newcastle. The estimated cost is 200*l.*, towards which a considerable amount has been already subscribed. The restoration of the chancel of this church has lately been effected.

#### CHURCH BUILDING NEWS.

**Brigg.**—St. Helen's, Kirmington, was re-opened on the 17th ultimo. The church, which is of the thirteenth century, has undergone a restoration. The chancel window (east) was hoeked up by the Commandments, the Commandments by an ugly organ, and the platform on which the instrument rested, and on which the singers were seated, reached seven or eight feet beyond the communion-rail. The north and south aisles have been entirely rebuilt at the sole cost of two parishioners, Messrs. Frankish and Hudson—the north aisle with four new windows by the former. One of these windows is an ornamental window, by Wilmhurst, of London, the gift of Mr. William C. Brackenbury, her Majesty's Consul at Vigo, in the province of Galicia. The designs are, the conversion of St. Paul, and Paul preaching at Athens—the heading being ornamented with the figure of the dove bearing the olive branch. This window is near the pulpit. The south aisle has three new windows, given by Messrs. Frankish and Hudson. A memorial window has been placed in the south aisle by the vicar. The subjects are the following:—1st light.

The Raising of the Widow's Son; 2nd. The Resurrection of Lazarus; 3rd. Raising Jairus's Daughter. The heading is a representation of the Ascension. Mrs. Hudson, the widow of the late Francis Hudson, of Kirmington Vale, has also put in a memorial window to her late husband. The following are the subjects:—1st light. The Disciples on the Road to Emmaus; 2nd. The Three Marys at the Tomb; 3rd. The Incredulity of St. Thomas. The heading is descriptive of the Resurrection. Both are the work of Messrs. Lavers and Barraud, of Bloomsbury. There is also a figure of St. Helen (to whom the church is dedicated) in the west (lanet) window of the tower, by Mr. Wilmhurst, of London. This was presented by the vicar, as was also the font, the work of Mr. Keyworth, of Hull. It was designed by the architect, Mr. Teulon, under whose superintendence the whole of the restoration has been carried out. Mr. Stiles, Navenby, was the contractor and builder.

**Braintree.**—The sum of 1,663*l.* has already been expended in the restoration and enlargement of the church, and about 270*l.* only remain in hand towards the sum of 2,000*l.* which will be required to complete the works.

**Bolnisi.**—Recently the church of this place, according to the *Bedford Times*, has undergone an almost complete restoration. The chancel has been fresh roofed, the inner side being stencilled. A memorial window, the gift of the rector, occupies the eastern end. The window is of stained glass, and contains twenty-six figures. There are several other windows of stained glass in this church. On the walls are painted several scriptural texts. A fresco-painting of St. Christopher was discovered on the northern wall some time ago. Several of the lines are visible.

**Chesham (Herts).**—The foundation stone of St. James's Church has just been laid here. The style of architecture is the Early Pointed. The church will consist of nave, an apsidal chancel, transepts, and south chapel, with a tower. The contract for erecting the edifice is 2,271*l.*, and the subscriptions already received exceed that sum. But it is proposed also to erect a parsonage house. The church will contain 256 free sittings, 85 appropriated, and 50 for children; in all 421 sittings.

**Newbury.**—The new church and schools here have been opened. The church is built in the Perpendicular style, and is intended to accommodate rather more than 500 persons. There are four windows on the south side, and six in the north aisle. Four arches extend the length of the nave, the roof of the nave and chancel have small arches of wood. An organ chamber on the south side of the chancel is lighted by a wheel window, filled in with quatrefoil tracery. On either side of the chancel are oak seats for chorists. The nave and aisles are stenciled with lead; the pulpit oak, with open traced panels, and on a Portland stone base. At the east end of the church is a Perpendicular stained-glass window, representing the Saviour and the Evangelists; the seven candlesticks underneath; and in the centre above a representation of the Lamb. At the west end is a stained-glass window, representing the Twelve Apostles and the Descending Dove. The font is of Caen stone, with Portland stone base, and oak cover, surmounted by a cross. The flooring is composed of Minton's tiles, except that portion covered by the seats, which is of deal. The church will be heated with hot-water pipes, laid down by Messrs. Plenty & Pain, of Newbury. At the west end of the south side of the building there is a porch, having a moulded stone arch, supported by pillars. The church is covered with green and red slates. The building is of brick, with Bath stone dressings. At the west end is a turret, 75 feet high, which contains two bells. Mr. Butterfield, of London, was the architect, and his design was carried out by Messrs. Myers, of London. The architect of the schools is Mr. G. Woodley, of Grafton, near Guildford. Mr. T. Bicknall, of Steventon, Berks, is the builder; and Mr. J. Walker was the clerk of the works.

**Ransay.**—The new church at Olliam, a hamlet of Ransay parish, has been consecrated by the Bishop of Chester. The old church is situated at a very inconvenient distance from that part of the parish in which the people reside; and, after a period of some 500 years, age is beginning to tell upon the structure. The tower will, however, be maintained, as a chapel to the cemetery around it, whilst the walls of the body of the church will be allowed to fall into decay. The Shiffner family have contributed 1,700*l.* towards the erection of the new edifice, as well as the site on which it is built. The architect is Mr. Christian. The church, which is 21 feet square inside, consists of a nave and south aisle, with a spire tower above

the nave and chancel. The nave and aisle of the church together form a square of 40 feet besides a transept of 18 feet; the chancel 20 feet. The style of the building is Geometric Decorated, of simple character. The walls are built of flint work, with dressings of Sussex stone from Seaynes hill quarry. It has a multangular apse, with five windows, single tracery lights, the arches of the windows being supported by pillars of polished serpentine. The windows which are filled with stained glass by Lavers and Barraud, were given by five of the late baronet's friends. The large west window of the church is to be shortly filled with painted glass by the Shiffner family, as a memorial to the late Sir Henry. The roofs of the nave and aisle are plastered white between ribs of timber. The ceiling of the apse is decorated in colour. The tower is surmounted by a single-covered spire of the short proportion common in Sussex. Within the church the tower is groined with ribs of stone and chalk fluting. The nave is divided from the aisle by an arcade of three arches supported on stone pillars. The side windows of the nave and aisle are glazed with rough glass, decorated in patterns by Mr. Wilmhurst, of London. The fittings are in deal, stained. The walls of the church are decorated with texts, written by Mr. West, of London. The flooring is of Staffordshire tiles; those of the chancel from Milton's factory, at Stoke-on-Trent, the space within the communion railing being paved with encaustic tiles. The pulpit is of oak, carved and paneled, supported on a stone base. The work was executed by Mr. Ayres, the contractor for the Sussex County Lunatic Asylum.

**Saunage (Dorset).**—The church of St. Mary, Swanage, has been restored, nearly the whole except the tower having been rebuilt. According to our authority, the *Dorset Chronicle*, the building is cruciform, with the addition of a north aisle separated from the nave by two arches, and the prevailing characteristic of the chancel is early English, and of the nave and transepts Perpendicular, though there are features of the Decorated style here and there throughout the building, more particularly in the east end, which has a five-light window of this description. The roof is open-timbered. Accommodation is given to a congregation of about 700, by a series of open seats of stained deal, while the chancel stalls have bench ends, with carved finials. There are likewise galleries for children in the transepts. The communion steps are of Purbeck marble, and the space within is laid with Minton's encaustic tiles, while the chancel is paved with productions from the Poole Architectural Pottery Company. In the south wall of the chancel there is a two-light hooded window, supported in the centre by a Purbeck marble column, and filled in with stained glass. On the opposite side there is an arched organ recess, which is the earliest part of the church now extant, and which is lit by two squints filled by Mr. Wyatt, the architect. The whole of the works have been carried out by Mr. Monday, builder, Dorchester, according to the plans of Mr. T. W. Wyatt, the diocesan architect. The total sum now received for the restorations is about 2,700*l.*, but about 300*l.* more are still required.

#### GAS.

THE Metropolitan Gas Bill has passed through the committee, who, amongst other points adverse to the promoters and favourable to the gas companies, have decided that the price per 1,000 cubic feet of common gas should be any sum the company think fit not exceeding 5*s.* 6*d.*, and that the price of canal gas should be any sum not exceeding 7*s.* 6*d.*, per 1,000 feet. The chairman finally said, that the committee had agreed to make a special report to the House, stating that it is their opinion, in case no legislation shall take place during the present session on the subject of the metropolitan gas supply, it is highly desirable that the whole subject should be brought under the consideration of the Government, and that the Government ought to be prepared to introduce a measure for the settlement of the question at the commencement of the ensuing session of Parliament, with a view to regulate the conditions under which the gas companies shall supply gas in their several districts, with a due regard to the interests of the public.

Preparations are being made for lighting the town of Cuckfield with gas. The building was commenced last month. It is expected to be finished by the 1st of September, and the pipes and apparatus are already manufactured in Brighton.

The question of reducing the price of the Devonport gas is being mooted. The Devonport

*Independent*, in an able article, urges the reduction as a measure likely to be beneficial to the company no less than to the public. The present price is 4s. 6d. while in the adjoining town of Plymouth it is 3s. 4d. The dividend on the 4s. 6d. is 8 per cent, while that on the 3s. 4d. is 10 per cent; and although the Devonport Company has had the advantage of witnessing the steady and continued benefit derived by the Plymouth Company, as well as the Plymouth consumers from the adoption of a liberal and enlightened policy, some of the Devonport shareholders seem to be far too stupid and far too greedy to follow up so excellent and profitable an example.

The Glasgow Gas-light Company have declared their usual dividends of 10 per cent, deducting Income-tax, to be paid on 1st August and 2nd February next. The chairman at the annual meeting explained that the balance of profit for last year amounted to 16,997.0s. 10d., and that, after paying the dividend, there remained a sum of 2,567. 10s. 10d. to be carried to the credit of the reserve fund account, which would then amount to 26,491. 16s. 11d., and which, in terms of the Act, might be raised to 29,101. 13s. 5d., out of which to secure the shareholders in the payment of a dividend should the revenue of the company, from any unforeseen cause, fall off, which placed the company in a very advantageous position. He also spoke of a further reduction in price to be hereafter considered with reference to the price of coal, "assured that, by following such a course, they would not only benefit the public, but insure the prosperity of the company by largely increasing the consumption of gas."

Gas has just been introduced into Launceston, Tasmania. The cost is 20s. for cash, and 25s. for credit, per 1,000 cubic feet.

THE PRESENT STATE OF CHURCH BUILDING.

The elegantly penned letter of "M. A., Cambridge" (p. 463), deserves attention, from its being a sensible exposition of certain asserted shortcomings in Church Building, and from its enunciation of a somewhat correct though incomplete theory; but, from his having left the practical conclusion almost untouched, it will be asked, What does it mean? What sort of church does the writer require?

In the first place, admitting his principles to be such as should prevail in erecting buildings for the Church of England, it must at the same time be seen that these principles are not completely given, and in the next that, without a full statement of them, no church can be satisfactorily designed; for, if a theory be not fully understood, the correct practical result cannot be attained. And here is the difficulty; for, while the acceptance of the theory is easy when it does not go beyond general ideas, yet, when others are introduced, there may arise a conflict of opinion that will render it impossible to establish in men's minds the desired rule.

The scope of "M. A.'s" remarks may be considered to set up a complaint that churches are not built as they should be, and an hypothesis that, if proper thoughts were introduced, there might be combined in them the fullest expression of ritual observance, with the highest development of æsthetic qualities.

I assent to his hypothesis, but am not much inclined to join in his complaint, for I am at a loss to perceive that the numerous admirable buildings that have been erected are so deficient as he intimates: granted that his requirements are for desirable points, I maintain that many of the best modern churches fulfil his wishes, and that others could be readily made to do so. The auditorium is effected, whatever be its shape, if every worshipper can hear, as is the case in numerous instances, whether there be columns or not; and, as to the less essential requisite of seeing, columns, when used, do not obstruct the view to anything like the extent that is commonly imagined. The emphatic structural declaration of preaching is secured when the pulpit is solidly built of stone, and adjoining or issuing out of a wall, as it often is. The desk, though frequently a removable fitting, is often properly placed and well marked. The table of the Holy Communion has received good attention of late years; and, by its being placed on a stone dais, its site becomes a portion of the structure. The font is sometimes emphatically and structurally fixed; and the organ has been gradually getting into suitable position.

Now, with such results, there is some danger of falling into a wrong mode of design, if we become discontented with what we have done. Let us

advance by all means, but let us take care that in altering our mode we do not go back. I am not objecting to what "M. A." has put forth; but, on the contrary, I approve and would enforce his valuable remarks. But I cannot fathom his views; and this engenders a fear that he may unwittingly entertain ideas inimical to true excellence in church architecture, which is a peculiar art requiring a structural expression of religious sentiment, and for this there are numerous indispensable particulars in which some minds, and possibly that of "M. A.," may not agree: for instance, one is, that the worshippers should all kneel in one direction as much as possible; yet some persons would place them in a circle, or, so long as they could see and hear. Another maxim should be, that no worshippers should be placed over the heads of others, as in galleries—this being an incongruous and irrelevant mode of placing a congregation; though, in a west end tower, or in some receding western portion, an exception to the rule might apply, but never at the sides. Strike out some such subordinate essentials as the two I have named, and the whole mode of design becomes a random thing,—an incoherent system,—with free license to make a church like a theatre, a circus, or an exchange, inasmuch as in none of these would the essentials named by "M. A." be necessarily cast aside. "M. A." may be aware of this danger; and, if he be so, then there is less need of observations on his ecclesiastical hammer.

EDWIN NASIR.

ON CERTAIN INTERMITTENT FOUNTAINS.

I PASS through Endell-street, Long-acre, occasionally, and have observed that the drinking-fountain there, though sometimes flowing, is also frequently dry. I have not had time to make the observations necessary for ascertaining the exact law by which it is governed, but I conjecture that it has stated seasons and hours.

This fountain, like many others, bears inscriptions to the effect that it is the gift of So-and-so, Esq., and is under the auspices of the Metropolitan Drinking-Fountains Association; and I should be glad if you would give me the opportunity of suggesting to these gentlemen that the first condition towards making a fountain attractive is, that it be perennial; and that if they wish to persuade the thirsty labourer to go past the public-house and wait till he gets to the fountain, they must make him feel perfectly assured that he will find a draught when he gets there: a single haulk will furnish him with an excuse to his own conscience for stopping at the Red Lion for the next twelve months.

The good people who have interested themselves in procuring the erection of these fountains have no doubt done a useful work: they do not, it is true, seem to belong to the class who "do good by stealth," nor to be likely to blush at any fame that may befall them; but I only touch on this for the purpose of urging on them that those who record themselves so confidently as great public benefactors ought to be actuated by a feeling akin to what is expressed in the French saying—"Noblesse oblige!" It does seem a little inconsistent that the leaders of a grand movement (everything is called a movement now), with office and secretaries, long subscription list, dinners, speeches, and what not, not to mention the special donor, should not be able to keep a poor little stream, no thicker than this pen, going all the twenty-four hours, and all the 365 days except when there is a frost; and, on the whole, one cannot help feeling that it would be better to have rather less self-glorification and rather more water. AQUARIUS.

THE NEW PARISH SCHOOL OF CLYST ST. GEORGE.

THE little village of Clyst St. George, near Exeter, on the 19th ult, was the scene of much rejoicing on the occasion of the opening of the school-rooms lately erected, with a teacher's residence, for the accommodation of the school endowed there many years ago by Dame Hannah Seaward. The bells pealed from the old tower at intervals, and flags waved both from the tower and the school buildings. The school-room was decorated with flowers by the children, about seventy of whom were assembled, and many villagers came to witness the ceremony. The mayor, the Rev. H. T. Ellacombe, delivered a short address, and the party afterwards partook of a goodly supply of old English fare, and spent the remainder of the day in the playground attached to the school, and on the rectory lawn, which was thrown open to all who chose to participate in the merry-making.

The school buildings are of substantial limestone masonry, laid in irregular courses. The windows are square-headed, with millions of Combe Down Stone, as are the quoins and dressings. The roofs are high pitched, with gables and dormers; the whole being covered with Bridgewater tiles, set in patterns, surmounted with a cresting. Octagonal stone chimneys, plainly ornamented, with a bell-turret of stone on one of the gables, give character to the whole.

Within, the walls are wholly of bricks, with black headers intermixed with white; and appropriate texts of Scripture, formed with letters from Minton's patent tile works. The roof, of oak and deal, is open to the ridge, affording ample ventilation; and the floors are laid with wood. A classroom adjoins.

On the outside a cloister of open-timber work (set on a dwarf wall), paved with common Staffordshire tiles, affords a useful covered space, where the children can play in wet weather.

The master's residence, which is unsexed, though of the smallest authorized dimensions, is conveniently arranged, having a porch and entrance, a small parlour, kitchen, and washhouse, with other offices, and three bed-rooms. The staircase is of stone, and the walls within are of brick, white-washed; indeed, there is neither paint nor plastering, except in the parlour, throughout the premises.

We understand that the cost has been defrayed by divers benefactions, added to from time to time and nursed in the Savings Bank. The site was given, and the whole work has been done under the superintendence of the Rev. H. T. Ellacombe, the rector, who is spoken of as architect, clerk of works, &c.

FLOATING BREAKWATERS.

In an article in your paper of July 21, upon floating breakwaters, it is stated that a plan is under consideration of the Ports Committee, by Captain Ardlerley Sleight; and, judging from the details given in your article, and without wishing to cast any disparagement upon Captain Sleight's plan, it must be evident to any one experienced in nautical affairs that such floating structures as are here proposed are erroneous in construction, and equally so to the purposes for which they are intended. Firstly, because of their great buoyancy from being water-tight; secondly, their utter destruction, if perforated by ball or shell. The former defect would be painfully manifest in a storm, where these structures were moored in line as a breakwater. The rise and fall by the action of the wave would tear asunder the strongest couplings, and the enormous strain upon the moorings would very soon displace them. The broad inclined plane to seaward would offer facilities for easy destruction; for, if a well-directed shell were planted right upon the plane, nothing would save it from going down.

These wedge-shaped timber structures might be found to answer the purpose of breakwaters at a cheap cost, but certainly not if made water-tight. Some years ago a similar invention to Captain Sleight's was moored off Brighton to protect the coast, but there were open structures of timber in shape resembling a prism, floating 10 or 12 feet below the water, and rising 7 or 8 feet above the line of flotation. This plan was found to answer, and the principle upon which it succeeded was the rendering the element itself the resisting barrier to the force of the wave. The inventor of this recommended breakwater was Admiral Taylor.

Shoreham. K. C. B.

BURSLER WEDGWOOD MEMORIAL COMPETITION.

The following is the report of the Referees on the designs submitted:—

"We have carefully examined the whole of the twenty-nine plans submitted in competition for the Wedgwood Institute, and with much regret have to find in them so great a lack of the requirements of a building of this import and character. The following requirements are essential.—Elementary class room, library, modelling room, master's room, store room, keeper's official room, and living room, must be on the ground floor. Museum, ladies' class room, advanced class room (this room is not inserted in any of the plans; it should be of moderate size, say 30 feet by 20), should be on the upper floor, and lighted from the roof. To avoid the imposition of local taxes, the keeper's house should have its entrance in the open air, and quite independent of any of the entrances of the institution. Provision should be made for lifting heavy casts, &c., with facility and safety. The style of architecture should be strictly memorial and suggestive; that is, should imply, as it were, an appreciation of Wedgwood's character and labours. This is not a question of cost, but one of taste—its absence contradicting the primary motive and feeling of those who are promoting the erection of the institution. Scarcely any of these elements of the question are found in the plans submitted; some of them are set verily at defiance. Their presence is compatible with the proposed expenditure; and it is for the committee to consider the propriety of another competition. Out of the twenty-

nine designs submitted, we have selected four, which, in point of arrangement and artistic treatment, elevate themselves far beyond any of the remainder, and upon which we offer the following comments:—Design No. 2, with the motto, "Think well out," presents a better recognition of the requirements of the building; its style is more consistent with its intended use, and some of its accessories were revised—would be more expressive of a memorial building to Josiah Wedgwood than any of the other designs, though still wanting in monumental character. To carry the building into execution in an honest and trustworthy manner would, however, considerably exceed the sum at the committee's disposal, and the plan fails to comply with the above conditions. Design No. 18, "Jussumus Veritas," is a high artistic merit, and offers many points of commendation in the arrangement of the plan; but it is quite inappropriate to the locality, and still further beyond the amount stipulated, and likewise, but to a greater extent, fails in its requirements. Design No. 19, "May the Arts flourish," presents a better lighting arrangement than many of the others, but is in other respects equally deficient and dissimilar in style. Design No. 27, "Pro Bono Publico," has by far the best arrangement of plan, but is wanting in truthfulness and monumental character. The remainder of the designs do not call for any comment. (Signed) George T. Robinson, F.G.S., architect; J. A. Hammerley, F.S.A., artist.

The premium of 20l. was awarded to the designs bearing the motto, "Think well out." On the letter accompanying them being opened, they were found to be from Messrs. Ford and Meyer, architects, Burslem. The second premium of 10l. has been awarded to Mr. James Murray, of Coventry, being No. 27 named in the above report, and bearing the motto, "Pro Bono Publico."

A second competition, limited to a few of the competitors, is now talked of.

#### EMPLOYERS AND WORKMEN.

Str.—At the request of my fellow-clerks and others, in the employ of Mr. George Jennings, of Bloomsbury, I write to inform you that on Saturday last we all met at Godstone, to celebrate our annual dinner. As the circumstances attending this particular meeting are calculated to produce a better understanding between the employer and employed, as well as to materially promote the interests of the latter, we consider it a duty to inform you of the circumstances to which we refer, leaving you to estimate their value. After various toasts, our chief clerk, who filled the chair, proposed the health of our employer: Mr. Jennings, in responding, said it should not be forgotten that masters had certain responsibilities as well as the men, and that, commercially speaking, a master was as much entitled to full service from the men in his employ as the men were to full weight in the purchase of domestic necessaries. He said he was glad to find that, after the payment of all expenses, each man would receive 5s. 3d. As there could be no ending without a beginning, he proposed that every man should put aside half a crown, and that if these willing to do so would give in their names, addresses, and the savings' bank most convenient to them, he would make the half-crown five shillings, invest it in the bank they named, obtain a book for them, in which all the money they could save would be entered, and at the end of every year he would add a shilling to each pound thus accumulated, when the men would be free to purchase those comforts so necessary to the season, and commence the year afresh.

As the hands employed in our London and Poole works amount to upwards of 250, I think I need scarcely apologize to you for relating this act of liberality.

Geo. G. MACVILLIAM.

#### ACTION FOR DILAPIDATIONS.

*Gibson v. Charter*.—This was an action tried at Newcastle, before Baron Martin, on a covenant to uphold and keep in repair certain buildings comprised in two leases, of which the plaintiff had purchased the reversion, to recover for their dilapidation on the termination of the leases.

Mr. Manisty, Q.C., and Mr. T. Jones appeared for the plaintiff; and Mr. Temple, Q.C., Mr. Monk, Q.C., and Mr. Udall for the defendant.

It appeared that the plaintiff, Mr. George Tallantire Gibson, an attorney of Newcastle, had purchased the reversion of a large quantity of leasehold property in Newcastle, the purchase-money being 10,000l., from Sir Matthew White Ridley, the leases on which were about to expire. The property in question formed a very small portion of that purchase, and consisted of certain sheds used for timber, a pawnbroker's shop, and the ruins of some wooden buildings erected in 1798, and used then and which, from age and decay, had tumbled down some twelve or fourteen years ago. The leases affecting this property were dated respectively in 1836 and in 1844, and the term of each had just expired. The property had been used and occupied by Mr. Cowan, who was dead, and the defendant was his executor. On the part of the plaintiff a surveyor was put into the box, who proved that the pawnshop and sheds would require various sums, amounting to nearly 200l., to put them in tenable repair, and that the granaries which had tumbled down would require from 200l. to 300l. to rebuild them. Altogether the plaintiff made a claim of 487l. for dilapidations.

The case for the defendant was that the granaries were merely temporary structures, built of wood, which, from wear and tear and natural decay, had tumbled down years ago, and which Sir Matthew Ridley had never called upon or expected the tenant to rebuild; and that, as to the other buildings, just before the lease terminated, one of the most respectable architects and surveyors in Newcastle had been called in to examine them, and put them in tenable repair, consideration being had for reasonable wear and tear; and that without stint on the part of the defendant this had been done before the premises had been delivered up, and evidence was given that they were in as good condition now as twenty-five years ago. The learned counsel for the defendant stated that the plaintiff had purchased this old tumble-down property as a speculation, with the object of compelling the holders of the leases to restore it, or pay an amount of compensation which would go far to reimburse him the whole purchase-money. The learned counsel for the plaintiff, in

reply, contended that whatever rights Sir Matthew White Ridley had the plaintiff now had, and that it was not to be contended that Sir Matthew White Ridley could not recover on the covenants in his lease entered into by the defendant's testator to maintain and uphold those premises, and that a Northumbrian jury would not give a verdict in regard to his client different from what they would give in regard to Sir Matthew Ridley, simply because he was Mr. George Tallantire Gibson.

His Lordship, in summing up, told the jury that they must take the evidence on both sides, and, as well as they could, determine in what condition the premises were at the periods of the respective leases, and they must take it into consideration whether or not, regard being had to their condition at the time of these leases, the defendant had surrendered them in a reasonable state of repair. The defendant was not bound to leave new buildings in the place of old, but only to keep in repair the existing buildings, regard being had to reasonable wear and tear. If premises got so old and decayed that they could not be kept up, the defendant was not bound to rebuild them.

The jury retired, and on their return found a verdict for the defendant.

#### Books Received.

*A Rudimentary Treatise on Clocks and Watches, and on Bells; with a Full Account of the Westminster Clock and Bells.* By E. B. DENTON, M.A., Q.C. Fourth edition, rewritten and enlarged. London: Weale, 59, High Holborn. 1860.

It does not necessarily follow, certainly, that an author who can write fairly and fully on a scientific subject, and even meet with no unfavourable criticism on it, must therefore be practically and intimately versant with that subject, as the writer of the present notice is quite ready to confess that he very well knows, from personal experience in a small way; having himself, in his younger days, prepared one of the very few treatises on Time and Timekeepers to be found in the English language; although, when he began to study the subject with the special view of preparing the little treatise referred to (for "Chambers's Information for the People," he may add), he had not the least practical acquaintance with it, and only learnt his task while teaching it to others, as not a few authors and compilers are very well known to do: nevertheless, so far as he is aware, his little compilation met with no unfavourable criticism.

Mr. Denison's work, however, is one of a totally different stamp, and undoubtedly displays great practical knowledge of timekeeping structures, whether in the shape of clocks or watches. So far as we know, indeed, it is the only reliable and practical modern English work on the subject. The only other work which we recollect of (besides Reid's old works, which has been long out of date), is the treatise in the "Encyclopaedia Britannica," which, in fact, is Mr. Denison's own, and the basis of this fourth edition of essentially the same work.

Mr. Denison's connection with the Westminster bell business (another branch) has been an unfortunate one, somehow, for his scientific reputation thus far; and, however groundlessly or unjustly, even his sixteen years' connection with the Dent clock for Westminster Palace (which, by the way, "has already seen the deaths of the three clockmakers, the architect, and the commissioners of works, whose names are involved in it") has not proved much less unfortunate for Mr. Denison. Nor does this close the debit account of fatalities, though not precisely in connection with the clock affair. Mr. Denison, it appears, is (or was to have been) the executor of the late Mr. Dent (whose real name, he intimates, was Rippon, and not Dent at all); but, by an unfortunate mischance, if not by design, the will of Mr. Dent, or Rippon, was burnt, shortly before his death, and not by his own hand; and this circumstance, Mr. Denison remarks, seems "likely to form the subject of a very remarkable 'will case.'"

In respect to that other law action with which Mr. Denison was, no less unfortunately for himself, connected lately, namely, the case of Nears versus Denison, the defendant in that action is still far from considering himself to have been worsted, and seems "determined," in this as in all other instances, to "die game."

"When I first announced to the public," he says, "that holes had been discovered in the bell, filled up with artificial cement, and that the referers had no idea of the existence of such holes when they passed the bell, Mr. Nears replied in the *Times* with *his most unqualified condemnation*," and enforced it with the statement that he was going to refute the calumny, and vindicate the soundness of the bell, by an action. I have no hesitation in saying now, what I suspected before the bell was cut into,—that if the Board of Works had done their duty, and had a complete examination of the bell made at once (which, according to Mr. Cowper's own account, they have not done even yet), no such action would have been necessary, and the tables would have been turned upon Mr. Nears. As it was, he was persuaded by his advisers, after he knew I had got the analysis, to retire without a verdict, and without getting, but on the contrary, being distinctly referred, the retraction of that statement which both he and his

counsel declared to be 'the sting of the liebel,' viz. that the bell got passed by the holes being concealed. But his persistence up to that point did something more. His counsel had to expand his 'unqualified condemnation' of my published statement about the half county of Middlesex, of Mr. Nears's theory and practice of bell-founding and bell-trimming."

Mr. Denison gives a very full account of all his various differences with many of those connected officially and otherwise with the Westminster clock and bells, the last upon whom he pours the bitter contents of the vials of his wrath being Chief Cowper, the last, or rather the present, Chief Commissioner of Works, and "his master," the premier. Speaking of Mr. Cowper and the delay as to the dissection or final disposal of the doleful Big Ben the second, he says,—

"At last, however, he has let out the real reason of all this delay and pretence of investigation, which, indeed, it was not very difficult to divine before; remembering that a certain prime minister, with whom he is a good deal more than officially connected, last year pronounced the striking of the clock a nuisance; and that Fitzroy was desired to ask me if it could not be stopped every evening while the House was sitting. And so Mr. Cowper now says, 'I rather had that a great deal more than I should be informed of the hours at the cost of the serious inconvenience of that House.' I do not venture to express an opinion whether those who have paid 5,000l. for these bells may not reasonably expect to hear them. But I am convinced, from experience in other places, and, indeed, from some experience in the committee rooms of the very place in question, that, although the striking of a clock may be felt as an interruption for a few weeks while it is novelty, the loss of the striking is often thought a greater nuisance afterwards. It should be remembered that the House of Commons and the clock were only speaking together in this about a month last year. But I suppose we must wait till Mr. Cowper rises into a Secretary of State, or otherwise leaves Her Majesty's public works to be managed by somebody else. Then perhaps at last we may get a great deal more soundly, after the same number of trials as they had in Paris 180 years ago, and the Westminster clock may at last be allowed to be completed, if it has not been spilt in the mean time."

It is far from supposing, however, that this discovery, or any other, will make the least impression on the present Chief Commissioner of Works, any more than the recent success of his determination to have the fourth pair of hands fixed by the engineer who made the condemned minute-hands, instead of by the clockmakers. I shall not be at all surprised to find him telling the House of Commons again, that, notwithstanding the cracks nearly had to be brought, and the holes all over and the brittleness of the outside, and the miscarriage of the composition, "it does not appear to be necessary to abandon the use of the bell, or to pay the smallest attention to any advice or opinion he may have received from me about either the bell or the clock."

*The Elements of Mechanism; designed for students of applied mechanics.* By T. M. GODFREY, M.A. London: Longman & Co. 1860.

THIS treatise has been written by the author—who is the Professor of Natural Philosophy in King's College, London—with the view of providing an elementary text-book upon the principles of mechanism for the students in the applied science department of King's College.

The work seems to be clearly and carefully written; but the method of classification is not very satisfactory; the author, however, remarks, apologetically on this point, that the book is simply designed to serve as an introduction to the elaborate and highly philosophical work of Professor Willis, and is not intended to stand alone, as in itself sufficient.

*The Oxenbridges of Brede Place, Sussex, and Boston, Massachusetts.* By WILLIAM DURRANT COOPER, F.S.A. J. Russell Smith, London.

SUSSEX is fortunate in having a little knot of accomplished and energetic antiquaries, who spare no pains to investigate customs, to trace families, and to illustrate the monumental and other antiquities to be found there. Foremost amongst them is Mr. W. Durrant Cooper, a large contributor to the Sussex Archaeological Collections, in the new volume of which the *brochure* named above appears.

It includes an elevation and a picturesque view of Brede Place, a house built in the latter part of the reign of Henry VII., or the early part of that of Henry VIII. "The old part is of stone, with good foliated windows, and two fine chimneys." The essay itself displays Mr. Cooper's usual acuteness.

Miscellaneous.

**TESTIMONIAL TO SIR MORTON PETO, BART., M.P.**—A testimonial, in the shape of a china dessert-service, together with a platoon epergne candelabrum and other plate, has been presented to Sir Morton Peto, at Lowestoft, as an acknowledgment of his successful efforts in establishing a complete railway system in the county of Suffolk. The cost of the articles presented was about 2,000l.

**AN EARLY JEWISH TEMPLE IN CHINA.**—At the late meeting (Oxford) of the British Association, Dr. Macgowan read a paper, before the geographical section, "On an *Ante Christian Colony in China*." The most interesting fact brought forward in Dr. Macgowan's communication related to a magnificent Jewish temple, which was destroyed by fire, in the city of Chingtu, about a century before Christ.

**PLYMOUTH.**—West Hoe is about to be set in active operation; Mr. James Thomson, architect. Situated at the bottom of Plymouth Sound, of a semicircular form, with its convex towards the sea, it presents three fronts, east, south, and west, commanding delightful marine views. The railway station is within half a mile of the property, the approaches to which are already formed, and lighted with gas. Public baths and reading-rooms have recently been erected. The drive encircling the property is completed, and connects immediately with the public promenades, the railway station, and the town.

**SOUTH KENSINGTON MUSEUM.**—It is understood that Mr. Lowe's committee on the South Kensington Museum will propose an additional grant for public buildings there of 27,000l. a year, to be applied to the construction of a building of a more beautiful and permanent nature, and erected so as to be part of any future plan for a uniform collection. It is proposed to remove from the British Museum only the Mediaeval part of the collection, and such duplicates and superfluities as cannot find room in Bloomsbury.

**DOINGS AT ST. LUKE'S, LIVERPOOL.**—Sir: Will you call the attention of the architects and builders of this town (Liverpool) to the wholesale desecration that is about to be perpetrated by injuring the most beautiful of our churches (St. Luke's) in pulling down and breaking up the gates and rails of the said church, which cost thousands of pounds, thereby spoiling what has always been considered as a great ornament,—and all for the sake of fixing a big lamp, to improve an adjacent cab-stand? As you always uphold all that is fine and beautiful, pray give this a place, in the hope that the profession may consider of the matter, and so in time prevent spoliation, by raising their voices against it. I am sure that it will meet the views of every lover of architecture to find that the intended job is stopped.—A READER.

**THE FRESCOS IN THE HOUSES OF PARLIAMENT.**—It is now three years since we pointed attention to the dissolution of the frescoes in the so-called Poets' Hall; and since then we have from time to time noted their progressive decay. Some of the artists by whom these works were executed have been unwilling to admit that their works were destructible by damp; they cannot, however, now but confess that not only are some entirely destroyed, but that all are partially injured, and their total destruction is only a question of time. The progress of the decay is more rapid and patent after the dreary winter and the hibernic wet summer from which we have been suffering; and if there is any who yet doubt that damp is the cause of the ruin, they have but to examine for themselves and be convinced.—*Art Journal*.

**PROPOSED MEMORIAL TO THE LATE A. W. PUGIN.** We are glad to find that a fusion has taken place between the parties who had this object in view, and that one committee will now prosecute it. The following words of Pugin himself, at page 20 of his "Apology for the Revival of Christian Architecture in England," seem to confirm in a peculiar manner the original opinion of the committee that the form of memorial proposed is the most appropriate:—"God grant me the means and I would soon place architectural studies on such a footing that the glory of these latter days should be even greater than that of the former. I would also have travelling students, but I would circumscribe their limits;—Durham the destination of some; Lincolnshire's steeped fens for others; Northampton spires, and Yorkshire's venerable piles, Suffolk and Norfolk's coasts, Oxford, Devonshire, and Warwick,—each county should be indeed a school—for each is a school—where those who run may read, and where volumes of ancient art lie open for all inquirers."

**PROVINCIAL ARCHITECTURAL CONGRESS.**—An advertisement announces the postponement of the Rugby Architectural Congress, and the members of the Worcester Diocesan Architectural Society will join the meetings of the Midland Counties' Association on the 7th and 8th of August.

**A TESTIMONIAL.**—The committee of the new school buildings for the parish of St. John the Evangelist, Tottenham-court-road and John-street, met together last Monday evening to celebrate the completion of their work. Upon the removal of the cloth, the incumbent presented to a fellow-committee a silver inkstand, hearing the following inscription:—"Presented to James Schofield, esq., by the other members of the committee of the new school building of St. John the Evangelist, St. Pancras, in token of their grateful appreciation of his valuable services in superintending the erection of the building, and designing important improvements in the work. July 30th, 1860."

**ISLINGTON VESTRY-HALL.**—At a recent meeting of the vestry of this parish the cost of the new hall was reported as follows:—Cash paid for land, 1,550l.; law charges, 91l. 2s. 6d.; clerk of works, 223l.; erection of building as per contract, 4,987l.; extra works, 696l. 2s. 9d.; architect's commission on buildings, 301l.; extra drawings, 20l.; incidental, 5l.; sewer works, 5l.; furniture, 314l. 5s. 3d.; gas-fittings, 230l. 17s. 8d.; warming apparatus, 195l. 7s.; total, 9,201l. 3s. 9d. At the same meeting, on the motion of a gentleman who was not present, "To consider the propriety of taking the opinion of three scientific men as to the possibility of remedying the acoustic defects of the vestry-hall," a vestryman, amid some laughter, suggested that if a few maps or the portraits of vestrymen were placed upon the walls, the defects spoken of might be remedied. It is by no means certain that he is wrong.

**WORKMEN'S INSTITUTE AND BENEFIT CLUB.**—An entertainment has been given to the members of this Institution by Mr. H. E. Gurney, M.P., who is one of the vice-presidents. The members assembled at the Institute in Euston-road, and were conveyed in eight four-horse omnibuses to Hampton Court, where they spent the day. In the evening they returned to the Institute, where dinner had been prepared, to which about 200 members sat down, the chair being taken by Mr. Gurney, and afterwards by Mr. J. Tidd Pratt, who said he knew of no such association with rules so admirably constructed as those of the Workmen's Benefit Club, which entirely excluded the possibility of fraud or error. The sick fund was kept entirely apart from the fund for superannuation, and for payment of a sum to relatives on the death of a member. A member might, by periodical payments, according to his age at the time of joining, assure an annuity commencing at any period of life he might choose to appoint. If he should die before that period, every halfpenny of his payments would be returned to his friends, or, if he chose to withdraw, to himself. The money was invested in Government securities, the Society only acting as agents. The Association have now, besides the large reading and lecture room in the Euston-road, branch establishments at Lambeth and Kensington.

**THE PROPOSED WATERWORKS FOR SPALDING.** At a meeting of directors and shareholders of the Spalding Waterworks Company, plans, diagrams, &c., relating to the proposed works, were introduced to the meeting by Messrs. Esom & Co., of Southwark. Mr. Brydone, the engineer, was also in attendance. The capital of the company is 8,000l. in 5l. shares, of which 6,000l. have already been taken by shareholders. It is anticipated that Messrs. Esom & Co. will be the contractors, and Mr. Brydone the engineer, and the works will be commenced within a month and completed during the year 1861. The proposed waterworks will be situated in a field close to the railway, by the side of the Finchbeck-road, and nearly opposite to the entrance to the cemetery. A tower of brickwork will be here erected, upon the top of which, at an elevation of several feet above the highest house, there will be a cast-iron tank capable of containing 30,000 gallons of water. Upon the ground-floor of this building, the boilers, steam-engines, and pumps will be placed, and above these, and underneath the tank, living rooms will be provided for the engineer and his family. Two filters will be constructed, and capable of filtering the required quantity. The filters will be provided with layers of shingle, sand, and a thickness of Spencer's magnetic carbide of iron, which is said to possess the remarkable property of removing all traces of organic matter, and materially improving the water for domestic purposes.

**THE PERNAMBUCO RAILWAY.**—The matters in dispute between Mr. Furness, the contractor, and the Pernambuco Railway Company, involving, as stated in the recent proceedings in the Court of Exchequer, nearly half a million of money, have been referred to arbitration. The arbitrator, Mr. Joseph Phillips, barrister-at-law, will leave for Brazil by the *Oceida* on the 9th instant, accompanied by Mr. Baylis, C.E., and Mr. Basse (instructed by Messrs. Rixon, Son, & Anton), as the representatives of the contractor. Mr. Lempriere (instructed by Messrs. Swift, Wagstaff, & Blenkinsop), left for Brazil by the mail on the 9th ultimo, and will represent the Company.

**LIQUIFYING QUARTZ ROCK: ARTIFICIAL STONY SILICATES.**—An idea, started some years since, is said to have been worked out in America by a certain Dr. Benjamin Hardinge, who, the *New Orleans Picayune* says, has spent the last fifteen years in his laboratory in liquidating quartz rock, and combining it again in new and varied forms. "By chemical combinations," says the *Picayune*, "Dr. Hardinge makes an article of plastic marble purer than the purest Parian. It can be made of any colour by mixtures with various metallic oxides. Every article of marble work may thus be cast as perfectly as castings of metal now are, and copies of Corinthian pillars, statues, mantels, &c., can be furnished at an expense of probably 1 per cent. their present cost. By a proper combination with ordinary sand or marble, a stone is made harder than the hardest flint, and at a price far less than the cheapest brick. Your parlours may be frescoed in marble, and time will never injure the colours. This is, undoubtedly, the same process used in the catacombs of Egypt, the colours of which are as fresh as when they were first put on, 3,000 years ago. This liquid quartz is also made into paint, incombustible and insoluble. This seems almost like a story of the Arabian Nights; yet it cannot be otherwise than true. For dissolving gold-bearing quartz, this invention's value is without limit. Every atom of gold may be precipitated and saved, and then the liquid is of far more value than the whole thing has cost." It remains to be seen whether Dr. Hardinge has really advanced practically beyond the hopes of past years with this invention. Messrs. Ransome, of Ipswich, we should think, have some title to a share in the practical invention of artificial stony silicates, though they may neither be properly called "marble," nor be "purer than the purest Parian."

**LONDON, BRIGHTON, AND SOUTH COAST RAILWAY.**—The half-yearly report of the directors of this company states that the amount of capital raised to the 30th of June last was 9,596,396l. The amount of capital expended had been 279,924l., of which 150,000l. was for the purchase of the Mid-Sussex Railway, 28,920l. for the Shoreham, Henfield, and Horsham line, the southern portion of which was on the eve of completion, 5,000l. on account of the company's contributions to the West London Extension line, 12,362l. in respect of the construction of the Victoria station, and the remainder for other works and purposes. The works at the Victoria station and Pimlico Railway were now nearly completed, and the company's station there was expected to be ready for public traffic in a few days. The total traffic receipts for the half-year ending the 30th of June last amounted to 385,714l., against 357,713l. of the corresponding half of 1859, showing an increase of 27,997l. The total working expenses and renewals amounted to 184,057l., against 170,365l. at the corresponding period, showing an increase of 13,692l. The net amount at the credit of the revenue account was 116,907l., out of which the directors recommend the payment of a dividend of 2½ per cent. for the half-year, amounting to 115,464l. Differences had arisen between the Board and the auditors by reason of the directors having declined to continue the issue to them of permanent free passes over the company's lines of railway. The auditors (Messrs. Reeves and Pilcher), in their report, call the attention of the proprietors to the great increase in the capital account of the company during the past eighteen months. The purchase of the West-end and Crystal Palace line had increased it by 640,508l., the Victoria Railway by 450,000l., and the Mid-Sussex by 150,000l.; together, 1,240,508l. In the past half-year was also added 94,497l. for the Shoreham and Henfield and other additional works. In consequence of the dividend being at the rate of 6 per cent. last year, the sum of 4,283l. had been divided in per-centages and paid this half-year to the secretary, officers, and oldest clerks, but which sum was charged in last half-year's accounts.

**KEEPING TIME BY ELECTRICITY.**—*Apr*opos of the doings of electricity, at Clatham they have now decided upon firing a cannon at twelve o'clock every day, by a wire from Greenwich Observatory, so as to inform the skippers of the hour for regulating their chronometers.—*Leeds Mercury.*

**FALL OF A SUSPENSION BRIDGE.**—The *Courrier de Saumur* states that at the suspension bridge of St. Florent (Main-et-Loire), as a man was driving a dray, loaded with twenty-one casks of wine, he became alarmed by hearing a loud crack, and flogged his horses to make them go faster; but, when they reached the middle, the bridge gave way, and the horses with the load fell from a height of 8 or 9 metres into the river Thionet. The driver escaped.

**DISEASE IN THE FRENCH OAK.**—It is not our own English oak only that is suffering from disease. The oak trees in the French forests have been attacked this year by a strange disease. They are covered from the top branches to the roots with a species of caterpillar, which forms a coating some inches thick, and in some localities the municipal authorities have published a notice forbidding children to enter the woods, as these insects, at the approach of a human being, cover the face, neck, and body, and their bite, it is said, has in many instances produced fever.

**BUILDING ACCIDENT AT DUBLIN.**—In Lower Bagot street, Dublin, whilst four workmen were on a scaffold 38 feet from the ground, in front of a new house, plastering a heavy brick cornice, the entire cornice fell over and carried the men and scaffolding into the street. Three of them were killed, and two others received serious injuries. At the inquest the jury could not come to any satisfactory conclusion as to whether the cornice was properly erected, the evidence being contradictory.

**OPENING OF A NEW DRINKING-FOUNTAIN AT READING.**—A second drinking-fountain has been opened here. It is the gift of Mr. Thos. Rogers, clerk to the Board of Health, &c. The fountain stands in a recess formed by the junction of St. Lawrence's Church and the adjoining building in Friar-street. The work is of an Early Gothic character. It has been executed in Mansfield stone by Messrs. Wheeler. The principal basin, which is semi-octagonal in outline, projects from the face of the stone a considerable distance, and is supported by a marble column. On each side of the column there is an arched recess, with small basins for animals, supplied with water from the overflow of the large basin. In the recess above the upper basin there is a carving in imitation of the water lily. From the point of a central leaf there issues a small jet of water which descends to the middle of the basin; and above there is a double arched canopy, supported on marble columns with carved capitals. The extreme height is about 11 feet. Messrs. Boulton & Woodman superintended the erection.

**THE NEW RIDE IN KENSINGTON-GARDENS.**—The determination of the Hon. Mr. Cowper, the Chief Commissioner of Public Works, to persist in the maintenance of the new equestrian ride, in continuation of that of Rotten-row, through Kensington-gardens, has been met by a corresponding spirit of opposition and resistance on the part of the inhabitants of Kensington, Chelsea, Paddington, and Marylebone, and the immediate districts abutting upon the scene of the alleged encroachment. During the past week various meetings have been held in Paddington, while in Kensington Mr. Russell Gurney, the Recorder of London, and the higher class residents, have taken part, and even the clergy, headed by Archdeacon Sinclair, the incumbent of Kensington, have been making common cause with those who look upon the new horse ride as an invasion of the quiet of Kensington-gardens. There appears to be a general opinion that the right hon. gentleman who now fills the office of Chief Commissioner of Public Works has committed a mistake, neither the requirements of the public nor the wants of the aristocracy tending to justify the proceeding. The opposition entertain a belief that the Chief Commissioner has, in making this new ride, acted not only without the sanction of the Queen, but in opposition to her Majesty's wishes, and this has determined them to make an appeal to her Majesty direct. A joint committee therefore met by arrangement at the Marylebone Court-house on Friday morning, which was completely filled, and it was then unanimously resolved to memorialize her Majesty upon the subject. A form was adopted; and it was further resolved that copies of the petition should be laid at the Marylebone Court-house, and at the vestry-halls of Paddington, Kensington, and Chelsea, for the signature of the inhabitants.

**MANUFACTURE OF BRICKS.**—Mr. W. Blynkhorn, Sutton, St. Helen's, has patented the application of the waste sand, spent gypsum, or other available residues arising from the grinding and polishing of plate-glass to the manufacture of bricks for the purpose of increasing their durability and fire-resisting properties, whether employed separately or in combination with other carthy matter or material.

**THE NEW PIER AT SOUTHPORT.**—The new pier is about to be publicly opened. The company was formed under the Limited Liability Act, with a capital of 10,000*l.* The designs were by Mr. Brunles, engineer, London, and the builders have been Messrs. W. & J. Halloway, of the Knott Mill Ironworks, Manchester. The pier extends from the promenade at Neville-street into the sea, to a distance of 1,200 yards, or nearly three-quarters of a mile. The height of the flooring from the sands varies from 16 feet to 25 feet, and the extreme width of the pier is 15 feet. At the further end there is a large platform for promenade, 120 feet long and 20 feet wide, which runs parallel with the sea at low water, and consequently transversely to the pier itself. From this promenade two flights of stairs descend to the sands, whence visitors can reach the boats which lie in the channel a little beyond the extremity of the pier.

**THE SCOTTISH ROYAL ASSOCIATION FOR THE PROMOTION OF THE FINE ARTS.**—The annual general meeting of this association was held in Queen-street Hall, Edinburgh, on the 23rd ult. The works of art to be distributed by ballot among the subscribers were exhibited on the wall behind the platform, with the exception of the first prize, Mr. Noel Paton's series of paintings illustrative of "The Dowie Dens of Yarrow," which was hung conspicuously in front of the platform, immediately beneath the chairman. There was an unusually large attendance, both the area and the galleries of the hall being filled. The report, among other things, stated that the funds of the association had materially increased, as last year they amounted to 4,263 guineas; whilst this year they amount to 5,616 guineas, that there had been commissioned, at the cost of 600*l.* sterling, from Mr. J. Noel Paton, R.S.A., six oil paintings in illustration of the Border ballad, the "Dowie Dens of Yarrow," and "considering," continues the report, "that these beautiful pictures derive at least a portion of their value and interest from being a connected series of illustrations, the committee have determined that they shall form one prize, the most valuable, even at the price paid for them, 600*l.* (which is far below their market value), that has ever been distributed by any art association in this or any other country. They will be delivered to the prizelord after the engravers, in whose hands they now are, have completed their respective plates; and that they had purchased, at a cost of 1,628*l.* sterling, forty-seven works of art recently exhibited at the Royal Scottish Academy, consisting of forty-six paintings and one piece of sculpture. The list of artists from whom these works of art had been acquired included the names of Douglas, Archer, Drummond, Hill, Crawford, Macculloch, Steell, Giles, and Houston, academicians; of Wintour, Hough, Fraser, Christie, Waller Paton, associates; and of Johnson, Hutchison, Pettie, Boddum, Milne, Donald, Hargitt, Mitchell, Graham, Halswelle, Clark, Munro, Greig, Michie, Stewart, Vallance, Stoddart, Fairbairn, Taylor, Bell, Finlay, Mackinlay, Prondfoot, Mackie, and Ritchie, artists.

**TENDERS**

For a new vestry-hall and offices, parish of Mile-End. Mr. Knight, surveyor:—  
Stewart ..... £4,695 0 0  
J. & C. Todd ..... 3,995 0 0  
Wood ..... 3,650 0 0  
Brown ..... 3,595 0 0  
T. Rudkin, jun. .... 3,595 0 0  
W. Hill ..... 3,513 0 0  
Blackburne ..... 3,449 0 0  
Porter ..... 3,375 0 0

For six houses at Kensington. Mr. C. Sewell, architect:—  
S. S. Wilson ..... £3,300 0 0  
Bird ..... 4,973 0 0  
Adamson ..... 4,907 0 0  
Godbolt ..... 4,824 0 0  
Fish ..... 4,300 0 0  
J. & C. Todd ..... 4,075 0 0  
T. Rudkin, jun. .... 3,909 0 0  
Walbutton ..... 3,679 0 0

For New National Provident Institution. Mr. R. Kerr, architect:—  
Piper ..... £13,284 0 0  
Holland ..... 13,959 0 0  
Jay ..... 13,566 0 0  
Lucas ..... 13,390 0 0  
Ashby ..... 12,880 0 0  
Myers ..... 12,997 0 0

For schools to be erected in Houghton-street, Claremarket, for the St. Clement's Danes Holborn Estate Charities. Mr. R. Hesketh, architect:—  
Hawson ..... £11,500 0 0  
l'Anson ..... 10,994 0 0  
Lucas ..... 10,503 0 0  
Trotlope ..... 10,473 0 0  
Byler ..... 10,409 0 0  
Foster ..... 10,021 0 0  
Nixon ..... 9,997 0 0  
Ashby & Sons ..... 9,984 0 0  
Macey & Horner ..... 9,950 0 0  
Piper ..... 9,740 0 0

For a new infirmary at Kensington Workhouse. Mr. Blore, architect:—  
Cowland ..... £1,931 0 0  
Foster ..... 1,931 0 0  
J. & C. Todd ..... 1,899 0 0  
G. Todd, jun. .... 1,739 0 0  
Hurst ..... 1,720 0 0  
Stimpson ..... 1,719 0 0  
McLennan & Co. .... 1,672 0 0  
T. Rudkin, jun. .... 1,625 0 0  
Pickard & Co. .... 1,557 0 0

For building new stables, living-rooms, repairs, &c., at No. 293, Oxford street. Mr. Searle, architect:—  
Williams, Brothers ..... £2,149 0 0  
Robinson ..... 1,844 0 0  
Davies ..... 1,716 0 0  
George ..... 1,264 0 0

For works to be done in erecting the Jews' Hospital, at Lower Norwood. Messrs. Tillot & Chamberlain, architects:—  
Lucas, Brothers ..... £20,387 0 0  
Ashby & Son ..... 19,640 0 0  
Hill ..... 19,460 0 0  
Piper & Son ..... 19,457 0 0  
Lawrence & Sons ..... 18,530 0 0  
Macey ..... 19,160 0 0  
Myers ..... 15,600 0 0  
Cabitt & Co. .... 18,470 0 0  
Jay ..... 18,207 0 0  
Wilson (accepted) ..... 17,759 0 0

For alterations and additions, Shiffield Paragon, Haats. Mr. Withers, architect. Quantities not supplied:—  
Prentis ..... £450 0 0  
George & Gover ..... 430 0 0  
Booker & Knight (accepted) ..... 368 10 0

For the formation of a sub-way, &c., Covent garden approach:—  
Evans, Brothers ..... £4,950 0 0  
G. Todd, jun. .... 4,925 0 0  
T. Rudkin, jun. .... 4,800 0 0  
Dethick ..... 4,157 0 0  
Deane ..... 4,115 0 0  
Thirst ..... 4,391 0 0

For a pair of semi-detached villas, at Sydenham. Mr. G. Low, architect:—  
Porter ..... £2,990 0 0  
Wood & Son ..... 2,768 0 0  
George ..... 2,550 0 0  
McLennan & Co. .... 2,633 0 0  
Adams & Co. .... 2,591 0 0  
Riley ..... 2,579 0 0  
Allen & Co. .... 2,501 0 0  
Todd, jun. .... 2,500 0 0  
Rudkin, jun. .... 2,495 0 0  
Amos ..... 2,379 0 0  
Deane ..... 2,290 0 0  
Humphreys & Co. .... 2,293 0 0

For an addition and alterations to a house at Hampstead, for Charles Eley, Esq. Messrs. Judge and Winstanley, architects. Quantities supplied:—  
Shaw ..... £845  
Mason ..... 839  
Patterson & Enderby ..... 745

For Finchley Industrial Schools:—

	Main Building.	Infirmary.	Total.
	£.	£.	£.
Cushing .....	19,900	2,760	22,660
Welchman .....	16,250	4,160	20,410
Ploemann .....	17,753	2,510	20,263
Foster .....	17,422	2,579	20,002
Nixon .....	15,997	3,757	19,754
Knaapp .....	15,820	3,552	19,372
Glenn .....	15,988	3,728	19,716
Patric & Son .....	16,890	2,439	19,329
Lawrence & Co. ....	15,497	3,745	19,242
Keys & Head .....	15,450	3,750	19,200
Hind & Alldred .....	16,658	2,507	19,165
West .....	15,465	3,750	19,215
Jackson & Shaw .....	15,473	3,537	19,010
Stephenson .....	15,600	3,600	19,200
Hill & Son .....	15,409	3,575	18,984
Emar .....	15,370	3,820	19,190
Pickard & Co. ....	15,250	3,340	18,590
Hicks .....	16,640	2,900	19,540
Damon .....	16,172	2,125	18,297
Holland & Son .....	11,636	3,310	14,946
Wilson .....	16,210	1,967	18,207
Myers .....	16,024	2,668	18,112
Evans, Brothers .....	14,820	3,300	18,120
Mansfield & Son .....	14,825	3,130	17,955
Patman & Co. ....	14,775	3,114	17,889
Ayres & Co. ....	15,300	2,500	17,800
Emar .....	15,000	2,100	17,100
Hoeken .....	15,165	2,568	17,733
Axford & Co. ....	14,619	3,095	17,714
Todd .....	15,350	2,623	17,973
Damon .....	15,509	2,100	17,609
Porter .....	15,043	2,165	17,213
M'Leam & Bird .....	15,030	2,166	17,196
Perry .....	16,010	2,015	17,925
Claxson .....	14,929	1,867	16,859
Hill, Whitechapel .....	14,878	1,950	16,828
Cowland .....	14,818	1,940	16,607
Battenbury .....	14,090	1,848	16,473
Rowe .....	14,113	1,738	15,851
Farman .....	14,428	1,734	16,171
Rudkin .....	13,100	1,800	14,900

# The Builder.

VOL. XVIII.—No. 914.

Drawings by Sir Christopher Wren.



**SIR CHRISTOPHER WREN'S** drawings, preserved in the library of All Souls' College, Oxford, are known to all interested in the biography of the great English architect, though known only by hearsay: few of our readers are likely to have seen them; and better knowledge of them is much to be desired. Such particulars as we are able to give from a recent examination, therefore, may be welcome. Mr. Elmes, indeed, refers to the drawings in his well-known volume on the life of Wren, and gives some extracts from the manuscript matter in the same collection, including reports and estimates; but

he gives no list of them in that volume, or sufficient account of their general character. He refers,

however, to a list which he had contributed some years earlier, or in 1812, to the "General Chronicle"; and which was the result of an examination in the year 1807, occupying three or four days. That list, and the comments and particulars interspersed, should be looked at by any future biographer. Although the services of Mr. Elmes are not to be lightly spoken of, there is still need of the adequate memoir of one respecting whose life, and whose influence on our art, much has been left unsaid in print. The "General Chronicle" was a periodical of short existence, and is not likely to be found in many architects' libraries; and the volumes of that work in the library of the British Museum, are imperfect, or do not include the portion of the publication wherein the list appeared. Those, however, who may be able to procure access to the drawings at Oxford, will find the printed list cut from a number of the "General Chronicle," bound in the copy of Mr. Elmes's memoir which there is in the same library of All Souls'; and they will also find manuscript catalogues, old and new, more or less imperfect and at variance. The drawings themselves, in several cases, bear memoranda, chiefly in pencil, which appear to have been made, at the time of the inspection, by the Rev. Mr. Gutch, late librarian of the college, and editor of the "Oxford Annals" of Anthony à Wood, and should have been erased,—or rather not made at all; for, we can speak to the difficulty which results from them. The printed list, however, we take as representing the best information to be derived from the combined labours of Mr. Elmes and Mr. Gutch; and though we have notes of many features of interest in the drawings, which are not mentioned in it, we found its general accuracy, as well as grounds for opinions which Mr. Elmes expresses on the authorship of a considerable portion of the collection,—established wherever time permitted us comparison and minute inspection.

Subsequent to the preparation of the matter of this article, we called to mind that some notice of drawings by Wren had been given many years ago at the Institute of British Architects. All efforts, however, to refresh recollection from printed records of proceedings of the Institute were unavailing. We were about to conclude that no paper had been read—at least, on the drawings at Oxford, when we came to a rough list of some of the early papers, and, after a long search, discovered the title of a MS. which was subsequently found. The paper, which is by Mr. Gutch, the architect, son of the late librarian of All Souls', is dated

Feb. 16, 1836, and is entitled "Some Account of the original Drawings and Designs by Inigo Jones, Sir C. Wren, and James Gibbs, preserved at Oxford; with two Catalogues and Remarks thereon by James Elmes, Esq., architect." The list of Wren's drawings appears to be the same (copied in MS.) as that in the "General Chronicle." The paper includes some extracts from the "Athenæ Oxoniensis" relating to the biography of the three eminent architects, besides the particulars of the drawings by Jones and Gibbs. There ought to be a perfect catalogue in print of all papers that have been contributed to the Institute.

The drawings altogether, at All Souls', attributed to Wren, must amount to more than 300 in number, and are now contained in five folio volumes. They were formerly in portfolios, as presented by Sir William Blackstone, to the college; but they were mounted on drawing paper, and bound, in 1800, having been previously much injured through frequent inspection. There are, however, in two of the volumes, still some loose drawings. The contents of these two volumes, the fourth and fifth, are, we should say, hardly any of them Wren's; and many of this number are landscape sketches. Mr. Elmes makes mention of no more than the three first volumes. The new arrangement in 1800, is spoken of by Mr. Elmes as having been "according to the catalogue in the middle of the first volume." A large number even of the drawings in the three volumes, are regarded by the same authority as not genuine: the remainder of the collection, however, includes matter of great interest and unquestionable value and authenticity: though, under any aspect, the collection can include a very small proportion of the drawings that must have been made by Wren or his pupils. Some of the drawings we saw may be by Hawksmoor, who designed a considerable portion of the new buildings at All Souls'. We should not be surprised to find many drawings by Wren in other libraries at Oxford, or at Cambridge. As numbered, there are 270 drawings and MSS. together, in the three volumes, viz. 110 in the first volume, 109 in the second, and 51 in the third. Those of which the authorship may be considered pretty certain, are, we should say, about half the number in the first volume, nearly all those in the second, and perhaps half those in the third. The most interesting part of the collection, which is in the second volume, relates to St. Paul's Cathedral, to several of the City churches, to the mausoleum intended to have been erected at Windsor, to Charles I. and a proposed statue, and to a design for Winchester Castle, for Charles II.; whilst elsewhere may be found drawings and a report referring to the library of Trinity College, Cambridge, the plan for the rebuilding of London after the Great Fire, and designs for the Monument. In the second volume, also, under No. 9, is the original warrant under the sign manual of Charles II., dated 14th May, 1675, for rebuilding St. Paul's according to designs which follow in the volume. The warrant is given in the "Parentalia," as well as in the memoir by Mr. Elmes, where, also, there is a slight account of these particular designs, with some reference to the progressive changes and great discrepancies which they exhibit, and the growth of the present grand result. Though obviously wanting many stages of that growth, which further research probably would supply, they deserve some attention, and a more particular account than has been given of them.

Great and very proper care is taken of the whole collection by the present authorities of the college. Every facility consistent with preservation of the drawings, we are assured would be afforded on proper application, to those having time to spare. The present notice is given merely to direct the researches of others, and to add information to that which is accessible, or has appeared in print. We have not space for a list.

In the first volume we find plans of the campanile of Christ Church College, Oxford, and of several private residences and suites of rooms, including apartments at Windsor, Kensington, St. James's, Whitehall, and the House of Lords, and houses for the Duchess of Mon-

mouth, Lord Allston, Lord Sunderland, and Lord Newcastle. Some of these are distinctly attributed to Wren's own hand by Mr. Elmes, whilst questioning the authenticity of many of the other drawings.

Looking at the execution of the drawings in the collection generally, most of them are in ink outlined, and sometimes slightly washed; but some are in pencil. Several are coloured. Amongst those which are most likely to be Wren's, are some with writing upon them, which should be examined by those practised in the identification of hands. In No. 32, the council-chamber, audience-room, and drawing-room, at St. James's Palace, of which Mr. Elmes, has said "drawn by Sir Christopher," the walls are outlined and hatched in brown ink, and the writing is in a flourishing hand. Many of the drawings, though made obviously without some of the tools and appliances which are now used, are well executed; and many of them remind us of the French manner of minute and carefully stippled drawing, rather than of the present manner of English architects.

The plan (No. 7, in the volume) for rebuilding London after the fire of 1666, showing also the connection of the new streets and the old, we suppose can be regarded as the original of the engraving which was published by the House of Commons (28th July, 1800), in a report on Improvement of the Port of London, and of the subsequent publication by Mr. Elmes. It would, however, be desirable that the original plan, whether at Oxford or elsewhere, should be certified as authentic. There are several copies varying from one another, in the library of the British Museum. The discrepancy is generally as to the position for the City Halls; that is to say whether they should be on the river-side, or grouped about the Exchange. No. 8 in the same volume, is a rough plan of the streets after the fire; and No. 101 is a copy of the first-named plan, cut out, to show only the new buildings.

The drawings are of every kind,—general drawings, and details both of ornament and fittings. A design for a drawing-room at Whitehall (85), has appended to it a letter as follows, but not addressed:—

"May it please your lordship to consider of the memorandum mentioned in the enclosed paper (most of which being pressing), and be pleased to recommend the same to the rest of your lordships."

The drawings and MS. matter, relating to the library of Trinity College, Cambridge, form the most interesting feature in the first volume. There is also exhibited in several drawings, a design for a senate-house and library for the University. The drawings for the Trinity College library include a design—not executed,—which, on a circular plan, is not very different in character from the present reading-room of the British Museum. The numbers following (44 to 51), with the plan of the site (43), seem to correspond with what is now built. No. 44 is the explanation of the drawings; but it is not signed. The sheet No. 45, shows half the back-front next the river, and half the longitudinal section: No. 46 shows 1st, a plan of the substructure and cloister; 2nd, the plan of the library and arrangement of the shelves; and 3rd, the front next the court with the pavilions for the stairs; No. 47 is the transverse section; No. 48, a perspective view of a stool and table; and No. 49, a sketch of the classes of the library; whilst Nos. 50 and 51 show other parts at large. Most of these are well drawn. The explanation has been given by Mr. Elmes, but with the spelling modernized; and as the document is interesting, and we have copied some parts of it from the original, our readers may be glad to have these as they were written.

We have printed words erased in the MS. in smaller type, and the corrections over them.

"If a building of that consideration you go about deserves good care in the designe, and able workmen to performe it, and that he who takes the generall management upon him may have a prospect of the whole & make all parts, correspond well together, to this end I have comprissed the whole designe in 6 figures.

Fig. I.

Shewes half the groundplot of the Substruction, Cloister, & first flights of the Stairescases. I have chosen middle pillars & a double porticoe & lightes outward rather than a middle wall, as being the same expence, more gracefull, & according to the manner of the ancients who made double walkes (with three rows of pillars or two rows & a wall) about the forum.

Fig. II.

Shewes half the groundplot of the upper floor, the entrances from the stairescases & the disposition of the shelves both along the walls & breaking out from the walls, w<sup>ch</sup> must needs prove very convenient & gracefull, & the best way for the Students will be to have a little square table in each Celle with 2 chaires. The necessity of bringing windowes & doores to answer to the old building leaves two square places at the endes & 4 lesser Celles not to study in but to he shut up w<sup>th</sup> some neat Lattice doores for archives.

Fig. III.

Shewes the face of the building next the court with the pavillions for the stairescases & the they

sections of the old buildings where a joyne to the new. I chose a double order rather than a single, because a single order must either have been mutilated in its members or have been very expensive, & if performed would not have agreed with the lownesse of the porches w<sup>ch</sup> would have been too darke & the solids too grosse for the openings. I have given the appearance of arches as the order required fair and lofty: but I have

of the Library  
laid the floor, upon the impostes, w<sup>ch</sup> answer to the pillars in the cloister & the levels of the old floors, & have filled the Arches with relieves of stone, where if you please you may w<sup>ch</sup> I have seen the effect abroad in good building, & I assure you where porches are lowe with flat ceilings is w<sup>ould</sup> be infinitely more gracefull than lowe arches, and is much more eye open & pleasant, nor need the mason feare [sic] the performance because the Arch discharges the weight, & I shall direct him in a firme manner of executing the designe. By this contrivance the windowes of the Library

rise high & give room for the desks against the wall, and being high may be afforded to be large & being wide may have stone mullions & the glasse pointed w<sup>ch</sup> after all inventions is the only durable way in our climate for a publique building, where care must be had that suow drive not

in. I have given noe other ornament to the middle than statues, because in this case I find anything else impertinent, the entrances being endwaies & the roofe not suiting it. This may be don if you please, you may make the three

middle Arches with columns & the rest with pilasters of a third or 4<sup>th</sup> of their module diameter, w<sup>ch</sup> will save some charge in stone, but it is best as it is designed."

After describing Fig. IV., the document referring to Fig. V., and speaking of the library, says:—

"if the middle ally were paved of the Library were paved with small marbles you would much for consult, the quiet of the place, & for the cleanness of the books from dust, the Celles may be floored with wainscote,"

and further,—  
"the cornices divide the ceiling into three large rows of square pannells answering the pilasters w<sup>ch</sup> will proove the best fret because in a long room it gives the most agreeable perspective."

And as to Fig. VI., transverse section, it says as to the king-post roof,—

"I have given the ancient forme of roofe w<sup>ch</sup> the experience of all ages hath found the safest, noe other is to be trusted without doubling the thicknesses of the walles. The Statues will be a noble ornament, they are supposed of plaister, there are Flemish artists that doe them cheape.

I suppose you have good masons, how ever I would willingly take a farther paine to give all the mouldings in great, we are scrupulous in small matters & you must pardon us, the Architects are as great pedants as Critics or Herald's. And therefore if you approve the designes let the mason take his measures

copies be taken of them as much as is necessary for

the present getting out the worke & he pleased to transmit them to me again & I shall copy out partes of them at large more proper for the use of the workmen and give you a careful estimate of the charge, & returne you again the original designes, for in the hands of the Workemen they will soon be soe defaced that they will not be able from them to pursue the worke to a conclusion. I have made a cursory estimate & it is not that at w<sup>ch</sup> you will grumble as not exceeding the charge proposed."

The date of this library has been variously given, as before and after the date of the Fire of London: but a quotation from the chronology of Wren's life and works derived from the Lansdowne MSS. would seem to settle the point. It is:—

"1677—1680, 'Bibliotheca magnifica collegii inceptit, S.S. Trinitatis Cantobrigie, et exerit.'"

In the second volume, there are about forty of the drawings connected with the building of St. Paul's Cathedral, or the reparation of the old fabric. There is a ground-plan of the cathedral "before Inigo Jones's portico," as says the MS. catalogue, and carefully drawn on vellum. There are also, a "Sketch of a doorn for St. Paul's before 1666" in pencil, and resembling the dome of Sta. Maria at Florence; a plan of one of the old Gothic piers of St. Paul's, signed "C. Wren;" a "Plan of the intersection of the cross of the Church and the proposed doorn in the middle," also signed,—the angles being solid, with large niches, or four instead of eight arches; a "Plan of the proposed doorn," and "Orthography of the doorn and part of the old Church according to the same design." Like the section which follows it in the catalogue, the "Orthography" has a signature, "C. Wren, 1666," in small characters, amongst the timbers of the roof. The design has, carried up to a great height, a gilt pine-apple hollow termination, which is very ugly. In the section, the choir remains Gothic, whilst the nave is Corinthian.

The appointment of architect to the new building, was made at the date named in the following, as we find it in Mr. Elmes's recent work "Sir Christopher Wren and his Times" (Svo., London, 1852).

"1673 [Nov. 12] Architectus et commissioner ad edificandum novam basilicam Dvi Pauli Lond. per mandatum regis sub magno sigillo, ex mandato, R."

After which there is:—

"1675. Nova basilica Dvi Pauli: Lon. primum posuit Lapidem."

But at what date he entirely condemned the great tower of the old building is not clear, at least from the documents and authorities immediately before us. It appears, however, that he had, anterior to the occurrence of the Fire, proposed the removal, and that of the parts of the old building adjacent to the tower, saying that the whole were "such a heap of deformities, that no judicious architect will think it corrigible by any expence that can be laid out upon the dressing it, but that it will still remain unworthy the rest of the work, infirm & tottering." He proposed "by cutting off the inner corners of the cross, to render the middle part into a spacious rotunda, with a cupola or hemispherical roof; and upon this cupola a spiring top to rise proportionably, but not to that unnecessary height of the former spire."

This proposal does not seem to have been approved of by Wren's employers, at the period preceding the Fire. What has been quoted, however, will serve to show how he arrived at one of the designs which we are about to mention, and how different the present dome is from designs which preceded it.

No. 10 in the volume of drawings, is an "Enographical Plan of the church." It resembles the present plan; but the western portico is decastyle, has internal columns like those of the Pantheon, and projects three columns from the face of the wall; whilst the north and south entrances have recessed porticos. In the "Orthography of the west end, with a doorn & spire," there is only one order of columns—to a portico resembling that by

Inigo Jones; and there is a lofty spire on a dome: there are also sections of this; and another drawing shows the same idea—the spire much resembling that of St. Bride's Church. Amongst the other drawings, is a plan (16) slightly different from the approved plan; a sketch in pencil (18) for a screen and organ; some sketches of the interior; and what are called in the MS. catalogue, designs "for the centering of the present cupola," but are ordinary plans of the octagon and cupola. No. 21 is called "Sir Christopher Wren's favourite design for St. Paul's, 1673," on what authority it does not appear. It "resembles the model," as Mr. Elmes says, "but it is a perfect square, with quarter-circle angles." In four or five drawings following No. 21, the dome is represented as in the model. In another design which we should hardly think belongs to St. Paul's, there is a termination somewhat similar to that of the tower of St. George's, Bloomsbury. In some of the other drawings, the variations from the present design are chiefly in points of detail, as by the arrangement of the northern entrance with steps as those of the south, the omission of rusticated work, or (if the MS. catalogue have not misled us) the insertion of lucarne windows in the dome.

The drawings of other churches, or designs, relate to Bow Church, St. Bride's, St. Anthonin's; St. Clement's, Bastechap; Christchurch, Newgate-street; St. Clement's Dances, St. Bennet Finch; St. James's, Piccadilly; and to the fittings of chapels, probably those of All Souls, Oxford; and Emanuel College, Cambridge. Some of the drawings are signed or marked "Chr. Wren," or "C. Wren." The designs for the Monument, with flames represented on the shaft somewhat after the manner of the Roman rostral columns, will be known to most architects. There is also a section of a design for a theatre; but the authorship is doubtful.

Nos. 91 to 93 are drawings preceded by an estimate, which has been published, of the design for the mausoleum already spoken of, and Nos. 94, 95, are the two designs for a statue. The whole appear to have been originally stitched together as a book, and on the cover is written:—

"MAUSOLEUM DIVI CAROLI REGII MARYRIE. Excogitatum anno Salutis 1673, de Mandato Serenissimi Regis Caroli Secundi, Consentaneo cum Votivis Inferioris Domus Parliamentarii suffragis; at (eheu conditionem temporum!) nondum extractum."

The estimate is precise and minute; but it is now well known. Mr. Elmes, in the "General Chronicle," says of the original:—

"It is not inserted with the fair copies of the rest, as by his desire, but is a rough private copy, much scratched, interlined, and doubled; and is a very interesting document, in his own hand-writing, as it develops his mind, divested of the formality of a document for public inspection."

The mausoleum was to have been erected (according to a further endorsement in Wren's hand), "at the east end of St. George's Chapel, on the place where stands the little chapel (commonly called the Tomb House), in the middle of which was begun by Cardinal Wolsey a most magnificent tomb of copper-gilt, for King Henry the Eighth, but never finished." The design resembles that of the Radcliffe Library so much as to lead to the impression that Gibbs must have taken his idea from it. One of the designs for the monument within the Mausoleum is tinted as if for gilt copper, and the other with Indian ink. In one, Charles is represented in armour, borne upon a shield carried by figures, as of Hercules and Minerva, which stand upon a base, or block of stone, under which last are crushed four figures representing vices, and Murder, and Hypocrisy. It was subsequent to the proceedings for the Mausoleum, that Wren superintended the re-erection of Le Scur's statue, at Charing-cross, of which he designed the pedestal carved by Gibbons. There are also in the same volume, plans for extensive stabling and barracks. One (101), a plan "of barracks in Hyde-park, for 1,000 horse," shows what might be called the pavilion principle applied to stabling.

The third volume contains plans of apartments in St. James's Palace; of the Earl of Oxford's house, St. James's; and the Duchess of Buckingham's; of the old record-rooms at Westminster; and others, including sketches and plans of the House of Lords and buildings at Westminster, which are probably Hawksmoor's. Amongst many drawings which there are of the Westminster School, there is a sketch of a new dormitory, like the building existing, which is marked, "Examined July 14, 1718-19, C. W." There are also drawings showing the relative situations of Old St. Paul's, with Jones's portico, and the present church, which latter is shorter, inclines more to the south-west, and has the intersection of the cross more to the east.

There are, doubtless, amongst the treasures of the Bodleian, and besides All Souls', in libraries of the colleges, whether at Oxford or Cambridge, great stores of material for the history of architecture, that have never been fairly examined. We are not referring only to what may be found, in Oxford, at Worcester College, relating to Inigo Jones; and in the Radcliffe Library, to Gibbs. Whether in the old loft at Merton, with its picturesque Elizabethan furniture, or in the later built and fitted library of Queen's, to which additions have been made under the direction of Mr. Cockerell, it is impossible for one having any mind for study and research, to help sighing that in place of months, only hours can be spent over what must be in each case so rich a mine, as in the midst of associations the most conducive to study.

#### BRITISH ARCHÆOLOGICAL ASSOCIATION AT SHREWSBURY.

The seventeenth annual Congress of the Association was opened on Monday, the 6th instant, at Shrewsbury, under the presidency of Beriah Bosfield, esq., M.P., and with the support of most of the nobility and influential gentry of the county. The Town-hall was placed at the disposal of the Congress, and the members assembled in the *Nisi Prius* Court, at three o'clock, to the number of about a hundred, when Mr. W. Bury, the mayor, inducted the president; and the Corporation presented an address of welcome, to which the president replied in the name of the Association.

The president's address occupied upwards of an hour and a half, and consisted of a eulogium on archaeology, and an erudite and able dissertation on its usefulness; followed by a condensed history of Shropshire, with some account of its language, agriculture, industry, and arts. He concluded by paying a tribute to the Rev. R. W. Eytton, for his recently completed "Antiquities of Shropshire," and to the memory of Blakeway, the historian of Shrewsbury; also to Mr. Thomas Wright, for his several works, and the explorations at Wroxeter.

The members then examined the abbey church very hastily, under the guidance of Mr. C. E. Davis, F.S.A. He said it was but a fragment of the original church, consisting of the western portion of the nave from the central tower. The nave was originally of one style, but now consists of three Norman bays on each side, with two others at the west end of subsequent date. There never was a western tower. The central tower was low, with probably a lantern, as was usual in Norman buildings. The east end had most likely an apse. The chapter-house no longer exists, but the door from the south of the church to the cloister is still visible. He doubted if there had ever been a lady chapel.

The style of building was Early Norman, and characterized by extreme simplicity. There had been a triforium, or blind story, and a story over that. He complained of the hideous modern gallery at the west end, and hoped the corporation would have it removed.

Subsequently, the company examined the decorated pulpit in the garden, supposed to have formed part of the refectory.

Mr. J. R. Planché, *Rouge Croix*, commented on some of the monuments. Whatever he says is always listened to with the greatest attention, and deserves some notice here. The first in order was one at the old south doorway, and was stated in the guide-books to have been dug up, prior to 1623, where Roger de Montgomery, the first Earl of Shrewsbury had been buried, and the author and the heralds then visiting the abbey imagined it would represent that warrior. This figure, and

another in the same church, supposed to be Earl Hugh's, were both said to be cross-legged; but this one never was so. Both the legs were broken off, but enough remained to show that they were perfectly straight. If these effigies were ever intended for Roger and Hugh, they were made long after their death. This one was of the date of King John, and very interesting,—somewhat similar to those in the Temple Church in London, which were of that date.

The next effigy was supposed to be that of Walter de Dunstanville, of Shiffnal, who died in the reign of Richard I. If this were so, it must have been made long after, as the cross-legged effigies, of which this was one, were not made until 1230, or later, and this would be, then, another instance of monuments being erected to individuals long after their decease.

Another recumbent figure is in the north aisle, but Mr. Planché had nothing to add to what had already been written about it: he attributed it to the time of Edward II. It represents a judge, but it is not known whom.

Another in the north porch was described in the guide-books to be in plate armour, which was a great error. It was a fine old figure of the time of Edward III. in civil attire of state. It had the mantle of state similar to those in all civil effigies of that period. This was removed from St. Alkmund when that church fell down. Another adjoining, also from St. Alkmund, was of the same period or slightly older—probably a merchant or official.

Mr. T. J. Pettigrew, F.R.S., treasurer, read a brief paper on a unique monumental effigy of a sub-deacon in the south aisle—a stone slab of the thirteenth century was sculptured with a small figure below a floriated cross. The figure was clothed in a clerical dress with an alb, and the emblems in the hands and about the figure, were a bell, a book, a lighted taper, and what was said to be a chalice, but this was an error, as it was quite clear that the person represented was a sub-deacon, or some one even inferior, who would not be allowed to carry the chalice—he therefore concluded it was a holy-water vat.

Mr. Pidgeon (the author of the "Guide") said he had considered it to be a holy water. This, however, was generally disputed. Mr. C. E. Davis thought it was a representation of the pyx.

The day had now nearly closed, and, together with a steady rain, prevented much further research amongst the antiquities of the city. The president, however, and a score of others, were zealous enough to make their way to the fine old church of Saint Mary's, which was described by Mr. Edward Roberts, whose account differed considerably in respect of dates from the Guide-book. Mr. Roberts made a difference of 70 or 80 years in the dates of some of the parts described in the "Guide."

He said,—it is generally considered to have been founded about 980, by King Edgar; but the earliest portion visible in the present building is of about the end of the eleventh century, and from that time up to the last period of Lancastrian and Tudor specimens are to be seen here, a great part of it of excellent character, but some very debased and inferior, probably due to repairs and restorations. It consists of a nave and chancel (24 feet wide, and about 136 feet, or, including the tower, 160 feet long); north and south aisles; transepts, with large chapels, north and south porches, and solar or library over one. The tower is Norman in the lower part, but seems to have been considerably altered or repaired internally. The nave has probably been reworked after the piers and arches were built, or it was the earliest indication of the pointed arch, scarcely differing from the circular. The piers were of clustered shafts of Early English spirit, and perhaps the earliest indication. The clerestory is early Tudor. The chapels are very lofty, but much altered from the original character. In the arch between the south chapel and the nave is a table-tomb with an effigy of a cross-legged knight of the fourteenth century, very similar to the one in the abbey. The tomb is beautifully arcaded in the canopy-work of that period.

The north porch caused much discussion; Mr. Pidgeon insisting that it had been built by the same workmen who had built the abbey, after that was completed: Mr. Davis and Mr. E. Roberts asserted that from its style that was impossible. It is groined and has two windows, with a central pillar and plate-tracery over it, with a quatrefoil.

There is an immense quantity of very fine glass, brought from several places; but it has been much and well repaired.

At the evening meeting, which, notwithstanding the rain, was attended by nearly a hundred members, Mr. Botfield presided.

Mr. Planché read a paper on the Earls of Shrewsbury. He said that Owen and Blakeway confounded Roger de Montgomery, the first earl, with his brothers and uncles, and he cleared up the genealogical difficulties. Robert de Belesmo was the last earl, and it might be this one whom the cross-legged effigy in the abbey represented.

The Rev. Mr. Bridgeman read the Rev. C. H. Hartshorne's paper on Powis Land and the Earls of Powis: it seemed to lead to nothing very conclusive.

Mr. Gordon Hills read a paper on "Buildwas Abbey," giving a full description of the remains of that once important edifice, with conjectures of what it was in its original state. He said, this building is a fine example of the smaller class of Cistercian Abbey Churches. Every part of its arrangement is preserved or distinctly traceable. The width of the aisle on each side of the nave is marked, though the enclosing walls are gone. The convent brothers and lay dependents of the monastery were placed during divine service at the west end of the church. Their entrance from the great cloister, I think, must have been close to the west end of the north aisle. This position is not quite usual for a door, nor is it usual for a church to be without an entrance at the west end of the nave, which clearly was the case here. My reason for believing the door to have been close to the end of the aisle is, that the western of the nave arches is some inches wider than the others. The massive proportions of these arcades, and the scalloped capitals of their columns, indicate the prevalence of the Norman style of architecture; while the pointed arches show an approach towards the style which early in the thirteenth century superseded the Norman, the union forming the transition style which began about 1150. The clerestory remains entire on both sides, and has round-arched windows throughout. Advancing to the east we find between the columns indications of a stone screen, which shuts off the aisles, leaving them as mere passages; and at the end of the fifth arch from the west, we ascertain that the choir, or portion devoted to the monks themselves, commenced. The bases of the columns here and eastward are raised, so that the choir must have been entered by an ascent of four steps, in which proportion also the marks on the columns show that the side screens were raised, forming the back of the stalls. The stalls extended up to the first great transverse arch, and would seat about thirty-four monks. The number originally on the foundation is not known: at the time of the suppression it is reported to have been only twelve. I may here remark that from the number recorded to have inhabited other monasteries, we may conclude the whole of the lay inmates to have amounted to about five persons for each monk. Mr. Hills exhibited a ground plan and other drawings, which proved useful to the audience, in assisting to a proper understanding of the subject.

*Tuesday, Aug. 7,* was a beautiful day, and permitted the Association to make an early start; and this appeared to be necessary, for, even with incessant exertion, the earliest return was not effected until nine o'clock—a twelve hours' journey with the same horses. The roads, too, are neither good nor easily hit, and our reporter was unfortunate enough to be on the coach, which, in addition to those misfortunes, lost its way, and did not return until after the close of the evening meeting.

The first object of interest was Buildwas Abbey, over which they were conducted by Mr. Gordon Hills, who described carefully its various details. Thence they went, through a hilly country, to Messrs. Maw's tile manufactory, which, not being an archaeological subject, we may here omit to describe. In another number we will give an account of this manufactory. A handsome lunch at Mr. George Maw's residence ended this part of the programme.

More hills and dales, and then the magnificent ruin of Wenlock Abbey was examined under the guidance of Mr. Edward Roberts, whose observations we append.

*Wenlock Priory.*—All authorities seem to agree in accepting the account of the original foundation of this abbey given by William of Malmesbury, and in fixing the date of it as 680. It is needless to say, that nothing whatever of that building is in existence, probably it was of timber, as was almost universal prior to this time, and by no means unusual both here and on the Continent, for centuries after; and it is not surprising that they have in consequence been frequently destroyed. This abbey, then, was founded by Milburga, daughter of Merewald, a Prince of Mercia and niece to Wulphere, the King of Mercia.

Milburga's sister dedicated herself to celibacy, as we gather, on account of the death of her bro-

thers, who were murdered by, or at least the murder was permitted by her uncle. Her mother founded a monastery at Mûster, in Kent, on land given as compensation for those murders; and it is possible that the immediate cause of this foundation of Wenlock was the same tragic event.

Milburg became abbess, and in process of time a saint, and on her death was buried near the altar.

The abbey does not seem to have escaped from repeated calamities, although they mostly arose from warfare, of which, from its great richness of soil and general wealth, as well as its population, this part of England was the constant theatre. It was twice destroyed by the Danes, and after the second destruction it was deserted. Some accounts state that it became decayed, and was deserted in consequence. It was not, however, until twelve years after the Conquest, that it began to appear in somewhat of the form in which we now see it. Mr. Eytton says it is the oldest, and was the most privileged, and perhaps the wealthiest and most magnificent of the religious houses of Shropshire.

The three abbeys which I have undertaken to describe to you all partake largely of the Norman and immediately subsequent eras.

After the loss of the arts by the overrunning of the Roman provinces by the Goths, there arose, in the course of time, an architecture more or less beautiful according to the greater or less rudeness of the country, and which may be considered as one great school which prevailed for six or seven centuries, the longest period of existence in any style without material alteration in so many countries not under the same rule. Originating either in the indiscriminate application of materials taken from Roman temples and houses, or in a rude imitation of them, we obtain various specimens of one universal type. Familiar as the English must have been with pure Roman works, and a high state of civilization in common with all countries where Romans went, it is remarkable that, so far as we are able to judge from Saxon remains, the worst type appeared here,—not very different from the Norman in its elements, but differing most materially in the magnitude and the taste of the works. There was besides, on the part of the Normans, an unaccountable jealousy of or dislike towards the Saxon buildings; and, although we can point to a score or two of works either in part or wholly ante-Norman, yet they are very few as compared with the vast number of remains comparatively perfect to this day of what was confessedly only a century or so of later date. Except of the sacred edifices of the thirteenth or fourteenth centuries, the majority are of Saxon origin. This we have seen was the case with Wenlock Priory. Its refounding was by Leofric, Earl of Mercia, and Godiva, his wife, shortly after 1017; but it was soon again deserted, and eventually forfeited by their grandson in 1071.

There are several slightly varying accounts of its subsequent rebuilding; but judging from the remains, there is nothing which indicates the truth of either one of them beyond the fact of the buildings being of different dates. The oldest portions are of the date of the Norman period. Domesday Book states that Earl Roger had made the church of St. Milburg an abbey, and I consider that little besides the guest-hall (near the present gate) remains of that building, if it ever was completed. William of Malmesbury, writing about A.D. 1130, says that "lately, however, a convent of Clugniac monks was established there while a new church was erecting." Of course St. Milburg's body was miraculously discovered, and was not only found not corrupt, but emitted the sweetest odours. Of the period referred to the chapter-house is part. All the church is of the massive Early English of the beginning of the thirteenth century.

It was an alien priory, and in common with others of that class was treated with much severity, and suffered exactions and confiscations repeatedly, until it was naturalized in the time of Richard II.

*Description of Buildings.*—The church is cruciform, with nave and aisles, two transepts, chancel, without aisles, and lady chapel. This I attribute to the time of Joybertus, who first appears as abbot in 1198, and died 1216; or of Humbert who succeeded him, at which time the abbey became of greater importance, and the parent of other abbeys. The south greater transept has one aisle, and an arcade or cloister. In the aisle is a coeval piscina, and probably the base of an altar: the niches for the parolæ are in the shafts;—a chapel also in adjoining part.

On the west side of this transept are remains of an altar, with part of the stone in the arching over it cut away apparently for the head of a

crucifix or statue. There are two corbels or brackets for relics, or for saints' statues. There is a drain from the centre archway.

The south transept is remarkable for the evident arrangement made with the view of preserving the chapter-house beyond,—the transept required a stronger wall than its aisle, and the main wall has either been added to or cut away so as not to interfere with the other side, and the arrangement of the arches and angle is peculiar and unique.

The chapter-house is the only remaining portion of the structures commenced, as I conclude, by Roger de Montgomery. But, whatever the foundation may have been, it was, as now existing, never designed by the same architect. It is a very beautiful specimen of the semi-Norman or Transitional period, which prevailed generally from 1151 to 1187. There is no record whatever as yet discovered by which we can ascertain the benefactor or designer of this part of the abbey. It must have been in the abbacy of Humbald or Peter de Leja. The latter was promoted from St. David's in 1176.

The walling is very elaborately ornamented with the interlaced arcading which has by some been supposed to have caused the invention of the pointed arch. He called attention to the building of the Early English church over these ornamented walls, in order to retain and preserve them.

A fireplace has been inserted in the south wall at a much later date. The whole of these buildings have been vaulted.

The ruins have been very badly used at different times. A Mr. Moore, writing in 1787, says that many years ago great part of the abbey was pulled down to rebuild some houses, and only four years since one of the clustered pillars of the church was nearly levelled, and a cart was waiting to take it away. To the credit of the late Sir Watkin Williams Wynne he it said, that he, as well as the present Sir Watkin, put a stop to these depredations.

A seal of the abbey was said to have been found at the church of Clun in 1760. Several views have been published in Grose, Beauties of England and Wales, Phillips, and Eytton.

There is a popular belief of a subterranean passage to Buildwas, of course without foundation, as was the case at Upton Court and other places seen at the last congress. In the garden at the east of the church is a heap of stones: amongst them is a very beautiful incised tracing of Early English underent mouldings, on a capital of a shaft, illustrating the subject of architectural drawings which has been occupying considerable attention lately.

Acton Burnett was reached at dark, and nothing was said about it. In the evening, on return to Shrewsbury, several papers were read, but we must leave further notice till next week.

#### SCIENTIFIC CONGRESSES AND WORKMEN'S ASSOCIATIONS.

The formation of societies of persons who are pursuing the various walks of science and art, and the congresses of others who are interested in various pursuits, are amongst the noticeable facts connected with the history of the past century. Previously to the reign of Charles II., when the Royal Society was founded, there were a few earnest men "knocking at the door" of science; but in consequence of the want of concentration much labour and valuable information were wasted, owing to the want of a knowledge of what had been previously done. The value of union, which has had such an important power in advancing particular studies, was then unknown.

The Royal Academy, the Colleges of Physicians and Surgeons, and the Antiquarian Society, were, after that just named, amongst the first class societies which were instituted in London: now we have the Society of Arts, the Institutes of Architects and Civil Engineers, Agricultural, Botanical, Archaeological, Geological, Zoological, and other societies connected with the various departments of natural history. Besides, there are the Ethnological, Statistical, Genealogical, and other institutions which are earnestly engaged in the worthy work of gaining, arranging, and distributing knowledge.

It is worthy of note, that from many of the original stems we have new branches which are extending in various directions. From the example of the Antiquarian Society have sprung the Royal Scottish Society of Antiquaries and that at Newcastle-on-Tyne, the British Archaeological Association, the Archaeological Institute; and throughout the provinces there have risen up

numerous architectural, antiquarian, and archaeological societies, which are engaged in accumulating materials for a complete record of the antiquities of the nation.

In connection with the fine arts, there are now also several societies of the greatest value.

Notwithstanding these numerous offshoots, it is satisfactory to find that in nearly every case the original institutions have increased in prosperity; and constantly we have fresh clubs and societies springing up, which, each in its sphere, serve, by the combination of those having certain degrees of knowledge, to pave the way to the general establishment of those truths which severally lead to the improvement of the condition of mankind.\*

Besides the societies above mentioned, which have frequent periodical meetings, the important congresses which take place annually of those engaged in various walks of art and science, are causing most important results. To these gatherings professors and men of eminence not only come from all parts of the kingdom, but from abroad, with their stores of information, which they exchange with others, all getting richer by the transaction. The British Association may be considered the first of those assemblages in England; and lately have sprung up the Social Science and Statistical Congresses, which are destined to throw so much light on peculiar conditions, that matters at length in doubt will be reduced to certainty, and legislators be enabled to provide remedies for those evils which have caused such great destruction of life and health, and been the cause of so much vice and mischief.

The skilful physician or surgeon, when considering the case of a patient, proceeds as soon as possible to inform himself of the extent and peculiarities of the disease: the wounds are probed, and the nature of the constitution is taken into account. Then medicine can be made of more sure effect than if the professor was left in uncertainty. In like manner, social and statistical congresses will enable us to obtain knowledge of the exact position of affairs, and to go more readily to effect a cure.

But while the great workers in science and art are found banded together for the advancement of each body, and for the purposes of mutual improvement and instruction, little has been done amongst the various classes of our skilled artisans to form, on a somewhat similar plan, institutions, by whatever name they might be called, which would have for their object the elevation of their crafts, and mutual advancement.

In connection with the Architects' and Civil Engineers' Institutes, useful books and other means of study are gathered together. At the meetings members exhibit drawings or models of their works: the youthful practitioner finds an opportunity of getting his ability made known; and is also, by the acknowledged position of others, stirred to energetic exertions.

The Painters' Company of London bare, to a certain extent, set a worthy example; and the chromometer and watch makers of Clerkenwell have founded an institution which bids fair to flourish, and increase the skill of those engaged in this important manufacture.

When thinking of this important subject, the following question suggests itself.

Why should not the stone and wood carver, cabinet-makers, the various metal-workers, decorative painters, and the numerous classes of skilled workmen, each have a club or society on a somewhat similar plan to those above mentioned, into which men might be admitted in consideration of their ability and respectability?

These should be independent of the trade associations. Recently we had an exhibition of pugilistic ability and the contention of brute force, which excited general attention. Far more worthy are those contests which take place in the ploughing and harvest field, and equally useful in developing muscular power. We have lately heard accounts of trials of skill which do not tend to the disfigurement of the human countenance, and the encouragement of a degraded taste. In one instance two farmers fought a severe battle in making within a given time the largest number of horse-shoes, of the best description. The sturdy smiths were enclosed within a certain space, and a large crowd watched the operations with the most intense interest. Formerly, within the recollection of many, there was a good deal of this kind of competition amongst masons, bricklayers, and others, not without benefit.

With the advance of the intelligence of the

\* The philosophical institutes and mechanics' institutes throughout the country should not be omitted from the above list.

upper and professional classes, the British workman should also improve, and to do so, should use means similar to those which have been so evidently the cause of progress with other portions of society.

KENT ARCHEOLOGICAL SOCIETY.

The third anniversary of this society was held at Dover, on the 1st and 2nd of August, under the presidency of the Marquess of Camden, K.G., and was very successful.

The report stated that 138 members had been elected since the Rochester meeting, and 23 more were elected on the 1st August, so that the total number of admittances to the society have been 821. Some members, however, have died, and others are in arrear of their subscriptions, and the exact number of present members was not given. The second volume of the Transactions for the year 1859 was promised in a month.

The principal feature of the meeting was a most extensive collection of rubbings from Kentish brasses, from the commencement of the fourteenth to the middle of the seventeenth century, with an interesting museum of antiquities. No paper was read on either collection, nor description given. The brasses of the fourteenth century were of excellent workmanship: two or three were Flemish, and of much beauty in design and execution. In the collection were illustrations of the armour and dress of knights and their ladies, of priests in their canonicals, of citizens and burghers in civic costume, with their wives; one remarkable feature being the large proportion who had been married twice. Kent is rich in brasses; and, large as the present collection was, there are many existing specimens, at Cobham Collegiate Church and elsewhere, which were not exhibited. The museum had Mr. Wm. Gibbs's collection, from Anglo-Saxon graves at Faversham; Sir P. H. Dykes's Celto-Romanic howl, with Christian emblems, found near Lullingstone, the ornaments on which have been recently replaced by Mr. A. W. Franks, the zealous director of the Society of Antiquaries, at whose meeting it was exhibited; an illuminated MS. representing the Court of Common Pleas in the reign of Henry VI., from the papers of Recorder Fleetwood, exhibited by Mr. G. R. Corner; a Roman urn found in Castle-street; Roman pottery found at Alkham; a dolium and other remains, found at the Buckland schools in 1859, sent by the Rev. S. T. Moss; and Samian and other Roman pottery found at Caxton last month, exhibited by the Earl of Darnley; charters of the Mission Dieu, from the Surrenden collection; a snuff-box given by Charles I. to Judge Twisden; and a gold case and tooth-pick presented by that monarch to Col. Tomlinson; the horn and remains of the corporation, including the space of Charles II.'s time, when the art of working in silver was fine, and part of the gold and silver cloth which formed part of the canopy at the coronation of George IV., of the same texture as that in the time of Queen Anne, preserved at Rye.

The buildings visited during the day were the Pharos and Church in the Castle, and St. Martin's Priory.

The excavations at the church had laid open the Saxon church to its foundation, and opened out a southern and a northern door, hitherto covered up, and gave the church a more imposing appearance than heretofore; and besides this, the fragments of Norman work have served as patterns for the restoration or re-edifying, which is under the care of Mr. Gilbert Scott. An interment in a chalk cist in the nave, and a leaden coffin in the north aisle, have been brought to light. The cist was lucidly explained by the Rev. J. Puckle, who had caused a ground-plan to be lithographed, which marked distinctly the Saxon portion of the fortress, and all the additional towers and works in the Norman and Medieval times; with the names of the persons for whom the several works were executed. The account is to be printed entire; and, by adding dates to the map at the different parts of the works, a valuable guide will be furnished for future visitors. Of the church itself, the rev. gentleman said, he had always supposed that the ancient edifice had been constructed of much larger dimensions, and of somewhat different materials than the Pharos itself, and at a later date. There were no traces of Roman tiles, very few of which had been found during the excavations and repairs now going on. Although our Saxon forefathers endeavoured closely to imitate the Roman style of masonry, still the difference between bricks or tiles baked and burnt was too apparent not to be observed; the Roman tiles being grooved somewhat after the fashion of waves upon paper; and thus they would

sink into the concrete and consolidate the whole fabric.\* In digging beneath, they came upon the foundations of what there was every reason to believe was the ancient Anglo-Saxon church of Egald the Saxon. If this were true, the date of St. Augustine's death being 605, it was at once clearly determined that this ancient British church was before his day. Mr. Puckle directed attention to the peculiar features of the edifice, the "long" and "short" work so distinctive of Saxon origin, and the "double-splay" windows, and various other indications, as corroborative of this idea; there were similarities to the Norman form that might be seen at Canterbury; but, then in this Norman style, they never found the "double-splay" upon the windows. He was disposed to date the foundation of this ancient church in the year 518. Beneath the western window, overlooking the Pharos, there was a smaller opening, which was exactly the height of a man's eye. It had been recorded that the Pharos was used as a guard-room, and mention was also made of two sergeants being appointed to keep lights continually burning in the chancel; and it would not be an extreme idea to imagine that this small window enabled the soldiers in the guard-room to see that their charge was properly attended to.

The architecture of the priory of St. Martin's was explained by the Rev. Dr. Plumtree, Master of University College, Oxford, who, with the aid of Mr. Ayres, the builder, had been able to trace the foundation, and to form a good approximate opinion as to the conventual church, and the parts now destroyed.

The walls were constructed of rubble and Kentish rag, together with finely-wrought Caen stone. The edifice itself consisted of a nave and two side aisles, and was 285 feet long; a chancel and a transept crossing the nave and aisles at about 145 feet from the western entrance. There were also two small chapels, with apsidal terminations similar to these at Romsey, at the sides of the chancel. At the north extremity of the transept there had been a chapter-house, 54 feet long by 20 feet wide. There were also discovered the bases of nine arches on pillars, each 15 feet wide, which had divided the aisles from the nave (33 feet wide). The bases of these pillars were about 5 feet square; the chancel or choir 40 feet long and about 29 feet wide. By the measurements, he had arrived at the conclusion that this monastic establishment must have covered about 20,928 feet, exclusive of the chapter-house. The refectory was one of the largest and most perfect in England. It was 100 feet long; in its walls the Caen stone was used in common with the other materials he had mentioned. It was of the Anglo-Norman period. Archbishop Corhoil, in 1132, obtained a grant from Henry I. of the revenues of the monastery of Martin's-le-Grand, at Dover, and erected the monastery or priory; and, as it was taken possession of in 1139, it was pretty evident that it must have taken seven or eight years to construct; and the stone showed in places marks of fire: similar traces existed in the Canterbury Cathedral and Gloucester Cathedral. There was an entry in the "Monasticon" which proved that these ravages were the work of an incendiary. Traces of paintings had been discovered on the walls, and beneath the windows might be distinguished the outlines of thirteen heads, the centre figure being taller than the others.

A well-served dinner was provided at the Wellington Rooms, and 180 ladies and gentlemen sat down. In the evening a *conversazione* was announced, and many attended. There was, however, little done. The Rev. J. Edge read a paper from Mr. Elphée, "On the Danish Vessel found in the River Rother, in 1822," which attracted much attention at the time, and was removed to London for exhibition. The vessel and its contents are figured in plate 30 of Rouse's "Beauties of Sussex;" and the paper added nothing to the particulars there printed; but it led to a subscription to raise another vessel supposed to be still in the sand. The evening closed with a few extracts from the public records relating to the Kent volunteers in the olden time, made by the energetic and popular secretary, the Rev. Lamherst B. Larking; to be printed at length in a future volume.

On Thursday excursions were made to St. Radigund's Abbey and the church of Alkham, to St. Margaret's-at-Cliffe, and to Barfrestone Church and the Roman camp at Coldred.

\* This was for the bond course in the Roman work at Dover, but flat and perfectly smooth Roman tiles are found in Richborough, Pevensey, and elsewhere.  
† The refectory at Battle Abbey is 106 feet long by 35 feet wide.

Of the building of St. Radigund, or Bradsole (founded in 1191), little remains, and little more is known. The gateway is of the time of Edward III., and on entering the square the arches of the huttery hatches leading to the refectory are found to be the only original parts left. The refectory itself has been shortened, and Leland tells us that the buildings had been larger than in his time. On the opposite side of the refectory, on the north of the square, are two rooms with a gable end and Perpendicular windows of the period of Henry VI., which might have been an oratory and ante-chapel; but all is in doubt, and must remain so till the foundations have been traced. A. Poyning and other men of note directed their bodies to be buried in this abbey, and hence a church is supposed to have existed; but the burial-place of the monks themselves was in a mortuary chapel on the north side of Alkham Church, a chapel distinguished for its elegant two-light Early English window, with shafts between the lights and at the sides, and an oriel window above, and for its Geometric (trefoil-headed) arcade of Caen stone, with Purbeck pillars. The original abbey barn is standing, and still used. It is large, but not too large for the grange of 450 acres. Mr. Poynter described the few remains; and a good paper might have been easily prepared for the occasion. The abbey was much used by the pilgrims going to the shrine of St. James of Compostella, and to the Holy Land. Aldrington Church, in Sussex, which had passed to Hubert de Burgh, on his marriage with Beatrix de Warren, temp. Henry III., together with the church of Portslade, was given to the canons of this church for the sustenance of themselves and the pilgrims journeying that way: \* and though the revenues were small, and the number of canons was only nine, the buildings indicate a sufficient provision for the pilgrims. The well still supplies the farmhouse, built by a grantee of the site in the days of Elizabeth, on the side where the abbot's apartments stood. This well is sunk for 300 feet till it reaches the water below the chalk, and has been known to be dry only once. The large pond or "sole" (Sax.), from which the place was named, and the fishing-ponds, are still to be traced, but are now dry.

The visit of the society has saved the facing with white brick of a flint buttress to the tower of Alkham Church. W. D. C.

THE ART-UNION OF LONDON COMPETITION.

THE Council of the Art-Union have reason to be satisfied with the response made to their offered premium of 100*l.*, for a series of drawings illustrative of "The Idylls of the King;" as, by the way, Mr. Tennyson and his publisher have with the Art-Union, considering the enormous advertisement and notoriety they have given, and will give, to the poem. Such a piece of good fortune has occurred to few authors. The forty-three sets of designs, consisting of 510 drawings, show a very large amount of talent. Some of the competitors have sent as many as nineteen drawings, others fourteen, the required number being twelve. The stake is a large one, amounting in fact to little less than a reputation, as the selected series will be engraved and distributed all over the world, and the name of the artist will be further set forth in the reports of the Society for years. The costume question has evidently plagued some of the competitors; indeed, if we admit that chain-mail did not come into use in Britain until the thirteenth century, and entire plate armour until the fourteenth century, it will be thought that very few of them have preserved correctness in this respect; a circumstance the less to be wondered at, since the poet himself has not greatly troubled himself to do so. The period of Arthur must be regarded as the eighth or ninth century. Some of the competitors state that they have advisedly adopted the costume of the Romancers, and not of the King. What view the Council will take in making their selection, remains to be seen.

Amongst the most excellent of the designs we should place, on cursory inspection, in the order in which they hang, so as not to convey a precise opinion on the subject, No. 18 (Constancy); 22 (Consuelo); 24 (A. C. N.); and 25, marked with a Crowned Skull. The merits and demerits of these must be carefully discriminated and balanced in coming to a decision. Amongst those less equally clever, but deserving attention, we should place No. 1 (Dion); 4 (Koppa); 5 (a Crown); parts very clever; 6, elegantly drawn, but mis-

\* Sussex Archaeological Collections, vol. XII., p. 121

taken in type, with a large number of added designs in circles around the main drawings; 14 (red cross); 17 (double triangle); and 43; while less emphatically we might mention 31, 42, and some others. No. 2 and No. 36 have considerable pretensions, but the authors have not submitted the required number of drawings.

Amongst the works of art purchased by prize-holders are some very excellent landscapes, and M. Durham's admirable statuette "Chastity," selected by Miss Ross Allason. The collection is further enriched by the competition statuettes and groups, of which we have already spoken, and a reduced copy of Mr. Foley's fine statue of "Caractacus," made for the Art-Union by the sculptor preparatory to its production in bronze.

#### SOUTH KENSINGTON MUSEUM.

THE Report of the select committee, occupying 63 folio pages, has been issued. An early class says,—

"The collections illustrating Architecture are partly the property of the public and partly belong to the Architectural Museum Committee. The collections of that Committee are valued at 2,500*l.*, and were brought from some lots in Cannon-row to commence a National Gallery of Architecture. These collections, for want of room, are at present ill arranged and crowded. They are much consulted by artisans employed in architecture. The same want of room prevented the Department from taking possession of the architectural casts obtained as models for the Houses of Parliament, purchased by the public at 7,000*l.*, and now resting the Office of Works 49*l.* a year for horse-room at Thames-bank."

Having arrived at the opinion, that the Museum in respect of its action as well throughout the United Kingdom as in the metropolis is exercising a beneficial influence, and that it is fully deserving of continued parliamentary support, the committee turn their attention to the state of the buildings at South Kensington, and arrive at the conclusion that additional space for the accommodation and exhibition of the art collections should be provided at once. Capt. Fowke states that the cheapest mode of obtaining this space would be to complete the quadrangle of brick buildings which was commenced by the Sheepshanks, Vernon, and Turner Galleries, and to glaze it over. He estimates that this might be done for 17,000*l.*, and by doing so the art collections now in the Iron Museum would be placed in safety, others not properly shown would be efficiently exhibited, whilst space would be provided in the Iron Museum to receive and exhibit the architectural casts. The report thus concludes—

"The danger arising from the use of the wooden schools and dilapidated houses renders it equally necessary to remove these buildings, and instead of them to provide as nice safe buildings for official residences and the art training schools. The cost has been approximately estimated by Captain Fowke at 27,000*l.* The committee recommend these works as matters of extreme urgency, the completion and covering in of the quadrangle court as a means of securing much valuable public and private property from a respectable quietude for it, the removal of the wooden schools and the dilapidated houses from considerations of safety, and, therefore, of real economy. The Iron building and the temporary brick buildings your committee see no occasion to disturb at present. They can be usefully employed, and may well be allowed to stand for some years to come. Your committee are by no means anxious to involve the revenue in large expenses for mere ornament. The museum is yet in course of formation, and they think it unwise to commit the country to a heavy expense in anticipation of its wants. The committee recommend that any plan which may be adopted for the buildings to be erected should be capable of being worked into a general plan which would at once fully occupy the ground, and be susceptible of a proper amount of decoration. Such a plan has been laid before the committee by Captain Fowke."

#### HISTORY OF GLOUCESTER CATHEDRAL.

WE avail ourselves of a report in the *Gloucester Chronicle*, of Professor Willis's "Sketch of the History of Gloucester Cathedral," given to the Archaeological Institute.

The general character which Gloucester Cathedral presents is that of a Norman cathedral completed nearly from one end to the other, but subjected to various alterations in consequence of repairs and faults of construction. Most of the writers on the cathedral describe the south aisle, and the choir, or presbytery as it was called by Abbot Frocester, as Decorated, but its features are only plastered on the Norman wall. The whole transept and choir present one of the most glorious examples of architecture he had ever seen. Bearing in mind that beneath the edifice there is a beautiful crypt, he would give passages from Frocester's Chronicle, which fixes the dates to the particular parts. The Chronicle said, in 1058 Aldred the Norman bishop built the church from the foundation (this was in the time of Edward the Confessor), and dedicated it to St. Peter. It was, then, either a Saxon or Early

Norman Church in the style prevalent at the time of Edward the Confessor. Now archaeologists have ascertained that the Norman style was brought in during the reign of Edward the Confessor, and the work was very rudely executed, judging from the examples of it in Westminster Abbey. In 1087, said the Chronicle, the cathedral was burnt down, and in 1087, that is, after the Norman Conquest, on the Feast of the Apostles St. Peter and St. Paul, the foundation of the church was laid by Robert, Bishop of Hereford, at the request of Serlo, the abbot. The first stone of the foundation was then laid in the time of Abbot Serlo in 1089. It was completed for consecration in 1100; it was certainly completed sufficiently for the performance of service, and probably the nave was also finished. In 1163, or between 1163 and 1180, the Chronicle states, the north-west tower fell, owing to a bad foundation; this fact shows that the building was a Norman church, and that there was a north-west tower. In 1222 the north-west tower was rebuilt by Hilarius, the sacrist, but that tower has now disappeared, and he need not treat of it, nor of the chapel of the Blessed Virgin, because that also did not now exist. In 1242 the Chronicle said the vault of the nave was completed by the monks themselves; they did not employ common workmen, and therefore he might suppose that the monks considered they would do the work better than common workmen. It is an Early English vault. The Chronicle next brought him to Tokay, a very important person in the building. Tokay gave Edward II. honourable burial in the church, and that attracted to the church a multitude of visitors; all classes began to regard the murdered king as a martyr and saint; and the offerings on his tomb amounted to such a prodigious sum, that the monastery was supplied with the means of building the church. That was, in fact, the great era of the church. Now Tokay, before that period, says the Chronicle, had constructed the south aisle of the nave at great expense; and we now see that this aisle has received an outer case; whereas before it was a Norman nave with a Norman vault, it now presents a Decorated vault with Decorated ribs, and the outside also appears to be Decorated. It is one of the most beautiful examples of the style; and it has this great advantage which other altered buildings do not possess: in other buildings the proportions very often constrain the designs in the new work, and give it a mixed character, spoiling both; giving, for example, heaviness to the Norman and flimsiness to the Decorated. But this is not the case at Gloucester; the south aisle is a good example of the Decorated. The windows resemble some in Merton College, Oxford. There is a variety of windows there, but the pattern occurs twice. The connection between Gloucester and Oxford was very curious. The college was founded in 1280, and the windows were of that period. Merton College was one of the first established in England, and the monks of Gloucester established a college for their student monks at Oxford, which afterwards became Gloucester College. Merton College was founded in 1280, Gloucester in 1288; Tokay began the south aisle in 1307, so that it is probable that he derived the pattern of the window from Gloucester College, Oxford. He (Professor Willis) knew no other example of it. This shows that windows were continually copied; indeed there are contracts still in existence, stipulating that windows and other features shall be copied from those in other buildings. In 1329, Tokay was succeeded by Wigmore, who seems to have made a table for the prior's altar, and he was well skilled, for the images were worked with his own hands. In Wigmore's time began the offerings on Edward's tomb, which enabled him to construct the aisle of St. Andrew as it now appears. The next person was Staunton. In his time it was that the prior of the monastery was made an abbot, and also was constructed the great vault of the choir and the stalls of the choir on the prior's side; and these were built with the oblations of the faithful. Indeed, the monks, it is said, grumbled about the expense; because it was so high up, he supposed; they declared more money was spent in ornament than would have rebuilt the whole church if it had been properly employed. The next person concerned was Thomas de Horton, the second abbot; and in his time the Chronicle states the high altar, with the choir and the new stalls on the abbot's side, were begun and finished, and also the aisle of St. Paul. The work was commenced in 1367, and completed in 1373. Nothing more was told of the history of the church till they came to the time of Walter Frocester, who wrote the Chronicle

which supplies the facts which he (Professor Willis) had stated. A commentator on the Chronicle after his death tells us that amongst other things which Frocester built was the cloister of the monastery, which had been begun in the time of Horton, and completed to the door of the chapter-house, and remained imperfect. Frocester was a great builder, and he took up this great work and completed it. For the rest of the history of the cathedral, strange to say, there is nothing else to depend upon but a passage in Leland's "Itinerary," containing, as he said, "notable things following I learned of an old man, lately a monk at Gloucester." Leland gives the facts all of a jumble, without any regard to chronology; but, by comparing his statement with the Chronicle, it appears that the north aisle and St. Paul's aisle are the same. He should assume this as a fact. Leland's old man said the south aisle was made with the oblations; the Chronicle says that Wigmore, who received them, made St. Andrew's aisle; so that here was the identity of the south aisle and St. Andrew's aisle established. He should, therefore, assume this as a fact also. Leland also said that Abbot Scarbroke built a great part of the tower, which was "a pharos to all parts of the hills." It is so still, at least by daylight, for a light is not put up at night. Then Leland says that Morwent erected the stately porch and two pillars at the west end of the nave, being minded to make the whole alike. We must be glad that he did not live to spoil the Norman by his paltry Early English. Now, it is remarkable that the only history of a late period resting on mere gossip; they found all later historians referring to each other, and when they got back as far as Willis, they found him referring to the old gossip on whom Leland relied. He had now done with history, and he would show what use could be made of it in fixing the dates of the different parts of the cathedral. First we have got the date of the crypt. The mention in the chronicle of a Saxon foundation has led many antiquaries to believe that the Saxons commenced the church, and the Normans completed it. But there are alterations in the crypt of a very curious character, and this is a very important point for consideration. One curious point—he had only discovered it the day before—is that the chapels which radiate from the choir instead of being circular or polygonal, and on examining some of the stones lying on the grass, he found that they were arcs of circles. It was now clear to him that when the foundations of the cathedral were laid the crypt was planned to receive the existing superstructure and no other. Indeed, in its design it is far too complicated for a Saxon church. He rested his opinion on the great complexity of the plan. The building is in conception a Norman church from bottom to top; with this difference, the bases which were forced on the architect for reasons of construction compelled him to make the east end of the crypt polygonal. It is a very early instance of polygonal chapels; and, indeed, every example of other styles is early at Gloucester. We find the arches of the crypt ribbed rudely, but in parts of the superstructure they are not ribbed but groined. Now all the buildings before the Conquest had not groined but ribbed vaults; and he thought some of the first of that construction might be claimed for Gloucester. It is allowed that this building had then very early, and they were of such rude form that we might think the builders of the cathedral struck out the idea for themselves. A slight examination showed that the arches of the crypt are greatly distorted. The statement of the chronicle that the tower fell down is confirmed by the state of the walls, which shows that the foundation of the building was faulty. It appears to have settled and become in a dangerous state, and an examination of the ribbed vault shows another curious fact. It is found that originally they were groined, so that the vault is not a real ribbed vault. These ribs have, indeed, been inserted under a previous vault, to prop it up. The builders saw the building settling in a dangerous way, and the Norman rib vault being understood, they applied it in this ingenious way. When this took place, there was no transept or choir, which clearly were in the Perpendicular style. The character of the Perpendicular is that the lines run right up to meet the arch-heads; but in the tracery of the cathedral you get flowing lines, which plainly indicate Decorated. The south transept, for instance, does not contain work such as the Perpendicular defines; but in the north aisle there is a great branch which runs up to the arch-heads, so that we have here the Perpendicular style. There is also some hexagonal tracery, similar in general character. Now, as regards the way in which this

is done,—all this beautiful tracery is laid on the Norman wall below. Parts of the choir are nothing but the ancient Norman work cut down and shaped; this shows the skill and economy of the builders. It may be supposed that this was done by Wigmore. He was inclined to think the Perpendicular style commenced in this district; it must have begun somewhere; in some places the mullion must have been carried up for the first time; and he knew no place so likely as Gloucester to have produced the change of style. There are no dates so early. The earliest is the great west window of Winchester, built in 1350 or 1360. You see here a nascent Perpendicular design gradually changed. The definition of Perpendicular is that a generally unbroken line rises from the ground to the top of the arch; this showed itself here in 1338; where, then, was it more likely to have originated than here? The lines of the vault are peculiar to England, the ribs run like a spider's web, and are most difficult to work out. There are earlier examples, earlier than the vault of the aisle of St. Andrews, which is the earliest in this Cathedral; but very few buildings have such magnificent examples as the vault of Gloucester. But there is this peculiarity in this vault, that it demands great skill in the art of stone-cutting, so that the joints may lie truly together, without which all would fall to the ground. That shows that the builders of the Cathedral were most skillful masons. This led to fan vaulting; a noble example of which is seen in the Cloisters; it springs from one central point. The fan is not much like a lady's fan, but more like an umbrella turned inside out, because the curvature of the ribs is all the same. This, of course, led to stone-cutting at the same curvature. This style of vaulting is entirely peculiar to England; there is no specimen of it on the Continent that he had ever seen, and all foreigners he had consulted say they have nothing like it; besides, they don't like it; it is ungenial to their eyes, and they say it looks like a thing turned inside out. But it demands the greatest skill in stone cutting. This vaulting at Gloucester is clearly dated 1360, and there is nothing like it till long after the reign of Henry VIII.; therefore we must assume that this school of masons produced fan vaulting, the glory of our own country. He was not saying this to pay a compliment to Gloucester; to justify this he might add he had put it in print many years ago; there it is in print, and it has become an established fact. The whole building, indeed, is full of peculiar fancies. What is more peculiar than the slender arch spanning the great arch of the tower, looking like a piece of carpentry in stone, and apparently holding up the vault? It is a deception, because it rests securely on the wall beyond. But the object is not to deceive, it is built for a good æsthetic reason. Unless something or other was provided the builders must have allowed the capital to hang down to a level with the others without anything to support it, or altered the arch above, and thus have disturbed the curvature of the vault. He believed that the arch was contrived to get rid of these defects. All this appears to be characteristic of a school of masons who were extremely skilful and glad of an opportunity of showing their skill, just as a modern engineer likes to carry his railway through a chain of mountains when he has a plain valley before him, to show his skill. The original south aisle ran completely round the east end of the choir. Abbot Staunton was determined to extend it, and in so doing contrived to solve the problem of getting a window wider than the side walls which contained it. Professor Willis then described, by reference to the plans, how the builders extended the side walls to relieve the new walls of the weight of the superstructure. He admired the ingenuity of the middle ages, but whatever may be said of their skill and science shown in their masonry, he believed they had none. They were perfectly practical and most ingenious men; they worked experimentally; if their buildings were strong enough, there they stood; if they were too strong, they also stood; but if they were too weak they gave way, and they put props and built the next stronger. That was their science, and very good practical science it was; but in many cases they imperilled their work, and gave trouble to future restorers.

Afterwards Professor Willis went through the building, and commented on its various peculiarities and beauties.

THAMES TUNNEL.—During the week ending 4th August, 18,033 passengers passed through, and paid 75l. 2s. 9d.

THE SHILLING TELEGRAPHAGE.

AN improvement in the telegraph system, which we have long wished for and advocated, is now likely to be realized by means of various and ingenious inventions, constituting an almost entirely new mechanism for the facilitation of telegraphic operations, and which is already in the hands of a new company, "The United Kingdom Electric Telegraph Company (Limited)," to be forthwith carried into practice.

The company will have a capital of 150,000l. It has been brought forward under favourable auspices, for the purpose, as the prospectus states, of establishing "a system of electrical communication, based on the principle of the penny postage, to convey messages throughout the United Kingdom at a low and uniform rate—a shilling for a short message, or some equivalent charge—irrespective of distance." It is Mr. Allan's system of electric telegraphy which is to be adopted, and it is believed that this system will, from its great rapidity and other advantages, effect an important saving in primary cost and working expenses. The arrangement is to place London in direct circuit correspondence with all the principal towns of the United Kingdom; and the promoters base their estimates of success upon the results achieved on the Continent, especially in Switzerland, where a low tariff, similar to that which it is now sought to introduce here, has realized high dividends, which have rendered telegraphic stock a favourite among the investing public of that country.

The improvements and inventions of Mr. Allan are too elaborate to be here described, and especially without the aid of diagrams; but we may state that they include a complete system of message printing, sending, and recording, by means of mechanisms which, it is believed, will ensure a rapidity of operation much more in accordance with the capabilities of the electric force than anything hitherto realized in practice. The messages, in the first place, instead of being sent "by hand," as it were, are put into the telegraphic apparatus ready printed in the form of punched paper cut out beforehand by alphabetical punching and composing machines, or keyed instruments, which rapidly prepare them for the telegraph; and the messages, in transmission, record themselves by special apparatus at the other extremity of the line. Resource is had to alternate negative and positive currents also, and to new pole changes or relays, for the obviation of delays and the general improvement of the telegraphic system; so that, on the whole, as we have said, an almost entirely new mode of telegraphing will be adopted, which, if it succeed, will completely supersede the old system, and compel all telegraph companies to adopt it (if allowed so to do) in self-defence, no less than for the public behoof.

The cheapening of telegraphic communication is also now being mooted in France. A Paris letter in the *Nord* says:—"The idea has been entertained of reducing the charge for telegraphic communication. That course would be a happy complement of the free-trade measures. The telegraphic despatches transmitted from offices in France do not yet amount to more than 500,000 f. per annum, each costing on an average 5 f. 6 c. That number is small in comparison with the 250,000,000 of letters sent through the Post-office. The reduction in the telegraph charges would therefore be at the same time a benefit for the public, and a good measure for the administration."

THE CANYNGES SOCIETY: ST. MARY REDCLIFF, BRISTOL.

THE thirteenth anniversary of the Canynges Society, established to raise funds for the restoration of the church of St. Mary Redcliff, was held on the 2nd inst. Divine service was, as usual, first performed in the church, the Bishop of Llandaff preaching the sermon. At the meeting subsequently, the president, J. Battersby Harford, esq., occupied the chair. The report read showed that the amount of contributions last year was about 500l. The report proceeded:—

"Your committee are able to announce the complete restoration of the stonework of the south porch, by means of contributions supplied by the efforts of the Commercial Auxiliary Association, in whose report this restoration will more particularly be noticed. The stonework of the east window of the Lady Chapel has been completed, and the stained glass, to be executed by Mr. Wailes, is in a forward state. The stonework of the north window of the Lady Chapel is also ready to be put up, and means are provided for stained glass, for which drawings have been ordered. A window has been completed in the north transept by the surviving members of the family of the late Mr. William Hopton Wylde, to the memory of that deceased gentleman, who was a respected

parishioner, and who assisted the restoration by his contributions and exertions. The doors of the north porch have been completed by the continued liberality of *Mrs. Desperdenem*, at a cost of 66l.; the elaborate tracery is well worthy of examination. A donor, whose name has not been allowed to transpire, has, through Mr. Churchwarden Powell, offered to contribute another stained-glass window, and that at the east end of the south chancel aisle has been selected. The buttresses on the south side of the church are now completed. The internal reparation of the church has also proceeded. The restoration of the pillars, mentioned in the last year's report of the Commercial Auxiliary Association, was completed, together with two other pillars by Mr. Alderman Barnes, and another by the treasurer, Mr. Edwards; and three anonymous benefactors have intimated their readiness to undertake the restoration of four out of the remaining five pillars, provided any one can be found to undertake the fifth. The Society of Freemasons have undertaken the restoration of the north east corner of the Lady Chapel. The work is proceeding satisfactorily, and it is the intention of that body to lay the chief corner-stone at an early period with Masonic honours."

The report then went on to state that Mr. Lucas's munificent proposal to give 1,000l. on condition that the sum of 800l. a-year, for five years, was secured, had proved successful, and that the sum of 5,000l. was thus secured.

A report from the Commercial Auxiliary Association was read, which announced, amongst other things, that the "Hall window," in the south side of the Lady Chapel (by Messrs. O'Connor), was finished and set up.

Dr. Symonds proposed, in an eloquent address, a resolution of thanks to the president. He said, as to the restoration he was glad that the movement had taken place in this age, for it was a practical refutation of the abominable calumny against the age, which had been called a mere mechanical, utilitarian age. Thank God it was a mechanical age: all sorts of improvements were being effected for the benefit of the population, for spreading comfort, and for extending advantages through the land, many of which would not have reached the lower classes, but for mechanical contrivances. It was also a utilitarian age, for sanitary improvements were being effected, and great reforms were being carried out in the criminal and other institutions that might be enumerated; but still it was not a mere mechanical and utilitarian age, for it was more of an æsthetic age than any that had preceded it. He would like to know at what period in the history of the nation there was so true and readily defined a love of art as in the present age—at what time more art, or a greater love of the beautiful, was cultivated than in the present day?

Thanks were voted to Mr. Alderman Proctor, to the Commercial Auxiliary Association, and Mr. Hatberly, their honorary secretary, to the treasurer the honorary secretary, the architect, and others.

Lord Stratford de Redcliffe was unanimously elected president of the society for the year 1861.

EXHIBITION OF 1861 AT DUBLIN.

THE Irish metropolitans seem determined to anticipate the Londoners—in the matter of time, at least—as regards an art and manufacture display; for an ærgetic movement is now on foot to secure that object for May of next year, in connection with the Royal Dublin Society. Triennial exhibitions were formerly held by that body, prior to the Great Industrial Exhibition of 1853, but since that period have ceased. The society, however, is far more favourably circumstanced as to accommodation than heretofore, owing to the recent erection of the Museum and the Agricultural Hall, in which latter the proposed exhibition will chiefly be held. It is required that a sum of 5,000l. should be guaranteed by the public, and at the preliminary meeting about twenty individuals subscribed in all 1,000l.

EXTRAMURAL INTERMENT IN RELATION TO THE POOR.

DURING some recent wanderings amongst the poorer neighbourhoods of the metropolis, we have heard repeated complaints of the additional cost of interment in the suburban districts caused by the distance to which it is now necessary to remove the bodies of the dead. Having formerly used some exertions to put a stop to the abominable practice of intramural interment, we have felt it a duty to watch the working of the new method, and we may state some facts in the hope of obtaining remedies for any evil which may exist.

In the metropolis, at the present time, on an average, 61,360 die in each year. If we take the moderate average of 4s. each for the interment of this vast multitude of the dead, the annual cost would be 245,440l. In ten years 613,600 people die in the London district, and at the above rate

the cost of interments would amount to 2,454,400L. We believe that in the time just mentioned this sum was below the cost of the interments of this vast city; and it must always be borne in mind that these figures are constantly increasing.

The competition of undertakers is as great as that amongst advertising tailors and dealers in health specifics. This competition, though liable to unseemliness on a subject so solemn, will in the end be productive of good, and cause the introduction of some plan which will in time tend to the further cheapening and increased decency of funerals.

Before entering into further particulars, it may be worth while to mention the cost of interments at the several suburban cemeteries:—

	Private Graves.		Common Graves, Parish-tioners.		Common Graves, non-Parish-tioners.	
	Adult.	Child.	Adult	Child	Adult.	Child.
Saint Pancras, Finchley....	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Islington, Finsbury....	1 4 0	10 0	11 0	7 8	0 14	0 9 8
Marylebone, Finsbury....	3 15	0 3	10 0	9 0	6 8	15 0 10 6
Paddington, Willesden....	5 7	6 4	10 0	6 8	5 8	1 5 0 18 0
Saint George's, Hanwell....	3 11	6 3	4 3	15 0	10 0	1 10 0 1 0
Kennington, Hatwell....	4 12	0 3	7 0	18 0	14 0	1 0 1 0 6
Lambeth, Totham....	4 12	0 3	7 0	16 0	12 0	1 8 6 0 6
Saint Giles's, Camberwell, Forest-hill....	3 7	6 1	13 6	13 0	10 0	1 6 0 1 0 0
	5 7	6 4	13 6	13 0	8 8	1 4 0 10 16 0

It will be here seen that for a common grave in any of the above cemeteries the charge for an adult ranges from 8s. 8d. to 2l. 2s. and for a child, from 6s. 8d. to 1l. 12s.

We have just now before us several charges for funerals. For 80l. we can have such costly trappings of woe as imbes on horseback, hearse with six horses, pages, mourning-coaches with four horses, coachmen and footmen, a lead coffin, with inside case lined with silk, &c., and outside coffin covered with velvet; achievements, apartments hung with black cloth, &c. For smaller sums less pomp is offered; but for 2l. 11s. an adult can be decently conveyed, together with mourners, to one of the cemeteries,—for 2s. 6d. less, if the minister is not required; an extra horse to the carriage would be 6s. more. A young child can be hurried for 18s., with the exception of the ground.

These figures show that if certain cemeteries are selected, the charge for burial, even when a separate grave is provided for the poor, is not greater than under the former ill-conditioned system; and if we could but get rid of prejudice, and induce the introduction of different arrangements, the cost of interments, and conveyance of mourners to and from the distant suburban cemeteries, might be very much further decreased.

	For Private Graves.		Common Interments.	
	Adults.	Child.	Adults.	Child.
Rensal-green, Harrow-road....	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Westminster, Earl's-court, Brentford....	7 6	12 18	6 2	2 0
South Metropolitan, Norwood....	5 7	6 4	13 6	15 0
Nunhead, near Peckham-rye....	3 10	0 4	16 0	2 0
Ashney-park, Stoke Newington....	3 16	3 5	6 1	5 0
Tower Hamlets, Victoria-park....	4 17	0 1	6 0	0 10 0*

At the Victoria-park Cemetery, and we believe in most of the above-named places, the practice of interring several bodies in one grave is continued. In the Victoria-park Cemetery a space is devoted to the funerals of children; deep pits are dug, and the coffins closely packed. We were told that in some of these graves there are as many as twenty children buried in each. Many persons complain that by this arrangement it is impossible for parents and children to rest together. So great is the number of funerals in those cemeteries in which the charge for common interments is suitable to the means of the poor, that care should be taken, and frequent inspection made, in order to preserve the regulated covering of earth (3-feet 6 inches) over the vast number of

\* This has been raised to 12s. for a child's funeral on a Sunday.

dead bodies, and that a sufficient space be left between each grave.

In the following cemetery there is a separate grave for each common interment.

City of London, Little Bedford....	£ s. d.	£ s. d.	£ s. d.
	3 7	0 13	19 0
	11 0	17 0	

WORKS IN IRELAND.

THE Amalgamated Waterford County and City Prisons are to be rebuilt according to plans by Mr. Tarrant, county surveyor. Tenders will be received till the 10th September.

The War Department are about executing the following works, viz:—An engineer's office at the Royal Barracks, Dublin; sundry slating and plumbing work at the Royal Infirmary, Phoenix-park, Dublin; a similar class of work at Fermoy barracks; the renewal of embrasures at Charles Fort, in the Cork district; and a new magazine, shafting-room, &c., at Sandy-cove battery, Dublin Bay; and altering the construction of redoubts at Tarbert and Kilkerrin, Limerick district.

The building season is unusually brisk in Dublin and vicinity. Various works, of a commercial character chiefly, are in progress in the City and the suburbs: the southern, especially, are rapidly extending, and dwelling-houses are springing up in all directions.

The stone-roofed church of St. Douglagh's, near Dublin—the most perfect pre-Norman relic in Ireland—is now in a forward state of preservation, under the directions of Mr. Sloane, who has caused the roof and outer walls to be repaired in Roman cement, the western corner shored up and partly rebuilt, the west window restored to correspond with the east, the vaulted ceiling of the oratory repaired, the floor relaid with fire-clay tiles bedded in cement, and the stairs and several other portions throughout repaired. It is said that the square tower of this edifice commands a view of the Welsh mountains, and those of Mourne (county Down), Wicklow, and Wexford.

The Court-house at Castlebar has been lately enlarged and improved after plans by Mr. Wilkinson, of Dublin, architect. It now contains two courts, viz. a crown and a record, separated by a central hall, with ascending flight to upper floors, which contain grand and petty jury rooms, &c. &c. The wings have been elevated a story, and are finished with pediments and connected by a central hexastyle Grecian Doric portico of cast-iron, according to the design of the original architect to the building, the late Mr. George Papworth. We learn that Mr. Wilkinson has also received instructions to prepare plans for a county lunatic asylum to accommodate about 150 inmates. In other respects the town is palpably "slow."

The summary dismissal of Mr. Deane, county surveyor, by the Grand Jury of Tipperary, is a subject for much gossip; but, as it is to be investigated before a court, public judgment ought to be suspended. The right of the appointment and dismissal of county surveyors rests (it seems) exclusively with the Grand Juries; but in this case, on application to Mr. Justice O'Brien for a public investigation, his lordship's suggestion that it should be accorded where a professional man's character was at stake has been acted upon.

A new Roman Catholic church is being erected at Crossmolina, after plans by Mr. Canning; Mr. McGurran, builder. The dimensions are 115 feet by 90 feet; nave, transepts, chancel, and intended tower and spire; style, Gothic. Differences having arisen between the architect and the builder relative to constructional questions, they were referred to the final arbitration of Mr. J. Lyons, architect.

The cathedral of St. Niel's, at Longford, now being completed under the direction of Mr. John Bourke, architect, is an important classic edifice. It was originally designed by Mr. Keane, architect, and is a cruciform structure, 240 feet in length, and 87 feet in clear breadth of nave and aisles, with breadth across transepts of 130 feet. The nave has a semicircular ceiling, divided into double recessed coffers, springing from a continuous entablature immediately over arched arcades, with Ionic columns at either side. A great portico, 96 feet in length, and a campanile, are yet to be erected. Mr. Bourke is also architect to the diocesan seminary of Holy Cross, near Dublin, and the building just commenced will be 260 feet in length, and 5 stories in height, the principal being approached by a spacious flight of steps through a stone portico, supported by rectangular pillars, and containing entrance-hall, 23 feet by 15 feet; reception-rooms of same dimensions; study, 41 feet by 30 feet; library, 23 feet by 30 feet; chapel, 23 feet by 40 feet; and class-

rooms of various sizes. The stories above comprise professors' and sitting rooms, together with seventy bedrooms; and in the basement will be refectory, culinary offices, bath-rooms, &c. &c. The exterior will display chiselled granite cornices and stringed courses, a central projection with wings dividing the facade into three portions, the groins and dressings of the central windows being granite likewise, the remainder throughout of the plainest character.

A parish church has been recently erected at Upper Cumber, Derry, according to plans furnished by the late Mr. Welland, architect to the Ecclesiastical Commissioners. It comprises nave, aisles, and porch, with sittings for 400 persons; is open-timber roofed, has spire and heltry, and is in the Gothic style. Messrs. McElwee, contractors. Cost, 3,000l.

A memorial schoolhouse is proposed, at Dublin, to the late wife of the Archbishop Whately.

Large additions are about being made at the Dominican Convent, Lion Hill, Dublin, chiefly comprising a new wing, with refectory and kitchen offices on ground floor; on first floor, an infirmary, noviciate, pharmacy, &c.; on other stories dormitories, dressing-rooms, &c. A transept will be added to chancel, and have a school underneath. Mr. Bourke, architect.

The foundation-stone of the new Presbyterian church at Rathgar, Dublin, has been laid by the Rev. Dr. Cooke, of Belfast.

A new church is to be built at Kilmachadar, county Kerry, for which the foundation stone has been laid. Mr. McDonnell, builder.

The Glasnevin (Dublin) Cemetery Committee are about having building improvements effected: Mr. Patrick Byrne, architect.

VALUE OF LAND IN THE CITY OF LONDON.

FROM a recent report of the Metropolitan Railway Company, we learn that, in anticipation of the extended traffic of this line and the need of space near the goods' depot at Smithfield, the directors have determined to purchase the whole of the vacant land belonging to the Corporation of London, on the eastern side of Victoria-street and north of West-street. For this, in quantity 5 acres 19 perches, the purchase-money has been agreed on at 179,157l., of which 60,000l. will be paid in money during the next twelve months, and the remainder by a rent-charge at the rate of 4½ per cent. per annum, redeemable in forty years. This is about 35,000l. per acre, so that each yard of vacant ground in this locality seems at the present time to be worth about 7l. 5s.

This large value, which is moreover small in comparison with that of land in other parts of the City, shows the difficulty of providing, on the ordinary plan, within these limits, dwellings for large numbers of workmen, and of a moderate income, who are engaged in the City.

MEMORIAL OF THE GUARDS; WATERLOO PLACE, LONDON.

EVERY one knows that a Memorial in honour of the Guards who fell in the Crimea is being erected in Waterloo-place, Pall-Mall, opposite to the Duke of York's Column, under the direction of Mr. John Bell, the sculptor. The pedestal, of granite, from the Cheesewring Company's quarries, has been ready for some time, and lately the bronze group in front has been set up. Of this we give an engraving in our present number. It represents a man of each of the three regiments, viz. the Coldstream, Grenadier, and Fusilier Guards. Each figure is attired in full marching costume, as they fought at Inkerman. These figures are between 8 and 9 feet in height, in bronze, by Messrs. Elkington, from their works in Birmingham. A figure of Honour, also in bronze, is to surmount the whole. The total height of the Memorial will be about 36 feet. The motto, which appears in our illustration, will not be placed so near the feet of the soldiers as it is here shown, but on the pedestal below.

There will be a trophy at the back, to be of real guns taken from Sebastopol, several mortars, and shot and shell being to be added to those already there. The devices and mottoes are only temporarily painted on at present, so as to be criticized and modified, if required, before incision. All must approve of the *principle*, even should they object to the details as they at present stand, of decorating pedestals, and not allowing them to remain the bald bare posts that they usually are in our British monuments.



THE GUARDS' MEMORIAL, WATERLOO PLACE, LONDON: LOWER GROUP.—MR. JOHN BELL, SCULPTOR.



THE PROPOSED FOREIGN OFFICE.

RECENTLY in the House of Commons, Mr. C. Bentinck asked the first Commissioner of Works whether there was any objection to exhibit photographs of the Ca' Vendramin Calergi, the Scuola St. Marco, and the church of St. Zaccaria at Venice, in order to show good examples of the style of architecture which Mr. Scott now proposed to adopt for the New Foreign Office.

Mr. Cowper believed that the photographs which the hon. member wanted to exhibit would be instructive, and that the sketches at present in the committee-room gave but a very imperfect and faint idea of the building which Mr. Scott would erect. But if he were to exhibit photographs of these three buildings, he could hardly stop there; and, to give the House an adequate notion of the subject, it would be necessary to convert the committee-room into an architectural exhibition. The House would do well to attach due weight to the opinions of the eminent architects who had acted as referees—Mr. Cockrell, Mr. Fergusson, and Mr. Burn,—who had stated that the sketch now in the committee-room was one worthy of approval for the purposes of the Foreign Office.

The new design as originally made was, we believe, Byzantine-Italian. Some who are in authority afterwards treated it, if we are rightly informed, somewhat after the fashion of the two wives of a certain individual famous in story, one of whom picked out all the gray hairs, while the other removed all the black. What is left the public have to see. No vote will be taken till next year.

LEEDS CORN EXCHANGE COMPETITION.

We understand that the Markets Committee of the Leeds Town Council, having made a final examination of the designs sent in for the intended new Corn Exchange, have decided to recommend that the first prize shall be awarded to Mr. C. Brodrick, of Leeds; the second to Mr. W. Hill, of Leeds; and the third to Messrs. Lockwood & Mawson, of Bradford.

SOUTHERN HIGH LEVEL SEWER.

METROPOLITAN BOARD OF WORKS.

At a meeting of the Board of Works, on the 3rd inst., Messrs. Lee and Bowles were accepted as contractors for the southern high level sewer, in the place of Messrs. Helling, on their signing a proper deed, to be prepared by the solicitors of the board.

A meeting of the creditors of Messrs. Helling, contractors for the sewer, was held a few days ago. The accounts, prepared by Mr. F. Kemp, showed liabilities to the extent of 15,132l. 17s., and assets, principally consisting of plant, of 13,357l. 17s. irrespective of what may be recovered from the Board of Works from moneys retained. An offer was made and accepted of 15s. in the pound, secured by the gentlemen who were sureties for the completion of the contract, which they have taken (as above shown) into their own hands.

ST. HELEN'S CHURCH, BISHOPSGATE STREET, LONDON.

It is at all times interesting to note the changes and record the alterations which, from day to day, steadily proceed in our ancient metropolis. New buildings rising up startle the inhabitants in their immediate neighbourhood with their conspicuous novelty, while the traveller almost doubts the identity of this or that locality, from the strange metamorphosis which greets his view.

Other buildings there are, nestled in quiet nooks, or embowed in ramparts of brickwork, which, when exposed, bring long-lost features to light, venerable from their antiquity, and pregnant with historical recollections. These last are precious to the antiquary, who does not pass unheedingly, but notes the changes, and finds some fact revealed, some beauty disclosed; and thus he forms a useful link between the past and the future.

It is in this spirit that we would call attention to the Priory Church of St. Helen, which, by the removal of some adjoining buildings, has exhibited portions long hidden. The nunnery was founded about the year 1210, and suppressed at the time of the Reformation.

The interior of the church is chiefly remarkable as containing several fine monuments and being the last resting-place of Sir John and Lady Crosby, Sir Thomas Gresham, Sir William Pickering, Sir Andrew Judd, and Francis Bancroft. Externally

it is of an unpretending character, with windows of late Tudor period; recently, however, some houses adjoining on the south side of the transept have been removed, in doing which a three-light and other windows of an earlier date have been revealed.

The parish finding this to be the case resolved to open one in the transept, as an ancient light; which right was disputed by the Merchant Tailors' Company, who contended that they were entitled to rebuild; after some litigation the matter was compromised. The Merchant Tailors allow a somewhat scanty light to enter the sacred edifice, slant in by new and handsome offices in the course of erection, under the superintendence of Mr. Corbet.

The parish have carefully repaired the window, which, by the liberality of Mr. Wm. Jones, deputy of the ward, has been filled with stained glass, with devices and descriptions.

The glass was supplied by Messrs. Claudet & Houghton, from a design by Messrs. Wadmore & Baker.

MASTERS AND MEN.

THE necessity which the masters have been under, in many instances, from the obvious state of the labour market, to grant reasonable advances to the men, has, as was to be anticipated, encouraged others to agitate for similar advantages, so that matters are still in a very unsettled state.

The movement in the building trade is, it is said, extending to Worcester. The carpenters and joiners in the employ of the various building firms in this city have sent letters to the masters, requesting an advance of 2s. per week in their wages. It is thought probable that the masters will consent to meet their men half-way, by allowing an increase of 1s. per week.

In consequence of a strike amongst the masons engaged in building the new church at Over, the further progress of the building is for the present prevented; but time has been allowed for completion.—The ship joiners employed by Messrs. Laird & Co., of Birkenhead, demand an increase of 3s. per week in their wages. In the event of this being conceded, it is said that the men in other departments will make somewhat similar demands.—Messrs. Dennis, Lee, & Welsh write to the *Leeds Intelligencer*, complaining that the Unionists insist upon their workmen quitting their employment, although "they already had all and more than their brethren in the trade were apt for," and that the Unionist masons have adopted as a model the "odious document" for the coercion of the masters. The Leeds master masons and bricklayers have followed the example of the men by combining for their mutual benefit. Indeed, the combination extends to the whole of the West Riding of Yorkshire. The fundamental principle of the association is that all the members pledge themselves (and are bound under a penalty) not knowingly to employ any of each other's workmen if they are on strike "on unreasonable grounds," and if any question as to the reasonableness or unreasonableness of a strike arises, it will be left to the branch association in the locality in which the strike exists to decide. The promoters strongly disclaim any wish to oppose "reasonable" requests on the part of the workmen. The application for an advance of wages by the masons in Leeds "had been willingly acceded to, but other demands which the men had made were such that it was impossible the masters could accede to them."—The *Leeds Intelligencer* states that the whole of the men employed at the various glass works at Castleford (fifteen in number) have given a week's notice to leave, in consequence of the refusal of the masters to raise the rate of wages. This is said to be a general movement throughout the district.—The operative masons of Halifax are demanding a reduction of the hours of labour from 57½ to 51½ hours a week, without a proportionate reduction of wages. A three months' notice was given to the masters of their intention to strike, if what was asked was not acceded to, and the notice has just expired. The masters not having as yet granted the demand, the workmen have, accordingly, struck work.—The joiners of Hull have been agitating for an advance of 6d. per day upon their present wages, and they have at length issued an appeal to the public for support. A great number of the men are at present on strike, but about thirty of the seventy-two master joiners have yielded the advance.—The opening of the Liverpool Free Public Library, which was fixed for the 18th of October next, is likely to be postponed in consequence of the strike of the joiners. The employers are willing to give the half-hour on the first five

days of the week, but they object to the loss of an hour on the Monday morning, and hence the strike.—The masons of Austerlarder have had a strike against their employers as to a rise of wages. They wished that 1s. 4d. per day might be added to the present rate, and the masters were unwilling to comply with the request. All work in this branch was thrown aside; but the masters have since, we hear, come to a good understanding with their men.

The insane strike at Coventry still continues; and although a highly popular local friend of the poor weavers, the Rev. Sidney J. Widdington, Vicar of St. Michael's, called a meeting of them, at which "he was greeted with deafening shouts of applause," nearly every idle hand was held up against him when he urged them to relax the stringency of the strike, and allow each to do his best for his starving family. Under the peculiar circumstances this is a dreadful infatuation. We observe, too, that most erroneous ideas prevail amongst them as to the prevalence of taste for French ribbons in this country, and even in Coventry itself. Even were it so, the reasons given for preferring the latter are onerous. But the flourishing state of the French ribbon manufacture is as gross a delusion as the idea of deriving benefit from a strike under present circumstances assuredly is. The French ribbon weavers are in a state of actual distress no less than the Coventry ones, and from sheer want of work, too, and not from a voluntary strike. Most of the looms at St. Etienne, where the ribbons are made, are idle, as we happen to know, and the weavers have either become colliers in the vicinity, or have left it altogether. And the reason we have but too well ascertained. In France, we learn, as well as in this country, the fashion has veered, for the moment, from ribbons altogether, whether for bonnets or dresses, to partridge wings, cocks' tails, and other feathers with wide-awake and other hats, and artificial fruit and flowers for bonnets, net quillings instead of ribbon bows and long ends for full dress, &c. The taste for ribbons may revive shortly, but such is the state of matters in the meantime, and strikes can only aggravate the evil.

In justice to the Coventry operatives (though it really affords them no justification for striking), we may here mention that the *Coventry Free Press*, which advocates their interests, states that "day after day appeals have been made, in courteous language, to the manufacturers, to reconsider the list, and offers even to submit to a reduction of prices have been made by the workmen, if the employers will but condescend to prove the necessity for it."

THE DRINKING-FOUNTAIN MOVEMENT.

A FREE drinking-fountain has been erected and opened at London-bridge. It has been put up at the cost of the United Kingdom Temperance General Provident Institution, and is situated directly opposite the society's offices, Adclaide-street. Mr. J. Taylor, at the opening in presence of a numerous assemblage, remarked that we had in the metropolis 10,000 places for the sale of intoxicating liquor, and it was proposed to counterbalance this, in some degree, by the erection of 400 drinking-fountains. The great object of this movement was not merely to supply water to the people freely in the streets, but to supply it of a pure and excellent quality. The supply of water to this fountain was furnished by the New River Company, and was filtered immediately on being brought to the fountain. The fountain was executed by Messrs. Wills, sculptors.—The Earl of Dudley having offered to erect at his own cost an ornamental fountain, in the Market-place, Dudley, on condition that the inhabitants put up one of an ornamental character, a committee has been formed for the carrying out of the latter object. A design has been obtained from London artists, consisting of six columns standing upon a pedestal, supporting an ornamental canopy. A site has been granted by his lordship at the top of the Birmingham-road. The estimated cost of the erection—all stone—will be 200l. The design is after the Temple of Vesta, at Athens.

*Birkenhead.*—SIR.—Amongst the drinking-fountain news I have never seen our rising town of Birkenhead mentioned. We have a gentleman who has done good by stealth: Mr. Joseph Craven put up drinking-fountains nearly two years ago. They are plain in design, and manufactured by Messrs. Leslie & McDonald, out of Peterhead granite. There are no ornaments about them that the street iconoclasts can injure. I fear the beautifully executed Middle Age designs so accurately illustrated in your journal will suffer from the hands of these despoilers. There should be a special enactment to punish them with great severity, even to the extent of penal servitude. R. H.

## PROVINCIAL NEWS.

**Newbury.**—It is proposed to consider, at a public meeting, the propriety of erecting a coin exchange in Newbury.

**Worcester.**—Mr. E. B. Evans, of this city, has recently purchased an estate at Whitbourne, and a mansion is about to be erected thereon. Mr. Elmslie, of Malvern, is the architect, and eight tenders for the building were sent in by contractors. Of these the highest was 25,745*l.* by Messrs. Mansfield & Son, and the lowest 21,500*l.* by Mr. Broadbent. The latter was accepted.

**Abergavenny.**—The local commissioners have nearly completed their arrangements for commencing the new water-works. The contract for the whole of the required new iron pipes, about 210 tons in weight, has been taken by Mr. Spittle, iron founder, Newport.

**Cardiff.**—New wards have been erected at the Cardiff Union Workhouse from designs by Mr. G. E. Chittenden, the architect of the new gaol. Mr. Webb, of Birmingham, was the contractor. The walls of the new wards—the floors of which were merely paved with tiles, and in some cases below the level of the ground outside—are raised upon the walls of the old ones, which stood in the rear of the workhouse premises: the washhouse and laundry adjoin the new wards. The men's sick ward, approached from the north, is 32 feet 6 inches by 1½ feet, and 12 feet high; it has a boarded floor raised above the level of the ground outside, bath-room, lavatory, with hot and cold water laid on to both, and the old lying-in ward is altered both in size and appearance. It is now warmed, ventilated, and lighted the same as the new wards, and has also hot and cold water laid on.

**Derby.**—The tenders for the erection of Derby Corn Exchange, according to the designs of Mr. Benjamin Wilson, have been examined, and that of Mr. Henry Bingham, for 2,985*l.*, accepted.

**Manchester.**—A large building for the A Division of the Manchester police has been erected on the site of the gas station, Albert-street, and is nearly ready for occupation. The building has a frontage of 200 feet, and extends back into Lower King-street. It is in the Italian style, from plans by Mr. Lynde, the city surveyor, and is built of stock bricks with stone dressings. There is a parade-room 58 feet by 42 feet and 28 feet high. It is lighted with sun-burners in the ceiling as well as gas-brackets on the walls, and there are seats round and an extensive fireplace and oven, at which the men on duty may warm themselves and their food. Stone staircases lead to the upper stories, which contain a great number of rooms, including seventeen bedrooms, kitchen, fitted with cooking range, larder, scullery, clothes-room, baths supplied with hot and cold water, a mess-room fitted with tables, and a lavatory large enough for a dozen men to perform simultaneous ablutions. Telegraphic communication has been formed with the new station. The building has cost about 4,000*l.* Mr. W. Buxton, of Manchester, was the contractor; and the sub-contracts were let to Mr. John Bramall, for the woodwork; Mr. Higgins, bricklaying; Mr. Kirkley, slating; and Mr. George, plastering and painting.

## CHURCH-BUILDING NEWS.

**Aunby.**—The church here, a time-worn edifice, is now undergoing a thorough restoration, after designs by Mr. W. Thompson, architect, Grant-ham. The works comprise the taking down and re-erection of the tower and spire, new roofs, seats, and floors to the nave and aisles; and a restoration of the pillars, arches, and windows. The chancel will also be restored by the rector. The tower, spire, and south aisle, are specimens of Early English architecture: the north aisle and chancel are of an earlier date. Mr. John Rudd, of Grant-ham, has obtained the contract, and is now engaged in taking down the spire. We understand the funds are raised partly by a rate on the parish, and partly by subscription.

**Church-Stowe.**—The church of Church-Stowe with Stowe-nine-Churches has been reopened for Divine service, after having been closed for restoration purposes for the last twelve months. Under the direction of Mr. Hardwick, the side arch, north of the chancel, has been again opened, says the *Northampton Herald*, the figure of the knight replaced in its original position under it, and the monument to Bishop Turner placed against the north wall beyond it. The large old pulpit, reading-desk, and screens have been removed, a more appropriate pulpit, prayer-desk, and reading-stand being substituted, the lesson-stand, an eagle, being supplied by Potter, of London, who also furnished the one for the church of All Saints,

Margaret street, London. On the principle that no portion of the old building that it was possible to retain should be done away with, the wood-work of the old screen now forms a wainscot for the walls of the baptistry, which is at the south side of the tower porch, and immediately at the left on entering the church. The pews are done away with, and open seats substituted, each seat being furnished with a complete set of kneeling hassocks. A new vestry has been built on the north side, the style being in accordance with the other portions of the building, the walls being wainscoted with some carved wood-work, removed from behind the altar. The chancel is stone. Outside the chancel arches are decorated with fruits and flowers, cut from the stone, and inside the arches are several figures of angels carved from the corbels. The chancel is paved with Maw's encaustic tiles. The church throughout is paved with Maw's dark blue and red small tiles. Adjoining the chancel, on the north side, are stalls for the clergy and the choir. The stalls are of plain unvarnished oak, on each stall being carved an angel with a trumpet, harp, or other musical instrument in its hand. The entire interior of the church is new, all of it being decorated. The east windows, indeed all the windows in the church, even to the belfry, are filled with stained glass, from Messrs. Powell & Son's, of London. The church is warmed with hot air pipes, the iron work and gratings, with all the other iron work in the church, being executed by Mr. Collins, a resident of the village.

**Market Harborough.**—Some restorations and improvements, such as replastering the walls, have been carried out at the parish church here. A new window has been placed in the west end of the belfry (which is open to the church) of Powell's patent plates, with a ruby band. Over the arch dividing the chancel from the church is a stencil border of the vine, which helps to relieve the dullness of the walls. At the bottom of the east window has been placed a brass plate, engraved by Mr. Hardiman, of Birmingham, and bearing the following Latin inscription:—"Ad Majorem D.E.L. Gloriam hanc Pictam Fenestram, d.d., F. P. J., J. H. II., A. M. V., H. A., anno Salutis mdcclxx." The whole of the work has been executed by Mr. Lee, of Lutterworth.

**Braintree and Bocking.**—The restoration and enlargement of Braintree Church, as at present carried out, in the Early Decorated style, comprise the erection of a new and enlarged north aisle, with external walls of flint and stone dressings, interspersed with red brickwork. The north aisle is lighted by four large windows, with stone mullions of geometrical tracery, and glazed in ornamental patterns. It will provide additional sitting accommodation for 100 persons. The tower has been denuded of its old coat of plaster, and now displays its original stone materials, while the spire is new shingled. The exterior of the chancel is also composed of new stone and brickwork, and has an east window. The open roof of the nave and north aisle is supported by stone corbels, carved. The clerestory windows of the nave are all new. The chancel roof is composed of old English oak. The gallery on the north side has been removed, as has also the gallery in front of the west end of the nave, which has thrown open to view a stone arch and small window in the tower. It is intended to remove all the galleries, which will expose to view the arches. All the big pews are to be removed and substituted by low benches. The interior of the tower will be refitted with seats, and the organ removed to the north chancel aisle. The whole of the south side of the church, which is in a very dilapidated state, requires to be restored. The south-west end, for many years used as a school-room, and now in a very ruinous condition, is to be restored, and will afford increased sitting accommodation to the congregation. The present alterations in the nave of the church have been completed by voluntary contributions, under the directions of Mr. J. L. Pearson, architect, London. The chancel has been erected at the cost of 400*l.*, by order of the trustees of the Felsted Charity. The contractors are Messrs. Parmenter & Sons, builders, Bocking. The whole of the work connected with the church restoration is progressing, and it is hoped will soon be completed, but much will depend upon the pecuniary contributions. The old bells have been recast.

**Corfe Castle.**—The Church of St. Edward the Martyr, which, with the exception of the tower, has been entirely rebuilt and enlarged, has been re-opened, and consecrated. The old church, which for centuries had occupied the site of the present erection, remarks the *Dorset Chronicle*, is a blending of various styles of architecture in

a somewhat confused mass, the predominating one being Early English; and to this latter style the architect, Mr. T. H. Wyatt, has principally adhered in the restoration. The chancel arches, separating the chancel from the aisles, are supported by clustered columns of Purbeck marble, eight smaller circular shafts surrounding a larger central column, and surmounted by plain mouldings, from which the arches spring. The arch between the nave and chancel is of the same character, and springs also from Purbeck marble shafts. The roof of the chancel is an open one of stained wood. The corbels supporting the vaulting shafts are carved. The chancel, which is approached from the nave by four steps, has been extended towards the east, and considerably enlarged; and the east end of the chancel has a three-light lancet window. The rails before the communion-table are of oak, and the space within them is laid with Minton's encaustic tiles. A small space in the north aisle is screened off, and appropriated as a robing-room for the minister. In the north aisle is a memorial window, lancet-shaped, erected by the Rev. J. C. Bradley; subject—The Crucifixion. On the opposite or south aisle are two small lancet windows—"Christ blessing little Children," and "Our Saviour presented to His Parents;" these were the gift of the architect, Mr. Wyatt. On the various arches of the chancel different texts of Scripture are inscribed; these have been prepared by Lady Charlotte Banks. The columns of the nave of the church are said to be types of the Saxon age, from which spring pointed arches of a later period, and these are surmounted by clerestory windows. The roof is open and lofty, and also of stained wood. The chancel aisles are continued throughout, each side of the nave. The capitals of the columns appear somewhat heavy, and are carved variously with fruit, flowers, and other designs, some of which are yet unfinished. The church is seated throughout with low open seats—those of the chancel with finials at the ends, and open backs. The pulpit is low, carved, and panelled. The tower has not been touched. The arch leading from the nave is lofty, and the belfry which it used to contain has been carried to a floor above the crown of the arch. The space within has been screened off, and in it the old font, which is of Purbeck marble, has been placed. The west window of the tower is in the Perpendicular style. In the north porch the two original Saxon shafts have been restored and built in with the new work. Mr. T. Farwell, of Swanage, and Mr. Meadus, of Poole, were the builders.

**Hagley.**—The new chapel of ease at Blakedown has been consecrated. It is located within a short distance of the Churchill Station on the West Midland Railway, four miles from the parish church of Hagley. It was built by Mr. Griffiths, of Eldersfield, after the design of Mr. Street, architect. The cost of the building was about 600*l.* The style of the edifice is Early English. The number of sittings (all free) is ninety for adults, and thirty for children. Provision has been made for warming the building after a plan by Mr. Mitchell, of Leamington. The church is dedicated to St. James.

**Worcestershire Churches.**—The building and restoration of churches is going on with great vigour in the Worcester diocese. The church at Barbourne, near Worcester, to be founded by Miss Lavender, is to be built by Messrs. Hartland & Aldenbrooke, of Sedgley, whose tenders have just been accepted. The long-desecrated church of Cow Honeybourne, near Evesham, is at length undergoing restoration, a public subscription having been raised for that purpose. Sir Thomas Wymington, bart., M.P., patron of Upper Sapay, is now restoring the church of that parish, at a cost of 1,000*l.*, one-half of which will be given by the hon. baronet, and the rest raised by subscription and a rate. Mr. Hopkins, of Worcester, is the architect, and the edifice will be re-opened in about a month. It has been nearly rebuilt. White Ladies' Ashton Church, near Worcester, is also being restored by the same architect, and will be furnished with a new aisle and vestry. There will be a general refitting of the interior and removal of the old galleries. The estimates for this work varied from 99*l.* to 380*l.*

**Falfield.**—The new church of Falfield, according to the *Gloucester Chronicle*, is erected on land presented by Sir John Jenkinson, bart., opposite the entrance to his park at Eastwood, in the parish of Falfield. It was originally a small hamlet in connection with Thornbury; and the church was designed with a simple bell turret at the west end; but as it was subsequently made into a district church, a small tower, surmounted

by an open belvedere, was substituted, presenting the appearance of a suitable village church. The style of architecture is Early Decorated. The arrangement of plan is that of a nave, with central aisle, chancel, and a small sacristy on the north side of chancel. The entire length internally is 62 feet, the width of nave 24 feet, the height 40 feet to ridge of roof. The exterior is of native stone with freestone dressings, and divided into four bays, having a two-light window in each: the large east and west windows are filled in with simple tracery. Over the nave and chancel are open, stained timber roofs, with carved principals of simple construction. Open seats of uniform size are provided throughout, which, with the pulpit and reading-desk, are of stained deal. The accommodation is for 206 persons, 150 free. An open archway is left between the chancel and sacristy, in which a small organ will be placed. The whole of the work has been executed by Mr. W. B. Burchell, builder, Thornbury, from the designs of Mr. S. W. Daukes, of London.

**Oystermouth, Somerset.**—The Swansen *Cambrian* states that the Oystermouth Church, having been almost entirely rebuilt, has been reopened for Divine worship. The architecture is principally Gothic, with, however, variations of the Early Perpendicular and Norman. In the restorations and additions care has been taken, where the ravages of time would admit it, to make use of the old materials, such as doors, windows, &c., whilst, in those places where rebuilding was absolutely necessary, the old style was imitated. Some of the old eucastic tiles which were found amongst the rubbish have been placed in conspicuous parts of the new walls: some tessellated pavement has also been preserved. In order to carry out the restorations and additions, upwards of 2,000l. were required; and the larger portion of this amount has already been realised: only about 200l. are now wanted to pay for the work completed. The restoration and renovation of the old tower are said to be seen to. The whole of the work has been carried out by Mr. Joseph Holtham, of Bath. Mr. J. Kyrke Penson, architect.

**Caythorpe.**—The church here is undergoing considerable alteration under Mr. G. G. Scott, architect. Mr. Scott's clerk of the works was at Caythorpe on the 16th ult., and made a special examination of the spire, the result of which is to be that the upper part is to be taken down to the extent of 40 feet and rebuilt. It seems that the bulge in the spire for the first 50 feet was straight, but from that point it had been carried up straight, instead of to the line directed.

THE ATLANTIC TELEGRAPH CABLE.

THE erroneous construction of the great Atlantic telegraphic cable is now made but too manifest by the recent attempts to lift it on the American side. It has been found to be quite rotten, so far as regards what was meant to constitute the chief stay of its strength, the heavy iron wire covering twisted round the central core. In some instances, on the other hand, the cable was actually lifted solely by the strength of the copper wires and gutta percha of the core, surrounded by the ponderous, rotten, and useless iron covering. Generally, however, the cable parted at length in all the continued attempts to lift it, doubtless not from rottenness of the core, but from the undue weight of the rotten covering. Where this covering had itself been protected by tarred yarn it was sound, as was the yarn. The cable has been abandoned, but we think prematurely, since the core was sound, and might, though not continuously liftable, be perfectly workable, for all that appears, across the entire Atlantic. Of course, the covering will be equally rotten, but it was towards either shore where any actual breakage, by the mechanical action of the sea, was most likely to occur; and were new extremities of better construction joined on to the main portion, we do not see why the whole might not yet be made workable, if, as is said, the gutta percha and copper core be entire so far as has been seen. Could not the main portion be tested, at least after a similar riddance of shore lengths on this side of the Atlantic? Meantime, however, the American end has been lost, but the spot is buoyed. On the whole, nothing could have been in more complete accordance with all we have remarked and suggested as to this cable than the result as now published. It would have been infinitely better, and far cheaper, to have simply laid the uncovered core; but that, farther protected merely by tarred yarn, would have constituted a far more reliable cable for the purpose than the stupidly ponderous and costly iron one actually laid.

SCOTLAND.

**Dundee.**—The Misses Baxter, of Balgavies, and David Baxter, Esq., of Kilmarnou, are named as those to whom Dundee will be indebted for a beautifully situated park of thirty acres. The piece of land marked out for purchase lies on the east side of the town, on the high ground immediately to the north of Springbill, between the Arbroath and Forfar roads: it commands, from its elevated position, a fine view of the Tay, the sea, and the magnificent ranges of hills which stand piled up like banks of summer clouds to the north.

**St. Andrew's.**—The new town-hall, commenced two years ago, now approaches completion. It is placed exactly opposite the Town Church in South-street, and extends about 120 feet down Queen-street, also running southwards. The design is by Mr. Henderson Hamilton, architect, Edinburgh.

**Bo'ness.**—The clock and bell-tower, designed by Messrs. Brown & Waidrop, Edinburgh, is at length all but completed. It is a square Gothic edifice of four stories, rising to the height of 75 feet, and is in keeping with the architectural character of the town-house. The lower portion forms a vestibule to the town-hall, through a large archway with heavy hotted mouldings—a flight of steps leading from the lower court. On each side of these steps are heavy ornamental stone pillars and stone balustrade. The pillars will be surmounted with metal lamp-posts. The second and third stories form the bell-room, and externally are buttressed to the third string course, which marks the commencement of the clock-room. The roof, of zinc, is flat, and hidden by the parapets. The bell weighs 950 lbs.: John C. Wilson, founder, Glasgow.

STAINED GLASS.

**Christchurch Cathedral.**—This edifice stands upon the site of an ancient nunnery, founded in the eighth century by a Prince of Oxford, father of the Saxon saint Frideswide. The *Times* says,—According to the legend, the beauty of Frideswide, who presided over the nunnery, attracted the attention of the Mercian prince Algar, who determined to carry her off by force. To evade his pursuit the pious virgin concealed herself for a long time in a pigsty, and when this unsavoury place of seclusion no longer availed, the daring lover was visited with blindness until he repented of his evil designs, through the intercession of the saint. This story, which is like a thousand others, will be told in ample detail by a window which is to be placed in the cathedral, and is now about half completed by Messrs. Powell & Sons, of Whitefriars. The saint is first shown in her childhood, trained by pious preceptors. Then she wanders a little into the pleasures of the world, typified by a sort of flower-garden; but she soon cuts off her hair, that she may live in holy retirement. Next comes the astonishment of the presumptuous Algar, at his want of success in his attentions to the virgin. Then the Mercian army, misled by an artful peasant, fairly marches round St. Frideswide, who is hidden in a kind of ditch. With the concealment of the fair saint in the sty, where she fervently prays, surrounded by a literally "swinish multitude," the completed portion of the window, consisting of two lights, terminates; but the cartoon for the fourth light is already painted, embodying the incident of the prince's miraculous blindness, and the death of the sinner. The work is executed on the old mosaic principle, each separate colour being represented by a separate piece. Mr. E. B. Jones, the artist who has designed the composition, has treated the subject in a thoroughly Medieval spirit, pursuing the tale with an almost childlike love of minuteness. The peasant-boy who misleads the Mercian army, by pointing over the wrong shoulder, is clearly the originator of the phrase, "over the left," now frequently used by modern Anglo-Saxons, with less pious intentions.

**Tarring Church.**—The stonework window of the early Perpendicular period, consisting of five lower compartments with a full tracery bead, at the east end of the chancel of the church at West Tarring, has just been filled in with painted glass. The design of the upper portion of the three centre lights, says the *Brighton Gazette*, is the Ascension, with the eleven apostles grouped around. The north opening contains St. John the Evangelist; and the south, St. Andrew (the patron saint of the church), with their respective emblems. The compartments are connected by the ornamentation of passion-flowers on a ruby ground. The lower portion of the compartment contains—1st. The Nativity; 2nd. The Baptism by St. John; 3rd. The Crucifixion; 4th. The Entombment; 5th. The Transfiguration. In the

tracery of the upper portion of the window arc represented Angels, the Holy Trinity, St. Andrew's Cross, with foliations of roses, figs, &c. Beneath runs the memorial inscription, in memory of John Thomas Longman, of Waterloo Place, London. There now only remains to complete the restoration of this old church, on which upwards of 3,000l. have been expended, an entire renovation of the chancel, a duty which belongs to the Ecclesiastical Commissioners, as appropriators of the rectorial tithes.

**Christchurch, Hants.**—A large memorial window has been erected at the east end of the north choir aisle, in the Priory Church of Christchurch, Hants, by Admiral Walcott, M.P., to the memory of his parents, Col. Walcott, commandant of the Christchurch Volunteer Artillery, in the French war, and his wife Catherine, aunt of Admiral Lord Lyons. The four lower lights are filled with designs representing the Nativity, Crucifixion, Resurrection, and Ascension of Our Lord, executed by Messrs. Lavers & Barrard. The only remaining east window in the church is that of the Lady Chapel. The window was erected under the directions of Mr. Benjamin Ferrey, the architect employed in the restoration of the church.

**Miscellaneous.**—A stained glass window has been put up in Glasgow, to the memory of Mrs. Hemans, the poetess. The architectural features of the window comprehend two principal lights, with a bold circle, and two curved spandrels above them. In each light, two groups of figures in panels appear between as many smaller medallions. The subjects of the four groups (selected by the committee of the subscribers) are Miriam singing—her Song of Triumph, the Presentation of the Youthful Samuel by his Mother, Deborah judging Israel seated beneath her Palmtree, and the Salutation of the Virgin Mary by Elizabeth. The upper circle contains a fifth group, representing another Mary seated at the Saviour's feet, and receiving from his lips the happy assurance that she had chosen the good part which should not be taken away from her. The architectural accessories are of the Renaissance period, and not very elegant. This window constitutes one of three in the apse. The centre one is of three lights, and will be in its glass of like character, to the memory of Alexander Knox, whose writings on the parables contained in Matthew xiii. are so well known, and from which the subjects will be chosen. The other will be a *fac simile* of the Hemans one, differing only in the subjects. All the side windows, too, are to be filled with memorials, some of which Mr. Warrington (the artist of the preceding) is already making designs for.—The same artist has in hand some works, 18 feet high, and 8 feet 6 inches wide, in one expense, for the apse of Whitechurch, Salop. Two of them are erected: the third, now in hand, represents the Ascension, the figures of which are fully life size. He has also recently erected the five-light window at the west end of the north chancel of the parish church of Hullix; and has now nearly finished two others for the north side of the same anto-chapel. The subjects of these are,—1. Moses receiving the People's Gifts; Moses lifting the Serpent; Moses anointing Eleazar. 2. Rebecca at the Well; Abraham offering his son Isaac; Melchisedec blessing Abraham. All these are memorials of the Waterhouse family. Mr. Warrington has also erected a memorial to Mr. E. D. Brockman, late M.P. for Hythe, in Newtonington church, Kent, the subject, the Good Samaritan. And he has recently put in six in Cheriton church, near the above-named.

FLAT-ROOFED COTTAGES.

I AM much obliged to your correspondent "C. D. S.," for his inquiries relative to the roofing of the cottages referred to in his letter, as it affords me an opportunity of giving additional information to that which has already appeared in the pages of the *Builder*; and, if I enter at length into the subject, it is simply for the purpose of bringing into notice a description of roofing which I consider a cheap, efficient, and water-tight covering, and one, as "C. D. S." observes, that might be advantageously substituted for lead, or other material, under a variety of circumstances.

I will first remark that "tiles and cement" have been used for some time in the suburbs of London as a covering for small buildings, and frequently also, I believe, in lieu of the ordinary roofing for houses. It commended itself to my notice for the following reasons.

If it is required that a tank, or reservoir, be perfectly water-tight, cement is adopted. If we wish to make a soft, porous brick, used in an external

wall, impervious to moisture, we cover it with cement. In fact, its frequent use for hydraulic purposes at once stamps cement as a material especially adapted for all purposes where it is desirable to exclude the penetrative action of water.

It is, without doubt, highly important that the materials used in a flat roof of this construction should be the best of their kind. The tiles ought to be hard-burnt, and true on the surface. Portland cement is the best for bedding the tiles, and should be tested, as sometimes, if confined, it will "Mon." The sand should be sharp, and washed, and mixed with the cement in equal proportions; and it is not necessary that the layer between each course of tiles be more than sufficient to thoroughly flush the work, so as not to leave any interstices.

Where small surfaces only have to be covered, it is best to avoid timber, and to lay the tiles with a slight curve on rough centering; but, where a large building is roofed in this manner, timber is necessary. In such cases the scantlings should be as slight as possible, care being taken to support the same until the work has set, when, if properly done, there is no fear of deflection. It is desirable, in laying the tiles on the timber, that the laths, or reeds, on which they are placed, should not be secured to the joists, so that, if the timbers shrink, the tiles would not then be disturbed. An arrangement of slight wire-work would, perhaps, be a good substitute for laths or other material. I do not recommend that the last course of tiles be rendered with cement; but, if they are of a porous quality, a coating of tar and oil will fill the pores, and tend to resist the action of the frost. A thoroughly hard-burnt tile will render this precaution unnecessary.

I will now reply to the several points raised by your correspondent.

First.—"C. D. S." can scarcely have understood the construction of these roofs, or he would not have alluded to a "leak in the joints." In the three or four courses of tiles used each joint of the underlying tile is covered by that immediately over it; and, the whole being thoroughly flushed with cement, a leak could only arise from a crack through the entire thickness. A crack in any material, whether lead or slate, will let the water through; and I do not claim exemption for this mode of covering under such circumstances.

Second.—One outlet being, in most instances, sufficient, as the flat can be laid with a fall to any given point, and one large stack pipe only being, therefore, requisite, there is much less chance of stoppage than with ordinary roofs, where several are necessary. My plan is to have a slightly raised parapet all round, and a cement lip at the outlet to the head of the stack pipe; and, as the tiles are laid over the walls before the parapet is fixed, it tends to keep the walls dry instead of damp.

Third.—I am not aware that in this country roofs are used as a promenade; but of this I am satisfied,—that a roof such as I have described will bear a test of this kind equally with any other material; and as for snow or other accumulation, the evenness of its surface would facilitate the removal of such with far greater ease than is usual.

Fourth.—There is no reason whatever why a roof of this kind should not project beyond the face of the external walls: the joists can be continued over 2 or 3 feet, if necessary, and corbels of wood, brick, or stone, to suit such projections, be introduced with effect: in fact, the covering forms a most efficient coping.

Lastly.—Whether flat roofs are "intensely ugly" or not is a matter of taste. I admit that the elevation shown in a previous number of the *Builder* was a very plain affair; but, as the object sought was economy, simplicity was necessary. If, however, "C. D. S." will call at 21, Exeter Hall, he can see some other drawings, which will satisfy him that, by an inexpensive arrangement of brickwork for parapet and cornice, a very fair effect can be produced; and that flat roofs are incapable of being treated with a variety of pleasing forms and arrangement is a fact I have yet to learn.

A good foundation for any building is of course most desirable; and, with such, I am convinced that, if tiles equal to those made in Staffordshire are used, and good cement, a roof of such materials would constitute a substantial, durable, and perfectly watertight covering.

I have adopted it in several instances, with a most satisfactory result, and shall be happy to afford any additional information, if required.

N. E. STEVENS.

#### MANAGEMENT OF THE SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

SIR:—Various references have been made in the *Builder* to the low rate of mortality in model lodging-houses. Allow me to say it would be very surprising if it were not low, for the fact is, that we are not allowed to die upon the premises. As soon as a lodger is afflicted with mortal illness, he is removed to die either in the workhouse or the hospital. In the report lately published by the Press of lodging-houses belonging to the society of which the Earl of Shaftesbury is the head, this house (George street) was set down as having no deaths during the previous year. Sir, the truth is that three men were taken out during that year whom it had pleased God to afflict with sickness unto death; two of them to St. Giles's workhouse; one lingered a few weeks, the other a few days: the third was taken to the hospital and died the same day. Another reason I think is the migratory manner in which the lodgers come and go: it would (I think) very much surprise you to know the many changes there are in the course of a few months. Statistics are powerful for good or evil: every fact should be known; so that, when the figures are published, the public might be confident they were the very truth: if they are not true the calculations made from them must be deceitful also. It is not an untruth to say that these men did not die in the house; but, if not an untruth, it is a suppression of facts, and Jesuitical in the extreme.

I myself, and I am sure my class, appreciate the efforts made by influential persons to better our condition; but, if they want the work well done, they must keep a strict watch over their servants; as, if they are not looked after, the management of these houses becomes very lax, and the comforts and health of the inmates are injured in consequence.

#### A LODGER OF SOME STANDING.

George-st. Lodging-house, Aug. 6th, 1860.

\* \* \* We print this letter with no desire to throw discredit on the efforts of the Society for Improving the Condition of the Labouring Classes, but simply that truth may be elicited. We take the opportunity, moreover, to make an observation in connection with the society. We are informed that some of its officials have desired to make it known that they did not approve of an account which was given in our pages recently of a visit to the houses belonging to the society, and were surprised that we should have permitted the appearance of a letter from one of the tenants who was dissatisfied. For many years, with pains and much personal exertion, we have advocated and advanced the objects which the society are supposed to have in view, and have uniformly supported and applauded the doings of the society itself. On the occasion in question we sent a trustworthy person to report to us, and have no reason to doubt his good faith. We must here, however, at once say that we care nothing whatever for the society: whether or not its officials are pleased with the course we adopt gives us no concern. It is the cause we have at heart, not the society; and it is quite possible that we have been too easily satisfied with their doings. That there have been tergiversation and misappropriations on the part of officials is notorious; and it is quite possible that, if we should be led to inquire fully into the management, and to state the precise results, they might have less reason to be satisfied than they now are.

#### THE WEDGWOOD MEMORIAL COMPETITION, BURSLEM.

SIR,—By the award of the committee for the above building we and the second premium is given to a design, "*Pro bono Publico*," placed No. 4 in the report by the architects selected to assist the committee in their decision, while ours, "*Jesuyra Vira*," returned as No. 2 in the same report, is placed as No. 3 by the same committee. We contend, in face of the report, that the second premium is honestly due to us, and, as we only know the result by a communication in your columns, we ask of the committee, through you, why it was that the selection of "*Pro bono Publico*" for this premium was made?

Without further calling into question the decision of the committee, we may be permitted to remark that it is singular the best design should, in the majority of instances, as in this one, emanate from a "lecal" man.

WIGGINGTON, BENNETT, & MORRIS.

APPOINTMENT OF ASSISTANT SURVEYOR, WOLVERHAMPTON.—The General Purposes Committee have appointed Mr. John Wakeford, of Brighton, as assistant surveyor, and to assist the borough surveyor in examining and making plans of the existing sewerage. There were thirty-three candidates for the office.

#### THE "BUILDER'S" LAW NOTES.

*Payment of Bills, &c.*—By an Act passed this session, whenever any bill of exchange, draft, or order, having thereon an adhesive stamp, shall be presented for payment, the person to whom the same shall be presented shall, upon paying the same, write, or impress on the stamp the word "paid." In default there is a penalty of 20l.—*The Stamp Act of 1860.*

*Penalty on late Stamping.*—By the same Act the penalty on stamping after the proper time, an agreement subject to a sixpenny stamp duty, is to be only 1l, if the subject matter be under the value of 20l.

*Minerals.*—The owner of the surface of land is *prima facie* entitled to all below it, and those who claim property in the minerals, must show some grant or conveyance by the owner of the land, or by his ancestors, or by the Crown. The rights of the grantee depend on the terms of the deed, but *prima facie*, if the minerals are to be enjoyed, it will be presumed that a power to get at them has also been granted as a necessary incident.—*Rowbotham v. Wilson.*

*Policy of Assurance.*—An ironmonger insured his life as "J. P. esq. of S. Hall" (giving full name and residence), omitting to state that he was an ironmonger. It has been held not to be such a misrepresentation or concealment as would render the policy void.—*Perrins v. Marine and General Travellers' Insurance Company.*

*Dividends.—Stamp Duty.*—A correspondence has lately taken place between the Board of Inland Revenue and the London and Westminster Bank, by which a point is settled respecting which some doubt existed in the mercantile world. The question was whether a person authorized by a shareholder to receive his dividends at the bank, should be the bulder of a power of attorney, and it has been decided that such a document is not necessary, but that a draft on demand, with a penny stamp, is sufficient.

*Railway Company.—Coals.*—It has lately been decided by Vice-Chancellor Kindersley, that trading in coal is not within the powers of a railway company, and an injunction was issued to restrain a company from such trading as being illegal in itself, and also contrary to public policy.—*Attorney-General v. The Great Northern Railway Company.*

*Waterworks.—Rating.*—A waterworks company obtained water in a certain parish, and conveyed it by mains and aqueducts through several parishes, but sold it only in the last of these parishes. It has been held that it is not a correct principle of rating to ascertain the value of the apparatus, and to divide it between the several parishes through which the water is carried, because the value of the occupied land may differ very much. The point was not decided as to which parish should make the rate.—*Petney Parish v. The Chelsea Waterworks Company.*

#### RECENT PATENTS.\*

SCREW WRENCHES.—*J. Ferrabee*, Stroud, Gloucestershire. Dated 20th December, 1859. The moveable jaw is made to slide freely on the bar or stem of the handle, and it is fixed or retained in any part thereof by means of a sliding wedge, which is introduced between the back of the bar or stem and the sliding-jaw. The wedge is carried by a strap from a sliding-piece, which slides readily on the bar or stem, and the sliding-piece can be moved to and fro thereon by means of a worm or screw carried by the sliding-piece, taking into a toothed rack formed on the bar or stem. The screw or worm may be so mounted on the sliding-piece that it may be readily thrown in and out of gear with the worm, so as to be able to adjust the screw-wrench or spanner with greater rapidity.

WATER-TRAPS, AND THE APPARATUS EMPLOYED IN THE MANUFACTURE OF THEM.—*J. H. Johnson*, Lincoln's Inn-fields, London. A Communication. Dated 20th December, 1859. According to the ordinary mode of making water-traps, two bent pipes are soldered together, and are consequently found to be very liable to break at the seam by reason of the tin being eaten out of the solder by the action of acid, and also by reason of the straining of the traps from the settling of buildings, such traps being found to be generally thinnest at the heads, where, in reality, the most strength is required. In constructing water-traps according to this invention, these objections are completely obviated, as the entire trap or head is cast in one piece; but, as a difficulty would occur in withdrawing the core, it is pro-

\* From the Engineer.

posed to employ a core of a peculiar construction, which constitutes one of the main features of this invention. This improved core is made of metal, and consists of segments of the bend put together separately upon a series of square blocks joined together by links, the segments fitting into dovetails on the actual surfaces of the blocks, in such a manner that they will form a curved metal core of a round section, the end and lateral joints of the component parts being sufficiently close to ensure a smooth surface in the pipe or trap. A hollow cylinder is screwed on to the end of the bend, on which cylinder is shrunk a ring, which fits a shoulder in the end of the core, and presses them against the screwed cylinder, which thus holds the core firmly. The cylinder, with the bent core screwed on, is placed in the mould, and by drawing the other half of the core (for the reverse bend) tightly against it all the end joints will be closed, whilst the dovetails, if properly fitted, will hold the longitudinal joints tight. The metal is now poured in so as to completely enclose the core, and when sufficiently cool the core is withdrawn by first unscrewing the cylinders and removing them, then inserting a sheet-metal pipe in the trap to hold the segments of the core in their places, whilst the plugs are withdrawn by means of a hook, leaving the segments inside, which latter are easily removed individually, leaving the cast metal trap clear.

**SCREW-CUTTING MACHINES.**—*H. B. Barlow, Manchester.* A Communication. Dated 24th December, 1859.—This invention consists, first, in an improved combination and arrangement of levers, rods, stops, and springs with the holding head of a screw-cutting machine, for the purposes of opening and closing the cutting dies; secondly, in an improved chuck for screw cutting machines, the improvements consisting in furnishing the inside of a ring with a recess and cam, and the outside with a spring-catch, lever-cam, and locking-stud, the said ring being used in combination with a die, box, cap, movable stud, and an eccentric lever, which is placed on the face-plate of the running head of the screw-cutting machine.

**CUSHIONING RAILWAY CHAIRS, PILLARS, PIPES, GIRDS, &c.**—*T. Truss, Darlington, Durham.* Dated 27th December, 1859.—The patentee claims the filling or otherwise coating of animal or vegetable fibres with alkalines, cold and hot grease, pitch, tar, or other greasy substances, and the application of the same for packing or cushioning for railway chairs, pillars, girders, engines, and other machines and pipe-joints. He also claims the application of animal or vegetable fibres not coated or otherwise filled with alkalines for packing or cushioning for railway chairs, pillars, girders, engines, and other machines.

**PREPARING YARN FOR SUBMARINE TELEGRAPH CABLES.**—*L. S. Magnus, Adelaide-place, London-bridge, and W. Sinnock, Brompton, Kent.* Dated 28th December, 1859.—This invention consists in saturating yarn, twine, cords, and strands of hemp or other fibrous material, with a composition consisting of India-rubber, gutta-percha, vegetable or other wax, resin, pitch, with or without other matters.

**Books Received.**

*Catalogue of the Works of Art forming the Collection of Matthew Uzielli, Esq., Hanover Lodge, Regent-park.* By J. C. Robinson, F.S.A., Member of the Academy of Fine Arts, Florence. Privately printed.

If all the treasures of art and vertu to be found in the United Kingdom were gathered together, they would form a whole that would astonish the world. When a portion only was sent to Manchester the eyes of cultivated men from abroad, who knew something of their own and our public collections but nothing of the interiors of our houses, were opened; but even this gathering gave no idea of the multitude of scattered valuables that exist in Great Britain in small collections and our old country residences. Wonderful men were those artists and art-workmen of old,—workers with the pencil, the chisel, and the burin; enamellers, potters, chasers, jewellers, die-sinkers, and inlaid, still putting to shame the art-workmen of these nevertheless great days,—these days of general knowledge and scientific discovery,—these days of steam, electricity, and photography!

Mr. Uzielli's collection, of which Mr. J. C. Robinson has prepared an elegant catalogue, appears to be one of great excellence. Some of the gems of it are known to the public through the

liberality of the owner, who has at different times sent them to the Brompton Museum, as, for example—not to mention smaller and more ancient works—Henri Ley's remarkable picture, "Mary of Burgundy giving Alms to the Poor," and Gibson's "Venus," both commissioned by the owner from the artists.

By the way, if we are not misinformed, the same sculptor's more elaborately coloured "Venus," concerning which so much has been said, is now in the English Custom-house, and will shortly be visible in this country.

In the catalogue before us Mr. Robinson describes 1,026 specimens, including a large number of engraved stones. The bendings comprise, besides, glass ware, Venetian and antique; Majolica, pottery, enamels, antique and cinque-cento jewellery, vases, bronzes, pictures, &c. &c.; and to each are prefixed introductory observations. As an example, we take some of his remarks on

*Majolica Wares.*

"With respect to the composition and methods of fabrication of the Majolica Wares, the *paste*, or body, is a mere common clay or terra cotta, usually of a brownish or yellowish hue. When the pieces are finished on the wheel, and have taken their appointed shape, they are first thoroughly dried, and then fired or burnt in the furnace: in this state, the ware is technically called *biscuit* (*biscotto*). The glaze is applied generally by immersion, i.e., the substances composing it being reduced to a fine powder, and mixed with water to the consistence of cream, the piece to be covered is dipped into this liquid contained in a large vessel. The porous nature of the biscuit ware speedily causes the moisture to be absorbed, and the gazing material then simply adheres to the piece as a soft coating liable to be removed by the slightest touch; on this surface the painter executes, with his enamel colour simply ground up or diluted with water. It is here that the wonderful executive facility of the Majolica painter is displayed, as the nature of the ground requires the work to be done at once; the artist, for instance, must be drawn at a single stroke, and no touch can be erased. The surface is so absorbent that, if the point of the brush charged with colour be allowed to rest on it, for even the briefest instant, an unsightly blot ensues. After the execution of the painting, the piece is fired a second time, being on this occasion enclosed in a case or "engobe" of terra cotta, to protect it from the direct action of the flames. In the furnace, the crude pulverulent covering fuses into a glossy enamel; whilst the painting, executed on its surface, sinking in and becoming judiciously incorporated with it, assumes at once a degree of power and brilliancy of tint very different to its previous crude, raw aspect.

The most remarkable variety of Majolica is the iridescent lustre ware, which reflects metallic lustrous tints, of various colours, according to the angle at which the light strikes its surface. The secret of the iridescent lustre, which appears to have been used principally at Gubbio, was lost even in the sixteenth century. Giorgio Andreoli, known as "Maestro Giorgio," was the first and most successful artistic manufacturer of the lustred wares; he lived between 1470 (?) and 1552 (?). The oldest date as yet noticed on any piece of Majolica is 1475."

In his notice of Gems the author alludes to the great caution now required in judging of the authenticity of such works, and gives these general rules, which may assist in judging of

*The Genuineness (i. e., the Antiquity) of an Engraved Gem.*

"First, the ancient gem engraver seldom bestowed his time and talent on an inferior stone; so that, although coarse and inferior engraving are sometimes found on stones of fine quality, the reverse is almost invariably true; engraving is rarely, if ever, seen on a bad stone; the work and the stone, in short, were generally of corresponding quality. Secondly, as (in Italy) the ancients were accustomed to examine their work by transmitted light, homogeneous and semi-transparent stones were, as a rule, preferred to cloudy and mottled ones, especially for delicate works. The back of the stone was, in all cases, carefully levelled and highly polished; and, as a rule, the engraving itself is nearly always highly polished—a degree of finish, which, on account of the great extra labour it involves, is seldom bestowed on modern works. Any supposed antique intaglio of highly finished work, if not polished in the "incavo," or hollows, of the design, should be looked on with great suspicion, and is, most probably, a forgery.

In cameos, the field, or ground, of the work is generally highly polished, whilst the flesh, or nude figure, is often left *mat*: the drapery and accessories are often, however, polished. The field, or ground, seldom shows much margin beyond the surface of the design, which is small in proportion to the extent of polished background. It is, as a general rule, an indication of recent origin. If there is any signature or inscription on the stone, it should be in relief or cameo, like the rest of the design; inscribed characters are scarcely ever incised, or cut in, on ancient cameos. It is important to observe the material, or peculiar stone, employed in cameos, certain varieties of stones being almost invariably preferred. The antiquity of a work, whilst others are as equally indicative of a modern origin: experience only can, however, inform the observer on this point; but, after all, the study and observance of the art displayed in the work itself is the surest guide. The connoisseur, imbued with a true feeling for art, will speedily be able to distinguish, as by a kind of intuition, the true from the false; whilst many material indications in the style and method of the work, if a work, to be acquired only by minute observation, come in aid of his judgment."

The examination of a collection such as is here catalogued is not very flattering to our art-progress. Reflected on rightly, indeed, and compared fairly, the position of several art-industries amongst us is little other than disgraceful.

**Miscellaneous.**

**MEDALLION PORTRAITS.**—We have lately examined with much pleasure a number of medallion portraits, in low relief, executed by Mr. Kuntze, of Newmarket-street, Oxford-street, a young German sculptor, lately resident in America. The medallions include portraits of Mr. Hawthorne, the author of "The Scarlet Letter"; Mr. Motley; Mr. Crosey, the American painter; Mr. Bennett, the author of "Baby May"; and several others. Some groups in bas-relief, lately produced by him, suggest to us that Mr. Kuntze's skill might be turned to advantage in architectural works.

**MUSICAL TASTE.**—Amongst the signs of advancement which may be noticed is the development of a musical taste amongst the working classes throughout the country. In Northumberland and Durham bands for the practice of instrumental music have been formed by the colliers in connection with numerous large works, and instead of cockfighting and other brutal sports, contests of musical skill, or meetings on a large scale for harmonious purposes, are common on holidays. In other districts, in the Potteries and several great manufactories in the metropolis, bands have been formed. This leads to good results, and affords a degree of intellectual amusement which has a humanizing effect. At the Caledonian Institution, the Foundling Hospital, and elsewhere, are trained companies of juvenile musicians, from which have been picked many able performers. The gathering lately at the Crystal Palace give some idea of the extent of this movement amongst the intelligent working classes. In public gardens, in the suburbs of London, music is made a chief source of attraction, and the best music is brought within the reach of all.—A. B.

**BUILDERS' HOISTS.**—Sir, If I may presume to claim the remarks on "Builders' and Contractors' Hoists," which I find at page 495 of the *Builder*, as intended for my new hoist-lifts, &c., I can but feel greatly obliged by your kind recognition. The application of water-pressure (suggested by you) might, I think, be carried out with advantage in some large contracts, but in the generality of small contracts perhaps it would not be quite so applicable. There is a quarter-size model in the Museum of Construction, South Kensington, and I am invited to exhibit a model of our "waved wheel," 12 feet diameter. I beg to call your attention to this novel form of wheel, and its general applicability for hoisting-machinery, for mining, and especially for paying out long lines of electric cables, as a single wheel could be made to pay out a cable with the least possible strain, and at any speed.—GEO. JOHNSON.

**WHITE'S PATENT AIR-PURIFYING VENTILATORS.**—These ventilators are well spoken of by Dr. James Copeland, Professor Gardiner, of the Royal Naval College, and others. They are described as being "portable or fixed, and of various forms and capacities, for the purpose of supplying purified, medicated, perfumed, warmed, or cooled air, for sanitary and other uses, in public and private rooms, ships, mines, hospitals, sick-rooms, workshops, manufactories, sewers, chimney-shafts, &c.;" for preventing the injury of clothing, furniture, pictures, &c., in houses, and goods in shops, by cleaning the air of such places; and they are recommended for **COOLING THE AIR IN INDIA.** The air to be purified is brought into contact with water by the action of the fan of the ventilator, water being well known to be capable of purifying air brought in contact with it. A large amount of organic matter, of *miasma*, and of *malaria*, is soluble in pure water, but lime water may be used, and disinfectants such as the chloride of lime, Sir W. Burnett's, Condy's, or Macdonald's disinfecting fluids may also be mixed with the water when it is expedient to use only a small quantity of water. The air may also be impregnated with medicine, perfumes, or the components of sea water, by the addition of the substances respectively necessary to the water used; and the temperature of the air is regulated by that of the water. The ventilators assume various forms, such as the hand ventilator, which is a small fan ventilator moved by hand, and adapted for occasional use in a sick room, to supply pure air, and to prevent contagion; or the water-force ventilator, which is to be connected with a vessel of water at the distance of 4 feet at least above it, and means provided for carrying off the waste water from it: this fan is moved by the force of the water issuing from a Barker's mill, and the air is purified by the same; a modified form of this ventilator is recommended to arrest and carry down the solid particles of smoke in flues, and to ventilate sewers, and arrest the impurities which arise from them.

**GAS.**—At the annual meeting of the Stirling Gas Company, a dividend of 8 per cent. was declared.—Gas is being made in Copenhagen from a sort of peat, which is reported to produce a light whiter and stronger in flame than coal gas.

**DEODORIZING SEWAGE.**—We hear that a company is being formed in Manchester, with a capital of 20,000*l.*, to work a chemical and mechanical process, patented in England, France, and Belgium, by Mr. B. Standen, of Salford, for deodorizing and concentrating town sewage, with the view of enabling towns to sell their manure at a profit, instead of (including collection) at a loss. It is stated that the plan has been in operation for the last nine months in the manufacturing township of Hyde.

**THE INVENTOR OF VULCANIZED INDIARUBBER.** The *New York Tribune* records the death, in that city, on the 1st instant, of Mr. Charles Goodyear, the inventor of the art of vulcanising indiarubber. Mr. Goodyear was born in New Haven, December 29, 1800. The disease which terminated his life had its origin in the severe and long-continued privations and anxieties which he suffered, and struggles which he made, in order to perfect and introduce into public use the invention of vulcanisation, to which his whole life since 1839, the date of the discovery, has been devoted.

**ANTIQUITY OF STENCIL.**—In the "Philosophical Transactions" for 1738 we read that Procopius, in his "Historie Arcana," says, the Emperor Justinus, not being able to write his name, had a thin, smooth piece of board, through which were cut holes in the form of the four letters J V S T, which, laid on the paper, served to direct the point of his pen: his hand was guided by another. Possibly, this way likewise has given the hint to the first of our card-makers, who paint their cards in the same manner, by plates of pewter or copper, or only pasteboard, with slits in them in forms of the figures that are to be painted on the cards. Such is the art of stencil, which has been applied, in our time, to decorating the walls of rooms, as well as to the marking of linen.—*Timbs's Curiosities of Science.*

**STATUES.**—We mentioned that the Sturge Statue Committee had decided upon requesting three sculptors to send in designs or models for the statue and fountain to be erected as a memorial of the late Mr. Joseph Sturge. The three gentlemen selected are,—Mr. Peter Hollins, Mr. John Thomas, and Mr. E. B. Stephens.—The clay model of the proposed statue, at Glasgow, to the memory of the late Mr. James Lumsden, in the studio of Mr. Mossman, will probably be despatched to London during August, to be here executed in bronze. The figure appears with a loose overcoat. The statue is 8 feet in height, and is intended to be placed on a pedestal of 12 feet. It is to be erected on the esplanade in front of the infirmary, of which institution he was treasurer for many years.

**LUDGATE HILL AND ITS ASSOCIATIONS.**—The Belle Sauvage, till very lately, afforded a curious specimen of the players' inn yard, where dramas were enacted previous to the building of theatres with roofs. Ludgate-street was famous for mercers' shops in Stow's day, and one of the old class, which has maintained its ground for upwards of a century (Hilditch's), still remains. At No. 65, the corner of St. Paul's-churchyard, lived John Newberry, for whom Goldsmith wrote "Goody Two Shoes" and a history of England. At "the Duncton," Ludgate-street, D. Griffith published the "Monthly Review," No. 1, 1749, perhaps the first of our critical journals. Fronting Old St. Paul's, Digby, Winter, Grant, and Bates were executed January 30, 1606, for their participation in the Gunpowder Plot. In 1792 was discovered a haribanc, or watch-tower, near Ludgate, forming part of London wall in 1276 (a fragment of it is preserved in St. Martin's-court, opposite the Old Bailey); and in the same locality, in 1800, a sepulchral monument was dug up. It is dedicated to Claudina Martina, by her husband, a Roman soldier. A fragment of a statue of Hercules and a female head were also found, and are preserved at the London Coffee House. At No. 32, for a long period, was the famous establishment of Rundell & Bridge, goldsmiths and diamond merchants. Flaxman's shield of Achilles, in silver gilt, was executed here, as was also the imperial crown for the coronation of George IV., 1821. At No. 45, William Hone published his "Everyday Book;" and it has still some splendid shops, especially that of the Everingtons, so remarkable for its display of rich silks and costly Oriental shawls.—*City Press.*

**BRASTED.**—The new national schools in this village were formally opened on the 23rd by the Archbishop of Canterbury. The building, which is situated in the village, was designed by Mr. Waterhouse, architect of the new assize courts at Manchester, and carried out by Mr. Singer, of Westerham, at a cost, inclusive of site and all extra charges, of 1,200*l.*

**HARROW-ON-THE-HILL.**—The foundation-stone of the new literary institution was laid on Wednesday last, by the Rev. M. Butler, head-master of the school. The style is Gothic, with red brick facings and Bath stone doorway, tracery, windows, and dressings. The building consists of library, reading-room (with open-timber roof), and apartments for keeper. The works are being carried out by Mr. R. Chapman, builder, at a cost of 800*l.*, from the designs and under the superintendence of Mr. Charles Laws, architect.

**CHURCH STRUCK BY LIGHTNING.**—During a recent thunder storm a flash of lightning struck the spire of Newark church, and the damage is estimated at 60*l.* It appears that the lightning entered at the north-east side of the steeple, injuring a portion of the stone-work, and thereby making an opening, which can be seen from the clock-chamber. This is the third time this edifice has been struck within the space of twenty-three years, and still there is no lightning conductor!

**HOPE FOR THE BALD.**—"Will Warners," of Stratford-on-Avon, whose casts of Shakspeare are known to some of our readers, writes as follows,— "Some six months ago I took a cast from the head of a bald-headed gentleman. My material was the pure Derbyshire plaster, mixed with a little clay from Broseley. Strange to say, a beautiful crop of down has sprung up on the gentleman's bald head. He attributes it to the cast being taken, the results of the material. If so, let all try it, and anyone can do it. I have devoted my time to casts many years, but never have had to record so strange an occurrence as the growth of hair after the cast was taken. I wish some of your correspondents would state the cause, and whether our bald-headed countrymen might with safety try the experiment."

**COMBINATIONS OF WORKMEN.**—The Middlesex magistrates sat on Monday in last week at the Guildhall, Westminster, specially to hear an appeal by John Goppin against a conviction by Mr. Corrie, the magistrate, for an offence against the Act relating to combinations of workmen. The appellant, John Goppin, was in the employment of Mr. Anley, builder and joiner, in Whitecross-street, and he with about thirty others, it may be recollected, struck against two men in the same employment who were working under the document. Being a member of the Association of Master Builders, Mr. Anley brought the case before the executive committee, and it was resolved to proceed against Goppin, and the result was that the magistrate before whom the case was heard, upon the evidence that was adduced before him, convicted and sentenced the appellant to a month's imprisonment, the Act not giving the option of a fine. The only question raised on this appeal was, not whether, in fact, but in the strict construction of the clause under which the conviction was made (George IV., c. 129, s. 3), the appellant had made "a threat." The Court held the conviction to be good, and confirmed it, with costs, against the appellant, who was then ordered to be sent to the House of Correction, in the terms of the conviction, for one month.

**PADDINGTON WORKING MEN'S READING-ROOMS.**—Sir,—In your impression of the 21st ult., an article appeared, headed, "The Wants of the Artisan in London," wherein you very justly alluded to the necessity of providing the industrious classes with the means of intellectual improvement. I beg to inclose you a copy of the last report of an institution established (now upwards of three and a half years) for the above purpose, by a few gentlemen in Paddington. Although not on a very extensive scale, still it has so far succeeded that our numbers last winter were about 300. To publish this would be more than I could expect; still I wish you to know that such an institution does exist; and when our report for the present year is printed, I will take the liberty of forwarding you a copy.—JAMES STUBBINGS, Librarian.

\* \* \* Various classes appear to have been established. The library is increasing; lectures are sometimes given, and the reading-rooms are open every evening but Sunday,—all for a subscription of 7*d.* per month of four weeks, or for 6*s.* 3*d.* a year.

**HALIFAX.**—The corner stone of a new chapel has been laid at Ambley Thron for the New Connection Methodists, cost, about 1,100*l.* Mr. John Davidson, of Halifax, is the architect.

**THE SHOP SUN-BLIND NEIGHBOUR.**—At Ipswich this dangerous nuisance seems to exist as in London and elsewhere; but as a local commissioner of the pavements has just received a serious blow from one, the evil will likely be remedied. The particular blind with which he had come in contact was not 6 feet high. At a recent meeting of the local commissioner the surveyor brought the subject under consideration. The town clerk said the height was laid down by Act of Parliament at 8 feet. After some conversation the committee resolved that the surveyor immediately take steps in the matter: 7 feet appeared to be considered enough, but to this we demur, as a very ordinary sized person walking along the pavement with an umbrella on a rainy day would still be annoyed by these abominable nuisances, which ought to be clear of the heads, hats, and umbrellas of all and sundry the leges. We only wish some London commissioner of pavements had this necessity of ridding us of these detestable projections *knocked* into his own skull for once and away: we should then have some hope of the many offenders against the law being brought to book about them.

**A NEW PATENT FIRE-ESCAPE.**—Dr. R. Gardiner Hill, of Inverness Lodge, Brentford, has recently introduced a fire-escape which consists of a rectangular framing of wood, bound together by means of the rods. The bottom part of this frame is formed of a lattice-work of thin iron. One side of the frame is made with a half door, to afford facility for getting out of the escape. The frame is covered at the bottom and round the sides with non-inflammable canvas. A ring is securely fastened to the floor or window-sill of the house, and to this ring is simply hooked the end of a chain carrying a block through which the tackle of the escape is rove. The whole of the tackle and block are kept inside the frame when the escape is not in use, the hooking of the block chain to the ring being the only thing to be done when the escape is required to be brought into use. The lowering rope is thrown to the persons below, or the occupant of the escape may lower himself by its means. The escape is then hauled up to bring down other persons, or for removing property from the upper part of a dwelling. The frame of the escape is fitted with castors on the inner side, and when not in use it stands upon them, and is covered with an ornamental cover, which converts the escape into a convenient ottoman. It can be used also as a dressing table; for which purpose it is placed on its side, and fitted with a loose deal top and muslin hangings in place of the cushion. In this way the fire-escape may at all times be kept near the window from whence it would be used if required.

**GAS IN THE UNITED STATES.**—Our Transatlantic cousin are still, in respect to the price and consumption of gas, much in the same position in which this country was when we first originated the gas movement, some twelve or fourteen years since, in the *Builder*. Prices are absurdly high, and the natural consequences are that dividends are low, and gas scarce. As the American *Gas-light Journal* of 16th ult. states, there are in England no less than fifteen gasworks to one even in the metropolitan state of New York. But no wonder when the high prices and the low dividends are considered. Prices in the States generally seem to range from two and three dollars up to seven, eight, and even ten (!) per 1,000 cubic feet, and dividends from 3 to 5 per cent. on the former, to none at all on the latter. The American *Gas-light Journal*, however, being convinced that "there are not less than 20,000 gasworks yet to be built" in North America, has the enlightened policy to urge on, their chief constituents, the companies, our own now fully confirmed and established principle of lowering the price that the dividends may be raised. "There is no question," remarks the editor, "that the lower the cost at which good gas is furnished, the greater will be the consumption, and necessarily the greater the profits to the manufacturers." And he is of opinion that "this is beginning to be understood by the companies," and "the sooner it is acted on," he adds, "the better we are sure it will be for themselves." Meantime, a vast field lies fallow in the States. Pennsylvania itself, which owns more capital in gas than any other state in the Union, has only 48 gasworks in its 63 counties, for a population of 4,000,000. And so of other states which are still worse off for the best light in general use, either with us or with themselves. The number of gasworks in 36 states at present is only 381.

REAPING MACHINES.—It is worthy of remark that at the competition of reaping-machines at the imperial farm, near St. Cloud, the three foreign prizes were carried off by British manufacturers. The prizes were 1,000 francs and a gold medal for the first; 500 francs and a silver medal for the second; and 300 francs and a bronze medal for the third. The competition took place in the presence of the Emperor, who, notwithstanding the unfavourable nature of the weather, closely watched the operations. The jury awarded the prizes,—foreign machines, first prize, to Messrs. Burgess & Key, of London; second, to Mr. Cuthbert, of Bedale; and third, to Messrs. Cromston, of London. The large gold medal of Honour was awarded to Messrs. Burgess & Key.

THE STATUES AND FRESCOS AT WESTMINSTER PALACE.—In course of a discussion in the Commons on the supply question as to 39,597l. for works connected with the Palace, Mr. Cowper, the Chief Commissioner of Works, stated that the question as to a statue of Cromwell did not press for a decision, because the proposition of the Fine Arts Commission was that the artists should begin with the later sovereigns, William IV. and George IV., and go backwards. Proceeding in that manner, at the rate of two sovereigns a year, there would be work to occupy them for a considerable time. The artists who were to execute these statues (for which 800l. each are to be given) were Mr. Thornycroft and Mr. Theod. As to the frescoes, Mr. Herbert was to receive 6,000l. for four pictures which he had in hand. He had already received 3,500l.; and, although he had executed very little on the wall, he had given three or four years of intense labour to the composition of these works, and had produced very noble cartoons, which were of themselves worth all the money. So again with Mr. Maclise who, though perhaps he had not advanced quite so rapidly in his work as might have been anticipated, had yet bestowed immense labour upon it, and was executing paintings that would uphold his reputation. Mr. Dyce might not have devoted himself to his work so exclusively as Mr. Herbert and Mr. Maclise, but he also had finished his cartoon, which was the result of great labour and skill. With regard to the Tudor portraits, they might be obnoxious to those who disliked everything belonging to the Tudor period, but they had been copied very carefully from what were called Holbein's originals, and their production had been very useful in forming a school of young artists, whom it was desirable to accustom to minute and faithful drawing.

TENDERS

For a pair of villas at Isleworth, for Mr. Geo. Imrie, jun.; Mr. Charles G. Searle, architect:—
Turner & Sons £1,350 0 0
Burchett „ 1,250 0 0
Ennor „ 1,175 0 0
Patman & Potheringham „ 1,098 0 0
Howell & Brown „ 1,055 0 0
Nias „ 1,002 10 0

For alterations at 33, Haymarket; Mr. C. W. Crocker, architect:—
Watson „ £333 0 0
Jackson & Sbau „ 290 0 0
Macey „ 264 0 0
Turner & Sons „ 214 0 0

For second portion of proposed restoration and re-seating of Kington Church, Herts; Mr. J. Clarke, F.S.A., diocesan architect:—
Kingham „ £797 13 0
Jeetes „ 745 0 0
Kibby „ 726 0 0
Warren & Allen „ 577 18 8

For third portion of proposed restoration of Middlewich Church, Cheshire; Mr. J. Clarke, F.S.A., architect:—
Farman „ £2,835 0 0
Wilson & Jones „ 2,450 0 0

For shops, stores, &c. at Kildgrove, Stoke-upon-Trent, for the Kildgrove Industrial Co-operative Society; Mr. Robert Chapman, architect, Newcastle. Quantities supplied:—
Cotton & Wood „ £1,850 0 0
Baylor „ 1,744 10 0
Harley & Denn „ 1,550 0 0
Fryer (accepted) „ 1,565 0 0
Pallin „ 1,500 0 0

For the Hartley Institution, Southampton; Messrs. Green & De Villis, architects. Quantities taken up by Messrs. Strudwick & Co., and Mr. Gritten, of West-minster:—
Mears „ £9,900 0 0
Watts „ 9,400 0 0
Marriott „ 8,950 0 0
Stevens „ 8,577 0 0
Eull „ 8,537 0 0
Gambling (accepted) „ 8,430 0 0

For alterations and additions, Lower Thames-street, for Messrs. Symonds, Sharpen, & Co.; Mr. H. H. Collins, architect:—
Picard & Co. „ £3,311 0 0
Macey „ 318 0 0
Ashby & Horner „ 275 0 0

For building a new chapel in Pemberton-street, Sunderland; Mr. John Tillman, jun., architect. Quantities supplied:—

For the whole Work.
Young „ £935 5 2
Hopper „ 913 9 6
Snelclaire, Thompson, & Young „ 838 0 0
Thompson & Terry „ 814 0 0
Pear & Humble „ 802 0 0
D. & J. Ranken „ 725 15 0

Executives, Mason, and Bricklayer.
Younger, jun. „ £320 13 3
Wardropper „ 312 15 9
Stonley „ 487 15 4
Hopper „ 433 10 0
Snelclaire, Thompson, & Young „ 415 10 0
T. & A. Cooke (accepted) „ 379 0 0
Thompson & Terry „ 311 0 0

Plastering.
Wardropper „ £291 4 7
Atkinson „ 58 8 8
Stonley „ 58 8 8
Hopper „ 58 8 8
Snelclaire, Thompson, & Young „ 58 8 8
Thompson & Terry „ 54 3 7
T. & A. Cooke (accepted) „ 47 0 0

Slating.
Preston „ £44 0 0
Dawber & Son (accepted) „ 40 0 0
Joiner and Carpenter.
Bates „ £330 9 6
Conyers „ 296 0 0
Snelclaire, Thompson, & Young „ 290 0 0
Pear & Humble „ 285 0 0
D. & J. Ranken (accepted) „ 258 12 9

Painting.
Bamlett „ £14 10 0
Gowdy „ 11 10 0
Kirkup (accepted) „ 8 2 4

For additions and alterations to Jews' Burial Ground Forest-gate, Essex; Mr. H. H. Collins, architect:—
Rivett „ £492 0 0
Mortler „ 383 0 0

For the erection of a primary, alterations to adjoining buildings and counting-houses, at Rotherhithe, for Messrs. Groves & Sons; Messrs. Snooke & Stock, architects:—
Cubitt & Co. „ £9,609 0 0
Hill „ 7,483 0 0
Ashby & Sons „ 7,182 0 0
Munlay „ 7,170 0 0
Ashby & Horner „ 7,090 0 0
Rider „ 7,065 0 0
Maecrs „ 6,973 0 0

For house, Maze Hill, St. Leonard's-on-Sea; Mr. F. H. Fowler, architect. Quantities by Mr. Smith:—
Stap „ £2,750 0 0
Ayers & Co. „ 2,642 0 0
Fish „ 2,430 0 0
McLennan & Bird „ 2,293 0 0
Howell „ 2,238 0 0
Hughes & Hunter „ 2,223 0 0
Kenwood „ 2,193 0 0
Donnelly „ 1,683 0 0

For the reseating and restoration of St. Luke and All Saints' Church, Wellingborough, Northamptonshire; Mr. E. F. Law, Northampton, architect:—
Cox & Son „ £2,748 0 0
Coxswell & Day „ 1,612 3 6
Watkin „ 1,225 3 0
Bradshaw „ 1,199 0 0
Burkitt & Cheater (accepted) „ 1,140 5 0
Reed „ 871 2 0

For additions to Newington-green Chapel; Mr. T. H. Hovenden, architect:—
Harvey „ £974 0 0
Dave, Brothers „ 930 0 0
Thompson „ 868 0 0
Axford & Co. „ 772 0 0
Brewster „ 757 0 0
Corder „ 752 0 0

For villa at Sharnbrook; Mr. Noble, architect:—
Reid „ £1,458 0 0
Perry „ 1,430 0 0
Conder „ 1,414 0 0
Saville „ 1,409 0 0
Pritchard „ 1,400 0 0
Dave, Brothers „ 1,375 0 0
Hill & Son „ 1,367 0 0
Rivett „ 1,347 0 0
Arber „ 1,335 0 0
Heiges „ 1,286 0 0

For schools at West Ham, Essex; Mr. J. Johnson, architect:—
Wright „ £3,499 0 0
Myers „ 3,369 0 0
Nixon „ 3,209 0 0
Hill „ 3,143 0 0
Dave, Brothers „ 3,075 0 0
Todd „ 3,059 0 0
Hedges „ 3,036 0 0
Rivett „ 3,033 0 0
Saunders, Brothers (accepted) „ 3,009 0 0
Stevenson „ 2,974 0 0
Wood „ 2,973 0 0
Fillington „ 2,953 0 0
McLennan & Bird „ 2,777 0 0

For stables, lodge, &c., at Newlands, Berks (near the house now in course of erection), for Mr. John Simmonds; Mr. Charles Smith, architect, Reading:—

Table with 4 columns: For Stables, Pulling down the old Newlands House, £ s. d.

For pulling down and re-erecting premises in High-street, Camden town; Mr. M. P. Manning, architect:—
Seagrave & Blodfield „ £999 0 0
Stevenson „ 995 0 0
Batterbury „ 988 0 0
Matthews (accepted) „ 942 0 0

For altering and restoring Heathfield Church, Sussex; Mr. J. Billing, architect:—
Tyler „ £979 0 0
Dove, Brothers „ 900 0 0
Adamson & Son „ 933 0 0

Bishopsgate Infant School, Alderman-walk; Mr. J. S. Scott, architect:—
Lawrence & Sons „ £1,050 0 0
Axford „ 935 0 0
Cannon „ 929 0 0
Heath „ 900 0 0
Asby & Sons „ 897 0 0

For repairs, alterations, and additions to the "Cower Testimonial" National School, Hertford; Mr. W. Willis, architect:—
Ravment „ £249 5 6
Norris (accepted) „ 248 11 9

For repairs, &c., to four houses, in Arnwell-street, Clerkenwell, for Mr. Simons; Mr. W. P. Griffith, architect:—
Brice „ £298 0 0
Brake „ 195 0 0
Baldwin „ 138 0 0
Powler „ 127 0 0

For building a public house and a dwelling-house adjoining same, on the Cotton Estate, Limehouse, for Messrs. Tuman, Hanbury, Buxton, & Co.; Mr. W. E. Williams, architect. Quantities supplied:—

Table with 3 columns: Public-house, Dwelling-house, Total.

TO CORRESPONDENTS.

F. G. T.—M. H.—F. R. W.—J. R.—R. B. R. (enough has been said of a mere ellipsis—J. W.—A. Tiller—J. R.—J. P. W.—S. G.—Messrs. G. & Co.—H. B.—T. W.—Mae—J. O. B.—T. & R. B.—E. F.—R. T. (why not do so, whether obliged or not)—A. M. D.—E. L.—P. M.—J. W.—L. & Co.—O.—One of Them.—W. W.—G. T.—R. T. B.—T. B.—E. & Son.—Messrs. W.—W. O. A.—W. F.—T.)

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ADVERTISEMENTS.

DIED, on the 4th instant, at his Residence, Priory Cottage, Dawlish, Devon, ROBERT EBBELS, Esq., Architect, formerly of Exeter and late of Wolverhampton, in his 70th Year.

MR. WILLIAM ELLISON, CONSULTING SURVEYOR, late of STAINSBY ROAD, Has taken Offices at 13, FENCHURCH-BUILDINGS, FENCHURCH-STREET, E.C. Where he continues to receive BUILDERS ON BEHALF OF CONTRACT, DEBITED ACCOUNTS, &c.

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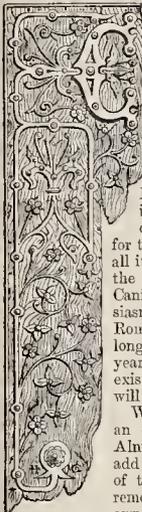
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# The Builder.

VOL. XVIII.—No. 915.

The Works at Alnwick Castle.



ONCERNING the works at Alnwick Castle, two striking and important facts combine to give them interest to the professional world. In the first place, two distinct styles of art—the one English, the other Italian, have been blended in the adornment of one edifice.

In the second, because it is asserted that the cinquecento art thus used is now for the first time introduced, in all its purity, into England. As the last work of the great Canina, who, with rare enthusiasm, ventured to journey from Rome to Alnwick after he had long passed the three score years and ten allotted to man's existence, these restorations will have a separate story.

We have already sketched an outline of the history of Alnwick Castle. We will now add an account of the progress of the new works. It will be remembered that the noble owner, his Grace the Duke of Northumberland, had resolved that the external character of the building should be handed down to posterity in all its pride of doujon, towers, barbican, and moat; and that the interior was to present a palatial aspect, with decorations of the cinquecento period of Italian art. To this end Mr. Salvin was entrusted with the exterior. The internal decorations were submitted to the Commendatore Canina, and Mr. F. R. Wilson was appointed to superintend both works. The contract was taken by Mr. George Smith, of Pimlico, who, over a space of nearly six years, including the trying time of the London strikes, successfully carried on this considerable undertaking. Operations were commenced in October, 1854, by pulling down a tower to make room for the main feature of the additions—the Prudhoe tower. The sky line of the castle had hitherto been flat and tame; the new tower was to rise 20 feet above the circle of towers, of which the keep was composed, and form a massive central object. In pulling down the condemned tower, some ancient window-heads were met with between the ashlar and the internal surface; and, soon afterwards, the black glass bottle, containing the parchment scroll mentioned by Professor Donaldson in his paper read to the Institute.

The word was quickly passed among the trades, that the old castle, the pride of every Northumbrian, was to be restored, and applications for employment streamed in,—every local workman and tradesman being anxious to be associated with the repair of the ancient Percy's stronghold. In the course of the excavations for the foundations, the old Norman moat was discovered with which the keep had been defended, in addition to the curtain-wall with its towers and outside moat. It followed a regular curve, and possessed a battered retaining wall. The foundations of the new tower, 15 feet thick, were carefully laid down; and, on the 25th of November, 1855, the corner stone of the splayed base was laid by her Grace the Duchess of Northumberland. This ceremony was marked by the first of a series of annual commemorative dinners given by the duke to the workmen.

The walls of the Prudhoe tower gradually arose. Good freestone was to be had in abundance, in the noor quarries, not a mile distant from the castle; and sand was obtainable from the bank of the river which winds past the

foot of the eminence on which the castle is built. The most particular regard was paid to preserve the character of the ancient masonry in the new work. It frequently happens that the prim smooth stone-work of a modern restoration stands out a gleamish and a patch upon the bold irregular work of the men of old; but in this case, after a careful study of the peculiarities of Edwardian masonry, exact drawings were made giving the dimensions of every stone that was to form part of the new work,—hence we have a faithful reproduction of ancient masonry. The south-west front of the tower is ornamented by a large *alto-relievo* of the Hotspur banner, which has been sculptured by Forsyth; while at the north-east angle arises the new flag turret. Thirteen months after the foundation stone was laid, the flag was lowered from the old flag tower as the standard of St. George was hoisted on the new turret, amidst general congratulations and rejoicings, intensified by the fact that the day on which this ceremony was performed was an anniversary of the duke's birthday. The towers and turrets of the castle reverberated the salute of the cannon, Lurley-berg fashion; and the cold grey town was bright with flags, and hospitable with commemorative feasts.

Meanwhile the Italian studio was in full operation. Signor Montiroli, architect, accompanied by Signor Bulletti, the Florentine carver, had visited the works, bringing with him the designs for the ceilings of the state-rooms as approved by the lamented Canina, and accepted by his grace the duke. He proceeded to make upon the floor of each apartment, to which paper had been previously affixed, full-sized drawings of the carved coffered panellings intended for the ceilings. Thus instructed, Signor Bulletti commenced to carve in wood samples of the decorations determined upon. It was intended that, after inspection and approval of these specimens, he should return to Italy and their superintendent the execution of the quantity required. But a carver, residing in the town, who was temporarily engaged to assist him, was found to imitate the models set before him with so much ease and precision that the first intention was abandoned, and it was resolved that the whole of the carvings should be executed in Alnwick by native talent under the guidance of Signor Bulletti. By the third year, after the commencement of the works, three of these ceilings,—the saloon, the drawing-room, and dining-room,—were perfected and fixed in their places. It was at this season that the lamented Canina visited this remote branchlet of his beloved art. Long will his venerable memory be associated with a sunny terrace walk, sheltered from the north by the castle walls, which he was frequently seen pacing with contemplative mien. With the English architect he could only exchange greetings by signs, neither understanding a sentence of the other's language; but with Professors Cockerell and Donaldson, who were also consulted at this time, he was able to communicate his impressions. Doubtless his sympathies were too entirely dedicated to the glories of the ancient Roman empire for him to feel much for the scenes of the Percy's prowess, although Sir Walter Scott's novels, translated into Italian, have rendered the Border and its history an attractive subject. The Commendatore brought with him, besides Signor Montiroli, Signor Mantovani, by whom the friezes were to be executed,—an artist already favourably known as having been entrusted with the restoration of Raffaello's frescoes, in the famous Loggia, in the Vatican.

In the Italian specification, already published in this Journal, it was proposed to observe a certain progression in the decorations; that simplicity should reign at the entrance and that an increased richness should gradually prevail till it culminated in the state apartments. The grand staircase, 12 feet wide, is wrought of a fine white stone whinned on the craggy hills of Rothbury, where great blocks of it break through the green and purple crest of heather. It was no easy task to bring the first landing-stone, 12½ feet square and 14 inches thick, safely down this hilly country into the valley in

which Alnwick is built; but it was eventually successfully accomplished. The staircase terminates in a vestibule, which is to be paved with marbles and adorned with paintings; thence, an antechamber admits the visitor to the principal apartments. The effect of the decorations is gorgeous: the minutely carved ceilings blazoned with gold and colour, the friezes rich in the ripe warm colouring of the south, the dados of choice woods inlaid in lozenge patterns, the marble mantel-pieces sculptured in Rome, produce a striking result. Looking upon one of the apartments the same flash of brilliant colouring is reflected on the eye as when standing before one of Turner's sea and sun pieces; but no reminiscence of the ancient Percies is recalled to the mind. And herein lies the gist of all that has been said about the re-modelling of Alnwick Castle. The identity of the building as the home of the chivalrous Earls of Northumberland, who fought and bled at Otterbourne, Bramham Moor, Towton, and St. Alban's, has not been preserved. The old Percy dining-hall, the Armourer's Tower, and the Falconer's Tower, have been successively sacrificed. Who cares how many times the gentle ladies of the house of Percy entered the Falconer's Tower on a visit to a pet merlin or a dying hawk? Who cares for the phantom knights who may have watched their disused armour hanging in the groined chambers of the Armourer's Tower? To accommodate the newly-arranged apartments to the Italian interior, the new Prudhoe Tower is built in such a position that the view from the windows would have been blocked out by these old towers: in consequence they are levelled to the ground.

The new range of kitchens is built, in disregard to Mediaeval precedent, without the line of circumvallation. The principal kitchen has a stone gabled roof, rising to a lantern, after the manner of the kitchens at Fontevault, Chartres, and Glastonbury; and the stone fireplace is treated in the same Mediaeval manner. Modern contrivances for culinary operations have been freely adopted; Messrs. Peetham, of London, having furnished stoves, ovens, and gas and steam apparatus of the most approved description. The numerous ladders and sculleries have been conveniently placed on one level; and hydraulic lifts from the kitchen to the principal floor also combine to save unnecessary labour: these latter are the engineering works of Messrs. Easton & Anos.

The decorations of the ceilings of the state bed-rooms are of plaster, cast from models made by Signor Taccolozzi for the purpose. Messrs. Earle, of Hull, furnished the cement used in these and other parts of the works.

The machinery and ironwork required in the building operations were furnished by Messrs. Hawks & Crawshaw, of Newcastle, with the exception of the immense girders and joists for the fireproof floors, which were provided by Messrs. Barrett, of the Adelphi. Some acres of lead were laid on to the roof by Messrs. Wilkin & Dickman, of Alnwick, who also manufactured the scores of copper and iron sashes and casements required. The local tradesmen were further employed on numerous other portions of the work. Mr. T. Robertson constructed the mechanical parts of the ceilings. The works are rapidly approaching completion, of which, when attained, we shall inform our readers in another paper.

## THE ARRANGEMENT OF WAREHOUSES.\*

HAVING seen Mr. Adams's warehouse, and learned his wise arrangements for the good of his hands, I naturally bethought me of looking into the condition of those warehouses in Manchester where females work. I was not previously aware of the great number of women who find employment in our warehouses at frill-making, cap-making, and the like, amounting, I am credibly informed, to several thousands. By the permission of various masters, kindly and frankly given me, I have looked through ten warehouses, employing about 1,100 women, and of these only two can be said to be commodious and well aired. In the work-rooms of four or five, the cubic air space per woman was excessively small, and the

\* By Mr. John Robertson. See p. 459, ante.

atmosphere polluted by gas-stoves and gas-lights. In one of these warehouses I noticed a long low room of less than 4,000 cubic feet of air space, where at fifty women, and in an adjoining room, of not more than 1,800 cubic feet, there worked twenty-four women; and the air space of the rooms in several of the other warehouses, with reference to the number working in them, was little if at all greater. The atmosphere in these was very bad; and when, in one instance, I expressed my surprise that a window was not kept open, my attendant replied that the inmates shut my window he might open as soon as he turned his back. On this I asked one of the women what made them do so; to which she answered, the place was so hot that an open window produced draughts such as nobody could endure. It is hardly possible for any one to imagine the incummodiousness of several of these warehouses, and the bad state of the atmosphere in the work-rooms, without paying them a visit; and a remedy for such evils is by no means easy. The reason is this: nearly all the buildings in Manchester in which women work were originally erected, not for warehouse purposes, but as dwelling-houses; and the work-rooms—once used as nurseries and sleeping apartments, perhaps—are now occupied by nine or ten times the number of persons they were originally meant to accommodate.\*

What, it may naturally be asked, is the physical and moral condition of the women in these, for the most part, badly ventilated warehouses? I do not find that they work longer hours than in Mr. Adams's establishment; and they cease earlier than his hands on the Saturday. With respect to health, I noticed in many that sallowiness of complexion which indicates a depressed state of vitality; but were it found that the health does not absolutely break down, this would make little in favour of the sanitary state of these warehouses. The female sex, when in the spring-time of life—between the ages of fifteen and twenty-five—bear up surprisingly under such causes of physical exhaustion as these; especially when, as in the present instance, they do not sleep on the premises,—the case in many of the London warehouses,—but walk night and morn-

ing to and from their own homes, which lie often at considerable distances.\* Concerning their moral condition, I would speak with caution. Their position in this city is one, doubtless, of great temptation; and I know not that anything hitherto has been done by the masters for their moral or intellectual advantage. A friend, whose official duties make him familiar with the state of our lower classes, tells me that when trade is brisk the women's work-rooms are generally overcrowded; and being in most instances badly ventilated, a state of atmosphere is produced injurious to health, depressing to the spirits, and disposing to the use of intoxicating liquors, as well as to such excitements as the dancing-room and theatre. When work becomes scarce, some of them street-walk—in hard times many do. This, it must be admitted, is not a cheering picture. If lodging-houses, factories, and print-works are thought to require inspection, these work-rooms, it will perhaps be conceded, equally demand it: assuredly this is a form of social evil which ought not to be overlooked.

Dismissing the subject of women's warehouses, I now venture a few remarks concerning those used for the country and shipping trades. And first, with respect to salubrity,—a point of no small importance, when it is considered that in some instances the number of hands, boys and men, in a warehouse reaches 250 and upwards. The build of a warehouse will, of course, have a bearing on the health. If the rooms are well lighted by windows in front and back, or on opposed sides, so constructed as to be readily opened, and which are not very remotely apart, this will be favourable. "Well-openings" of various kinds, now common where the area of the floors is great, assist in giving light, but do little for ventilation in comparison with properly-placed windows. Unfortunately, in a number of structures that have been built for warehouses (of transmuted dwelling-houses I am not now speaking) there are windows on one side only, the opposed side being a dead wall, and proper ventilation, therefore, out of the question; to say nothing of the impossibility of so placing the latrines as to avoid atmospheric pollution. An instance will best explain what I mean. A gentleman in delicate health, on whom I was attending, said to me—"I fear the air in my office is not good: I wish you would look in, and tell me if it could be improved." On calling, I found a warehouse for grey goods, employing about forty hands. It was an extensive structure of four stories, back to back with another warehouse, the windows in one end and side. On entering the ground story, I was sensible of an unpleasant odour, and at the same moment I cast my eye on two doors facing me, near the before-mentioned dead wall. On asking a man what were these, he said they were the closets, one for the masters and the other for the hands. It being early in the forenoon, and the closets, of course, recently used, the atmosphere was a good deal tainted; and as such air will ascend and circulate through a building, I found, on reaching the offices, which were on the first story, that they were not free from taint: this, I may remark, is anything but a solitary case. In some warehouses I found there was no water-closet, the hands having to get accommodated as they best could. In a number of recently-built ones, however, is an outside stair behind, and off the landing for each flat of this stair is a little room containing a water-closet, urinal, and lavatory. Yet even here the latrine might be better ventilated than in any instances I have yet seen. On points such as these architects have something still to learn. As connected with salubrity, it would be wrong to omit the mention of an atmosphere loaded with dust and fine filamentous particles in certain quarters of shipping warehouses, produced in preparing the goods for packing. I know not how the evil is to be remedied; but I am assured that it gives rise to cough and ill health in those—often ladies—who from morning till night are inhaling it.†

The lighting of warehouses by gas is doubtless an improvement upon lamps and candles, giving a brighter and clearer light, and lessening the risk of accidents by fire. But gas used, as is commonly is, without a flue to hear away the heated impure air—the product of its combustion—is

unwholesome, partly from the large quantity of oxygen it consumes, leaving the atmosphere poor, and partly from the flood of carbonic acid it generates. This is especially noticeable in the offices where sit the masters and clerks; and so depressing to the feelings have I known this impoverished air to become, that the gaslight has had to give place to the feeble illumination of the oil-lamp. What is the remedy? I answer, a flue in every instance, opening over the flame, to carry off the heated and vitiated air as it is being produced. I cordially agree with what the editor of the *Builder* says on this point,—“A gaslight without a chimney, or ventilating apparatus, ought to be as unusual as a fire without a flue.”‡

Thus alluding to warehouse offices, I may just observe that, in many instances, to my knowledge, the air in them is sickly and depressing to the spirits, owing solely to imperfect ventilation. Such an office ought to have either a *dead-end* partition, to give it community of atmosphere with the rest of the warehouse, or the partition going to the ceiling, it ought to have windows in the partition opposite those by which it is lighted from without, in order that, when necessary, the air may be speedily renewed by a through current. Rarely do I enter an office of any kind without being at once sensible that I am breathing an impoverished atmosphere; and as the remedy is easy, it ought not to be neglected.†

It will not be denied that mechanical inventions, employed as substitutes for, as well as in aid of man's muscular powers, are beneficial; and nowhere is this more strikingly apparent than in a number of our large warehouses. Formerly (even now, in some instances) tons of goods were brought and laid at the warehouse door, thence to be borne, perhaps to the fourth or fifth story, on the backs of porters; reminding one of the astonishing feats of strength and endurance, told by Humboldt, of the Indians in the Peruvian mines, who not only climb ladders from a great depth, like the Cornish men, but bear the produce of their labour to the surface on their backs. I cannot better illustrate the value of mechanical helps than by referring to a petition of the cotton-ports of Glasgow, addressed to the cotton spinners of England and Scotland, praying them to send lighter burdens. They say, that from the nature of their employment, the manner in which warehouses are constructed in that city, and from the absence of hoists in them, they (the petitioners) are compelled to carry skips to third and even fourth flats, whereby they have sustained serious bodily injury; further, that as all of them are not able to carry the heavy weights which are sent into the market, the few who are strong and young have to do the share of the less powerful and aged of their number, and thus, ere long, are reduced in strength, and become diseased by such excess of labour. We may hope the petition will not be in vain; for, when we notice how rapidly goods in warehouses are packed by the hydraulic press worked by steam power, how easily the heaviest bale, laid on a truck and wheeled to the hoist, is, by this means, carried from any flat to the basement, where, on another truck, it is pushed to the loading door, and with tackle, managed by the band of a mere lad, is lifted into the wagon, it is obvious that science renders now the infliction of bodily injury by heavy burdens laid on porters without excuse.

Leaving what has been said concerning the Nottingham warehouse to produce its effect on humane and benevolent minds—it will not be read without some benefit—I proceed, in conclusion, to say a word or two on the late hours and the night-work in a number of our warehouses. I have reason to believe that late and night labour is losing favour with a few of the more enlightened employers, because it is not found to be, upon the whole, profitable. Even this is encouraging. We must not repine should the majority go on for a

\* See the *Builder* for November 26, 1859, p. 770.

† The close, unwholesome state of offices, law-courts, schools, and places of public worship, is not peculiar to this country. In New York, we are told that the court-rooms are proverbially unhealthy, and valuable lives have been sacrificed in consequence of the bad air which prevails in them during the transaction of public business. The offices attached are equally liable to objection, and the churches, during a crowded service, in many instances, are almost insufferable from the heat and impurity of the internal air. School-houses, also, by the neglect of sanitary science, endanger or permanently injure the health of both teachers and pupils. See the elaborate and most interesting report of a select committee appointed to investigate the Health Department of the city of New York, presented to the Legislature February 28, 1859, p. 19.

‡ This curious petition, which is well worth reading, may be seen in the *Manchester Guardian* for October 31, 1859.

\* This transmutation of dwelling-houses into warehouses in Manchester, is a subject of considerable local interest and curiosity. The following account of it, with the rise and extension of the different branches of our trade, I have from Mr. David Bellhouse, the person, from his great local knowledge, no one is more competent to supply this kind of information.—“The first warehouses I remember being built,” says he, “were in what were then called the ‘New Market-buildings,’ off Cross-street, near to Market-street. What was known as ‘New Market’ had been built by the Lord of the Manor, and had a butchers’ shambles and fish market; but in course of time these were done away, and the land became the site of warehouses. They were all cotton warehouses. At this time (1804) the cotton trade, dealing in the raw material, was a principal trade in Manchester; and the cotton warehouses congregated round, and as near as might be, the Exchange, including Back-square, Bank-street, Half Moon-street, Cross-street, New Market-buildings, and some on the other side of Market-street, leading to Cross-street, New Cannon-street, &c. By degrees the cotton trade declined, just as spinning and manufacturing increased,—the cotton being either imported by the spinners themselves, or brought, as it is now, through the brokers in Liverpool. From about 1804 onwards, the principal warehouses for manufacturers and the country trade were in Hodgson-square and an extensive lot of narrow streets, including the Blue Bear-court district through the heart of which Corporation-street now runs; Cannon-street, New Cannon-street, Duke-street, Peel-street, High-street, Marsden-square, Church-street, and adjacent small streets. These warehouses were originally, for the most part, dwelling-houses altered and enlarged. I remember dwelling-houses in Cannon-street, and in High-street, at the end nearest Market-street, where also was the Bridgewater Arms, then the principal hotel, the site of which is now covered with warehouses. By degrees these warehouses, altered from houses, became inadequate to the requirements of the extending trade of Manchester. A few new ones were built at the bottom of Cannon-street, one—I believe, the first—by the late Messrs. Richard and Thomas Potter; then a new pile, called Cleveland's-buildings, Tipping's court; next, some new ones in High-street, Church-street, Marsden-square, and top of Cannon-street; and, more recently, in New Brown-street, Palace-street, and Spring-gardens. I think this brings us down to 1825 or 1830, from which period the ‘country-trade warehouse’ increased in importance, and even the comparatively recent warehouses became inadequate. The Cannon-street district was completely deserted by the home trade, and the old warehouses fell in value and were used for inferior trades, such as those of the country manufacturers, &c. The country trade, however, began to spread into Fountain-street, where Watts had their first large warehouse,—Church-street, where Phillips's house stood, and is there now, then in Mosley-street, York-street, George-street, Booth-street, Parker-street, Piccadilly, and Portland street, ending in such handsome establishments as Potters and Norris's, McLarens, Bannermaul's, Westhead's, Kersey & Co.'s, Brown & Co.'s, Sam Fletcher & Co.'s, Jackson's, and Messrs. Waits's. During this time another branch has been rapidly increasing—the shipping trade; and for this purpose a great number of new warehouses—some of them magnificent—have been built in streets generally distant from the Exchange; but on a matter so well known, it is, of course, needless for me to enlarge.”

\* I am informed by an experienced upper servant in one of our warehouses, who used to be in a London house, that there a considerable proportion of the hands remain and sleep on the premises, the beds often laid in corridors and other close quarters.

† Perhaps flues running to the roof from each flat or room where this dusty work goes on, and a current maintained up each flue by a ventilating wheel at the top, might be found useful.

while in the old way; for progress, though slow, is sure: long experience has taught me this, and leads me to anticipate that, in time, the interest of the employer will be seen in all cases to harmonize with justice and mercy to the labourer. Forty years ago I remember well the absurd way in which factory labour went on, when even children of six years worked, under the stimulus of the strap, sixteen hours a day; and, through a long subsequent period, how a set of night-hands kept the factory illuminated till morning, and that with the most deplorable consequences to the morals of these workers. All this is happily of the past; for factory labour, thanks to wise legislation, is now as compatible with health and morals as any kind of employment. Another step in the right direction was the Saturday half-holiday, which, however, as many will remember, encountered strenuous opposition, notwithstanding it could not be denied that late Saturday labour usually led to a violation at once of the laws of religion and humanity. A friend told me, during the agitation for this reform, that curiosity induced him to go to an extensive bleacher, whose works lie about twelve miles from Manchester, and ask at what hour on Saturday his carters got home. Pondering the question for a little, the bleacher replied,—"Saturday! No, they usually get home about six on Sunday morning." "And what then," said my friend, "do the men do with themselves when they have unyoked and put up?" "Oh," said he, "they are asleep immediately in the straw-beds beside the horses." All this sounds to us now as something fabulous.

The policy of night-work has always, I confess, appeared to me questionable, and it does so more especially now, when mechanical means enable the packing and loading of goods to be accomplished with such wonderful ease and rapidity. If it be contended that shipping orders have often to be executed with a promptitude which necessitates late, and even night labour, the reply is, that this kind of argument of urgent necessity may be advanced against almost every reform, just as happened with respect to the Saturday afternoon holiday (admitted now to be an unalloyed good).

It is pleasant to be able to report that some of the gross evils connected with late and night-work are being gradually, though perhaps slowly, mitigated. A allude in particular to the substitution now, by some, of tea and coffee for the refreshment of the late and night hands, instead of the old allowance of beer. The extent of beer consumption in late-working warehouses may be imagined when I state that as much as 57, a week has been paid for the beer consumed by the hands in a single house; and I have been told of a more lavish rate of expenditure in some houses than even this. As a medical man, I can say, from personal knowledge, that amongst the clerks and younger hands, the late-hour system—that is, leaving off at ten, eleven, or twelve o'clock—exposes to temptation and immorality. With regard to the masters, especially the younger members of the firm, who usually stay the last, and upper servants, ambitious of making for themselves "a position," I fear the habit of late work, though sometimes disavowed, prevails in busy seasons almost as much as formerly; and that, in the case of not a few, the consequent exhaustion of body and mind (to say nothing of the unseasonable hours and the waiting up they inflict on their households) more than counterbalances the advantage supposed to be gained. Indeed, this too eager pursuit of business,—this lavish waste of health and vigour on the part of very many who have come under my notice,—has often reminded me of what is suggested in the homely adage about burning the candle at both ends; for if we will thus make light of Nature's best gift—"a sound mind in a sound body"—we need not be surprised should she vindicate her beneficent laws by a painful award.

\* It is instructive to read what Mr. Russell, in his "North America, its Agriculture and Climate," page 226, reports of late and night working in the Island of Cuba during the six months of the cane-crushing season. The negroes begin the day's work at half-past four, and at ten have an hour for breakfast, then resuming the work go on till sunset, when they have an hour for dinner; after which they toil till midnight; thus working eighteen hours out of the twenty-four. He was assured by an engineer that fatal accidents, from the labourers being overcome with sleep and falling into the boiling pans, are not uncommon. Happily we have nothing quite so bad as this amongst us. One of our houses, to my knowledge, is setting an example to its neighbours which it would be well were they to follow: the packers give over at nine, come in the morning at six, and at eight o'clock have a substantial breakfast provided at their employers' expense.

#### BRITISH ARCHEOLOGICAL ASSOCIATION IN SHROPSHIRE.\*

THE alternating of wet and fine days gave us our share of rain on Wednesday, the 8th; and although the arrangements comprised the examination of works of great interest, there was a sensible falling off in the number of the excursionists, although there were more than sufficient to cover the guarantee of a minimum for the special trains engaged. On arriving at Shifnal the rain fell in torrents, and some members returned. The programme was involuntarily altered; and, after hastily viewing the church, the Rev. Mr. Petit's paper being postponed, the company, in sections, made their first resting-point at Tong Castle, where Mr. Tucker received the Association (in the name of Captain Thorneycroft, who was absent at a distance), and read a paper chiefly on the lords of the castle (of which he said there had been four). The present building is modern. Thence to Tong Church was a short drive across the park. Mr. R. Norman Fisher read a paper on the subject. He described it as a cross church, although this had been questioned, and that it was almost unique in the general arrangement. The outside is much plainer than the inside.

At the north-east corner he considered there had been a chapel to the Virgin: he came to this conclusion from a statue there. The south aisle was older than any other part. The Rev. J. L. Petit explained his discovery of the earlier and more elaborate label moulding to the south face of the arcade, between the nave and south aisle; but Mr. C. E. Davis thought it not earlier, but a specimen of the more elaborate finish given to the faces of internal walls, where a strong light fell. Both Mr. Gordon Hills and Mr. Roberts thought it was of a different date to the other part of the church, but partly reworked. Mr. Planché gave his opinion on the monumental effigies of the Pembrugge family. He said it was the first time he had seen them. There were some points of interest about them: the date of one was 1408, and would apply to Sir Fowke Pembrugge: it had the same basinet and hauberk as in Henry IV.'s time, and the same kind of japon which preceded the complete plate. The effigy of the lady gave him the impression at first that it was of Sir Fowke's first wife, of the family of Trussell. It is habituated as a widow, with the barbe crossed above the chin. The costume was of the date of 1446, and therefore was not that of his first wife. He thought it must be of his second wife, who survived him. He differed, with great diffidence, from so great an authority as the Rev. Mr. Eytton. The other tomb was that of one of the Vernons. Some of the shields in these monuments were blank, probably left to be filled up afterwards.

The president had arranged to receive the Association at Decker-bill, where accordingly the company arrived, and found that an unfortunate misunderstanding had caused the president to keep to the programme, which the violent weather had induced the members to alter. The reception was not the less cordial for this *contretemps*, and almost immediately an elegant *déjeuner* was laid in two reception-rooms, presided over respectively by Mr. Botfield and his lady, to whom thanks were most sincerely returned; and then a division of the members occurred, part returning to Shrewsbury *vis* Shifnal, and about thirty enlisting the services of Mr. Roberts (who had made a preliminary examination) in an inspection of Lilleshall Abbey. The weather cleared in the course of the drive, and it formed a delightful excursion.

The foundation of this building is of the time of Stephen, by Ethelreda, a daughter of King Alfred, who was subsequently a perfect amazon, and was called the "Lady of the Mercians." There must have been a large guest-hall and extensive dormitories; for, being on the high road, the number of demands by travellers was very great; and the abbots made several complaints of their want of means to supply these demands. It was an abbey of regular canons of St. Augustine. There were several charters by which privileges were granted by Stephen, Henry Duke of Normandy, King John, Henry III., Edward I., Richard II., and even Henry VIII. Amongst the benefactors were Fitzalan, part of whose monumental slab the association had discovered at Buildwas on Tuesday; Le Strange, Dmstanville, Pantolfe, Lezouche, Trusbut, and Erdington.

The buildings consist of a nave, choir, and transept, with, perhaps, a lady chapel; the nave being Early English, the other being Norman. The west doorway displays exquisite Early English

mouldings, with fillets adapted to the circular arch, such as was found in many of the Shropshire transitional works. The great west window has been inserted, and is Late First Pointed. The south aisle of the chancel, or lady chapel, is in effect a separate chapel built against the main building, with a very perfect piscina and credence in one, with a shelf or ambry over one corner of it. The drain from the piscina is horizontal. The north aisle is a separate chapel or chantry, with an ambry remaining. In the choir is a semicircular arch over a recess with Early English mouldings and shafts. The stalls were removed from here to Wolverhampton at the dissolution, and are believed to be in existence now. All these buildings were vaulted. On examining the exterior, Mr. Roberts pointed out the early specimens of buttresses.

The conventual buildings were next examined: they are, unfortunately, desecrated by being converted into stables—the cloister into a pheasantry, and the refectories into refuse yards.

The chapter-house is in the same position as at Wenlock, with a sacristy or treasury on one side, and a scriptorium on the other. The refectory on the south side of the cloister has a very peculiar and beautiful recess; used, probably, as the pulpit, with a quatrefoil in plate to give light, and was most likely inserted afterwards, as the character is later. In two recesses are laid fragments of tombs, one being a knight of the date of King John or Henry III., judging from the armour and shield; and the other of an abbot, apparently, of the earliest Decorated period. In the chapter-house are two coffin-lids, one without any mark or inscription remaining, and the other with a cross calvary, the cross being within a wheel.

At the evening meeting, the Rev. C. H. Hartshorne read an interesting paper on "Powis Land and Powis Castle." That which we referred to last week, read by Mr. Hartshorne, was one on "The Princes of Upper Powis," by the Hon. and Rev. George Bridgeman, — our reporter was accidentally seated in a part of the court where he was precluded from hearing well, and the court is one of the worst possible in respect of hearing. The other papers were by the Rev. George Dod on "Boscohel," and Mr. E. Levison on "The Shrewsbury Book."

This book is so called because it was executed by order of John Talbot, Esq., of Shrewsbury, as a wedding present for Margaret, daughter of René, duke of Anjou and Maupe, and titular king of Sicily, Naples, and Jerusalem, upon the occasion of her marriage with Henry VI., king of England and France, in April 1445. The volume is interesting as an example of the state of arts at the period when it was executed, and on account of the historical associations which it calls up, and the illustrious persons by and to whom it was presented. Margaret of Anjou was an artist of no ordinary degree of merit.

Thursday, August the 9th, was a railway day, but still an early departure was made; and the weather being more propitious, a large party assembled, and, a special train being prepared, no time was wasted. The first stoppage was at Stokesay Castle, of which Mr. C. E. Davis gave a description. The account given by Mr. Parker, he said, was incorrect. He stated that the license to crenellate Stokesay, obtained by Lawrence de Ludlowe, in 1291, could be but little guide in ascertaining the date of the present castle, as it was quite clear that it must have existed previously, as two portions (the two towers) were of earlier date. The southern tower resembles very much the Peel towers of the Borders, and is, doubtless, a complete fortress. The lower story was entered by a large doorway, and all the other stories were approached by a staircase within the thickness of the walls. The story above has an entrance which was approached by a small bridge. These two were, doubtless, ordinarily used; but in case of defence being necessary, Mr. Davis had no doubt that the lower door would be walled up, and the upper one only used. On the story above, singularly enough, one of the windows was inserted in an archway; that is, it had the remains of door-binges, proving most certainly that this must have been an entrance also that might be used, closing both lower doors, and making this tower resemble in all particulars the Border castles. The great hall is clearly the erection of Lawrence de Ludlowe, and is a fine specimen of the architecture of the period.

The party afterwards proceeded to the side of the railway line, and were taken up by a train, and continued their trip to Ludlow, the church of which was described by Mr. Edward Roberts. He said it was a curious specimen of the utter obliteration of the former work by a casing of the walls in a later period. He pointed out several early

\* See p. 507, ante.

parts which still were visible, particularly two piscine in the large south chapel, one of them being semicircular, although, as at Lilleshall, with Early English mouldings, and with a horizontal drain. The Rev. Mr. Hartshorne thought them even so late as Decorated. The glass and rood screens were pointed to as very beautiful.

The castle was examined and described by Mr. Thomas Wright. He said the earliest account was in the history of the Fitzwarines, which is curious and partly traditional. It was stated to have been built by Roger de Montgomery, Mr. Lyton, however, showed that from an examination of all the documents, that could not have been; and one very good reason was, that the land itself never belonged to him. It was probably built by the Lacies, between whom and the Fitzwarines there was a deadly feud, and might account for both families possessing it in the course of warfare. It was founded before the end of the twelfth century; and, by the middle of the thirteenth century, the whole castle covered as much ground as now. It was occupied by the two princes who were murdered. Edward IV. had rebuilt the residence in it, and several times the court was held there. The greatest alterations were made in Elizabeth's reign. The furniture remained in it as late as the middle of the eighteenth century.

After a minute account of the several apartments, the party assembled at the antiquated "Feathers' Inn, a pretty half-timbered house, and accepted a very handsome luncheon at the hands of Sir Charles Rouse Boughton, to whom thanks were given. Some healths were drunk, including Mr. Thomas Wright, proposed by Mr. Mair, of Liverpool, and "The Ladies," proposed by Mr. Pettigrew, in a speech full of humour and spirit.

There was still an hour to spare: this some filled up by visiting Ludford Church, which Mr. E. Roberts described as peculiar in respect of being a very small nave and chancel, with a very large chapel. The west wall is evidently older than the other part, and might be either Saxon or Norman. The tower has been built against it. There are several Medieval tombs.

At the evening meeting, the Rev. J. L. Petit read a paper on Shiffnal Church, an elaborate memoir profusely illustrated.

This was followed by Mr. Thomas Wright's paper on the Legends of Shropshire, from which we must give a couple of examples:—

"Everybody will remember the story of the building of Carthage, how the founders could only obtain as much land as they could encircle in a bull's hide, and how they craftily cut it into slender thongs, and thus contrived to encircle as much land as was sufficient to build a town. Geoffrey of Monmouth tells the same story of Hengist, who, by the same stratagem, obtained from the Britons land enough to build a castle, to which, in memory of the transaction, the Saxons gave the name of Thanester. There are several places in England to which this legend is attached, and among them that of Tong in Shropshire. The same story has taken a very curious form in a legend preserved in the parish of Bromfield, in our county, where they tell of a young lady, whose father would not permit her to marry a gallant knight because the latter was only a younger brother and unable to offer her a sufficient marriage settlement. The young lady, however, persisted in her resolution to marry the knight, and at last one day she informed her father that the ceremony was to be performed the next morning at Bromfield Church. The angry parent told his daughter she might follow her will, but, of all his great estates she should receive for her portion no more land than she could crawl over before morning. She went from his sight, apparently unaffected by this threat, but next day she made her appearance at the breakfast-table covered with mud, and announced that she had secured a tract of meadow reaching about half-way to Downton, round which she had crawled on her hands and knees during the long winter night. The father was so pleased with the spirit displayed by his daughter that he made her the heiress of all his estates, and they remained in the possession of her descendants many years. This ground is still called *Crawl Meadows*."

"There is another legend connected with Shrewsbury, intended to explain the cause of the extension of the trade in Welsh flannel, and it is certainly a curious illustration of the history of the more miscellaneous class of local legends. It is said that the Welshmen took the precaution of measuring their 'pieces' of flannel before they left their homes, but the purchasers in the Shrewsbury market, who bought by the yard, invented a method of measuring which pleased by its quick-

ness and ingenuity, under cover of which was practised a rather ridiculous deception. They made a round harrel or frame, exactly one yard in circumference, on which the parties concerned placed one end of the piece, and went on rolling it until the whole piece was wound up, each revolution counting for a yard. For very obvious reasons, the Welsh seller always found his piece shorter at Shrewsbury than at home, until, having at last discovered the trick, the Welshman refused to attend the Shrewsbury market any longer."

We must finish our notice next week.

#### A LIMP ACCOUNT OF THE SUSSEX ARCHEOLOGICAL DAMP DAY AT PEVENSEY.

THE Sussex Archaeological Society held its annual meeting on Wednesday last week, Pevensey and Hurstmonceux Castles being the points of interest proposed to be visited. A previous attempt, ten years ago, to inspect Pevensey Castle, had been rendered abortive by the very bad weather; and now again the old spell seemed to rest upon the excursion, for the rain descended in a hopeless never-to-be-ended manner. A special train was arranged to start from Brighton at ten o'clock, and it was with an ominous smile of half contentment and pity that the smart young ticket-collector pointed it out to the adventurous archaeologists, as he inquired, "Pevensey, Sir?" The said "special train" was specially late in starting; but doubtless the officials purposely detained it, with the charitable design of keeping its passengers as long as possible under cover, reasonably concluding they would find *such* a day long enough any how. Some of the carriages were unprovided with lamps, the directors doubtless thinking these illustrious *illumina*ti, who can look into the past through the darkness of ages, and make all things clear by the light of their own minds, could not possibly need lamps to guide them through the gloom of merely a tunnel or two. Considering the very settled state of the weather—settled for rain, that is—the society must be congratulated on the enterprising spirit of its members, as evinced by the respectably large gathering of them which congregated within the roofless walls of the picturesque ruins, Pevensey and Hurstmonceux. But the proposition to alight, and view the church close to Pevensey Castle, was, nevertheless, negatived in some of the conveyances, by the majority of the party; so the minority had to content itself with a passing glimpse of the strangely extensive old pile, and to console itself with the assurance that, thanks to railroads, one could easily run over any fine day and inspect the church, which, from the antiquity of its walls, promised many points of interest, in spite of the fearful "Carpenter's Gothic" of its windows.

Another hour of close compression, in tightly packed vehicles, brought the members to the top of the hill, at the foot of which Hurstmonceux stands. Here all who would view the noble ruin were compelled to alight, it being judged, but erroneously so, by the respective Jehus, quite impossible for the carriages to descend the once descending slope. Accordingly, ladies and gentlemen turned out in the pouring rain, raging wind and driving mist, to walk down over steaming grass that covered their feet nearly to the ankles; but the universal good temper that prevailed diminished all difficulties, and the desire to make the best of a bad business was everywhere apparent. One little lady, in our hearing, exclaimed, good humouredly, on being consoled with, "If the day had been fine, where would have been the use of putting on our prettiest petticoats, for we should have had no opportunity for displaying them?"

Umbrellas were all but useless: many of them were turned inside out, and portions of others blown hither and yon; while those that maintained their integrity of shape were altogether unable to afford protection from the pitiless, all-permeating, misty deluge. Nevertheless, one or two enthusiasts, on whose vision the beauty of the pile opened for the first time, actually stood still for some minutes, regardless of discomfort to body, to feast their minds on the grand effect it produced, which effect was doubtless doubled in grandeur by the scar of the storm.

Within the ruin printed descriptions of it were distributed to the visitors, this method of imparting information being thought preferable to the old plan of "reading papers," it having been noticed, on some former occasions, that as the lecture proceeded the ladies gradually melted away from the throng by twos and threes, and as was of course to be expected, their respective escorts of gentle-

men presently followed them, leaving, at last, the worthy lecturer himself, and a few of the committee-men, alone with the learning.\*

Here you have what was said about the building:—

This building was erected in the year 1440, by Sir Roger de Fynes, at a cost of 3,800*l*. A manor-house had previously occupied the site, and been the seat, successively, of the De Mouceux, and the De Mouceux de Fyneses, from the time of the Conquest. To the park which had previously existed, Sir Roger added 600 acres of land. His son, Richard Fynes, Sheriff of Surrey and Sussex in 1452, married Joan, heiress of Thomas Lord Dacre, and was, in her right, summoned to Parliament, and declared Baron Dacre of the South in 1458. Thomas, the second Lord Dacre, distinguished himself as a soldier, and was Constable of Calais. He died in 1534, and was buried under a magnificent altar tomb in Hurstmonceux Church. His grandson and successor, Thomas Lord Dacre, associated this place with a very tragical event. Engaging in the foolish and unlawful frolic of hunting deer in the park of his neighbour, Sir Nicholas Pelham at Hellingly, a fray took place between his companions and the knight's gamekeepers, which resulted in the death of one of the latter. For this Lord Dacre was held responsible, and he, together with three of his gentlemen, Mantel, Frowds, and Roudon, were executed at St. Thomas Waterings, 29th June, 1541, but not married. His sister Margaret espoused the Sanson of Lemard, Esq., and was recognized as Baroness Dacre. They resided much at the castle, and added greatly to its internal decorations. The castle and estate remained in his eventful line of descent until the time of the Sanson created Earl of Sussex by Charles II. He improved the castle by the addition of sash windows on the east; but, losing a great part of his estate by extravagance and gambling, he was obliged to sell Hurstmonceux, the seat of his ancestors from the Conquest. In 1708 the estate became the property of George Naylor, Esq., of Lincoln's Inn, who married a sister of Thomas Pelham-Naylor, Duke of Newcastle. His successor was Sir Francis Kinsman, Dr. Francis Hare, Bishop of Chichester, and the latter left the castle to his son, Francis Naylor. In 1775 it devolved upon his half-brother, the Rev. Roger Hare, but was then considered to be so dilapidated as to be past repair. The interior was therefore demolished, and the materials were employed in adding to the mansion called Hurstmonceux Place. From F. Hare Naylor, Esq., in 1807, the estate passed by sale to Thomas Read Kemp, Esq. In 1819, it was purchased by the Gillon family. In 1846, Jno. Gillon, Esq., M.P., sold it to H. B. Curtis, Esq., M.P., father of Herbert Mascal Curtis, Esq., the present owner. The castle is accounted one of the earliest brick buildings in England. It is also among the latest specimens of a castle, properly so called; possessing much of the grandeur, with little of the strength, of the feudal fortress of earlier times. When in full repair, it was considered the largest house in England belonging to a subject. Addison's comedy, "The Drummer, or the Haunted House," was said to be based upon a tradition connected with this mansion. The room immediately over the Porter's Lodge was known as Drummer's Hall, from the loud "spirit-rapping" formerly carried on there.

After a hurried inspection there came the repacking of damp individuals into very small omnibuses and other conveyances, and then the return to Pevensey. During the retreat animal spirits were decidedly "below proof," doubtless reduced in strength by the involuntary admixture of water from the clouds; and possibly also by the unwonted fasting which, in many instances, extended from eight o'clock in the morning till between two and three in the afternoon. Re-arrived at Pevensey, however, a handsome spacious booth (which the Society is ambitious of purchasing), erected within the ruins, gladdened the eyes of the intrepid voyagers.—I use the word advisedly, this being decidedly *water* excursion,—and a capital dinner, well cooked, well served, and well eaten, brought to a more successful termination than could have been anticipated, a day which had opened upon the Sussex Archaeologists with so little promise, and which had hitherto certainly not belied its foreshadowing.

The Lord Bishop of Chichester presided at the dinner; and, after its conclusion, appropriate toasts were given; but, though the circumstance was once just barely mentioned, all the speakers missed taking advantage of what might have been made a fine point in a speech,—the grand effect produced by the heavy measured booming of the murderous gun, which, as a trial of its own power, was endeavouring to batter down one of the massive Martello towers hard by;—so named, as the *Builder* has before now said, from Martello, or Myrtle bay, in Corsica, whence they were copied, and which were raised on our coast as a protection against the expected invasion of the Corsican, Napoleon Bonaparte.

Mr. Mark Anthony Lower read a verified descriptive account of Pevensey, respecting which I will only say, it was a pity the author had not contented himself with the rich smooth plain of grandly-marching prose, instead of attempting to toil up the steep of Parnassus, only to lose himself in the mist and fog which on Wednesday last enveloped all heights, physical and fanciful.

Subsequently Mr. W. Durrant Cooper read a very curious letter, hitherto unpublished, from

\* Some notices of Pevensey and Hurstmonceux will be found in previous volumes of the *Builder*, especially the volume for 1855, p. 133.

Dr. Andrew Borde,—the original "Merry Andrew."

One idea worth recording was eliminated during the return journey home, to the effect, that archaeological meetings might be rendered additionally interesting and instructive, if arranged chronologically as to periods,—the British, Roman, Danish, Saxon, Norman, &c. And it was suggested that a local museum, illustrating solely the precise period of the building to be investigated, should be collected; and that all papers read, and all decorations used, should be made to bear upon the same point.

A WOULD-BE ARCHÆOLOGIST.

WHITBY.\*

WHITBY occupies a very picturesque position at the mouth of the Esk, on the Yorkshire coast, midway between the Hamber and the Tync. The vicinity is fine, with all the dales and glens connected with the Esk. The town is built on the two opposite sides of the inlet formed by the river in its passage to the sea; and the harbour, above the revolving bridge by which the divisions are connected, is capable of containing 300 vessels of the medium size, the two lighthouse piers shaping the entrance, as well as guiding to the port. The landmarks are, the abbey in ruins, and the old parish church, on the eastern cliff; while, on the summit of the western eminence, the terraces extend in lines of modern construction. The town, with its 11,000 inhabitants, crowds in its central parts towards the water. The alleys or yards stretch from the top to the bottom of the acclivities, and the houses on either side, built tier above tier, are reached by flights of stone stairs; the higher landing-places, above the sphere of roofs, and masts, and smoking chimneys, having their own view of the town, the harbour, and the German Ocean.

"Whitby, and not Scarborough," says White, in his "Month in Yorkshire," "would be my choice had I to sojourn for a few weeks on the Yorkshire coast. What it lacks in the style and show, which characterize its aristocratic neighbour, is more than made up by its situation on a river, and the beauty of its neighbourhood."

The vicinity has its antiquarian and its poetical interest, too. Here the famous St. Hilda dwelt in her abbey of Streonshalh, which she founded in the seventh century. Ages have gone by since Hilda was gathered to her fathers, but posterity still cherishes her memory. A fair is held to this day at Whitby on her birth-day, the 16th of August. The town owns her for its patron saint. Churches are dedicated to her, and miracles ascribed; for in the "olden time" the neighbourhood was cleared of its *snakes* by her power, as the abundance of its Ammonites testifies!

"Then sole amid the serpent tribe,  
The holy abbess stood,  
With fervent faith and uplift hands  
Greeting the holy rood.  
The suppliant's prayer and powerful charm  
Th' unnumber'd reptiles own:  
Each falling from the cliff becomes  
A headless coil of stone."

Hilda was succeeded as abbess of Streonshalh by Elleda, the friend of St. Cuthbert of Lindisfarne, of both of whom, and their friendship, Bede discourses at large.

The town of Streonshalh and its monastic ere were destroyed in 867 by the Danes, and both lay desolate for 200 years. The monastic foundation, however, was re-established in 1074, by Reinfrid, a zealous monk of Evesham, to whom William de Percy granted the conventual ruins; but there are no grounds for believing in the rebuilding of the monastery by its first Norman possessors. However, of this it is certain, that all traces, both Saxon and Norman, have disappeared in the erection of the present fabric, which exhibits the Pointed Gothic in its first, second, and third periods or styles, the first, or oldest, belonging to a date a century later than the life-time of Reinfrid. The town of Whitby, like its predecessor, Streonshalh, arose as a dependency on the abbey.

The abbey-church has been the most stately fabric in the monastic group. The east end, with the walls of the choir and the north aisle; the north transept, and a remnant of the nave, still remain; but the dwellings and offices for the household, as standing on the south and south-west of the church, having all been removed, are known only by name in the records. The abbey is the great historical monument of the district. When entire, the square tower, as marking the centre of the cruciformation, arose on four huge arches opening

to the usual quarters of a church—the choir on the east, the transepts north and south, and the nave, or longest part, on the west. On the site of Hilda's foundation the fabric in length is 310 feet; and, with the south projection of the transept, which is gone, the cross extent would be 153 feet. The main side walls in height are 60 feet. The height of the tower was 10½ feet.

In the earlier eras, the monastic buildings in their character were primitive and unpretending; but an advance in magnificence marks their erection as ecclesiastical splendour grew with an increase of revenue. The choir, in the lancet or Early English style, is ascribed to the abbot Richard of Peterborough, whose administration lay between 1148 and 1175. The eastern front, entire, exhibits six lancet windows in two tiers, with three of smaller dimensions in the gable between the pinnacles, for lighting the roof. Sided by seven pier arches for the ground story, the superlatitudes are the triforium and the clerestory. Within the walls, a passage crossing the lancet lights of the clerestory has communicated with the different quarters of the building, one approach remaining at the west angle of the north transept, and another at the north-west angle of the nave. At the distance of one arch from the east end of the choir the pillars indicate a screen for the high altar.

The south aisle of the choir is gone. The extant north aisle retains a part of its groined roof, with curved bosses at the intersections of the ribs. On one is a lion rampant; another bears the lamb and flag, an emblem of peace; a third has two fishes; and a fourth is a circlet of foliage or flowers. The windows throughout are "single lancets" charged with dental and zigzag mouldings, the arches of those in the clerestory springing from heads crowned and mailed. The body of the choir would be roofed with wood: the side aisles were vaulted in stone. The front of the north transept, still perfect, presents nine lancet windows in three tiers, with a small "Catherine wheel" in the gable. The style is Decorated.

Viewed from within, the windows recede in elaborate undercut borderings, and the capitals of the side shafts, in contrast with the plain round caps of the choir, are an exuberance of foliage and flowers, in which birds and fruit appear and reptile formations entwine.

The tower fell on a calm day, June 25th, 1830. The pillar at the south-west corner had long been cracked; and, as a further weakness, the staircase within it is recollected as approached from the south transept. The top story was panelled on the four sides in window-shaped compartments, three on each side, and a staff with a vane stood at the north-west angle.

The nave has formed a perspective of eight arches, being one arch longer in the parallel than the choir. All that remains of it is part of the north side aisle and a fragment of the west end, in which we perceive the principal entrance to the church, the access in ordinary being by a small doorway, formerly porched, and still extant in the side wall aforesaid.

The west end, by pre-eminence "the front," has been very imposing. In the central space, between pinnacled buttresses, the principal entrance shafted and moulded, and "the great light of the nave" with its variform tracery, stood deeply embayed. The front, in its leading details, belongs to the last variation in Gothic architecture—the Perpendicular style; the indications being found in the window constructions.

The nave is not in a straight line with the choir, but exhibits a deflection at the west end of 9 feet towards the north. The cause is a query, and the solution hitherto given not satisfactory enough to be interesting.

The parish church was originally founded after the Conquest, for the use of the laity. In 1510 it became parochial. Originally Norman in nave and chancel, with the entrance on the south side of the former, the tower at the west end, as well as the transepts, are after additions. The entrance, round-arched, with a pair of "cushion-capped" columns on either hand, was destroyed in 1823, to make the principal porch nearer the tower, where it now is. A line of semicircular-headed windows, each 4 feet high and 22 inches broad, originally encircled the building; and, as an outside example, the one blocked up over the modern porch aforesaid may be cited.

In the modernization of the old fabric, a process which commenced in 1744, the walls were everywhere pierced for the ordinary house sash. The repairs and extension of the structure took place when old church arrangements had not the position in the public mind which they now occupy.

The elevated site of the church, and of the abbey on the eastern cliff, is attained by a hand-mailed flight of 196 steps, termed the church stairs.

Whitby, on the whole, is an interesting place, and the first of the two volumes above referred to, to which we are mainly indebted for those few notes on it, contains a full account of the town and its history, buildings, and neighbourhood. The "Guide" is a smaller work, which, for a shilling, gives a more limited account of all the objects of interest at and about Whitby, with an Essay on Sea-bathing, by Dr. J. Dowson. Both volumes contain maps of the district.

The neighbourhood appears to be advancing. Good free stone abounds, and is in great demand.

LODGING HOUSES IN DRURY LANE AND ISLINGTON.

ALTHOUGH something has been done in erecting proper houses in various parts of the metropolis, there is wide scope for the exertions of private individuals, who,—seeing the sure effect of wise arrangements on health and life, and believing that by conducting such places in the ordinary business-like manner, they can be made to pay a fair per-centage on the money invested,—may be led to build houses for the use of families, and adapt others for single men.

The large cost of ground in the metropolitan districts, and some other reasons, cause difficulties, but in several instances such experiments have been very successful.

Since the establishment of lodging-houses for single men by the two societies for the improvement of the dwellings of the industrious classes, several places on a similar plan have been opened with varied success. We have before referred to some of these, and may now glance at the "Drury Chambers" (Nos. 3 and 4, Pitt-place, Drury-lane). These are old-fashioned houses, of considerable size, which have been put into thorough repair, well ventilated, and opened as lodgings for single men. Under the care of the inspectors of lodging-houses, the beds have been so arranged according to the space, that over-crowding is prevented; and for 4d. a night, or 2s. a week, including Sunday, a man may obtain a wholesome lodging. The bedding is very clean; and at the time of a chance visit the place seemed well managed and cared for. A kitchen or sitting-room is provided for the men, with locked cupboard for each; and it may be expected, notwithstanding the considerable amount which has been expended, that the manager will gain a good income from the speculation.

When we remember the former condition of the majority of the lodging-houses of this class in many districts of the metropolis and in the provincial towns, the contrast is satisfactory. In such places as these men have the opportunity of association without the need of resort to the public house. In winter time there are a comfortable fire and light. The police inspectors of lodging-houses—intelligent men, who, on all occasions on which we have had the opportunity of noticing their operations, have been remarkable for the kindly yet firm manner in which they fulfil their duties—see carefully to the drainage, and by their timely visits enforce a degree of order and cleanliness which is as beneficial to the lodgers as to the keepers of the houses themselves.

Formerly the houses for the reception of travellers in the suburbs, and in St. Giles's and other parts of London, were, in most instances, frightful places, in which either decency or morality was next to impossible. Men with wives, and families of children of different ages—in search of work or from some other causes obliged to take the road—had often no other choice than to resort to those places, where they were forced to associate with the most depraved and profligate.

Barred doors prevented visits of the police, and such was the nature of the people boarded there, that it was a matter of no little danger for those who meant kindness to venture into the neighbourhood. Persons of both sexes, old and young, were huddled together, and the uncommunicated boy or girl was thrown into close co-uection with those versed in vice.

It is difficult to estimate the damage that resulted from such association,—the amount of robbery, and systematic hugging and imposition, which was reared and encouraged by the ill arrangements of these terrible resorts of the poor and depraved. As a contrast to these, we may look at one of the houses for travellers, situated in Islington, which is much resorted to, and is registered, and looked after by the police inspectors of lodging-houses. This is situated in a

\* Whitby: its Abbey and the Neighbourhood. By F. K. Robinson. Whitby: S. Reed, 1860.  
See the Illustrated Guide to Whitby. Sixth edition. Whitby: S. Reed.

narrow court, which, but for care, would be a nursery for fever and disease. The lodgings consist of several houses: by means of many contrivances—which are not very apparent to the eye unpractised in those matters—a fair amount of ventilation is managed; and perhaps, in such conditions, it is as well that the means of ventilation be not too apparent; for those who have been accustomed to lodge in close, impure atmospheres, seem to have a strange aversion to the admission of air, and possibly would keep it out. Doors have, however, been taken off, and panels taken out of cupboards, which answer a good purpose. Some rooms are fitted up with beds for men, which are placed at the distance legally allowed.

No miscellaneous hoarding together of men and women is allowed in these apartments; there are, however, some of the rooms arranged for the use of married men and their families. In these places, a partition is placed at such a height as ensures a certain amount of privacy, and still allows ventilation. It would perhaps surprise some accustomed to affluence, and who have not looked at the condition of the London poor, to see the rough accommodation for travellers who are praising. Great, however, is the improvement which has been made; and it is something to know that, although the arrangements are not of the most refined description, here people, at the cost of about 3d. a night, can sleep without the fear of evil communications, fever and pestilence.

According to the terms on which these houses are licensed, it is necessary to whitewash all the rooms at stated intervals, to prevent damp, and do proper repairs; to change and properly keep clean the bedding; to trap and keep clear the drains. A sufficient water-supply is also required. The opposition will be remembered which was made by even those who were dying by the hundred annually through the ill conditions in which they were placed. Now, however, not only the tenants, but those who let the houses are thankful for the change.

Some of the courts close by, in Islington, are differently managed, and need supervision. In these places there is a large population. We will not just now mention the names. They ought, however, to be well known to the parish inspectors. The closets are insufficient for so many occupants, and the condition of them in the morning on which we called was abominable. The usual complaint was made of short supply of water. Few would think, on first looking at the dilapidated dwellings, that they were uninhabited: it will be found, however, that working men and their families thickly populate the place. In passing through the apartments it is evident that the want of proper closets, conveniently attached to houses which are let in tenements, is the first requirement which should be attended to. A visit to some of these miserable London interiors is indescribably painful. In one room, occupied by a blind woman, there was not an article of furniture: a few dirty shavings in a corner served for a bed. In another room a child lay seemingly at the point of death. Terrible must be a sick bed in such a situation, and sad it was to find a man in the last stage of consumption in a place close by. With several miserable pictures stored in the memory, squalid figures relieved by mouldy, damp, and decaying walls, and other scenes of dirt, confusion, and neglect, we can but wish earnestly for the means of improving such a state of things.

We are told that horse property in these courts is of little value in its present condition. Surely, however, those persons in whose charge the houses are, should see that they are kept in a decent condition. In some courts, small casks, bottles, and a variety of odd vessels were waiting for the water supply to come in. Most inconvenient and insufficient is this arrangement. In another court (Ashley-court) the people can draw water at any time from a tap which is placed in a convenient part of the court. Some of these courts exhibit such different degrees of cleanliness and care, that much evidently depends on the exertions of the persons who own or have the superintendence of the houses.

In some of them, indeed, it is evident that as much is done by the owners as can reasonably be expected, and that the tenants repay the endeavours by decent behaviour and carefulness.

**THE TOMB OF HARVEY.**—It has been determined by the College of Physicians, with the consent of the next of kin of the illustrious discoverer of the circulation, to restore his tomb at Hempstead church in such a manner as to secure his remains from the desecration and destruction to which they are now exposed.—*Lancet*.

#### ON THE MECHANICAL EFFECT OF COMBINING GIRDERS AND SUSPENSION CHAINS, AND THE APPLICATION OF THE SYSTEM TO PRACTICAL PURPOSES.\*

At the meeting of 1857 a paper was read by me on this subject, my attention having been directed to it by being required to investigate, as engineer-in-chief to the Londonderry and Enniskillen and Coleraine railways, the best mode of connecting the railways across the River Foyle, in conjunction with a road bridge. The depth and bad bottom of the river led me to recommend a suspension bridge, combined with a girder; and, in order to investigate the strain and the amount of girder power required to cure the oscillation and wave, the model was made which I now submit to the meeting.

The design, when submitted to the Commissioners of the Road Bridge, was approved by Sir William Cubitt, their consulting engineer; but, some doubt having been suggested as to the fitness of suspension bridges for railway traffic, the question was submitted to Mr. Hawkshaw, who recommended the girder bridge now in course of erection by the Road Commissioners, at their cost.

It is, no doubt, the safest course for an engineer to recommend what has been done before, and to avoid experiments; but this, it is contended, does not render it less desirable that the subject now before you should be understood as a mechanical question, as it is admitted by the strongest opponents of suspension bridges that they are practicable and advantageous when large spans cannot be avoided, and we have as a fact the Niagara bridge of 822 feet span, constructed principally of timber, in a situation exposed to severe hurricanes, which has carried over for six years the heavy goods and passenger railway traffic of the New York Central and Great Western of Canada Railways.

It is not, however, in cases where large spans are indispensable that this principle of construction is alone advisable. In the case of the Londonderry bridge it is not impracticable to construct piers in the river, but they are attended with serious risk and cost and interruption to the navigation, which, in the opinion of Sir William Cubitt, might have been avoided, and a superior engineering work made at less cost.

The same occurs in London. The Hungerford Suspension-bridge has become the site of a railway extension, and it is at once assumed that for railway purposes suspension is inadmissible, and this bridge, so ornamental to the river, is to be superseded by a girder bridge with numerous piers. I believe for no other reason than because the mechanical effect of the combination of chains and girders is not sufficiently understood, and for this reason I desire to press the investigation of the subject. But referring again to the Niagara bridge, which is 822 feet in span, and of which the girder portion is of timber; if this bridge will stand heavy railway traffic, can it be doubted that a bridge entirely of iron of the best quality, or the improved material puddled steel, can with safety be constructed of much larger spans?

But it is not only to avoid the difficulties of rivers that a successful suspension girder bridge would be useful, but in many cases valuable property may be saved, and even the difficulties of dealing with the crowded traffic of the streets of London very much diminished.

A suspension girder bridge of spans of 2,000 feet is perfectly practicable, constructed with superior metal, but 1,000 feet is sufficient to meet the difficulties of the case, and lines of railway can thus be easily carried across a crowded city at less cost and with less destruction of property than by underground railways or any other means than has hitherto been suggested.

I shall speak subsequently more in detail of the cost and practicability of such lines of communication, but it is necessary now to say a few words to justify my claiming the attention of the meeting to the subject.

The principal cost of a structure consisting of a series of openings will be the suspension wires or chains and the towers. The amount of girder power to cure the wave and oscillation will not be found, as my experiments will show, to be a serious addition to the cost, and the item in ordinary suspension bridges which forms the largest proportion, viz., the anchorage, will here be divided over numerous openings.

With reference to the chains or wires, the most ready estimates will be deduced by reference to any existing structure, and I select the Niagara

\* Read at the Oxford meeting of the British Association, by Mr. Peter W. Barlow, F.R.S., as mentioned in our notice.

bridge as the only one tested by railway traffic. Here we have a section of 242 inches of wire with a weight of 350 tons, a span of 822 feet, and a deflection of 59 feet.

In a series of spans the suspension chains, irrespective of the towers, would form fully half the weight of metal in the structure, and assuming a price of 40l. per ton, we have 12,400l. for each opening as the cost, assuming that for the purposes of omnibus traffic we require an amount of strength which has been found sufficient in a locomotive railway of heavy traffic, combined at the same time with a separate carriage road communication.

The rule for ascertaining the sufficiency of railway bridges adopted by the officers of the Board of Trade is to estimate the strain produced by the greatest weight which by possibility could come on the bridge throughout every part of the structure, which should not exceed one-fifth of the ultimate strength of the nettle.

The strength necessary, therefore, depends in a great measure on the mode of traction adopted, and it is therefore a very important question in this case to consider whether locomotive steam engines are the best mode of traction where the traffic will be entirely of an omnibus character, requiring trains as frequently as every four or five minutes to give efficient accommodation and relief but of the lightest character.

Parson's Air Engine may be well adapted to the purposes of such traffic. Although it may be justly condemned as applicable to the ordinary railway traffic, it has advantages where the tractive power required is not such as to exhaust the reservoir of power and require high pressure too rapidly, which will not be the case in the present application, partly because the trains will be very light, and partly because at every pier or tower small stationary engines will be used for the purpose of raising the passengers from the surface of the ground to the platform of the railway, which would furnish a supply of compressed air for the renewal of the reservoir of the iron locomotive. Without entering further at present on the question of the practicability of this suggestion, or whether the atmospheric or any stationary system may be so, as it is assumed that such a system of traction is adopted, or that a locomotive of one half the weight only of ordinary locomotives, such as I am now employing on our railways, is required, and therefore the ultimate weight which might arise on such a bridge would not exceed one half of what might occur on a railway bridge, assuming the extreme case that it be loaded from end to end with locomotives.

It is generally considered that a bridge for ordinary road traffic does not require to be made of the same strength as an ordinary railway bridge, but this I believe to be an error. A railway bridge covered from end to end with locomotives is a possible strain to which it may be subjected, but in a large span it is a less possible or probable contingency than that of a road bridge being densely packed with passengers or soldiers, by which a greater actual weight would arise with a greater amount of vibration, while bridges with a motive power like Parson's engine, or stationary power of any kind, would not be liable to an ultimate strain of one half that of a bridge for ordinary road traffic.

It is true that many failures have occurred in suspension bridges, which fact has much shaken public confidence in them, but it is only necessary to examine the causes of their failure to see that they were the certain results of the defect of construction, and when these cases are examined they become evidence of the advantage of the principle, not of its defects. If road, like railway, bridges had been constructed under the supervision of the Board of Trade, not a single failure would have occurred, and when it is stated that these bridges have been constructed with from one-fourth to one-sixth the section of iron that the Board of Trade would require, and without any means of correcting the wave and vibration, it is not surprising that they have failed, but rather that they have existed so long, and that some of them now exist.

The public may rest satisfied that any bridge which has passed the approval of the Board of Trade is not only sufficiently strong, but much in excess of the necessary strength, and they can as safely reside under such a bridge as under the roof of a house, and it is in accordance with these rules that my estimate is formed.

The section of metal in the suspension chains or wires required for a double line of railway with a span and depth equal to the Niagara Bridge, with girders constructed of good iron to comply with the Board of Trade rule, would not be more than 240 inches, and I propose to adopt this

section; that is to say, to give the same strength to my structure for light railway passenger traffic as has been given to the Niagara bridge, which has a road communication in addition to a heavy railway traffic, in a situation exposed to the most severe hurricanes.

We thus arrive approximately at the main cost of the structure, viz. the supporting chains which will contain 2,000 tons per mile, which at 40l. per ton will be 80,000l.

We have next to consider the cost of the towers or piers, which I propose to construct of wrought or cast iron, and we have the Crystal Palace water towers as an example of a similar structure from which the cost may be deduced. These towers are 220 feet in height and support 1,500 tons of water at the top. The towers required for such a bridge as I have described will not have so much weight to support, and the height will not exceed 150 feet, and allowing the same section of metal and strength, the cost will not exceed 10,000l. each tower.

The next large item is the cost of the girders and the platform necessary to prevent the undulation or wave—a necessary addition to every suspension bridge, but one which has hitherto been generally neglected; and thus has arisen the want of confidence in a mode of structure which admits of numerous applications of great public importance.

The investigation of this part of the subject is the immediate object of this paper, as the strains and necessary weight of metal in the main suspenders has been long calculated and fully established; but for the purposes of the approximate estimates, I shall only here state that a weight of metal equal to the chains will be found to be sufficient at a cost of 60,000l., and thus a total cost, allowing for land and other contingencies, of 300,000l. per mile, would carry such a structure through the densest part of London; a sum small, compared with the object to be obtained, and which will probably be much reduced on further investigation, as it accomplishes the object of railway communication without any interference with the sewers, water-pipes, &c., and with less destruction of property than a tunnel, which will be unavoidably most unpleasant for passengers, and more objectionable for the application of steam and locomotive power, that a viaduct, where if Parsey's system or stationary power does not admit of practicable adaptation, light locomotives may without difficulty be used.

I am, however, dwelling more on this part of the subject than the title of my paper justifies, my object being merely to show that, if a system of larger spans can with safety be established for railway purposes, that there are many instances of useful application to the public.

#### General Remarks upon the Construction of Bridges of Large Span.

Bridges may be divided into three classes:—1st. The arch—a structure in which the supporting material is subjected to compression alone, but which contains no rigidity in itself.

2nd. The suspension bridge, in which the supporting material is subjected to extension alone, which also contains no rigidity in itself; and

3rd. The girder, in which the material is subjected to both extension and compression.

Of these three systems, the girder necessarily requires, from combining compressive and extensive resistances, a much larger amount of metal than either of the other systems.

In an ordinary arch, the compressive force is resisted by the abutments, which in no way add weight or strain to the metal; but if the arch is converted into a girder, it can only be done by adding a tie-bar, the arch having then to support its own tie, or substitute for an abutment, in addition to its own weight.

In a suspension bridge the tensile force is resisted by the anchorage, and if these are taken away to make it a girder, a compression tube or bar has to be used as a substitute for them (as in the Chepstow Bridge), which tube becomes, in large spans, with its supports, by far the largest portion of the structure, and destroys the bridge by its own weight, besides doubling the deflection.

It is thus evident, that if you convert a girder into an arch or suspension chain of the same depth, half the supporting material is at once dispensed with, from the duty being transferred to the abutments or anchorage, and the deflection decreased one half.

Thus, theoretically, an arch will produce the same saving as a suspension chain; but it is not so in practice, because there is much greater difficulty in dealing with compression strains than with extension. In the latter case, the strength

is correctly measured by the section of the metal; but where you have compression strains to deal with, wrought iron is liable to buckling, and you thus cease to have any true measure of its strength and power of resistance, a difficulty which arises not only in larger iron arches, but occurs also in deep girders, and thus limits their extent of application.

Mr. E. Clarke, who published an account of the Britannia Tube, concludes his investigation of the subject by arriving at a similar conclusion, in which he no doubt also expresses the views of Mr. Robert Stephenson. In speaking of the limits to which tubes similar to the Britannia would be carried out, he says:—

"If the dimensions of the section remained constant, and the length only were increased, the tube would break with its own weight when it became about 850 feet long.

But if the dimensions of the section were also increased so that the tube retained the same proportions, becoming then a similar tube to what it is at present, it would break with its own weight when it became about 1,570 feet long. The depth of the tube would in this case be 100 feet; the breadth 45 feet, and the weight 62,000 tons.

Other curious properties of similar tubes may be determined from the preceding reasoning; but in practice these theoretical limits cannot be approached. The impossibility of construction, the rapid increase in the weight of the requisite pillars for any great extension of depth, the necessary additions for preserving the general form of a large structure, considered merely as an edifice, independent of its action as a beam, and the great crushing strain to which the bearings would be subjected, are all elements increasing in a high ratio with the dimensions, and rendering impossible, on similar principles, any structure of much greater magnitude than the Britannia Bridge. This will be evident if we call to mind that in that tube 21 per cent. of the whole weight of the sides is already consumed in stiffening them; and not only would the weight of a larger structure increase as the cube of its length, but it would also require a much larger per centage of stiffening plates in the sides, for as the pillars increase in height, the weight increases as the cube of the length, while the strength is only as the square.

In this respect the ordinary suspension bridge possesses considerable advantages over other structures, for the strain being wholly tensile, the laws of pillars do not come into operation, and such bridges may be safely constructed of magnificent dimensions with little material.

These advantages, however, at once disappear when the horizontal strain is resisted by a pillar forming a portion of the structure itself, as in the case of the Chepstow bridge; and the limits of such a system are nearly similar to those of a tube, the weight per foot run increasing nearly as the square of the length, and therefore the weight of the whole structure as the cube.

The magnitude of the arch is limited, like that of the beam, by the danger of distortion, its stability being dependent on the laws of pillars. The thrust on the abutments becomes, moreover, a formidable difficulty in arches of great magnitude."

These observations, which are, however, much at variance with the arguments which decided that the suspension-bridge of Telford should be superseded, I fully concur in, and they are very important. It must be admitted, at all hands, that a structure whose direct strength depends on the resistance to the extension of iron, is safer and of greater strength than one which depends upon its compressive resistance. Firstly,—because the extensibility obeys known laws, and metal is superior in tensile strength; secondly,—for the reason previously described, that you avoid the necessity of loading your bridge with material to produce compressive resistance; and thirdly,—because the deflection varies nearly as the square of the depth, and you can have increased depth in a suspension-bridge with little additional material and cost.

A comparison of existing structures will at once prove this, and as an example I will mention that the two tubes of the Britannia bridge contain 2,500 tons of supporting material in a span of 460 feet, while the Niagara bridge, of equal strength and of 822 feet span, contains only 350 tons.

In the face of such undeniable facts, it is surprising that a system of parallel girders for large spans has been adopted, the safety of which, as regards direct strength, is not so certain because you depend on compressive resistance, which may suddenly fail from buckling, as you cannot estimate where it will occur from experiments on a

model, and you are therefore only certain of the strength of your structure as far as you actually test it, and have not that margin of the excess of certain strength to allow for deterioration which it is desirable to obtain.

As these advantages of suspension structures must be obvious, the question at once suggests itself, why have they been abandoned for railway purposes, where safety is so important?—the only answer to which is the supposed practicability of curing the oscillation and the wave produced by a passing load; and it is to the investigation of this important subject that my experiment and observations are directed. The first objection of the oscillation or swinging produced by a hurricane is not a serious one, as the force of the wind will only occasion mischief in combination with its action on the timber platform of the bridge, producing undulation and waves, and has been cured by Mr. Rendel by the addition of a girder parapet of iron. It could not occur in bridges with an iron platform, and stiffened by a girder of good iron, presenting comparatively little resistance to the wind; and I have therefore directed my experiments alone to the cure of the wave.

For the purpose of my experiments I had the model made which I now lay before the meeting, which represents one opening of the intended Londonderry bridge,  $\frac{1}{2}$  of the intended size, the length between the towers being 13 feet 6 inches, which it is submitted is of sufficient dimensions to deduce accurate results when large compression strains are not the subject of investigation.

To illustrate the object of my experiments, I will again explain that a suspension chain, *per se*, has no rigidity in itself; a weight placed on any part will instantly distort the figure, and the platform will take the form of the wave; and thus the numerous bridges erected on this principle, without a means of correcting the distortion, are unfit for the purposes of traffic of any kind.

The obvious correction for this undulation, which has been adopted by Mr. Rendel and Mr. Roubin with success, is a girder attached to the platform of the bridge, so that the weight is distributed and the waves diminished to such a degree as to be unobjectionable in practice; and the mechanical question for consideration is the amount of wave which will arise with a girder of a given depth and section of iron.\*

#### THE "IRON HORSE" MAKING A NEW START.

WE see it reported in the Banif and Wick papers that Lord Caithness has had a carriage fitted up on something like the locomotive principle, and has travelled on it with considerable rapidity, up hill and down dale, in the rough and hilly north, as well as along level roads and through crowded market-places; the whole apparatus, it is said, being as completely under the command of the noble driver as would have been a carriage-and-four or a mail-coach. With this carriage the Earl of Caithness and his Countess are said to have paid visits to friends, and completed a journey of some length with the speed of the old "mail;" and with great success. Does not this now at length fore-shadow that the day may yet after all arrive when the horse, being no longer necessary, may become a curiosity, as the skeleton of the mammoth in the British Museum, now is?—that, even in warlike operations, instead of cavalry mounted on horses, and now less efficient on account of the use of "arms of precision," we will have regiments of stalwart men mounted on "iron horses," as our primitive British forefathers had their peripatetic apocryphal iron war chariots, extremes thus meeting, but with a difference, even in the wild and savage war screech with which they will rush upon the foe?—that in more peaceful scenes even fair ladies may call for their steam horse, so tamed, that with it they will fearlessly roam through the streets of the West-end, the parks, and other places of fashion? What will they do with the grimysnoke? may some say; but are we for ever to be unable to consume our own "blacks?" Let us at all events console ourselves with the idea that coal, as a means of propelling the locomotive, may not be always necessary! Electricity would be cleaner: even the German baron's compressed air-hotties of iron, or some still simpler motive power, may one day replace it, at least in the new equivalent for pony carriages, cabs, and riding horses.

The revival of the locomotive carriage for common roads is not so likely now to have its progress checked as it was when the rail shot ahead of it; and it is to be hoped that no renewed infliction of heavy tolls will again stupidly interfere with it.

\* To be continued.



KILMORE CATHEDRAL, IRELAND.

## KILMORE CATHEDRAL, IRELAND.

KILMORE CATHEDRAL, of which we give illustrations in our present number, was consecrated on Tuesday, the 17th of July last, by the bishop of the diocese, in presence of a large number of the clergy.

The old cathedral, whose place it supplies, was a mere square room, with flat ceiling and gallery, quite inadequate for the accommodation of the parishioners.

The new building has been erected from the designs of Mr. William Slater, of Carlton Chambers.

The style selected is Middle Pointed. In plan the church consists of nave and aisles, north and south transepts without aisles, and chancel also without aisles. The tower is central: it is carried up one stage above the roof, and terminated by a four-sided pyramidal roof.

The west door is double, with a carved tympanum. The roofs of the nave and transepts are open, with carved braces supported on columns: in the chancel the roof is panelled. In designing the building two objects were kept in view,—the first, to provide suitable and increased accommodation for the parishioners; the other, to preserve, as far as possible, the distinctive cathedral arrangements. To accomplish these, the nave and aisles and south transept are filled with convenient open seats for the general congregation.

The north transept is occupied by the organ, which stands on the floor, and by the children of the schools. Under the tower are placed the stalls for the clergy and choir, and the bishop's throne: all these are of oak, and richly carved by Mr. Forsyth, of London, from the architect's designs. The chancel proper is left unoccupied by seats, and is thus available for confirmation or gatherings of the diocesan clergy, and the like. The pulpit is placed at the north-west part of the tower, and the font in the nave, at the west entrance. These were executed in Dublin by Messrs. Purdy & Outhwaite, who also carried out the stone carving.

There are at present only three stained glass

windows in the church,—two in the south transept, executed by Mr. Miller, the gift of the Nisbett family, and one in the south aisle, by Messrs. Clayton & Bell. The chancel is paved with Minton's encaustic tiles.

The general works were carried out by Mr. Hague, builder, of Cavan. The materials used are dark local stone for the general walling, and a lighter stone, from Dungannon, for the dressings. The external effect is much increased by the site, which is on the slope of a hill.

The funds have been provided by the bishop, assisted by private benefactors and a grant from the Ecclesiastical Commissioners.

## CONDITION OF THE POLICE COURTS.

In the police-courts of the metropolis, which day after day are crowded, may be noticed examples of the dangerous classes who are to be met with in the dismal and neglected neighbourhoods of London, but who, except in troubled times, are but little known to the more prosperous inhabitants.

Terrible are some of the countenances which may be seen, and so great and singular is the contrast, that the skilled painter might here form impressive pictures. In the waiting-rooms, most of them had in their sanitary arrangements, may be observed all grades of people. Some of these courts are so unwholesome in their arrangements that they cannot fail to shorten the days of those whose duty it is to be in constant attendance there, and are most pernicious to those who have occasionally business to transact. It is singular that, in those places where the law is generally well administered, such ill arrangements should be allowed.

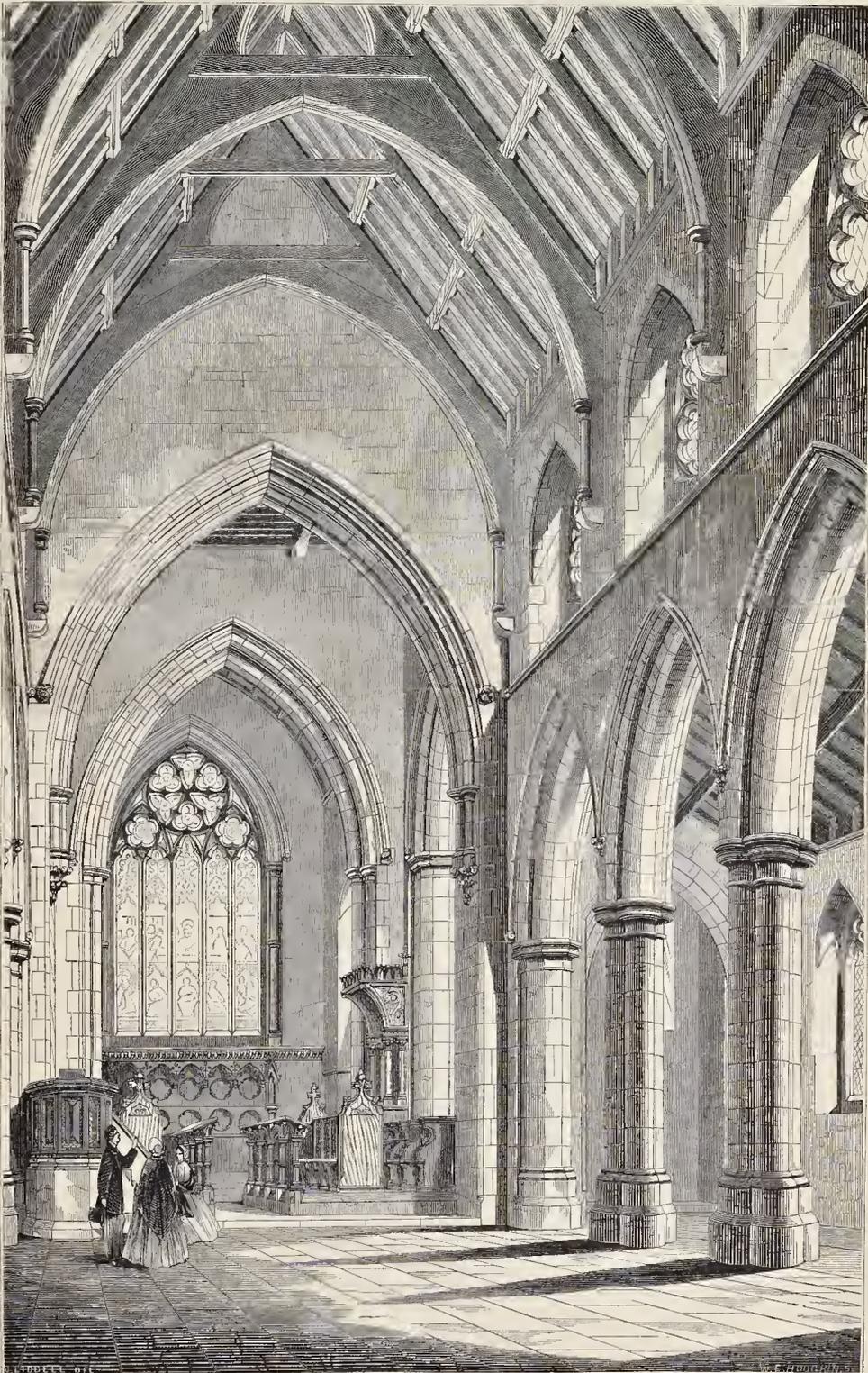
In Clerkenwell Court, a place of but recent erection, striking defects may be noted. In the waiting-room, which is often densely crowded on a hot summer's day, the most simple means of ventilation are neglected. As such a large number of people are often kept waiting here sometimes for hours, there should be, besides

the windows, an opening into the chimney, near the roof; and, as the door-way is usually blocked up by persons, there should be another opening above the door. It might be thought that the fireplace would help the ventilation; but, strange to say, the register of the stove is carefully closed; at least it was when we looked at it.

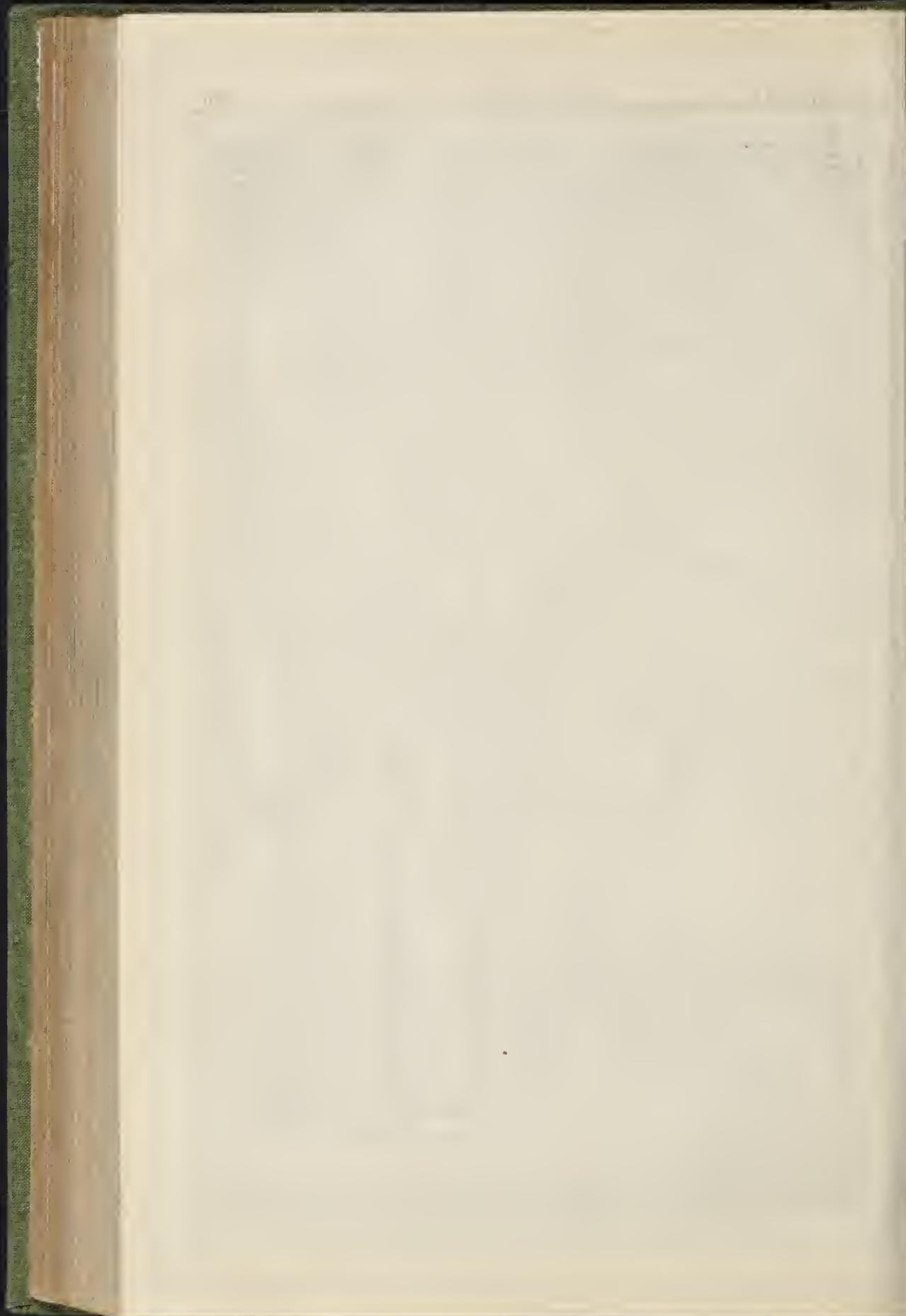
Here were sergeants of the useful sanitary portion of the police, who might give a beneficial hint in such cases. In the magistrate's private room and some of the other offices leading from the long passage which stretches to the court, a little care would improve the ventilation. At the further end of the passage mentioned there is a door, which, during the most busy part of the day, is kept closed. When last there, notwithstanding that the windows which range along one side were open, from the want of vent, at and beyond the door we found the atmosphere stagnant and oppressive. In the seats were women and children, and the place was thronged with other persons who were waiting as witnesses, or had been summoned for other purposes.

Persons unaccustomed to such places complain of the effect which the heavily-loaded air has upon the spirits. Children either doze into an unnatural kind of sleep, or become fractious; and doubtless, besides the inconvenience at the moment, future damage is done. The court here is of fair proportions, and well lighted; but, as we have said, there are needed further means to promote the circulation of air, perhaps more particularly in the winter time, when the windows are kept closed, than in the summer.

In the Guildhall Police-court, which has been altered, the arrangements are now very good. A large space has been provided for the accommodation of the public. The room is large, and the ventilation well managed. This now contrasts agreeably with the accommodation in the Courts of Exchequer, &c., near the Guildhall, and the Lord Mayor's Court at the Mansion House. The latter is even worse than Bow-street, and calls loudly for great improvement.



INTERIOR OF KILMORE CATHEDRAL.—MR. WILLIAM SLATER, ARCHITECT.



## ARCHITECTURAL PHOTOGRAPHS.

MESSRS. THOMPSON & Co., of Pall-mall, propose to publish a series of Architectural Photographs, on the 1st and 15th of each month. They profess that they intend to issue only first-class, carefully-printed, impressions, of really good and interesting subjects, at an unusually low price; and they have engaged the co-operation of Mr. F. Bedford, by whom all the photographs will be taken.

They propose to include, in the series, "Illustrations of Medieval Ecclesiastical Architecture—Exteriors and Interiors; Mural, Monumental, and other Sculpture; choice or remarkable examples of Civic and Domestic Architecture; Picturesque Ruins, and various other noteworthy subjects of a more or less rigidly technical character, interesting to architects, artists, archaeologists, literati, and persons of taste generally."

Each view is to be 11½ inches by 9½ inches, mounted on board, 18 inches by 14 inches, and singly will be sold for 6s.; to half-yearly subscribers, each will cost 5s.; and to yearly subscribers, only 4s. 4d.

We have before us half a dozen of the photographs prepared for issue, including an excellent view of Lichfield Cathedral (and giving the whole height of the spire); the Tower of Wrexham Church; Roublia's Monument to Mrs. Myddleton (not a wise choice); and the monument erected to the memory of the late Venerable Archdeacon Raikes, in Chester Cemetery, from the design of Mr. Penson. Mr. Bedford's name gives sufficient assurance that the photographs will be good as photographs. Everything will depend on the taste and tact employed in the selection of subjects.

## PARIS.

THE deep foundations that are being taken out, in order to continue La Rue des Halles on the site of the ancient market-place, bring to light, every day, a large quantity of human bones, belonging to the cemetery of the Innocents, and which have been carefully collected for re-interment. Now situated in the centre of Paris, the cemetery of the Innocents was primitively established outside the boundary of the town, between the two bourgs of Saint Germain-le-Neuf and Saint Germain-le-Vieux, the Beau-Bourg, and the Bourg l'Abbé, near one of the north of Paris gates, at the junction of the Saint Denis and Montmartre roads.

From the time that Philippe-August had it properly enclosed until its suppression as a burial-ground in 1785, it never ceased to receive funerals from twenty different parishes. The number of persons buried increased extraordinarily every year. The last grave-digger, Nicolas Poutrain, within the space of thirty years, had laid down to rest, according to his notes, no less than ninety thousand human beings. Thus, the number must have been about 3,000 each year, most of whose remains were heaped up in a common grave from 5 to 6 metres deep. It has been estimated that as many as 1,200,000 were interred in this cemetery from 1186 to 1785, or within about 600 years.

The fatal incidents which have occurred from time to time during the last century, in different quarters surrounding the cemetery of the Innocents; the complaints of the inhabitants, who attributed to this focus of putridity the fetid state of the well water; and the disappearance of generations by result of fever from the above emanations, called the attention of the authorities; and the Council of State, by its decree of the 9th of November, 1785, pronounced the suppression of the cemetery of the Innocents. The ancient quarries situated under the plain of Mont Souris, at a place called the Tombe Isoire, appeared the most convenient for the establishment of a subterranean cemetery. Thus originated the catacombs of Paris, which became the depository of the bones of all the churchyards of the capital, not far from the new little square of the Halles, where the restored and repaired fountain of Jean Goujon refreshes the verdure.

A steam fire-engine was tried in the Champs Elysees a few days ago. Placed in communication with one of the water-cocks of the grand avenue, it threw a jet higher than the roof of the Palais de l'Industrie. The advantages of such a machine are incalculable, both from the quantity of water and the force of projection.

The works of the tower in course of construction between the Church of Saint-Germain-l'Auxerrois and the Marée of the first arrondissement are drawing to a close. Already, notwithstanding the surrounding scaffolding, one can form an idea of

the effect of this structure, whose height is not less than 40 metres. It stands on a square base 7 metres on each side, the faces being pierced by trilobed ogival windows. Hexagonal counterforts or buttresses, separated by arches, flank the upper story, and a gallery with open work balustrade runs round the higher story, which is of octagonal shape. Statues of saints and kings will be placed on the different stories, and they are now receiving the finishing touch for the statuary.

The fountain of St. Michel is nearly finished: the bronze statues of the cardinal Virtues have been put in place. These statues, nearly 3 metres high, stand on capitals of white marble, supported by four columns of red Languedoc marble, and placed in pairs on each side of the central niche, to be occupied by the group of Saint Michel, which has been already cast, and is being cleaned up. The two stone figures of the upper façade,—Power and Moderation,—are completely terminated, as are also the different bas-reliefs, bronze shields, marble tablets, and other sculptures and ornaments which enter into the composition of this work. Two enormous eagles, of hammered lead, are being put up at the angles of the pediment, to whose ornamentation they will add, and at the same time mask the house against which the fountain is reared. A number of carvers are finishing off the marble fountain in which the waters are to play on the 15th inst., the *file* of the Emperor. On this occasion the scaffolding and canvass will be removed, and the public will be able to gaze upon this important public work, destined to mark the entrance of the Boulevard de Sebastopol on the left bank of the Seine.

The works of the Cathedral of Notre Dame are drawing to a close. New statues have been placed in the vacant niches of the *Galerie des rois*, on the west front; and in a few days the twenty-eight niches which compose this group will be completed. An immense scaffolding covers, at present, the southern façade of the transept, by means of which the last finishing work will be given to this important restoration. The grand rose on this side is shortly to be demolished and reconstructed, on account of its dilapidated state: all the portions are ready for putting up, so that much time will not be lost. The new central spire, almost clear of scaffolding, now appears with all its elaborate ornamental work. The plumbers are putting the last touch to the lead-work of the base, also to the ornamental ridge fret-work of the roof of the nave. Before the year is out the cathedral will be finished and given up to the parochial authorities.

## ART AND RECREATION IN THE COMMONS.

IN course of an incidental discussion on the National Gallery last week in the House of Commons it was intimated, on the part of the Government, that they approved of Mr. Pennebroke's plan for a new gallery in preference to Captain Fowke's for an alteration of the present building, even although the latter would only cost from 30,000l. to 50,000l., while the former would cost probably 200,000l. Captain Fowke's plan, it was thought, was either too extensive for a mere alteration, or not extensive enough. In course of the discussion, Lord Palmerston said it was desirable, if they could, to make some final and permanent arrangement, to provide for the whole of this subject. The question came to this, whether, by the outlay of some small sum for a short time to come, upon the present building in Trafalgar-square, the immediate want could be provided for, so as to render it unnecessary to embark upon the large expenditure which would be necessary in order to build a new National Gallery on the site of Burlington House. As the matter must come forward again on a future occasion, he would simply point out that that would be the question which would then have to be discussed. In reply to a question put by Mr. Coningham, Lord Palmerston said that in the belief that Sir C. Eastlake was a most proper person for the office of director of the National Gallery, he had recommended her Majesty to re-appoint him, and he had been re-appointed accordingly.

On the supply question of a vote of 100,400l. (which was finally granted) to defray the expenses of the royal pleasure-grounds and parks, a discussion ensued of a miscellaneous character as to the parks, the new ride, &c. Lord John Manners said, as to the ride, the argument in favour of the riding part of the public might be carried too far, because a far greater part of the public rode in cabs and carriages than on horseback, and, to be consistent, the right hon. gentleman (Mr. Cowper) should throw open the road to carriages (omitting

buses and cabs inclusive?) as well as to people on horseback.

With regard to the works at the Serpentine, Mr. Cowper said he had, in conformity with Mr. Hawksley's recommendation, had a well sunk for the purpose of providing fresh water, as he believed the principal evil of the present state of the water arose from stagnation. As to any excess in the expenditure, he had Mr. Hawksley's assurance that it would not exceed the sum of 17,000l. There would be a power of supplying the round pond in front of Kensington-gardens from the well in question, instead of by the water companies.

With respect to the proposed museum in Victoria-park, he stated that the Board of Works had no power to erect any such building, and he was simply asked to do that which he had no power to do.

As to Battersea-park, there was great want of water there, and it was proved to be more economical to have a well sunk, than to take a supply from the water companies. It would cost just as much money to get water from the river as from a well; and he thought that if Thames water were used in the gardens, Battersea-park was likely to be a very disagreeable place. Mr. Joseph Locke thought the economy of sinking the well so near the Thames was very doubtful, and ought to be more clearly shown. Mr. Cowper explained that sinking the well at Battersea-park would save an annual expense of 300l. for watering the gardens, for water for the lodges, &c. Mr. John Locke wished to know why no progress had been made in letting the ground in the neighbourhood of Battersea-park for building purposes. He had no doubt that a great check upon traffic, not only over Chelsea-bridge, but over Southwark-bridge, was owing to the existing tolls. As a matter of economy, it was worth the while of the Government to consider this question of payment of the toll at Chelsea-bridge (particularly as the new railway bridge was nearly completed), in order to make the public property at Battersea as remunerative as possible.

Lord J. Manners said, with regard to the metropolitan parks generally, that, when the parks were established, the metropolis had no special voice in the matter. The legislature made them, and consequently the public, he thought, ought to pay for them.

## THE TOWERS AND SPIRES OF LONDON.

THE churches of London, which give so much beauty to every view of the metropolis, and have, moreover, so many valuable and interesting associations, are threatened by the "Union of Benefices Bill," now before the House of Commons. The Royal Institute of British Architects, as we have already mentioned, have sought, even if they could not save the churches, to obtain protection for the towers and steeples; and, at their inspiration, Mr. Cavendish Bentinck proposed to the House in Committee, on the 8th, to add these words:—

"Provided always, that nothing in this Act contained shall authorize the pulling down the churches of Saint Stephen, Walbrook; Saint Martin, Ludgate; Saint Peter, Cornhill; and Saint Swithun, Cannon-street; or the towers and steeples of any of the churches within the City of London, and specified in the schedule to this Act annexed."

Further, to insert the following clause:—

"In case any of the churches specified in the schedule to this Act annexed be pulled down, the towers or steeples of which shall, under the provisions of this Act, be required to be left, every such tower or steeple shall be considered to form part of the church of the united parishes, and be repaired and sustained in the same manner as such united parish church is repaired and sustained."

That part of the first clause which defends the four churches specially named was carried, but the remainder was not; and some further efforts to preserve our steeples are necessary.

On Monday last a meeting was held on the top of St. Paul's; Mr. Godwin (in the chair), Professor Donaldson, Mr. Norton, Mr. Penrose, Mr. Porter, and Mr. T. Hayter Lewis being present; when the various towers and steeples were examined, with the view of saying which should be preserved. The sight was wonderful, and those present found few spires to the destruction of which they were willing to assent. The following memorial was agreed on; and, being afterwards signed by the president of the Institute and such members of the council as could be found, was presented on Tuesday night:—

"To the Honourable the Commons of the United Kingdom of Great Britain and Ireland in Parliament assembled.

The humble petition of the undersigned President and Members of the Council of the Institute of British Architects, sheweth,—That your petitioners have learnt with great satisfaction that on the recent discussion in your honourable House of the Union of Benefices Bill, the

church of St. Stephen's, Wallbrook, and three other of the churches built by Sir Christopher Wren, celebrated for their architecture, were expressly exempted from liability to be destroyed under the operation of the proposed Act.

Your petitioners, as architects, beg respectfully to impress upon your honourable House that the appearance and beauty of the city of London arise chiefly from the highly picturesque and beautiful towers and steeples built by Sir Christopher Wren and other architects, which for variety and excellence of architecture are not surpassed by the celebrated campaniles of foreign cities, and which render the aspect of the City from the river and bridges, and other commanding situations, one of the most striking objects in the world, and a just pride to the country and the metropolis.

The City is chiefly composed of brick mercantile buildings of little architectural character, and the loss of some of the towers and steeples which might be of little importance, would detract greatly from the general effect.

Your petitioners beg respectfully to submit, that at a time when your honourable House is voting large sums for the erection of public buildings in the metropolis, it would be a great loss to destroy existing structures of great architectural merit.

Your petitioners trust your honourable House will add to the list of churches already protected some of the other towers and steeples in the city of London.

Your petitioners, therefore, humbly pray your honourable House that the following towers and steeples be added to those exempted from destruction in the Bill before your honourable House, namely:—Saint Alban's, Wood-street; Allhallows, Bread-street; Allhallows, Lombard-street; Allhallows, Thames-street; Saint Andrew's, Holborn; Saint Andrew's, Watling-street; Saint Augustin's, Watling-street; Saint Bartholomew's the Great; Saint Bene't's, Thanes-street; Saint Bride's, Fleet-street; Christchurch, Newgate-street; Saint Dunin's Backchurch; Saint Dunstan's in the East; Saint Dunstan's in the West; Saint Edmund the King's; Saint George's, Botolph-lane; Saint Giles's, Cripplegate; Saint James's, Giltie-hill; Saint Lawrence's, Jewry; Saint Magnus's, London-bridge; Saint Margaret's, Lothbury; Saint Margaret Patten's; Saint Mary's, Abchurch; St. Mary's, Aldermary; Saint Mary's Bow; Saint Mary's Somerset; Saint Mary Magdalen's, Old Fish-street-hill; Saint Michael's, Cornhill; Saint Michael's, Queenhithe; Saint Michael's Royal; Saint Mildred's, Bread-street; Saint Mildred's, Poultry; Saint Sepulchre's; Saint Yves's, Foster-lane. And your petitioners will ever pray," &c.

#### THE MANUFACTURE OF PAVING TILES.

BEFORE conducting the members of the British Archaeological Association over the works at Benthall, as mentioned in our list, Mr. Maw explained the nature of the several processes. He said,—The manufacture consists of two distinct branches, which are essentially different in nearly the whole of their processes. Firstly, the making of encaustic tiles, or those inlaid with a pattern of two colours, which is the re-production of an art limited in Medieval times to church decorations; but now having a much more extended application. Secondly, the manufacture of plain tiles, and tesserae of a uniform colour used in the construction of geometrical mosaic pavements, similar in character to those found in the Medieval buildings in Italy; also mosaic and tessellated mosaics, similar to those occurring in Pompeii, and almost all Roman remains in this country and on the Continent. The materials employed in both processes are nearly identical, and consist for the most part of the clays and marls of the Shropshire coal-measures. These, without any colouring matter, together with clays from the south of England, form the red, buff, and fawn-coloured tiles; and, in connection with different proportions of oxides of iron and manganese, the black chocolate and grey tiles. The white and all the richer coloured tiles and tesserae are formed of a species of porcelain or Parian, the white left uncoloured, and the blues and greens coloured with oxides of chrome and cobalt. The preparation of what is technically termed the body of the tile, which is the first process in the order of manufacture, consists in mixing the constituent clays and other materials with water, and commingling and purifying by passing them in a semi-liquid state through a sieve made of the finest lawn, containing between 10,000 and 15,000 perforations to the square inch. All the coarse particles are by this means removed, and the texture of the clay rendered perfectly fine and even, as well as greatly adding to the brilliancy of the colour. The semi-liquid purified clay is then dried out what is termed the slip-kiln,—if for the manufacture of encaustic or inlaid tiles, to a plastic state; or, for plain or self-coloured tiles, perfectly dry and hard. It is at this point that the two processes diverge and are essentially different. There is also some slight difference in the proportions of the materials used in their composition, but this need not be more than noticed. The encaustic tiles are made of plastic clay; the pattern impressed from plaster of France moulds, and the indented surface filled in with different coloured clays in a semi-liquid state. The tile is then allowed to dry gradually to the consistency of wax, and the inlaid patterns developed by scraping off the superfluous clay. For the manufacture of the plain tiles, of one colour throughout, the material, which has been dried quite hard on the slip-kiln, passes through a

machine which grinds it to powder ready for moulding, which is performed in steel dies under very powerful screw presses, some of which work to a pressure of 30 tons. Both kinds of tiles, after having been formed, are placed for ten days or a fortnight in the drying stove, an apartment heated by fires up to 80 or 90 degrees, and when the whole of the moisture is driven out, they are ready for the burning. This is performed in large kilns, the tiles being stacked in fire-clay boxes, termed saggars. The actual burning occupies four days and nights, during which time they are gradually brought up to white heat by the consumption of from 18 to 20 tons of coals; and during another four days and nights are as gradually cooled, occupying the kiln in a hot state for eight days and nights. Great care is necessary in this part of the process to give the correct amount of heat throughout the kiln: if the firing is not carried sufficiently far the tiles are soft and irregular in colour, which necessitates a repetition of the process; and, if carried beyond a certain point, they gradually decrease in size. They are judged of by long narrow tiles termed "proofs," from time to time drawn out of the kilns during the firing. The whole contents of the kiln may be spoiled in a very few minutes. The great bulk of the tiles are employed in the unglazed or bisquit state, the manufacture of which is complete with the burning. They have merely to be drawn from the kiln; and, as they somewhat vary in size and colour, depending upon the precise extent to which the firing has been carried, have to be passed through a gauge, which divides all the larger forms into four distinct sizes. The process of glazing or enamelling is performed by applying a thin coat of paste, made by vitrifying materials on the tiles that have been previously burned, which is converted into a glaze by subjecting to a low red heat in a small furnace termed the enamelling kiln. Glazed tiles are principally employed for both linings and the sides and backs of fire-pieces, also for pavement in combination with unglazed tiles, with which they form very pleasing contrasts. To those who are interested in statistics, I may mention that we consume every year about 1,500 tons of coal, and from 1,100 to 1,200 tons of clay, and various materials entering into the composition of the tiles, out of which between 20,000 and 30,000 square yards of tiles, tesserae, and mosaics are manufactured, composed of 700 or 800 distinct shapes, sizes, and colours. About half of these are laid by the paviors in our own and our agents' employment. The principal use of our manufacture is for the entrance-halls and corridors of private houses and public buildings; also for conservatories, verandahs, dairies, and internal and external wall decorations. A considerable proportion is sent to America, India, and the Colonies. Among the principal works we have executed, or have in hand abroad, I may mention the pavements of the entrance-hall of the new University of Toronto; also nearly the whole of Osgoode Hall, Toronto, laid by our own men sent out for the purpose; the entrance-hall of the Hong Kong Club; Deck House, and other parts of the steam yacht *Said*, for the Pash of Egypt; Jessore Church, Bengal; the ground-floor of the new General Post-Office, Calcutta; and the Cathedral of the Spanish town, Jamaica.

#### LIFE AND DEATH.

THE Registrar-General's annual report for 1858, referring first, not to England alone, but to Great Britain, states that its estimated population in the middle of 1858 was 22,626,331, and the excess of births over deaths in the year, 246,458. 759,676 children were born alive, 351,316 persons were married, and 513,188 died; so that on an average, upon every day in the year, 2,080 children were born, 962 persons married, and 1,405 died, leaving a gain of 675 as the result of the day. The birth rate for Great Britain was 33·67 to 1,000 living, the death rate 22·68, the marriage rate (persons married) 15·52. For easy recollection it may be noted that rather more than twice as many are born in a year as are married, and the deaths should not be so high as married between those two numbers. To 1,000 people living in the two countries the births in the year were thirty-four in Great Britain, twenty-seven in France—a very striking difference; the deaths twenty-three in Great Britain, twenty-four in France; the persons married 15·5 in Great Britain, 16·9 in France. In Scotland the marriages, if all registered, were not so numerous as in England; the births were almost exactly at the same rate; but the percentage of deaths in Scotland was only 2·047, in England 2·303. Turning now to Eng-

land and Wales only, we learn that to every 1,000 girls 1,045 boys were born, and 102 males died to every 100 females, the average of twenty-one years being 103; but there are more females living in England than males, and out of equal numbers living 105 males died to every 100 females, the average being 107. The births are always most numerous in the first half of the year: in 1858 they were as 2,091 to 1,909 in the two half-years. The mortality of the year was high. The deaths in the chief towns were at the rate of 2·655; in the country districts, 2·006. The deaths registered in the three months that ended the 30th June, were 110,578,—a larger number than was returned in any previous June quarter (1848-59). The annual rate of mortality last quarter was 2·228 per cent. of the population, while the average of ten previous springs was 2·195. It is a remarkable and interesting fact that, if 2,000,000 of acres on which the chief towns of England are situated be distinguished from the remaining 35,000,000 which hold small towns and country parishes, it is found that the rate of mortality on the former (2·305 per cent. per annum) was below the average of last quarter, whereas on the latter the rate, 2·155, was above the average. The average rates were respectively, 2·346 and 2·028. It cannot be questioned that large populations have even now some advantages of a nature favourable to health which villages do not possess. The highest attainable health is probably to be sought in a happy combination of both states—*rus in urbe*. In London 14,894 persons died in the quarter. The metropolis lost about a thousand more lives than in the healthier spring of 1859. Pulmonary complaints were very fatal. The mortality from zymotic diseases generally was comparatively low: in this class measles chiefly prevailed.

#### DRINKING-FOUNTAIN COMPETITION, BOSTON.

TWENTY-TWO designs were submitted in competition for the above, when that by Mr. Sherwin, of Liverpool, obtained the first place, and that by Mr. Charles Phipps, of Bath, the second. Both are Gothic designs.

#### HEREFORD CLOCK TOWER COMPETITION.

THE Hereford Town Council advertised for designs for a Clock Tower and Clock-Tower Entrance. Fifty-eight architects have sent in designs, and these are now being exhibited in the Shire-hall. The decision is to be announced on the 6th of next month.

#### SOUTHMOLTON MARKET COMPETITION.

THE first prize of 25*l.* was awarded to Mr. W. T. Cross, of Exeter; and the second prize to Messrs. Waters, of London and Exeter. Mr. Cross was appointed architect for the erection of the new market, at an estimated cost of 3,000*l.*

#### SCULPTURE AND GOTHIC ARCHITECTURE.

At the *conversations* of the Birmingham Archaeological Association, held in King Edward VI.'s School-room, on the 7th inst. Mr. Chamberlain read a paper on this subject. He said that in the old Gothic times, sculpture and sculptured decoration were of many different kinds, sometimes simple and cheap, sometimes elaborate and costly, now conventional and then natural, now roughly hewn and then smoothly finished, as circumstances might dictate; but that in all good Gothic work sculptured decoration of some kind was present, and that in the best periods it was used most profusely and lavishly. In the minor works of the period as much was given as the builders could afford; but, in the cathedrals and other large works, every feature, external or internal, was wrought by the agency of the chisel and mallet into forms of great and lasting beauty. Although many styles had used sculpture profusely, in no other than the Gothic had it been trusted to so wholly or relied upon so thoroughly. It had commenced with perfectly simple forms and conventional methods of treatment, and had worked its way up to the expression of the natural grace and beauty of leaves and flowers, of the human form in the added majesty of clothing, and the human countenance. The artists who produced this sculpture also knew thoroughly well where it should be placed, and where it would show to the greatest advantage, so that by this means also this work possessed a

charm which modern work frequently is wanting in. Their practice was not to put a public building at one end of a street and a statue at another, but they made their public buildings eloquent with the statues of the saint, the warrior, and the statesman, and thus secured to each part the dignity and the excellence of fellowship. All Gothic sculpture commenced in the decoration of the constructional features of the building, and forms which, by superficial observers, are supposed to be merely ornamental, are full of actual use and real service. The law of Gothic life was, first, truth and use; and then beauty. All that the architect needed in the way of size or of strength, every feature of construction required by his building, was provided first and chief of all; but he did not end his labour there, but by his thoughtfulness and care these necessities of construction were made, each in its degree, beautiful; and, while the usefulness of the building was unimpaired and its strength undiminished, the required beauty was obtained, to the building's great and lasting glory. The Gothic architects allowed the workmen an amount of liberty which was never tolerated in the Classic styles; both the Greek and the Gothic builders knew that only one man here and there was compelled to produce the best work, but that there were a host of men who could produce the minor forms of decoration. The Gothic architect eagerly accepted their help: he asked each man to produce the best work possible to him; and only reserved to himself the right of deciding where it should be placed. The Greek architect, on the other hand, brought down his own ideas to what he conceived as the level of average ability. He set before the workmen some few abstract forms, some few simple arrangements of conventional line, and compelled them to produce these low forms of beauty with mechanical perfectness, no deviation being permitted from the decreed standard. The law of the Greek was copyism and unholly obedience. The law of the Mediaevalist was liberty and law. Consequently, in the best Gothic work the grand spectacle was exhibited of many differing minds, and much varying power, all working harmoniously together, to produce a given and worthy end. Every building became a book, stored with all kinds of lore for all degrees of men; full of all sorts of truths and lessons; written ever with the records of noble and heroic deeds; and eloquent with the great truths of Scripture history. Those who decried this style have found fault with it as being barbarous; but they would see less to blame if they considered the matter more deeply. One part of the grotesqueness was attributable to the state of general education of the people: these buildings were meant to be understood by them, and the grotesque sculpture was exactly fitted to awaken their inquiries and to cause them to think for themselves. One other great part was attributable to the fact that the spirit of the style encouraged rough village masons and carpenters to attempt methods of ornamentation above the mechanical powers of production which they had acquired; but that, however rough and rude their efforts might be, it was better that they thought about leaves and flowers, about saints and angels, than if they had contented themselves, as in the modern classic days, with cutting triglyphs and sinking square channels round stones. The spirit of Gothic architecture always remained the same: the outward characteristics of the style changed rightly with each century. The Middle Ages were the days of Ecclesiastical architecture. This was the period of Domestic architecture. Yet in this, as in the old styles, sculpture ought to form a chief method of decoration. The union of architecture and sculpture was again needed: each was feeble and weak without the other; and true architecture and good sculpture were alike impossible, until the architect and sculptor were really one, and their work recognized as being in all essentials the same. The revival of Gothic architecture became every day more sure in its success, but it still needed the earnest and hearty co-operation of all who love art. Those who oppose barely seem to know what they are doing: they are opposing a style in which progress is possible, and success is sure—a style which can use all the powers of man, which can find room for the most humble work, and which thankfully receives the highest; while the style which they would propose in its stead was weighed long ago in the balance and found wanting,—a style where success means degradation, and whose prosperity entails upon its followers that worst of all servitude—the slavery of the will and the mind.

At the same meeting Sir Francis Scott made

some observations on Limoges enamels (of which specimens were exhibited); and Mr. T. Bunce read a paper, entitled "A Few Words about Antiquaries."

LEEDS SCHOOL OF ART.

A GREAT effort is now being made to raise funds for a new school of art in Leeds. It is to form one wing of the projected Mechanics' Institution, concerning which an advertisement to architects for plans recently appeared in our columns. Perhaps, in proportion to the size of the town, Leeds may at present be said to have the worst accommodation for a school of art of any town in England. Lord Palmerston has consented to preside at a meeting in October, at Leeds, to inaugurate the building scheme of the whole institution, and to bring its claims forcibly before the public. He will also be requested to distribute the medals to the successful students at the school of art. It is proposed to build the school of art wing first.

The increase of work in the latter shows how peremptorily additional accommodation is called for. We quote from the list of successful candidates at the late examination:—

Summary and Comparison of Results for Session ending 15th June, 1860.	
	1850. 1860.
Number of medals awarded.....	11 20
Passed senior examination.....	53 103
Passed junior examination.....	73 150
Elementary prizes.....	75 92

THE PUBLIC BATHS AND WASH-HOUSES OF THE METROPOLIS.

THIS movement progresses in a most satisfactory manner, and the accommodation provided in these places is appreciated by the class for which they were intended. In connection with some of the large swimming-baths, clubs have been formed, and skilful professors teach the useful art of swimming. This is a matter which has for long been too much neglected in the large towns of England, a fact which seems remarkable, when we consider how eminent this nation is as a maritime one.

From inquiries made, it seems that the number of bathers is constantly increasing. In this respect we are, however, only going back to a good practice of days gone by,—to the old Roman and Saxon times of England,—when the use of the bath was common. The wholesome custom, in the Mediaeval and more recent ages, went nearly out of use.

Buckland, in his "Curiosities of Natural History," remarks that the English people have not been for so very long a bathing people, so that bathing-machines on the sea-shore are a comparatively recent invention. The sea was only considered fit for the purposes of commerce, and the coast as the residence of merchants and fishermen.

Bath, and some other places famous for mineral waters, were in use. More than a hundred years ago a physician named Russell wrote a book on the advantages of washing his body in the sea. From that time the pleasant nooks along the British coast have been becoming more and more in request. Brighton has risen to a vast population, and places which were formerly desert spots are now yearly resorted to by thousands for health and pleasure.

THE VICTORIAN TRADES' HALL AND LITERARY INSTITUTE, MELBOURNE.

AN inaugural address, for 1860, was delivered by Mr. John Millar, Honorary Architect to the Institute, on 24th May last, on the presentation of a design by him, gratis, for a permanent hall, to be erected on the Government gift of an acre of ground in the centre of the city for a site, and estimated to be worth 10,000*l*. The extreme measurements of the building will be 340 feet by 135 feet. The site is 400 by 250 feet, bounded on one side by Victoria-street, and on the other by Lygon-street. The building will be placed in the centre of the ground, isolated, and elevated upon a stylobate of 7½ feet above the level of the street, and approached from both fronts by deep flights of steps of 40 feet each in extent. The style will be Greek of the Periclean age, the Greek being regarded by the architect as more appropriate to the climate than Old English, which he should have otherwise, he says, preferred. The great central public hall of the edifice will be capable of accommodating 4,500 persons, and measures 150 feet by 90 feet wide, and 75 feet in height, including the galleries. Various committee-rooms

for the separate trades surround the hall, and there will be a colonnade 130 feet by 20 feet, running parallel with these and the central hall. There will also be a lecture hall, 80 feet in diameter, class-rooms, news-room, and various other accommodation, besides a basement story for stores, &c. The portico is flanked by a campanile tower, 80 feet in height. Nothing is said of the probable or estimated cost. In his address, Mr. Millar particularized the following as a few of the buildings in progress of erection at Melbourne:—

Senate House.....	at a cost of £250,000
Post Office.....	100,000
Custom House.....	100,000
Treasury.....	100,000
Chief Secretary's Office.....	150,000
Free Public Library.....	200,000
University.....	100,000

all connected with the State; besides the numerous banking establishments, including the Savings Bank, and many others, at a cost, he says, far exceeding a million of money.

BATTLE-FIELD CHURCH, NEAR SHREWSBURY.

THE attention of the public having been directed to this interesting relic of past days, by the visit of the archaeological congress to the spot, let us hope some advantage will follow.

Here, where Sir John Falstaff fought a whole hour by Shrewsbury clock—if he might he believed,—this church was erected in memory of the dead who fell in a great national struggle. The building, moreover, is a very good example of a certain style of English architecture. This ancient church—in every way so interesting—has since stated to fall into decay, as we some time ago stated, a large portion of the roof is gone; and, if efforts are not made, the place will become a complete ruin. The population of this parish is very small, and the means available quite insufficient for the restoration of the building.

Some time since it was said that the owner of the domain on which stands the church, being friendly to English sports,—hunting, and others,—it was proposed in his honour to restore it; it seems, however, that a present of plate or something of the kind was accepted instead. The gentlemen of Shropshire are generally remarkable for both patriotism and intelligence; and it may be hoped, therefore, that Battle-field Church will not be allowed to perish.

SURVEYORS AND THE APPRAISERS' LICENSE.

WE were requested last week to publish the following correspondence, but preferred making some inquiry first:—

Sir,—I have to acknowledge the receipt of your favour of 21st instant, and beg to thank the Board for their courtesy.

You say "Every person who exercises the calling or occupation of an appraiser, and who, for or in execution of any gain, fee, or reward, makes any appraisal, or valuation chargeable by law with any stamp duty, requires a license," &c.

Permit me to trespass a little further, in order that I may be informed what is an appraisal or valuation chargeable by law with any stamp duty. I have applied to my legal adviser, who is unable to inform me; and as I am desirous of fully complying with all proper legal requisitions, I should feel greatly obliged by a definite explanation of the terms employed.

For example: If I, in the course of my professional practice, prepare a valuation, that is, a report of my opinion of the value of any property for sale, mortgage, or probate, is a document of that kind liable to stamp duty? If, under ordinary practice, such a document is exempt from duty, but when used in the Court of Chancery, for example, requires by the rules to be stamped subsequently to leaving my hands, ought I to be licensed before making an affidavit on plain paper, for the purpose of having my report so used?

Again: If, in my profession of an architect, I measure and value the materials and workmanship in any building, for the purpose of adjusting the settlement between the proprietor and the builder, ought I to take out a license before acting in that capacity—the documents in ordinary cases never being stamped at all? I am not aware that any court would require such documents to be stamped.

And again: If in a dispute between certain parties I am appointed a referee for the adjustment of their differences by a proper legal instrument, and in that capacity measure and value any artificer's work and material, or value any land or building, making my award upon a proper legal instrument, is it necessary that I should be licensed before acting in that capacity?

Hoping to be favoured with a reply to the foregoing inquiries, I remain, &c.

"Inland Revenue, Somerset House, London, W.C. 1st August, 1860.

Sir,—Referring to your further letter of the 23rd ult., I am directed to inform you that all appraisement or valuation of any estate or effects, real or personal, heritable or movable, or of any interest therein, or of the annual value thereof, or of any dilapidations or of any repairs wanted, or of the materials and labour used or to be used in any buildings, or of any artificers' work whatsoever, is liable to duty. I have also to state that an appraiser is liable to a

penalty of 5s. if he neglects to deliver to his employer, within fourteen days, a duly stamped appraisal.—I am, sir, your obedient servant.

(Signed) T. SARJENT.

It was held, at the Inland Revenue Office a few years ago, and correctly as it seems to us, that a license is not necessary for those who, acting for the builder, prepare his accounts. These are not "appraisements" requiring a stamp, but the tradesman's bills of charges, and the surveyor is simply his clerk for the time, so to speak.

#### A STATUE OF ROBERT STEPHENSON.

A MEETING of noblemen and gentlemen, friends of the late Mr. Robert Stephenson, M.P., was recently held at Fendall's Hotel, Westminster, for the purpose of taking into consideration the most appropriate mode of testifying, in a public manner, the general respect for his memory. Lord Lansdown was unanimously requested to take the chair. In the course of his address the chairman said he would suggest the memorial being a statue, and that application should be made to the Government for permission to place it within the area of St. Margaret's Gardens, Westminster, where, beside that of Brunel, on the way between the scenes of their professional labours, and of the parliamentary contests they had maintained, the effigies of the two men might stand as beacons of encouragement to the younger members of that profession to which great Britain owed so much of her present greatness and prosperity. Mr. Joseph Locke, M.P., proposed the first resolution, which was seconded by Lord Powis. Mr. Hawleshaw proposed the second resolution, seconded by Mr. Fowler; and the third resolution was moved by Mr. J. P. Gassiot, and seconded by the Hon. Robert Grimston. The resolutions were then unanimously passed: they are as follows:—1st. That this meeting, desiring to testify the universal respect entertained for the character of the late Mr. Robert Stephenson, M.P., proposes to erect a statue in his memory. 2nd. That subscription lists be opened for providing the necessary funds. 3rd. That the noblemen and gentlemen present be requested to act as a committee for carrying into effect the foregoing resolutions, with power to add to their number. Subscription lists were ordered to be opened at the banks of Messrs. Glyn, Mills, & Co., and Messrs. Coutts and Co., London; and Messrs. Hodgkin, Barrett, Pease, & Spence, Newcastle-upon-Tyne; and at the office of Mr. J. G. Parry and Mr. Charles Manby, the honorary secretaries, 24, Great George-street, Westminster.

#### THE DRINKING-FOUNTAIN MOVEMENT.

A FOUNTAIN of some cost has been erected by Messrs. Wills, Brothers, in the Strand, close to the Church of St. Mary-le-Strand, and nearly opposite Somerset House. The public are indebted for it to the liberality of Mr. Robert Haubury, M.P. The base of the fountain is composed of polished red granite, above which there are six bronzed pillars supporting a polished marble entablature, surmounted by a dome enriched with water plants, and over all a Cupid without wings or darts, bearing on his head a vase supposed to contain that fluid which the fountain is intended to supply. There is, or is to be, a lamp suspended from the dome. The water flows from two jets out of a bronzed vase in the centre of the fountain. On the east end of the fountain is inscribed:—"The gift of R. Haubury, esq., M.P.," and underneath, and elsewhere are various texts. We are forced to say that the details are very unsatisfactory.

#### SUPPLY TO DRINKING-FOUNTAINS.

RESPECTING the filters in street drinking-fountains, your correspondent justly points out the need of change or the necessity for improvements therein. I have, through practical experience whilst fitting up filters, for a considerable time past also felt convinced of the need of a change, and would therefore suggest the following remedy. In all the drinking-fountains which I have taken notice of, the following plan is carried out:—the water supplied by the company is first introduced to the filter, and, after passing through the best filtering substance or purifying process known, is immediately allowed to flow onward through several feet of metal pipe, pass brass taps, empty into metal cisterns with copper cock, then descend through smaller pipes, and is given out to the people warm in summer time, and generally impure.

I would suggest that in no case whatever should filtered water be allowed to come in contact with metal afterwards. There is no necessity; for, when

the water has once passed through a filter, it should flow on through glass tubes, earthenware pipes, or enamelled iron bore to the outlet. Such tube or pipe may be protected by passing through a pipe of larger diameter, or in some cases through solid stone, or even through the middle of an ice-bank, and thus effectually escape the heat of the sun. But if the filter is fixed in the proper place, which is as near as possible to the outlet, the water will be generally obtained, independently of other means, both pure and cold.

The expense of altering or removing the filters now in use or action would be trifling; and in those heretofore erected the cost would be much less than heretofore. The space required would be less also.

The friends and admirers of this drinking-fountain movement are greatly indebted for the information and suggestions given in the columns of the *Builder*.

WILLIAM EAST.

#### THE SIZE OF RAIN-WATER PIPES.

The formula  $400 a \sqrt{h} =$  discharge in cubic feet per minute, used by some writers, when applied to rain-water pipes leads to very erroneous results, being based upon the assumption that fluids follow nearly the same laws of gravity as solid bodies, which is true only so far as relates to velocity.

When the fluid falls in a continuous stream, the velocity multiplied by the sectional area of the column will be a constant quantity for all heights, the size of the stream diminishing as the velocity increases.

It therefore follows that the length of a rain-water pipe will not affect the discharge to any extent.

In calculating the following table, I have adopted the formula  $q = 5 \sqrt{h}$ ,  $d$  representing the diameter of the pipe in decimals of a foot, and  $q$  the quantity of water discharged in cubic feet per second.

It is applicable to all vertical pipes which receive their supply with little or no pressure or head.

Table showing the Discharge from vertical Rain-water Pipes, &c.

Diam. of stack in inches.	Discharge in cubic feet per second.	Discharge in cubic feet per minute.	Superficial feet of roof, age water pipe, required to lead the water from rainfall being at the rate of 1 inch in 240 per hour.	Diameter of pipe, required to lead the water from the stack in feet.
2	.057	3.42	2.449	3 inches.
2½	.099	5.943	4.279	4 "
3	.156	9.375	6.750	4 "
3½	.239	13.783	9.924	6 "
4	.321	19.250	13.860	6 "
4½	.431	25.834	18.500	6 "
5	.509	33.539	24.250	9 "
6	.711	42.965	30.719	9 "
6	.884	53.033	38.184	9 "

It will be seen from this table that, even in small pipes so placed, the capacity for discharging water is very considerable.

The stack pipes generally used are abundantly large, but the eaves gutters are frequently too small.

Eaves gutters should never be less in width or depth than twice the diameter of the stack pipe: the depth, however, should be reduced towards the end farthest from the pipe, so as to admit of a sufficient fall, the appearance presented by which might be concealed by having a fascia of uniform width cast on the face of the gutter.

J. T. HURST.

#### THE FIRST MAKER OF EARTHENWARE SEWER AND DRAIN PIPES.

In a recent number of your journal, under the above head, are some inquiries as to the comparative novelty in this country of earthenware socket-pipes. I beg to call your correspondent's attention to the following extracts from Heath's "Accounts of the Ancient and Present State of Ragland Castle, &c. Monmouth, 1806."

"The well which supplied Ragland Castle with water . . . is distant near two miles, . . . many of the pipes which conveyed it have been ploughed up in the fields in which they were laid. . . . These pipes were of two sorts, viz., lead and earthenware. Mr. Daniel was so obliging as to favour me with a piece of this pipe, which is made of clay, but so well and judiciously burnt, that, though it has been underground some centuries, it would still defy the injuries of time and weather for ages to come. Judging from the part in my possession, they appear to have been made

with bell mouths, and fixed one within the other. It measures ten inches in circumference, the diameter of the lower two inches, which would throw about 200 gallons of water a minute."

A patent was granted so early as 1619, for the manufacture of earthenware drain-pipes. See the "Abridgements of Specifications of Patents for Drain Tiles and Pipes," published by the Commissioners of Patents.

W. G. A.

#### A PROTEST AGAINST THE RIDE IN KENSINGTON GARDENS.

MR. EDITOR,—Do hold out a helping hand to the nearly vanquished pedestrians who feel themselves failing in their hard struggle to maintain the integrity of their dear-loved Kensington gardens.

We do not wish, as has been asserted, to render the gardens "private," but merely to keep them safe; and every one knows it is positively unsafe for women and children to cross Rotten-row, during the hours chosen by equestrians for their rides. If the same is to be the case in Kensington gardens, a large portion of the community must give up walking in them altogether, for they can neither go to nor return from any part of the gardens through two-thirds of the entrances without crossing the proposed ride, and thus running the risk of being ridden over by "a cavalcade of pretty women bounding along in their breezy gait."

As the writer of the *Times's* leading article is so very philanthropic, how was it the idea did not occur to him that less wealthy persons, who can only afford to ride in Kensington gardens, might also like to take an airing in the park and gardens? They have to bow in submission to a restriction which is made for the good of the many; so surely the rich equestrians, who have so numerous other enjoyments, may well afford to be bound by the same law.

Kensington-gardens is the only place in all London set apart for the use of pedestrians, while every park is open for riding and polo. Surely the suggestion to take it savours somewhat strongly of the old Hebrew story of the "one little ewe lamb."

If the equestrians wanted "air" to gallop on, why did not the petition to have the upward-proceeding slice after slice of grass land taken away from the once broad stretches of green to widen their own Rotten-row? And if it be "shade" they need, will not the trees still standing on the monotonous space suffice for that purpose, especially this very unusual summer, when to feel the heat of the god of day is a treat rather than a trial?

No: there is no good reason of justice or necessity why the beautiful gardens should be thus disordered and rendered useless to those for whom they have been heretofore set apart, or no English Peer- or Mater-families would raise a voice against the appropriation.—I remain, sir, respectfully yours,

THE MOTHER OF THREE LITTLE GIRLS (Who certainly do like to be able to walk in Kensington-gardens twice in the day).

#### TREATMENT OF BUILDERS.

Sir,—In my neighbourhood it is proposed to erect national schools, with residence. Several builders of respectability were invited to send in tenders for the work, and not to receive instructions and bear conditions, by appointment, in the architect's office. It was there stated that the lowest tender would be accepted; but should its amount exceed the sum intended to be expended by the committee, *then* reductions would be made, which would be a matter of arrangement between the successful candidate and the architect.

When the tenders were examined (which, though considerably over goods, did not vary more than 30%), it was found that the lowest considerably exceeded the sum proposed to be laid out; and slight alterations were made in the plans, for which a corresponding reduction was offered on behalf of the contractor whose estimate was the lowest. However, to the surprise of many, the committee (doubtless, from the advice of their architect) have decided on carrying out the works themselves, after professional advice as to building, purchasing materials, and hiring labour.

Would you, sir, kindly offer an opinion as to the legality of such proceedings? Would you also be good enough to say whether such an arrangement as I have described is just to the competing builders, especially to him who sent in the lowest tender. Would he not be fairly entitled to compensation?

I confess myself ignorant of the civil law in this matter, but I am quite sure that "Summum jus summa injuria."

A COUNTY BUILDER.  
\* \* \* Just, of course, it is not. If the statement in the letter can be proved, and there were no contrary condition, the builder who made the lowest tender is in a position to sue for compensation.

#### INSTITUTION OF MECHANICAL ENGINEERS.

The proceedings in connection with the annual provincial meeting of this institution commenced on Wednesday, the 8th August, in the Lecture Theatre of the Midland Institute, at Birmingham. Mr. James Fenton, of the Low Moor Iron Works, near Bradford, Yorkshire, presided, and there was the usual attendance, principally gentlemen resident in Birmingham. The walls of the room, and around the platform, were hung with diagrams illustrating the subjects treated in the papers read.

The Chairman having briefly opened the meeting, called upon Mr. William Mathews, of Corby's Hall Iron Works, Dudley, to read the first paper entitled "The progress of Mr. Mathews's theory presented in his paper, which was 'On the Ten-year Coal of South Staffordshire, and the Mode of Working.'" The remaining papers were read by Mr. Marshall (secretary). The first was by Mr. Charles Goehring, of Manchester, describing a method for taking off the waste gases from blast furnaces.

The next was by Mr. E. W. Siemens, of London, on a new method of insulating electric wires for underground and ground purposes, by the application of India-rubber and its compounds. Mr. Siemens remarked that until lately gutta-percha was thought

to be an almost perfect non-conductor of electricity, but in dealing with long lines of submarine electric telegraph, its conductivity had become a source of painful anxiety to the electrical engineer, who had to look out for insulating materials. Glass and other vitreous substances, which possessed the highest insulating properties, were, of course, inapplicable; and amongst the various insulators, none combined the insulating with flexibility, and other desirable properties, in so high a degree as india-rubber and its compounds. The proposal of Mr. Siemens was based on the well-known adherent property of india-rubber when two fresh cut surfaces were joined under considerable pressure. It was stated that, the advantage of comparative cheapness, and certainty of result, would by this system be combined with that of rendering the application of heat unnecessary. A practical demonstration of the proposed method was given by means of a working model.

The fourth paper read was "On Coal-burning in Locomotive Engines," by Mr. Charles Markham, of Derby. Mr. Markham stated that experiments on the Midland lines had resulted in a simple apparatus termed "a smoke consumption plate," with which all the engines on the line were now fitted, and by means of which the smoke was burnt with complete and efficiency that had never been previously attained. The Chairman stated that Mr. Markham's invention saved the Midland Railway Company 40,000*l.* per annum.

On Thursday's proceedings were resumed, Mr. James Kennedy, of Liverpool, president of the Institution, in the chair. The attendance was as numerous as on the preceding day.

The first paper, read by Mr. Marshall (secretary), was a description of Aert's Water Axle Box, by Mr. Sampson Lloyd, of Wednesbury.

The second was on a new system of Open Coking, by Mr. S. H. Blackwell, of Dudley.

The next was a "Description of a Machine for Drilling instead of Punching Wrought-Iron Plate," by Mr. John Cochrane, of Woodside Ironworks, Dudley. The machine was designed for the purpose of drilling a large number of holes in wrought-iron plates required for the construction of girders for the new railway bridge over the Thames, at Hungerford. In describing the machine, it was stated that the holes were drilled by means of a table, and surrounded by a wrought-iron frame, within which the plate was accurately adjusted to the proper position; water-pressure was employed for raising the table to the drill, and for giving the required pressure in drilling. The machine was arranged so to drill all the holes in one plate simultaneously, and accomplished its work with much rapidity, and complete efficiency.

The next paper was a "Description of the Round Oak Ironworks," by Mr. Frederick Smith, of Briery Hill, communicated through Mr. Alexander B. Cochrane, of Dudley.

The fifth was "On the Application of the Decimal System of Measurement in Boring and Turning," &c., by Mr. John Fernie, of Derby.

In the last paper was a "Description of Machinery for Crushing Stone for Macadamising Roads," by Mr. Charles G. Mounthan, of Birmingham. The writer stated that he believed the machine referred to in the paper was the only instance in which the invention had been found commercially successful. Its origin was due to Messrs. Ellis & Everard, of Leicester, who desired a machine to break stones which would otherwise have been wasted in the Matchfield quarries, near Ashby, in Leicestershire. The design was prepared by Messrs. Ellis & Everard, and placed in the hands of Mr. J. E. Hodgkin, Birmingham, to construct a machine, but Mr. Hodgkin relinquishing business, the design was devolved upon the writer to carry it into effect. The experiments made with the machine completely established its success.

During Wednesday and Thursday afternoon a large number of the members of the Institution availed themselves of the courteous invitation given them to visit the principal manufactories in the town, and from an inspection of which they derived much gratification.

The *entertainment* which took place in the Town-hall, on Wednesday evening, was attended by a large number of persons, including many ladies. In the committee-room was arranged an ample supply of refreshments, and in the hall adjoining there was an exhibition illustrative of art, science, and manufactures, the objects being principally supplied by local firms.

**Books Received.**

*The Illustrated Horse Doctor.* By Edward Mayhew, M.R.C.V.S. London: Allen & Co., 7, Leadenhall-street. 1860.

This is a handsome and ably written volume on a subject of unquestionable importance to all classes, from the highest to the lowest, in the possession of the management of horses, and to building tradespeople fully as much as to any other. It is plainly written, without the use of much technical or veterinary phraseology, which, indeed, has been systematically avoided, in order that the book might become generally useful. It gives a detailed account, illustrated by more than 400 very graphic and interesting pictorial representations by the author himself, of the various diseases to which that poor, faithful, and useful servant of man, the horse, is subject; together with an account of the best mode of treatment, and the requisite prescriptions, written in plain English; so that, in fact, by its means, if judiciously perused, every one may become his own veterinary physician and surgeon, and be able to ward off and prevent many diseases, the premonitory symptoms of which ignorance and harsh usage but too often aggravate and confirm.

There are one or two points, however, on which we would have wished the author to have enlarged a little more than he has done; namely, on the proper construction and the sanitary arrangement of stables,—a subject to which we have frequently

given attention, although the author asks, sarcastically, "How could any architect be so very 'maudin' as to design a stable with the slightest consideration for a horse?" As well might we retort the sneer, since the author himself has done little or nothing to point the way to that proper construction for the want of which he blames "architects," who have but too seldom anything to do with it. Neither has he said anything worth speaking of in regard to the sanitary arrangements of stables, and shows want of appreciation of efforts in that direction while talking of the "great fuss made about sanitary laws" for human beings. Now although Mr. Mayhew is not an architect, surely he is a sanitary officer so far as regards stables and horses, and ought to have discussed the subject of sanitary arrangements, which in truth involves the more architectural department of construction itself. This defect in his otherwise very useful work we hope he will amend in an early one of those many new editions through which it will probably run.

**Miscellaneous.**

**FLUES FOR BOILERS.**—In the course of the last report of Mr. H. W. Harman, C.E., chief inspector to the Manchester Association for the Prevention of Boiler Explosions, he says,—“The necessity of strengthening all boiler flues, by encircling them with hoops of angle or T iron, seems at last to be more generally recognized. Any plan, however, by which the tendency of flues to collapse can be effectually guarded against should be hailed with satisfaction, as rendering explosions of less frequent occurrence, and demanding but periodical and proper inspection to ensure entire safety.”

**PATENT CHIMNEY-BAR AND HEARTH-PLATE.**—The chimney-bar and ventilating hearth-plate, recently patented by Messrs. Edwards & Co., deserve attention. By the introduction of the patent chimney-bar, the flue is at once formed of the required size, 14 inches by 9 inches, thus doing away with the large open space left when the old chimney-bar is used, and which has so often been found not only unnecessary but very objectionable. A register-door is attached to the chimney-bar, arranged so that no space is left for the accumulation of soot or dust. By the ventilating hearth-plate the supply of fresh external air may be brought to the box either between the joists or through hollow bricks, and enter the room through a sliding ventilator in hearth-plate, as shown on plan, and which would be underneath the bottom plate of fender. The expense of the proposed arrangements is comparatively trifling.

**BOYDELL'S TRACTION ENGINE IN BRAZIL.**—The traction engine, which was manufactured under Boydell's Patent, by Messrs. E. T. Bellhouse & Co., engineers, of Manchester, has arrived in Brazil, and is the first steam locomotive in the empire which has ascended to the height of 3,000 feet above the sea. The ascent from the Maua Railway to the city of Petropolis, 3,000 feet in a distance of eight miles, was achieved successfully, we are informed, and the very sharp curves were easily turned. The natives were considerably astonished at its progress and arrival at the city, and seen now prepared to believe any strange tale told by Englishmen, although many doubt the evidence of their own eyes that the engine is in Petropolis. This is the first traction engine which has been sent to Brazil, and it is likely that others will follow, the keep of animals being very costly.

**BUILDERS' CONTRACTS.**—At the Nottingham Bankruptcy Court, a few days back, some curious disclosures were made in reference to builders' contracts. A bankrupt explained an ingenious system thus:—“Suppose eight or nine builders are invited to tender for a job: they meet together, and agree to put so much money, perhaps 200*l.*, on the contracts, which are then sent in in the ordinary way. Whoever is the successful competitor gives a bill for the sum put on, and it is divided among the other builders for their trouble in estimating. The Commissioner said: It strikes me as being a kind of fraud upon the parties who invite the tenders.—Mr. Danks: It is done merely to recompense the unsuccessful contractors for their trouble.—His Honour: They get 200*l.* divided among them, and, as that is put on the estimates, they are to that extent fictitious. The successful one is often enabled to put in a contract which would not have been accepted if the other contracts had been properly estimated. If this is a custom, I think it is more highly honoured in the breach than in the observance.—*Worcester Chronicle.*”

**THE HARROW TONTINE ASSOCIATION.**—We see that a Tontine Association has been established to effect the building of first-class houses, much needed at Harrow. In this Association all the advantages of the system appear to be secured to the shareholders themselves, as the houses to be erected with the capital subscribed become the property of those holding a nomination on the lives of the last survivors when such lives drop to the number of the houses built, the profit rents, until that period, being divided amongst the shareholders.

**MASTERS AND OPERATIVES BILL.**—The select committee of the House of Lords on this Bill have made a report, to the effect that they cannot come to any satisfactory conclusion with reference to the Bill before them without giving to the manufacturing and commercial interests which have not yet been heard an opportunity of stating their opinions respecting it; they therefore recommend that the subject should be postponed until next session.

**CRAVEN HOTEL, STRAND.**—In these times of hotel-building by companies, through whom it may be hoped London before long will be well supplied in this particular, it is but fair to mention what is being done by private owners. Mr. Tapster has enlarged and nearly rebuilt the Craven Hotel, Craven-street, Strand, under the guidance of Messrs. Banks and Barry, and has effected a very great improvement. A lofty coffee-room, of considerable pretensions, has been formed, and the general arrangements for the accommodation of the public appear to be very satisfactory. Messrs. Lucas, Brothers, have executed the works.

**VALUE OF LANDED PROPERTY.**—The Berkswell Hall estate, Warwickshire, ten miles from Leamington, in a favourite sporting country, was submitted to public auction at the Mart, on Wednesday, by Messrs. Chinnock & Galsworthy. The sale attracted a large attendance of gentlemen from the Midland counties, many of them accompanied by their agents, and evidently intent upon purchasing this fine estate. The rental, as stated in the particulars, was 2,350*l.*, including the cottages and 250*l.* fixed as the estimated rental of the mansion. The biddings commenced at 60,000*l.*, and after a spirited competition the price reached 81,000*l.*, at which it was knocked down to Mr. Thomas Walker, of Orgrave Park, near Lichfield, thus realizing thirty-four and a half years' purchase on the total rental, with the addition of timber at a valuation.

**THE ELLESMERE MEMORIAL.**—On the 10th inst. the ceremony of inaugurating the memorial tower erected to the memory of the late Earl of Ellesmere (and of which we have already given an engraved view in the *Builder*), took place at Worsley. Messrs. Driver & Webber, of London, were the architects. The monument, which stands on the west side of Worsley New Hall, is a tower of transition Gothic character, consisting of an octagon shaft, with spiral belt of coloured tiles, rising from a square basement, terminated by a corbelled out-gallery, with iron balustrade, around a central spirelet. The height of the tower is 132 feet, and from the top a view of the surrounding country can be obtained. At the inauguration, suitable addresses were made by the Rev. St. Vincent Beechey and Mr. Fereday Smith, which were responded to by the Earl of Ellesmere and Mr. Webber, the architect.

**LICHFIELD CATHEDRAL.**—The restorations going forward in this cathedral have been the occasion of discoveries illustrating the ancient history of the fabric. Foundations of old walls have been uncovered, which appear to point to the fact that at least two distinct structures have occupied the site at different periods previous to the erection of the present cathedral. Nearly in the centre of the present choir the foundations of a church, with an apsidal termination some 27 feet in radius, are visible. Farther eastward are the foundations and part of the external plinth mouldings of a still larger building. A plan has been made by Dr. Rawson of all that has been found. Numerous other objects of interest have been discovered, such as Norman capitals and arch stones, old coffins, and encaustic tiles. The large spire of the cathedral was struck by lightning on the 29th ulto. It cracked the spire at the base just above the tower, removing a large piece of stone from the window frame: the stone went through the ceiling of the north-east aisle which is under repair. The congregation assembled in the south-west aisle, though much alarmed, sustained no injury. It is said that the spire will have to be taken down as low as the battlement, the top having been injured as well as the bottom.

**FALL OF A BUILDING AT PENDLETON.**—A serious accident occurred a few days ago at Pendleton, three persons being killed and several severely injured, by the fall of the larger portion of the premises occupied by Mr. John Parry, as a small-ware manufactory. The building was in Ford-lane, near the railway station. It was two stories high, and consisted of an old and new part, the latter having been erected within the last twelve months, by Mr. Thomas Valentine, builder, Pendleton. According to the *Manchester Guardian*, the new portion of the manufactory was 70 yards long, and there were fourteen or fifteen persons at work in it at the time of the accident. It seems that, without the slightest indication of danger having been noticed by any of the hands, the whole of this portion crumbled to the ground like a child's house of cards, and so complete was the destruction that scarcely two bricks were left standing together.

**CRYSTAL PALACE.**—The great annual excursion of the Foresters will be held at the Crystal Palace on Tuesday next, the 21st of August. Last year the enormous number of 63,181 persons attended this festival. The Great Summer Poultry Show, which always attracts large numbers of provincial visitors, takes place in the last week in August. This is to be followed on the 30th August by a special day set apart for amusements provided by Mr. Strange, the contractor for the refreshment department. On the 1st September the Hollyhock Show will be held. In the following week the Tonic Sol Fa Association hold a contest of singing societies, a party of Scotch vocalists coming expressly from Edinburgh to sing some of their national airs. On Thursday, the 13th September, the Liensend Victualers hold a great festival for the benefit of their Asylum. A performance by about 2,000 voices of Mr. Martin's glee, which were so successfully produced at Exeter Hall last month, will take place on Saturday, 15th September; and on the 19th and 20th of the same month the Autumn Dahlia and Fruit Show: on two of the last days of September Madame Clara Novello, who is coming to England on her farewell tour, will sing for the last time in the "Creation" and "Messiah," two performances of which will be got up directed by Mr. Benedict.

**THE CHARING-CROSS RAILWAY.**—At the second ordinary general meeting of the company, the report which was read stated that the works connected with the railway bridge across the Thames at Charing-cross were commenced in February last; and the progress already made has been considerable. The principal expenditure incurred has been on account of the purchase of the existing Charing-cross Suspension-bridge, and for the land and premises at Hungerford-market, required for arrangements. The directors have concluded an arrangement with the Clifton Bridge Company to sell them the chains and materials of the bridge (exclusive of the piers) for 5,000*l.*, the purchasers removing them. Steps are forthwith to be taken for purchasing the further property required, in order that the works between the south end of the Charing-cross bridge and London-bridge station may be completed by the time that the railway-bridge and new West-end terminus are ready for traffic. The engineer's report stated that the contractors are making good progress with the Charing-cross bridge. The two cylinders which are to form the first pier on the Surrey side are already sunk to a considerable depth into the bed of the river. Considerable progress is also being made at the contractor's works with the superstructure. The iron necessary for two of the spans is in hand, and about fifty tons have been put together ready for erection. The receipts for the half-year ending June 30th, 1860, amounted to 122,231,129*l.*, and the expenditure to 58,626*l.* 2s., leaving a balance of 63,605*l.* 10s. 9d.

**BUILDERS' DINNERS.**—Sir: As another instance of masters assisting in promoting the social pleasures of their workmen and of good feeling in place of disagreements, I hope it will be worthy of your notice, that on Saturday, the 4th, the workmen in the employ of Dove, Brothers, builders, Islington, went for a holiday in vans to Epping Forest, where an excellent dinner and tea were partaken of. The chair was taken by Mr. Critchett, supported by Messrs. G. Dove, Combe, Stately, Lett, Southam, connected with the firm. The health of our employers was drunk with enthusiasm, in acknowledgment of the very liberal donation given by them towards our enjoyment, and in the evening the party returned to Islington heartily satisfied with the day's pleasure.

—ONE OF THE PARTY.

\* \* \* We have received similar notes as to other firms (Mr. Parsons, &c.), but cannot find room for more.

**NORMANTON CHURCH COMPETITION.**—Competitors, who have received back their designs as "unsuitable," desire to know whose design has been found suitable.

**MOSAIC PAVEMENT.**—We are asked to draw attention to a mosaic pavement, which has just been laid by the Architectural Pottery Company, Poole, Dorset, at their offices, 36, Parliament-street. The design is by Mr. J. M. Lockyer, architect.

**METROPOLITAN BOARD OF WORKS.**—At a meeting of this Board held last week, Mr. DeLith's tender for underpinning the Ranelagh sewer for 2,926*l.* was, upon the engineer's report, accepted. The Board, upon the recommendation of the chief engineer, determined upon taking the contract for the Southern High-level Sewer through the Surrey Consumers' Gas Company out of the hands of the present contractor, the chief engineer and the Board not being satisfied with the manner in which the work was being done.

**DESTRUCTION OF A RAILWAY STATION BY FIRE.** A serious conflagration has taken place at Paisley, resulting in the complete destruction of the goods shed, for the accommodation of the goods traffic, at the railway station, and of a number of vans and waggons filled with a variety of valuable merchandise, which had arrived chiefly from the south. The building was almost entirely of wood.

**TRANSMISSION OF MONEY BY TELEGRAPH.**—The *Progress*, of Lyons, says that the administration of the telegraphic lines has now under consideration a project for affording the public the facility of transmitting sums of money by telegraphic despatch. What, by the way, has become of the English project? The extension of the Post-office order system, we suspect, extinguished it. In the absence of such a system in France, the telegraphic one may have a better chance of success.

**"STEAM SUPERSEDED;" NEW MOTIVE POWER.** A correspondent of the *Siecle*, M. Victor Borie, whose name is well-known, writes to announce to the public that the application of dilated air to the working of machinery, as a substitute for steam, has been discovered by a working mechanic of the name of Leveque, living at 31, Rue Rousseau, who is said to be exhibiting a piece of machinery, moved solely by air, of four-horse power, and in a way so perfectly satisfactory that, according to M. Victor Borie, the days of the steam-engine are numbered.

**THE VICTORIA STATION AND PIMLICO RAILWAY.**—The railway and bridge are now ready for public traffic, and the works of the Brighton Company's station are fast advancing towards completion. The Victoria station is about a quarter of a mile west of Buckingham Palace, on the site of the basin of the Grosvenor Canal, and covers 101 acres. This space is divided in the centre, half being appropriated to the Brighton Company, and half to the Chatham and Dover and the Great Western jointly, the mixed gauge having been laid on this portion of the station, and over the main line. The Brighton station covers 51 acres, having eight platforms of considerable length. The main line passes under the Belgrave-road, is enclosed by walls, and covered by a glass roof for about half a mile. This has been done to protect Mr. Cubitt's property from the noise; and, as a further precaution, vulcanized india rubber is placed between the rails and the longitudinal sleepers. The chief work on the line is the bridge over the Thames, which, including the land openings, extends 920 feet in length. The quantities of materials used in the construction of this bridge have been as follows:—197,800 cubic feet of timber, used temporarily in gables and cofferdams, and 16,800 cubic feet in floors; 10,700 cubic feet of York landings; 4,050 cubic yards of concrete; 6,500 cubic yards of brickwork; 23,857 cubic feet of Portland road stone; 57,205 cubic feet of Bramley Fall stone; 1,295 tons of wrought iron, and 225 tons of cast iron. The total cost of the bridge will be about 90,000*l.*, or 3*l.* per square foot. Its strength has been tested by locomotive and loaded trucks, weighing together 350 tons. The deflection on the centre of the two middle openings was one inch and one-fifth, and the greatest deflection on the two outer openings was 0*·*94 of an inch. The load removed, the bridge resumed its original level. It is expected that the railway and station will be opened for public traffic some time during the present month.

**TENDERS**

For a house at North Bow, for Mr. W. H. Macc. Mr. James Tolley, architect. Quantities supplied:—  
Reed ..... 287 0 0  
Ayers & Co. .... 87 0 0  
Ashby & Horner ..... 8-6 0 0

For two houses, Brick-lane, Spitalfields. Mr. William Reddall, architect:—  
Kebbell ..... 21,930 0 0  
Porrett ..... 269 0 0  
Johnson ..... 775 0 0  
Green ..... 760 0 0  
Pritchard & Son ..... 735 0 0  
Case ..... 747 0 0  
Scott ..... 743 0 0

For taking down and rebuilding front wall of White Lion public-house, and part of the *Sapping Gazette* Office, and other works in Tainton-court, Gracchurh-street, for Mr. William Mitchell. Mr. J. Farring, architect:—  
James & Son ..... 215 0 0  
Ramsay ..... 287 0 0  
Noriss (accepted) ..... 280 0 0

For erecting villas on the Trafford estate, near Norwich. John Daymond Ellis, architect, Norwich:—  
Long ..... 21,375 0 0  
Munro & Foyson ..... 1,455 10 0  
Brooks ..... 1,343 0 0  
Lacey ..... 1,329 10 0

For offices at the corner of Fenchurch-street and Rood-lane, for Messrs. E. & S. Edwards. Mr. Henry Dawson, architect. Quantities supplied by Mr. Richard Roberts:—  
Lucas, Brothers ..... 211,798 0 0  
Piper & Sons ..... 11,448 0 0  
W. Cabitt & Co. .... 11,425 0 0  
Brass ..... 11,284 0 0  
Ashby & Horner ..... 11,240 0 0  
Browne & Robinson ..... 11,089 0 0  
Axford & Co. .... 10,887 0 0

For additions and alterations to house, 40, Wigmore-street. Mr. T. H. Northcroft, architect. Quantities given:—  
Harrison ..... 270 0 0  
Knaapp & Son ..... 724 10 0  
Sauders ..... 788 0 0  
Dennett ..... 776 0 0  
Hyde ..... 612 0 0  
Slipson ..... 610 0 0

For house, 48, Wigmore-street. Mr. T. H. Northcroft, architect. Quantities given:—  
Wilson ..... 2,550 0 0  
Terry ..... 510 0 0  
Knaapp & Son ..... 547 0 0  
Jameson ..... 540 0 0  
Slipson ..... 463 0 0

For Friends' endowed schools, Reeth, Yorkshire. Mr. Peachey, architect:—  
For schools and fittings, master's residence, and small cottage boundary walls. Only. £ s. d.  
Warren ..... 2,101 14 1, 1,331 17 2  
Armitage ..... 2,046 12 4, 1,306 1 4  
Bollock ..... 1,958 0 0, 1,250 0 0  
Kemp & Abdale ..... 1,839 0 0, 1,507 3 0  
Elwin ..... 1,866 16 9, 1,507 3 0  
\* Accepted.

For executing the cleaning, watering, cartage-work, and scavenging of the town of Leamington, for the Local Board of Health. Mr. A. Morgan, C.E., surveyor:—

Names.	Section No. 1.		Section No. 2.		Section No. 3.		Section No. 4.	
	Cleaning, per an.	Watering, per an.	Cleaning, per an.	Watering, per an.	Cartage-work, &c., probable amount per an.	Scavenging, per an.	Cartage-work, &c., probable amount per an.	
Ivery...	£330	£100	£215	8 0	£300			
Hart...	900	464	291	7 11	408			
Croft...	699	700	180	12 1	350			
Clark...	750	459	236	1 3	400			
Marriott, accepted.	800	350	239	17 1	350			

**TO CORRESPONDENTS.**

Letters on Marble.—Sir: Will any of your multitudinous readers inform me of any preparation for colouring letters in marble, that will resist the influence of the atmosphere? I have been in many countries in different parts of the Kingdom, and very few instances can I see of the colouring remaining unimpaired. It being a universal complaint, a preparation that would remedy the evil is desideratum.—H.  
G. R.—D. T. D.—W. H. W.—J. H.—J. F. F.—W. F.—E. R.—W. B. T. & R. E.—W. P. B. (apply to Mr. Robinson, South Kensington Museum).—R.—R. M.—E. H.—J. L.—J. L. M. (there are half a dozen equally good).—J. W.—T. F. (Britton's "Public Buildings of London").

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# The Builder.

VOL. XVIII.—No. 916.

Mr. Ruskin's "Modern Painters."\*



AN author, who lays before us a fifth concluding volume of four hundred pages, of a work which bears throughout, evidence of an amount of labour and thought seldom given to an art subject, at least deserves, at such hands as ours, careful examination and a disposition to appreciate the result. We have, therefore, both carefully read Mr. Ruskin's last volume, and striven to possess ourselves of the meaning and intent of his words. We must say, however, the object is by no means easy of attainment. There is in this volume, as in every work by Mr. Ruskin, much that may instruct as well as delight a certain class of readers,—the more thinking, and we may say conscientious,—of whom our author incidentally laments the paucity or want. But, even for these, the aim or drift of the work,

taken to be the exaltation of a particular artist,—whose exhibited pictures and drawings now happen to stand the best evidence of his wonderful, or we will say, as we have long said, quite unequalled power in landscape,—will not excuse a bulk of digressional and episodal *impertinence*, encumbering the march of an argument; useful though they might be elsewhere, or regarded by themselves. Or, taking the intention to be to inculcate the right perception of nature, and appreciation of what is truly art, there are equally excrescences and inconsistencies in the matter of this book. Perspicuity and precision of style, the latter so much contributing to the former, obviously are what they have been called by the first authorities on language, the first and indispensable requisites to pursuance of a thesis. These essentials, however, Mr. Ruskin does not secure, through having omitted to show plainly the object of so large and varied a work as the "Modern Painters," and through the contradictions and inconsistencies to which he has given utterance. We allow, with our author, that changes must occur in opinions during a period such as that of the seventeen years over which the publication of this work has extended; but what must be the effect on a public, indisposed, as we may think from what our author says, to take any trouble to avoid bewilderment? What the tendencies of that so-called criticism which follows Mr. Ruskin's lead, when views have to be reconciled, like some on the nature and essence of art which we find in this fifth volume, to those, for example, which Mr. Ruskin promulgated at the commencement of a well-remembered pamphlet? In that case Mr. Ruskin, so far as plain words went, seemed to hold that art was only imitation, and not to see that mere drawing, or without invention, could not be art. He also did not see, or did not sufficiently show, that there is a certain opposition, or at least distinction, between nature and art, whilst the creative power manifested in works of art is mind—the greatest of all the works of nature. He now not merely gets to see that invention is the essential ele-

ment of art, but he approves of liberties taken by Turner in giving, as representations of actual scenes, objects arranged in different positions to those in which they were observed. He thus forgets what would seem like a *dictum* of his own, that, whilst there is an aim for true art, there is one also for accurate delineation; or, in other words, that, as in landscape painting and representations of architecture, the aim is both the pictorial and the explanatory. In truth, the proportions of the art element and the delineative, by varying, produce the different gradations of art, and kinds of art-work; and were Turner in one sense the greatest artist that ever lived, landscape works of his which were the result of accurate observation and his power of memory, could hardly be ranked in art with subjects admitting invention prominently in the theme,—however nearly allied, and sometimes practically indistinguishable, the delineative power may be from the power of so-called high art. It is not our purpose to attempt to show what art really is. The difficulty always has been felt, and has been confessed by us on many occasions. We would say, however, with our author, that there is a step gained in showing what a thing is not, and in discovery of an error. Such error we believe there is in his depreciation of particular artists and schools; as, indeed, there is in the tone of criticism both on painting and architecture which is now prevalent. We do not class a Teniers with a Titian,—for the reasons just referred to: but both have their merits; and one of such artists is not to be depreciated for the absence of qualities for which he did not seek, and of which the absence by no means implies negation of art. Mr. Ruskin in his preface, after a long account of his labours during the last four years, to excuse delay in the appearance of this fifth volume, says:—

"It was long before I got quit of a boy's veneration for Rubens' physical art-power; and the reader will, perhaps, on this ground forgive the strong expressions of admiration for Rubens, which, to my great regret, occur in the first volume.

Finding myself, however, engaged seriously in the essay, I went, before writing the second volume, to study in Italy; where the strong reaction from the influence of Rubens threw me at first too far under that of Angelico and Raphael; and, which was the worst harm that came of that Rubens influence, blinded me long to the deepest qualities of Venetian art; which, the reader may see by expressions occurring not only in the second, but even in the third and fourth volumes, I thought, however powerful, yet partly luxurious and sensual, until I was led into the final inquiries above related."

And that we may not do him any injustice by what we have said, we will continue the quotation:—

"These oscillations of temper, and progressions of discovery, extending over a period of seventeen years, ought not to diminish the reader's confidence in the book. Let him be assured of this, that unless important changes are occurring in his opinions continually, all his life long, not one of those opinions can be on any questionable subject true. All true opinions are living, and show their life by being capable of nourishment; therefore of change. But their change is that of a tree—not of a cloud.

In the main aim and principle of the book, there is no variation, from its first syllable to its last. It declares the perfectness and eternal beauty of the work of God; and tests all work of man by concurrence with, or subjection to that."

We have shown that we cannot quite agree with the author in the character here given of his opinions.

We may mention that he had before observed, that the first volume, which was "the expansion of a reply to a magazine article," was not begun because he thought himself "qualified to write a systematic treatise on art;" but because he "at least knew, and knew it to be demonstrable, that Turner was right and true, and that his critics were wrong, false, and base." Elsewhere he says that the work has been written for no object of fame or money, or "for conscience' sake," but "of ne-

cessity;" and that by "a little flattery adroitly used," and "the substitution of verbiage generally for investigation" he could have gained greater circulation of the volumes.

"I saw an injustice done, and tried to remedy it. I heard falsehood taught, and was compelled to deny it. Nothing else was possible to me. I knew not how little or how much might come of the business, or whether I was fit for it; but here was the lie full set in front of me, and there was no way round it, but only over it. So that, as the work changed like a tree, it was also rooted like a tree—not where it would, but where need was; on which, if any fruit grew such as you can like, you are welcome to gather it without thanks; and so far as it is poor or hitter, it will be your justice to refuse it without reviling."

The several parts of the work are divided into chapters, which bear the fanciful headings in which Mr. Ruskin delights, and which have their advantages. In the two first parts he pursues, as in the fourth volume, the minute investigation of the structure or growth of certain forms which are elements of the beautiful in landscape scenery. The fourth volume, of about the same bulk as that before us, related entirely to Mountain Beauty. Two questions, our author says, occurred on arranging his materials preparatory to the production of the fifth volume,—“one in the section on vegetation, respecting the origin of wood; the other in the section on sea, respecting curves of waves; to neither of which, from botanists or mathematicians, any sufficient answer seemed obtainable.” Ultimately, knowing "little of ships" and "nothing of blue open water," the section on the sea was unsatisfactory to him: the "mathematical difficulty lay at the beginning of all demonstration of facts;" and he abandoned the proposed section, at least as regarded the present work. He therefore confines the first half, or two parts, of his fifth volume to the "vegetation question" and that of the nature of clouds, or rather as to the production of the forms regarded as objects of beauty. These two parts of the work, and the two following, are illustrated by plates very beautifully engraved as well as drawn, and by woodcuts,—the latter mostly too bold, or coarse, for the purpose of explanation.

The first chapter, entitled "The Earth-Veil," shows that flowers and trees were intended to render service to man, and greatly through their attribute of beauty. The author thinks that the common usage of words by which an ill-taught person is called rustic, and a gentle one urbane, may one day be reversed. In the second chapter, entitled "The Leaf Orders," he divides plants broadly into "Tented Plants," that is those living in encumbrances on the ground, as lilies, or on surfaces of rock, or stems of other plants; and "Building Plants," or trees, which build or rise above the ground. The Building Plants he divides into "Builders with the Shield," and "Builders with the Sword,"—the former being those with expanded leaves, shielding the young bud; and the latter, or the pines, having sharp leaves in the shape of swords. He proceeds, in the next chapter on "the bud," to examine the *chief mystery of vegetation*, which, so far as respects external form, he says is "among the fair shield-builders." In the next eight chapters he examines with great minuteness every feature of the plant, beginning with the simplest spray or shoot, and showing how the leaves and branches grow, and are influenced one by another, and by such causes as decay and the prevailing winds, to form the future tree. He contrasts the treatment of foliage by Salvator Rosa with that by Turner, Albert Durer, and Veronese; and that of branches by some of the Dutch painters, with the natural form of a branch.

In the chapter entitled "Leaves Motionless," he inquires into reasons of the infrequent treatment of flowers in detail by the chief masters. He discovers that flowers have no sublimity, and that there is a wide distinction between flower-loving minds and those of the highest order; whilst he observes that in good landscape painting, the breadth of foreground, included, implies a distance of the spectator which prevents seeing flower-detail. But the reason he gives in which just now we are most

\* "Modern Painters. Volume V.: Completing the Work, and containing Part—VI. Of Leaf Beauty.—VII. Of Cloud Beauty.—VIII. Of Ideas of Relation—1. Of Invention Formal.—IX. Of Ideas of Relation—2. Of Invention Spiritual." By John Ruskin, M.A., &c. Imp. 8vo. pp. xvi. 384, including indexes.—"Local," "To Painters and Pictures," and "Topical,"—to the whole work: 37 plates; many cuts. London: Smith, Elder, & Co. 1860.

interested is, that "much of what is best in flowers is imitable in painting;" and that "a thoroughly good workman feels the feebleness of his means when he matches them fairly with nature, and gives up the attempt frankly,—painting the rose dull red, rather than trying to rival its flush in sunshine." How different is this from the naught-rejecting, non-selecting course, once distinctly named, and which, therefore, it is Mr. Ruskin's fault if he was deemed to recommend exclusively. That the aim in this particular, whatever merits (and these are great) are to be found in their works,—has been mistaken by the artists lately called Pre-Raphaelites, would seem to be admitted by Mr. Ruskin himself in the following passage, as also in one of the main divisions of his volume. He says:—

"Some beautiful things have been done lately, and more beautiful are likely to be done, by our younger painters, in representing blossoms of the orb and the field in mass and extent. I have had something to do with the encouragement of this impulse; and truly, if pictures are to be essentially imitative rather than inventive, it is better to spend care in painting hyacinths than dead leaves, and roses rather than stubble. Such work, however, as I stated in my first essay on this subject, in the year 1851,\* can only connect itself with the great schools by becoming inventive instead of copyist; and for the most part, I believe these young painters would do well to remember that the best beauty of flowers being wholly imitable, and their sweetest service un-renderable by art, the picture involves some approach to an unsatisfying mockery, in the cold imagery of what Nature has given to be breathed with the profuse winds of spring, and touched by the happy footsteps of youth."

We do not think, however, that he insisted on invention with the same clearness as in the present work. On the other hand, he seeks to show a range of conception in Turner's pictures which is scarcely of the nature of landscape art. The exposition by our author, of the relation of tributary lines and forms to the effect of a picture, may be correct,—though we should like to know how much is the necessary result from *perspective*: but the effort, to discover a profound  *motive*  in the work, which involves so much elaboration of words, often suggests the previous question, whether Turner had a  *motive*  other than the directly obvious one, or any requiring the ingenuity expended by Mr. Ruskin on the search. The sixth part concludes with the following eloquent words on the mosses:—

"And, as the earth's first mercy, so they are its last gift to us. When all other service is vain, from plant and tree, the soft mosses and gray lichen take up their watch by the headstone. The woods, the blossoms, the grit-bearing grasses, have done their parts for a time, but these do service for ever. Trees for the builder's yard, flowers for the bride's chamber, corn for the granary, moss for the grave."

Yet as in one sense the humblest, in another they are the most honoured of the earth-children. Unfading as motionless, the worm frets them not, and the autumn wastes not. Strong in loneliness, they neither blanch in heat nor pine in frost. To them, slow-fingered, constant-hearted, is entrusted the weaving of the dark, eternal, tapestries of the hills; to them, slow-pencilled, iris-dyed, the tender framing of their endless imagery. Sharing the stillness of the unimpassioned rock, they share also its endurance; and while the winds of departing spring scatter the white lawn-thorn-blossom like drifted snow, and summer dims on the parched meadow the drooping of its cowslip-gold,—far above, among the mountains, the silver lichen-spots rest, star-like, on the stone; and the gathering orange-stain upon the edge of yonder western peak reflects the sunsets of a thousand years."

Part VII. treats of the various effects of clouds, under the heads,—“The Cloud-Balancings,” “The Cloud-Flocks,” “The Cloud-Chariots,” and “The Angel of the Sea.” The author shows how little is known to men of science of the nature of the clouds, and of the causes of their changes of form; but these chapters may be studied with advantage for

\* “*Pre-Raphaelitism*—p. 28, and the note at p. 27, compare p. 63. The essay contains some important notes on Turner's work, which, therefore, I do not repeat in this volume.”

information on the perspective representation of clouds. In the last chapter, under the fanciful designation given, effects of rain cloud are spoken of. English wet weather, the author says, is “indeed, one of the things which we should desire to see Art give perpetuity to.” And he ranges the climates or lands of the globe under five heads with respect to their fitness for art, or thus shortly worded:—

Wood-lands..	Shrewd intellect..	No art.
Sand-lands..	High intellect....	Religious art.
Vine-lands..	Highest intellect..	Perfect art.
Field-lands..	High intellect....	Material art.
Moss-lands..	Shrewd intellect..	No art.

In the course of this chapter, a reference to the mowing-machine brings the assertion that this, “in common with all other inventions of the kind,” is likely to “bring more evil upon men than ever the Medusa cloud did, and turn them more effectually into stone.” And he adds in a note:—

“I do not say this carelessly, nor because machines throw the labouring man ‘out of work.’ The labouring man will always have more work than he wants. I speak thus because the use of such machinery involves the destruction of all pleasures in rural labour; and I doubt not, in that destruction, the essential deterioration of the national mind.”

He reasserts this error, and at greater length, in a later part of the work.

In Part VIII. the author reaches the most important section of his subject. In the first division of his work, it had been seen how far art might be, and had been, consistent with physical or material facts; in the second division, how far obedient to the laws of physical beauty; and in the last division he has to consider the “relations of art to God and man.” “to inquire into the various powers, conditions, and aims of mind involved in the conception or creation of pictures; in the choice of subject, and the mode and order of its history;—the choice of forms and the modes of their arrangement.” This whole inquiry then falls into two main divisions, namely, *expressional* or *spiritual invention*, and *material* or *formal invention*,—the former being concerned with choice and arrangement of incidents, and the latter with arrangement of lines, forms, and colours, so as to produce the best possible effect. “Well composed,” as applied to a picture, he says, does not mean composed according to rule, but precisely the contrary,—composed as no other picture is, or can be again. Yet there are certain elementary laws traceable. It is necessary first to understand what composition is. “Composition may be best defined as the help of everything in the picture by everything else.” He therefore gives the first chapter to what he calls “the law of help.” In the course of this chapter it is, that he speaks best on the element invention. Invention is “not only the highest quality of art, but is simply the most wonderful act or power of humanity. It is preeminently the deed of human creation; *ποίησις*, otherwise poetry.” Afterwards he shows that to “create” not only *can* be said of man's labour, but must be said continually. To create anything “in reality is to put life into it.” A poet, or creator, is not a person who puts things together, as a watchmaker steel, or a shoemaker leather.

“His work is essentially this: it is the gathering and arranging of material by imagination, so as to have in it at last the harmony or helpfulness of life, and the passion or emotion of life. Mere fitting and adjustment of material is nothing; that is watchmaking. But helpful and passionate harmony, essential choral harmony, so called from the Greek word ‘rejoicing,’\* is the harmony of Apollo and the Muses; the word Muse and Mother being derived from the same root, meaning ‘passionate seeking,’ or love, of which the issue is passionate finding, or sacred invention. For which reason I could not hear to use any harsh word than this of invention.”

In the next chapter,—“The Task of the Least,” he endeavours to show how the minutest portion of a great composition is helpful to the whole. A great composition “always has a leading emotional purpose,” to which its

\* Χοροὺς τε ὀνομαζίαται παρὰ τῆς χάρᾶς ἐμψυον ὄνομα.—(De Leg. ii. 1.)

lines and forms have relation. “Undulating lines” are “expressive of action,” and “horizontal and angular lines” of “rest and strength.” He proceeds to examine in detail certain subjects of opposite characters, noting the smallest details as introduced with purpose. We have alluded to this above. In the third chapter,—“The Rule of the Greatest,”—he says:—“Greatness can only be rightly estimated when minuteness is justly revered. Greatness is the aggregation of minuteness; nor can its sublimity be felt truthfully by any mind unaccustomed to the affectionate watching of what is least.” But this affection must be accompanied by comparison and reflection. The following, in which the italics are ours, like many other passages, indicates an advance from what the author wrote some time back.

“Here I will only state in conclusion what it is chiefly important for all students to be convinced of, that all the technical qualities by which greatness of treatment is known, such as reserve in colour, tranquillity and largeness of line, and *refusal of unnecessary objects of interest*, are, when they are real, the exponents of an abnormally noble temper of mind, never the observances of a people supposed to be useful.”

In the fourth chapter, he treats “the law of perfectness.” Perfectness, properly, he says, means harmony, not carrying the work up to any constant and established degree of finish, but to a degree determined upon. All great work is to be called complete according as it fulfils the conditions which were chosen at first. The sketches of true painters may be classed as—1. *Experimentals*, which by the greatest men are hardly ever made. 2. *Determinants*, to fasten down an idea. And, 3. *Commemoratives*, being records of facts. The sketch made as a memorandum may, unless the exact purpose be understood, be as unintelligible as shorthand. Such, he says, were some of Turner's memoranda: others were both commemorative and determinant. We will merely mention the sketch of Lausanne, altered in the chief features from the reality, whilst made; because it illustrates some of the remarks we have offered. Mr. Ruskin says a picture may be painted almost any way, as by beginning at one corner and finishing, provided it have been rightly conceived.

The last part,—“Of Invention Spiritual,”—contains some of the best writing, and also some of what we must consider the most fallacious, in the book. Object, however, as one may, the book is full of beauties, full of value. Parts are indeterminate and obscure in motive, filling the mind with a poetic mist, so to speak, very charming and enjoyable, but out of which the striving cultivator must condense his own drops of useful rain if he would have it; while other portions contain teaching with the correctness of which we may be unable to agree: nevertheless the whole exhibits so much thought, inducing thought, and so much heart, inducing earnestness, as materially to increase our obligation to the author.

BRITISH ARCHÆOLOGICAL ASSOCIATION IN SHROPSHIRE.\*

THE course of our report has brought us to Friday, August 10, when, with the exception of a visit to the lead-mines at Shelve, where the old Roman workings were pointed out, the drive was taken direct to Linley Hall, the seat of the Rev. J. F. More, who had prepared for the mental delectation of the visitors by exhuming the aqueducts and other parts remaining of a Roman villa, and exhibiting many antiquities, amongst which was a Roman pig of lead, lying beside a modern one, showing how similar they were in shape. It was stamped IMP. ADRIANI AVG. There were two oak blades of spades, said to be also Roman, and in excellent preservation. They were flat, and something like the blade of a baker's peel, but broader, and with a hole near the short projection on one side.

An excellent *déjeuner* was partaken of, and perhaps not the least remarkable thing seen was the splendid service of old china, which was said to be one of the only two services ever exported from China? The health of the host, and of Miss

\* See p. 523, ante.

More, the hostess, having been given, the company spread themselves through the grounds for a short time, as More Church had been cut out of the programme, apparently with the tacit consent of all, for every one seemed content to remain, and it was late before the departure was effected.

In the course of the day the Rev. Mr. Humphreys read an Etymological paper on the names of the locality, and the Italian Hall was described by the Rev. Mr. More. At the evening meeting Mr. George Maw read a paper on Tessellated Pavements, illustrated by drawings of those in Uriconium.

The Rev. Mr. Scarth read a History and Description of Wroxeter Church, which was visited the next day. Mr. Thomas Wright explained briefly the characteristics and history of flint instruments, and exhibited M. Bouche's collection, and an enormous quantity from the neighbourhood of Bridlington, in Yorkshire. In the course of his remarks, he stated that he did not agree with the generally received division of implements into the stone period, bronze period, and iron period, and believed the time would come when that theory would be overturned. He produced a large number of flint forgeries, which, however, were easily detected from the ignorance of the forgers, who used files in their manufacture. On the great question involved in the recent discoveries of flint instruments in early strata, he had no opinion to offer. The whole subject is to be sifted during the next session of the association.

The greatest attraction of the Congress was Uriconium, which was reserved for the last day, Saturday, the 11th, and fortunately the weather was fine. There was again a large increase of numbers; and, as the programme was not quite so long, the time of departure was not quite so early as on previous days. Hitherto the hour of starting had been nine o'clock, but on this day it was half past ten, and half an hour's drive brought the party first to Hanglamond Abbey, which has been much changed by workmen having for several years been employed to almost reconstruct it.

Mr. E. Roberts conducted the Society over it, and said that it was an abbey of canons of St. Augustine, and, as compared with Welock, was scarcely more than half its value. It was said to have been founded by William Fitz Alein, Earl of Arundel; but, on an examination of the buildings, he agreed with the Rev. Mr. Eytton, who drew his inferences from documents, that at all events none of the buildings remaining were of that date. The endowment and foundation might much precede the erection of the abbey; and this, as well as most abbeys, showed progressive building in its several parts.

The church itself is entirely destroyed, except one doorway, of semi-Norman date, at the west end of the south aisle leading to the cloister. This, and the front of the chapter-house of the same date, have been unnecessarily mutilated at various times, down to the present century. The chapter-house has repeatedly been stated to be entire, whereas the front only remains: the other is not only much later, but considerably smaller, and is of very inferior character. It exhibited a sketch from a drawing made in 1813, to show that since then the aspect is entirely changed. The ceiling is very heavily timbered, in the style of the 15th century, but that and the windows in the bay end appear to have been brought from other buildings of that date, and rebuilt here at some later period. This also is the case with the bay window in the abbot's lodging. The great cloister has only part of one wall remaining, in which are two semi-Norman arched recesses, said to have been for a lavatory; but Mr. Roberts thought he should be able to show that there was a room there, and the arcading was one end of it.

The Abbot's Refectory has window-seats in the recesses, and a large chimney-corner, of late Perpendicular work, probably inserted much later. There are two sepulchral slabs of the thirteenth century, in the place where the choir was, but they were removed from the chapter-house. One was stated to belong to the great-grandson of the founder, while the written account at the Abbey described it as of the great-great-grandson. This would rather lead to the conclusion that the founder was the second Fitz Alein. The inscriptions are in Norman French, as follows:—

VOYS KI PASSE PAR ICI PRIES PYR L'AME  
JOHAN FICALAIN XI GIT ICI DEY DE SA ALME  
ET MERCI AMEN.  
& YSABEL DE MOR . . . R [Mortimer] SA  
FEMME ACOST DE LI DEY LE LVE ALM . . . T  
MERCI AMEN.

There was recently a real found here, which

was said to be inscribed with the words, "Robert de Sherrington, Abbot of Haglamon," but as there was no such abbot recorded, he had looked at an impression, and found it simply, "Sigillum Roberti de Sherringtone," and apparently of the thirteenth century. After inspecting a well house of the fifteenth century in the Abbey Woods, Mr. Roberts concluded by saying that there is scarcely any part of these remains which can be looked upon as in their simply decayed state, every part having been renewed, displaced, or altered in arrangement, and destroyed in detail. The greater part of this was done by the late proprietor.

Battlefield Church was visited *en route*, and was briefly described. It is a simple church, with nave, chancel, and western tower. The date of the grant of the land is 1403; but some of the windows are so clearly of an earlier date, that there must either have been a church there before, or the decorated windows must have been brought from some other building. The church is under restoration, but it is feared that the Doric columns in the interior will not be removed. About three feet below the present surface is an almost entire encaustic tile pavement, and some lead coffins have been discovered beneath. The east window has considerable remains of old glass, but much disarranged. Attention was drawn to a representation of a chalice in the glass, which might give a clue to the subdeacon's slab, examined in the abbey church on Monday. The chalice was surmounted by the wafer, with the sacred monogram as a nimbus, with rays of light spreading from it. Some remnants of indented ridge tiles were dug up, and showed that there had been a crestring.

Wroxeter, the site of the ancient city which has been disintegrated, occupied a considerable time in examination, but it has been so fully and so recently described by us,\* that we need only add, on professional points, that the building now supposed to be the Basilica (as appropriated by the conductor of this journal, at a meeting of the British Archaeological Association in London at the commencement of last year), has been filled in again, for want of space for the soil excavated, and that part of the tessellated mural decoration takes the form of a guilloche-patterned skirting, in two colours. The drains discovered have a drip at each stone with which they are floored, and the so-called gutter is blocked up occasionally by cross pieces of stone, or boulders. When pointing out the hypocausts excavated, he stopped for a moment at a small apartment, which he said appeared to have been the place where the fires were made, and was a feeder to the hypocausts; for here was found a quantity of coal and charcoal. The first and largest hypocaust was then entered. This was 37 feet by 25 feet, having at the north end an apse, and was coloured on the outside, showing that the Romans coloured their walls both outside and inside. The apse was formed of strong masonry, some very large stones being found, and one of them having a piece of iron fixed in with lead. To this probably some ornament had been attached. Mr. Wright mentioned that, when this hypocaust was first opened, it was remarkable for the state of preservation in which the columns supporting the floor were. The floor was for the most part gone in all these hypocausts, with one exception; but when these were opened, 120 of the columns were counted, each about three feet high. Unfortunately, however, soon after the discovery was made, a number of colliers got into the excavations, and, in mere wantonness, broke the columns to pieces. They had, however, been subsequently put up again by Dr. H. Johnson, as nearly as possible in their original state. In commenting on these hypocausts, five or six in number now discovered, Mr. Wright said he thought there could now be no doubt that the buildings which they were surveying were the public baths of the city of Uriconium. Some half-worked stones were found. They were now in the exact position in which they were discovered, as if the workmen had been disturbed in their labours by the attack on the city. This was at a place where one of the walls had evidently been mended after its first construction.

Wroxeter Church was described in the Rev. Mr. Scarth's paper as of Saxon foundation, dedicated to St. Andrew. The Norman part consists of a south door in the chancel, now built up. The Rev. Mr. Eytton states that the earliest portion is of the time of Henry II.; the windows in the north wall are of the beginning of the Early English period. The window on the south side of the chancel, and the chancel arch, are of the Deco-

rated period. Other parts are of Perpendicular. The font he thought was an old Roman column, hollowed out by the Saxons. Mr. Scarth now conducted the members over the church; and, on the conclusion of his examination, Mr. Roberts was called upon for his description. He said that the sculptures showing in the south wall were certainly Saxon in their appearance, but had been built in. The semi-Norman south door of the chancel has a transitional character externally, and even a dog-tooth ornament in the label internally. The depressed chancel, which he acknowledged as having at first puzzled him, was certainly decorated, and the peculiar four-centred shape was due to settlements. The tower-arch was of about the same date, but the impostors were Norman, and well sculptured; these were only seen from the gallery, for which they had been cut away on the face next the nave. He had been given to understand that there was a fine hammer-beam oak roof; and he strongly urged the authorities to have the plaster ceiling removed, and also some high chancel-pews, one of them having a canopy like an Elizabethan hedstead.

Atcbam Church was examined on the road homewards, and was the last on the extensive programme of the week. The church is dedicated to St. Eatta, and is of Saxon origin, although none of the works of that time remain. The east wall has a peculiarity, such as was noticed at Ludlow. There are two chambers of 3 feet or 4 feet square, with small apertures externally. These were, probably, for the administration of the Sacrament to a few confessing lepers.

In the evening the last dinner was attended by an unusually large number, as generally Saturday evening meetings are thinly attended. Numbers had departed, but upwards of forty sat down.

The closing meeting was well attended, and a paper contributed by Dr. Wright, on the distorted skulls found at Wroxeter, was read. Mr. Thomas Wright disputed the conclusions at which Dr. Wright had arrived, and expressed his conviction that there was original uniformation, and that the alteration was not posthumous. Considerable discussion ensued, and the subject was deferred till the winter session.

Some interesting records of Hereford were read, and this closed the business of the congress.

Thanks were warmly voted to the several officers and committees, and finally by acclamation to the president, who, with his lady, had been unflinching in his attendance at all the excursions and meetings of the congress. The president, in returning thanks, gave a *résumé* of the proceedings of the week, and thanked individually every one who had contributed by papers and descriptions to the success of the congress, which had been one of continual exertion, arising from the great distance to which the excursions extended.

ON THE MECHANICAL EFFECT OF COMBINING GIRDERS AND SUSPENSION CHAINS, AND THE APPLICATION OF THE SYSTEM TO PRACTICAL PURPOSES.\*

PREVIOUS calculations and experiments on girders enable an estimate to be made of the deflection of the girder of a given length with a given weight, and therefore the deflection of any girder intended to be attached to a chain can be calculated.

It accordingly occurred to me, that if the relation between the deflection of a wave attached to the chain, and that of the same girder unattached, could be obtained, we should be able to ascertain precisely what girder to allow to a chain, so that a given load would produce a given amount of deflection.

For this purpose I made a series of experiments upon girders of different kinds, attached and unattached to the chain, and the following are the results arrived at:—

Experiments.

The first experiments were made with a model girder to correct scale, but it was found that, when attached to the chain, the deflection was too small to be observed, and it was found necessary, in order to magnify the wave and make its amount more distinct, to have a girder of a quarter the depth of the model girder, which was made of angle iron  $\frac{1}{4}$  inch thick.

The deflection of this girder, without the chains, with a load of 42 lbs. placed in the centre, was 1.2 inches.

The deflections of the wave with the chain attached, and 227 lbs. distributed over the girder,

\* See especially our volume for 1859, pp. 372 and 517.

\* By Mr. P. Barlow. See page 526, ante.

when the weights were placed at  $\frac{1}{4}$  from the high tower, were, with—

lbs.	$\frac{1}{4}$ from high tower.	Centre.	$\frac{1}{4}$ from lower tower.
56	-.10	-.01	+.05
112	-.29	-.04	+.12
168	-.39	-.06	+.16

Experiment 2.—In this case the weights were placed  $\frac{1}{4}$  from the low tower.

56	+.06	-.01	-.13
112	+.15	-.05	-.25
168	+.18	-.07	-.36

The deflections here averaged .32 inches, with 168 lbs. equal to .08 inches, with 42 lbs., or  $\frac{1}{4}$  the deflection of the girder without the chain.

It was still obvious, from the deflection at the centre, and little rise exhibited in the wave, that the stretching of the chain to bring the metal surfaces to bear still sensibly influenced the result; and I had another wooden girder made, consisting of a plank  $7\frac{1}{2}$  inches in width, and three quarters of an inch thick, in order still more to magnify the wave, and to diminish the error from the stretching of the chain.

The deflection without the chain attached was 1.48 inches with 10 lbs.

Experiments with the Chain attached.—With 56 lbs. placed at  $\frac{1}{4}$  from the high tower on the girder, which was previously quite unloaded, the deflections were, at—

| $\frac{1}{4}$ from H. T. |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| -.31                     | -.48                     | -.32                     | -.02                     | +.22                     |
| $\frac{1}{4}$ from H. T. |                          | $\frac{1}{4}$ from H. T. |                          |                          |
| +.29                     |                          | +.15                     |                          |                          |

Experiment 2.—70 lbs. being equally distributed over the girder, and 56 lbs. at  $\frac{1}{4}$  from high tower.

Experiment 3.—150 lbs. all over weight in same place.

-.20    -.35    -.20    +.02    +.20    +.23    +.14

Experiment 4.—193 lbs. equally distributed; 56 lbs., as before.

-.18    -.31    +.17    +.05    +.18    +.20    +.14

The deflection here indicated with the model loaded with a weight representing 96 tons on the bridge (which experiment was several times repeated), was .31 with 56 lbs., .055 with 10 lbs., or  $\frac{1}{4}$  of the deflection of the girder without the chain.

This result being so much at variance with the general view of the subject, although very nearly in accordance with my calculations, I determined to verify it by a smaller girder, 6 inches by three quarters of an inch thick, which would render the wave still more visible, the observations being made with great nicety.

The deflection at the centre, when not attached to the chain, was 2.375 inches with 8 lbs.

Girder attached to the chains, 193 lbs., being equally distributed over it. The deflection, with the weight placed  $\frac{1}{4}$  from the high tower, was—

lbs.	$\frac{1}{4}$ from H. T.	Centre.	$\frac{1}{4}$ from L. T.
56	-.01	+.13	+.53

Experiment 2.—With 56 lbs. at the centre of the bridge, the deflection was .30.

The deflection of the wave here exhibited at  $\frac{1}{4}$  of the length with the bridge loaded to a weight equivalent to 100 tons on the actual bridge, which experiment was repeated several times with the same result, was 0.64 inch with 56 lbs., the deflection without the chains being 2.375 with 8 lbs., or 25 times the amount, thus confirming the previous experiment—a result so at variance with the preconceived notions of many engineers, that it is to be expected, in some instances, it will be received with incredulity; but an investigation will show that the result is in accordance with the law  $\frac{1}{2} \frac{W}{b d^3 x} = \text{a constant quantity.}$

If the girder were supported only in the middle, the deflection of the half girder would be  $\frac{1}{4}$ ; but, as one half of the girder cannot deflect without the other half rising from the action of the chain, it is reduced to  $\frac{1}{4}$ ; but the girder is not supported at one point only, but at various points, which will still further reduce the deflection.

Assuming .27 to be the true average result, I have calculated the necessary dimensions of a girder as follows:—It being determined by the Board of Trade what amount of weight should be the test to produce a given deflection on half the girder, we may derive from existing girders the weight which must be given to such a span as the Niagara girder to reduce the wave to a given amount. Let us assume, for example, that 200 tons on one-half the span shall not produce a wave exceeding 2 inches. To deduce the result from the Boyne viaduct, we have the ascertained fact

that in a girder of 264 feet span, the deflection with 540 tons all over was 1 foot 9 inches.

The deflection, if of the length of the Niagara bridge, would have been 26.4 to 283: 1.9: 57 inches  $\frac{27}{100} = 2.11$  inches is therefore the deflection which would have been produced by a weight of 540 tons, and therefore 200 tons would produce .79 inch deflection.

The weight of a girder of the same section as the Boyne Viaduct would be 932 tons, 261: 820: 300: 932 tons, and to produce 2 inches deflection, 368 tons, if made of ordinary iron; but if made of superior metal, the reduction of weight will be in proportion to the increased strength.

To obtain the result from the Britannia Tube, we have as an ascertained fact that its weight is 1,600 tons, and that its deflection with 200 tons all over,  $1.25 \text{ inch } 2.40^3 : 820^3 : 1.25 : 7.04.$

The weight of the tube of 820 feet long would have been 2,852 tons.

The deflection, if attached to a chain,  $\frac{7.04}{21} = .36$  inch.

The weight, therefore, to produce 2 inches deflection with 200 tons, will be 370 tons, which nearly agrees with the calculations from the Boyne lattice bridge.

To compare the Britannia bridge with a suspension end of the same span, and to produce the deflection, we have  $\frac{27}{100}$  weight of the chains equal 500 tons.

Concluding Remarks.

By the above calculation we arrive at the result that spans, much above 820 feet, may be constructed even without improved metal, where girders are not practicable; and that in large spans, where they are practicable, a suspension girder, tested with the same load and to the same deflection, will only require one-fifth or one-sixth of the metal, and will be a safer structure from depending on the extension of the material.

This result is the more important because the advocates of parallel girders have acted on this assumption—that the construction of a platform 450 feet long, sufficiently rigid for railway traffic, almost amounts to the construction of a girder itself.

When my paper was read at the Dublin meeting, there were several girder engineers present, but there was no observation made during the discussion upon the special object of my experiments, except by Professor Rankine, who investigated the subject on the spot, and arrived at nearly the same result.

The only observation made by other engineers was to the effect that there would be some oscillation or motion which could not be arrived at by investigation, but without any denial of the truth of the deductions of my experiments.

Now I venture to contend that the amount of deflection of a given girder with a given weight can as clearly be arrived at by investigation when it is attached, as when it is unattached to a chain.

There may be practical points more in favour of one construction than another, which I am prepared, as a practical man, to discuss; but these are questions rather for the Institution of Civil Engineers. But whatever these practical failures may be, there must be a certain deflection which arises with a given force or weight applied, and it is this—the first and most important inquiry in every mechanical structure, which is alone the subject that I am now desirous should be investigated and understood.

With reference to any supposed practical objection to suspension structures, when applied to railways, even when the wave is cured, I will only observe, having had great experience in railway construction, I am unable to form an opinion, without further explanation, of what is referred to, although some railway engineers adhere to the idea that no weight of girder will make a chain rigid, yet this was the original proposition for the boiler, but some of the most eminent men have expressed a contrary opinion. Telford, with whom I had the honour to serve for a time as pupil, and Sir W. Cubitt, whom I also served several years as engineer on the London and Dover Railway, and who has had great experience in railways, are both fully satisfied that the suspension construction might be adopted to all descriptions of bridges.

Mr. Rendel, who constructed the Inverness bridge, and Mr. Vignoles, who constructed the Kiev bridge, in Russia, have expressed a similar opinion. Both of these bridges had stiffening girders, of small depth, and the effect from observations made on passing loads (the Inverness bridge having had a locomotive over it on a truck) fully bears out my calculation of the ratio of the deflection with or without a chain.

I may add, that in America, suspension bridges have been used for aqueducts with success, as well

as for a railway bridge, and that the wave of the Niagara bridge, which has a girder of wood, is less than my calculation would give; in fact, I should have doubted whether any wooden girder construction could have reduced the wave of a span of 820 feet sufficiently for heavy traffic either for road or railway.

It may be true that public feeling is against suspension bridges, from the repeated failures arising from want of metal, and from no means of curing the wave, which arises, as my model has shown, by the smallest weight applied at any one point; but this is only a reason why men of science should look at the question and correct an error which is a check upon useful enterprise and upon the progress of public improvement.

When alluding to the adoption of a system of large spans for the relief of London traffic, it was not intended to express a decided opinion that this is the best mode of removing the difficulty, although I believe, on mature consideration, it will be found to be so, as the objections to the other modes suggested are very great.

Tramways in the streets will be more beneficial than is probably expected, but as London streets are generally so narrow, little can be done by this system, unless stopping at shops or residences is prohibited, except at appointed places.

The construction of a viaduct consisting of a series of shops, with a railway on the top and a street on each side, as suggested by Sir Joseph Paxton, would be the most perfect arrangement, but the cost would be serious; and the railway must follow the surface of the ground, or nearly so, which would render the gradients unfavourable.

The scheme, however, which contends with the greatest variety of difficulties, although actually in course of construction, is the tunnel under London. It is expensive, not only from destroying property on the surface, but from interfering and disarranging the sewer, gas, and water pipes, &c., under the surface. The passengers will be inconvenienced by travelling in the dark, and in a tunnel in which the atmosphere (being immediately under the surface of a crowded city), must be necessarily very impure.

An underground system has also the objection that the application is limited to the elevated parts of London, as, if below the level of high water, it would be liable to inundation.

The use of steam power is also prohibited by Act of Parliament; and Parsey's air engine, not being applicable, the girder system has, in this respect as well as others, the advantage, as steam power may be employed if necessary.

In conclusion, I will, however, observe that whether suspension girders are applicable or not to the particular purpose of London traffic, there are many cases where the benefit of railways may be extended by a safe and economical system of large spans, where they would otherwise be prohibited by the cost of execution, and I therefore trust not to have been in error, as far as relates to the mechanical points, in bringing this important subject before the British Association.

OUR BLACK DIAMONDS.

JOHN BULL finds a piquancy in panics that is not altogether objectionable to him. Panics are, to his ordinary fare—the roast beef and plum-pudding of the British constitution,—palatable *extremes*, leaving, perhaps, a certain amount of thirst and fever behind them, but still imparting a zest to his diet that plain roast and boiled would not afford. Our forefathers relished the same appetising fare. A mysterious rumble, set down for an earthquake, kept our grandmothers from Ranelagh and *faro* for a whole season; and an unexpected comet in those times made more converts to piety than the most popular preacher. In these latter days the Cherbourg dockyards, under the *nom de cuisine* of *pâtés d'invasion*, were made much of. A certain wedge, newly found in our rivers, and threatening to choke them all up,—so says the *Carle*—has also been served up at the national feast. An *entrée* of more importance and more highly seasoned, known as "the great tribulation coming upon the earth," has been partaken of in fear and trembling; while a still more recent dish has been introduced to our consideration, extracted from the probability of the failure of our coal supply. Making due allowance for John Bull's taste for false alarms, the facts in reference to the last conjured panic remain the same. There is an end to everything, and our coal-fields are not exempt from this universal law. We have used up what were no doubt considered to be our inexhaustible forests, and, seeing that our present annual consumption of coal amounts to sixty mil-

tions of tons, we must in process of time come to the last coal seam. Compare our comfortable fire-sides with the execrable stoves of our continental neighbours, and then let us congratulate one another that the failure will not be in our time. Sufficient for the day is the evil thereof.

We are deeply indebted to the coal trade, not only for our cheerful homes, but for the many remarkable inventions, discoveries, and adaptations, to which the prosecution of it has given rise. But for the coal trade, we should still be burning oil in our streets, as they do to this day in St. Petersburg. But for the coal trade, we should be travelling at the old stage-coach rate still; there would be no return tickets to Brighton for 2s. 6d.; no excursions to Paris for 20s.; no trips to the mosques and pyramids; in fine, this is another instance of great results attending small causes: we should be in a very different stage of progression but for the finding of this fossil.

When was it found? Who found it? "Næboly kens," answer the pit laddies. "Probably," suggests the most competent authority in the north, "if the subject could be fully investigated, we should find that the Chinese were the earliest coal miners; for Marco Polo attests the general use of this substance in China in the thirteenth century." Antiquaries appear to be woefully unconvincingly convinced that coals were occasionally used by the Romans, cinders having been found in Roman *débris* in several Roman stations. That they only availed themselves of coal for fuel when wood was not procurable in convenient quantities is assumed from the fact that great surface seams are still apparent, close to more than one station, which present unmistakable evidence of not having been touched. The Saxons made no general use of coal: peat and timber were in sufficient abundance for their wants. But coal must have been burnt by them occasionally for particular purposes; for we read that in the year 852 Wulfred of Sempringham paid to the Abbey of Peterborough sixty cart-loads of wood, and twelve of fossil, or pit-coal. The proportions of this payment confirm the conclusion that the use of coal was exceptional; otherwise, taking it for granted that the wood was intended for fuel, they would have been reversed—sixty of coal to twelve of wood. Possibly, as the monks are known to have been very expert in the manufacture of elegant metal work for the embellishment of their churches and altars, they may have come to the knowledge of the very superior advantages of coal for this purpose. After the Norman conquest, cart-smiths appear to have burnt coal systematically in the pursuance of their trade. The celebrated "Baldon Buke," (the north-country equivalent for "Domesday Book," which, it will be remembered, does not include the four northern counties), mentions coal several times in connection with smithcraft. The coal trade, however, can scarcely be considered to have commenced before the year 1239, when Henry III. granted a charter to the freemen of Newcastle-on-Tyne, for liberty to dig coals; and, when a regular export trade was set on foot, royalty favoured the new fuel, and ten shillings' worth of it was burnt at Edward II.'s coronation.

No sooner was coal employed by the various manufacturers of the metropolis, than an outcry was raised against it which, with but occasional intervals of quiescence, has lived down to the present day. The nobles and commons sitting in the high court of Parliament formally applied to the reigning monarch (Edward I.) to prohibit the further combustion of coal, as the smoke arising therefrom contaminated the atmosphere and rendered it unfit and unwholesome for his liege subjects to breathe. Their sovereign lord the king immediately issued a commission forbidding the use of the offending fossil, and empowering his officers to destroy the furnaces and kilns of any refractory persons who persisted in burning it. Evelyn, in Stuart times, complains bitterly of the state of the atmosphere from "the hellish and dismal cloude of sea coale." And when, in the Georgian era, a certain Fredk. Hoffman published a work at Geneva in which he attributed the frequency of consumption among the English to the injurious effects of coal smoke, the national consternation knew no bounds. On the other hand, we turn to a letter from Sir Horace Walpole, in which he writes he must leave Strawberry-hill, with all its valued associations, for Berkeley-square, for in London alone can be had health,—a fact he over and over again alludes to in his correspondence as being caused by the numerous fires, which dry the air and make it more fit for delicate people. And in the late revival of the prejudice against London smoke, an ingenious chemist asserted, through the columns of the *Times*, that the consistence given to the London

atmosphere by its fogs and smoke rendered it, so to speak, highly nutritious.

The impetus given to the trade by the royal grant, and perhaps, too, in some measure, by the starch opposition, was evidenced by the opening of new collieries. It is on record that the prior of Tyne-mouth let two new collieries near Elswick; and, what is very interesting to know, that the annual rent of one of them was six marks. In 1351 the burgesses of Newcastle were beholden to Edward III. for a license to dig for coal without the walls; and, seven years afterwards, for leave to dig in additional new places—the Castle moor and Castle fields.

In the fifteenth century, Eneas Sylvius, better known, perhaps, by his subsequent title, Pope Pius II., deposed to seeing lumps of black stone given for alms at the Scottish convent gates; nevertheless, the use of coal was pretty nearly confined to furnaces, forges, and kilns, until the middle of the sixteenth century, when it had advanced so far in public estimation as to be burnt in kitchens and halls. Wood, with its autumn-scented wreaths of mist, arising from the hearth, as from some household altar, was still used in my lady's parlour. Wood was also long afterwards employed by particular trades, or branches of trade, such as smelting iron, glass-making, brewing, dyeing, and chemical operations. Indeed, it was not till timber had become so scarce as to be sold by the pound in some districts that the resources of our coal mines were properly applied by our forefathers. Queen Elizabeth passed four Acts of Parliament to prevent the needless destruction of timber, the effects of which legal hampering manifested themselves in the gradual reduction of the number of furnaces from 300 to 59. The iron trade was most affected by the prohibition of wood fires; for in 1740 not 18,000 tons of pig iron were made in all England. This was 120 years ago. Our present annual rate of production exceeds 2,000,000 tons, and requires 12,000,000 tons of coal to smelt it and convert it into bar iron.

The present paper concerns things that are of the pit, yet not in the pit, otherwise we might tell how there are, to this day, in remote districts of Northumberland, small collieries where the mining operations are nearly as primitive as those of Edwardian times,—where a load still means as much coal as a packhouse can carry on his back, and where the machinery is of the rudest description. We may, however, mention one of the early shifts to obtain light in a mine. The moderns complain of the dim light emitted by their Davys, and deprecate the tardiness of invention that has not yet made gas applicable for mine lighting, but what would they think of fish light? Yet the phosphorescent gleam from dried fish was the only alternative the Mediaeval miner had to pitch darkness in many workings.

Coal was taxed as early as the fourteenth century, when 6d. per ton was levied every quarter of a year upon all ships leaving Newcastle with this freight, the necessity for which innovation was caused by the fact that "Scardburgh" was threatened by the French, and the sinews of war were required to defuse it. Soon afterwards the form of the duty was altered to 2d. per chaldron upon all coals not sold to freemen of the port of Newcastle, to counteract a trick of the trade that heaped twenty-two and sometimes twenty-three chaldrons into a keel that was only charged duty for twenty chaldrons. This impost appears to have been, in great measure, evaded too; for, on the accession of King Edward's sister, "Sweet Sister Temperance," Queen Elizabeth, the arrears amounted to a very large sum, which she claimed. The payment was ultimately commuted by an agreement, which fixed that future duty at 1s. the chaldron; while such coals as were sent over the sea were to be charged a duty of 5s. per chaldron. King James resented a rich harvest from this arrangement; but not altogether content with it, he superimposed an extra tax of 3s. 4d. per chaldron upon the coal intended for home consumption, and exactly doubled the duty originally levied upon coal sent to foreign parts by "our late sovereign lady of famous memory, Queene Elizabeth."

The Great Fire of London was the immediate cause of the exaction of a duty on the coal consumed in the metropolis. A large fund was required for the re-erection of so great a portion of the city as comprised St. Paul's Cathedral and fifty-two parish churches,—a difficulty the Parliament met by imposing a tax of 1s. per chaldron upon all sea coal brought to London. The modest sum raised in this manner proved quite insufficient; upon which the Parliament increased the tax to 3s. per chaldron,—much, no doubt, to Evelyn's satisfac-

tion. The old worthy must have felt mightily content when it was subsequently increased to 8s. In the present century, in the war time, the duty ran up to 9s. 4d. per chaldron; in 1830 it sank to 6s. in 1850 the greatest grievance that remained for the Londoners was a municipal charge of 1s. 1d. per ton.

So late as the reign of George III., when Pitt, Fox, Burke, Wilkes, and Junius, were all preaching universal freedom, serfdom existed in the Scotch colliery districts: when a colliery changed hands, the colliers with their wives and children were sold with the property as part and parcel thereof. These victims of legislative sluggishness were not emancipated till the year 1775. And still more pitiable victims, female colliers, were not protected from underground drudgery, by legislative enactment, till 1840. These, with the sad casualties resulting from explosions, are the dark spots on the picture.

It is noticeable that the superstitious feeling of the dark ages peopled the mines with fairies; and death from noxious vapours was attributed to the breath of a certain pale horse. The means taken for recovering persons whose animation was partially suspended by the phantom's fiery breath was one we should hesitate to adopt at the present day. A clod was immediately dug up in a green place, and the patient's face inserted into the hole left by its removal. After lying with his face downwards for a few minutes he was removed to fresh air. If no signs of life appeared after three or four repetitions of this process, it was concluded there was none left in "the pur body."

The names of some of the most brilliant personages in history flash out from the grim records of the coal trade. In 1529 we have Cardinal Wolsey, in his capacity of Bishop of Durham, regulating the affairs of the collieries in his palatinate. Then we come upon Cromwell as the partner in an undertaking to smelt iron with pit-coal. Alas, for the stanch-hearted pioneer! it failed, and was abandoned as an impracticable scheme. Then court scenes in the reign of the merry monarch pervade the page, where we read that Charles II. settled on his natural son Charles, Duke of Richmond and Lennox, the duty levied on the trade of the Tyne, with conditions that, on his demise without heirs, it should be enjoyed by Louise, Duchess of Portsmouth. Our black diamonds have lent brilliance to many a *bon mot*. One of the lady-wits of George III.'s court remarked, during an interregnum between the dissolution of one ministry and the formation of another, when the Earl of Aberdeen and the Duke of Newcastle divided the chances, in public estimation, of being prime minister, that his majesty appeared not to have made up his mind as to which coal he would burn in his cabinet,—whether it should be Scotch coal, Newcastle coal, or Pitt coal.

WORKS ABROAD.

An interesting bridge is in course of construction at Lyons, formed of rockwork, to afford communication between the great island of the *Pare de la Tête-d'or* and the remainder of the park, and promises to be a most charming piece of work. The first arch on the side next the island is just finished, and forms a vast grotto half buried under the bank of the river and half overhanging. It is to be accessible by three irregularly-shaped arcades, one on each side, approached by footpaths on the banks of the river, and one in front through the very shutment. All this is built with fragments of micaceous schist, cemented together with Roman cement, so as to constitute a monolith. Cavities and crevices have been left for the introduction of earth for ivy and stonework, &c. Another bridge, partly wood and partly rustic stonework, will connect the other side of the island with the terra firma of the *para*. The interior of the island is to be fitted up for the reception of wild beasts in caverns, as in the Zoological Gardens of Marseilles; so that the most easy-going and stay-at-home citizen may contemplate the deserts of Africa or America with the groups of tigers, lions, and pumas, and experience all the *émotions des grands voyages*, without fear of danger.

The Minister of Public Instruction in Modena, having been informed that there existed some pieces of music of the sixteenth and seventeenth centuries, mice-gnawn and worm-eaten, in the Palatinate Library, and that another collection equally valuable was stored in the National Palace, has ordered them to be put together and preserved. M. Angelo Catalani, master of the Cathedral Chapel and conservator of the library, much experienced in bibliography and musical literature, has been recently ordered by the

Government to draw up a catalogue of these musical works, among which are many of the finest Stradella, many having been never published. This catalogue, accompanied by biographic, bibliographic, and historic notes, is to be published to the world.

A great exhibition, industrial, agricultural, and horticultural, is to be held the 5th September next, in the town of Saint-Dizier (Haute-Marne), the centre, and the market, of the most important French metallurgical districts. The departments of the Seine, Aube, Côte-d'Or, Yonne, Haute-Saône, Vosges, and Haute-Marne, are invited to contribute. The ground proposed for this meeting contains 50,000 square metres. It is a magnificent park, round which the Marne winds.

The collections of the medal and antiquities department of the imperial library, Paris, have just been enriched by a bronze group of the Gallo-Roman period. It was found on the 1st July, last, at Loisia near Saint-Amour (Jura), and purchased at a high price by a distinguished connoisseur—M. Prosper Dupré, whose collection of Roman medallions is well known to all connoisseurs. This group, as well remarkable for the rarity of the subject as for its perfect state of preservation, represents a half-naked divinity with a diadem, seated sideways on a mare followed by her foal: on the base of the monument, which is no less than 27 centimetres (about 10½ inches) in height is placed an "offering-box" for the faithful. This divinity is *Epona*, the guardian angel of stables and horse-training, as M. Dupré has judiciously demonstrated in a letter of the 15th ult., in which he announces to the conservator of the cabinet of medallions his generous intentions.

The new buildings of the Imperial Library advance rapidly, and are nearly terminated. These constructions are only repetitions of the principal dispositions of those portions previously raised, with the exception of a sort of round tower.

#### THE WEDGWOOD MEMORIAL.

The committee have resolved upon a second competition for the proposed institute, and invitations have been issued to six of the architects whose designs in the recent competition were most approved. Specific instructions are being prepared by a sub-committee, aided by Mr. Hamersley, of the Manchester School of Art. We have been requested to state, in reply to the letter which appeared in our columns (p. 518, ante), that the circumstance of the designs, No. 18, "*Jus supra Tim.*," being placed second in the report of Messrs. Robinson & Hamersley, was simply owing to the accident of its position in the catalogue. "The whole of the designs were hung for examination in the order in which they were unpacked, and the four numbered 2, 18, 19, and 27, were most approved. The premiums were unanimously awarded to Nos. 2 and 27."

#### RATING OF CANALS.

UNDER a Canal Act the proprietors were protected against too great an increase of rating, by a provision that the company should be rated in the same proportion as the lands and grounds lying near the canal should be rated. Several valuable buildings were erected near the canal, and were highly rated. The company objected to be rated so highly as the nearest land containing these lands, and it was held that the rating of the most valuable and less valuable land should be added together, and the canal rated according to the aggregate value of the whole.—*Re the Glamorgan Canal Company.*

#### WORKS IN IRELAND.

A correspondence between the late Thomas Moore (the Irish poet), whose bronzed effigy now stands in College-street, Dublin, and Mr. George Roe, D.L. and alderman, addressed in his corporate capacity, on the scandalous state of the University (T.C.D.) boundary wall, has taken place recently, and elicited from the latter that the city engineer and the college clerk of works are in consultation on the subject. It would indeed seem to be time.

We understand that Mr. Worrall, C.E., is to be the new county surveyor for Derry, in the room of the late Mr. Stewart Gordon, C.E.

Gas has been recently introduced into Ballina, and is selling at 8s. per 1,000 cubic feet, irrespective of water-rent. The works were erected by Messrs. Donald, Wilson, & Co., of Paisley, chiefly on speculation, the town commissioners guaranteeing 200l. per annum for the public lights.

The Towns' Improvement Act has been adopted in Tullamore.

The new R. C. church of St. Vincent, in Dublin, Messrs. Hadfield & Goldie, architects, of which a drawing was exhibited at the Royal Academy, is rapidly making progress. The choir and transepts are raised to the base of the clerestory, the arcade being completed, and the piers to carry the central tower are now being built. The sacristy is roofed. The materials of which this church is built are white limestone dressings and dark rubble. When entirely finished this will be probably the largest R. C. church in Dublin.

A new convent has just been built at Omagh from the designs of Messrs. Hadfield & Goldie, for the religious community some time settled there. The building, designed in a simple manner, contains numerous rooms, and is pleasantly situated near the station of the Londonderry and Enniskillen Railway. The contractor is Mr. Wallis Dorlin, of Dublin, and the cost of the building will be about 2,500l. It is to be opened on the 13th of September.

The convent at Letterkenny, in the county of Donegal, is being considerably enlarged from designs by Messrs. Hadfield & Goldie. The new apartments consist of chapel, school-rooms, and dormitory. A square tower terminates the façade, which is extremely simple, and constructed of stone of the locality.

#### BELFAST, IRELAND.

THERE is a considerable amount of activity in the building trades here. The only thing which appears to limit its further increase is the price to which bricks have lately risen. Several new companies have commenced their manufacture by machinery; but the season has not been propitious, and bricks cost now double, or nearly so, what their price has been. At least 99 per cent. of all the buildings erected here are chiefly built of brick; and until very lately the whole were made by hand, with only one exception, viz. at Ravenhill, where the proprietor, after repeated failures, at last succeeded in making perforated bricks, of an excellent quality, by machinery. But, as he had a monopoly of the trade, his prices were high, which has induced others to erect machinery, which it may be hoped will shortly reduce the price to what would give a moderate profit to the manufacturer. One brickmaker has engaged to supply 1,800,000 bricks to the contractor for the erection of the Ulster Hall, a building intended to be devoted to musical purposes, the erection of which has been commenced. Two Presbyterian churches are also being built, and two others having large additions made to them; and since January last 200 new houses have been occupied for the first time. Turkish baths are being erected in Donegal-street; and, a few days ago, at about 8 a.m., the cornice in front fell, carrying the scaffolding with it to the ground, destroying part of the boarding along the footpath. Fortunately, the workmen were absent at the time, or they could not have escaped unhurt; and no person was injured on the street. The cause assigned is that the cornice projected too far for the quality of the materials employed. The roof was slated at the time.

The basement story of an extensive warehouse for Messrs. Dunville & Co. has been partly completed opposite the Roman Catholic Cathedral. The town being chiefly seated on ground reclaimed from the sea, piling is the only method which has been found sufficient to secure the structure from settlements in any building beyond a small two-story dwelling. In this case, however, as a basement story was to be provided, the foundations have been carried down eight or ten feet below the level of the street, and will, we think, be at least half that distance below the level of ordinary high water, and are about six feet broad. The first-floor will be fire-proof, and formed of brick arches resting on metal girders and columns. The latter rest on blocks of granite bedded on masonry, formed of slabs of sandstone five or six feet square. The girders are about 18 feet in length, and weigh from 17 to 18 cwt. each. The building is about 100 feet long by 80 feet wide, and will be two stories in height besides the basement.

A new Roman Catholic church has also been contracted for, to be erected on the Falls-road, near the model schools. The style is to be Decorated Gothic, with nave, aisles, porch, and two towers. The amount of contract is nearly 11,000l.

Strenuous efforts are being made to revive the project of railway communication between Downpatrick and Newry, where no conveyance ever has

been save an outside jaunting car to carry the mail, which ran as often without as with passengers. A company tried to get an Act for this line, with others, in 1845, but were defeated by other railway companies opposing.

#### AMERICAN NOTES.

The side walls of the great reservoir at the Central Park, New York, have been built up to the required height.

A new art gallery, 200 feet by 35 feet, is being erected on Broadway, near St. Thomas's Church, New York. A collection of paintings from Dusseldorf and elsewhere will be placed in it.

A new free public library is building at Worcester, Mass., with front towards Elm-street of 60 feet and 75 feet in depth. Externally it will present an elevation with a portico, and surmounted by a French roof, and be two stories in height, except at south-east corner which will only be one.

The import of Canadian timber this season to the United Kingdom considerably exceeds that of former years.

It costs 523,355 dollars weekly to clean the streets of New York.

The buildings at Washington are said now to be noble; that of the "Capitol Extension" nearly completed, the "Patent Office," with pure white marble fronts, and the "Treasury building," almost finished, and having a grand colonnade of thirty marble monoliths, being especially so.

A machine that makes 400 barrels a day from logs has been invented, and is at work at Menasha. It is called the *Livernore* patent.

On the Fox-river Canal upwards of a million of dollars have been already expended in improvement.

#### MR. SPURGEON'S METROPOLITAN TABERNACLE.

On Tuesday last a meeting of the friends of the Rev. C. H. Spurgeon was held in the new "Tabernacle," which is being erected for him opposite the Elephant and Castle, for the purpose of offering up thanksgiving for the success of the undertaking, and making an attempt to raise the remainder of the required funds so as to open the place free from debt. From a report read it appeared that the contributions were 22,196l. 19s., of which the following sums had been expended:—Paid on the contract, 10,000l.; for the purchase of land, 5,100l.; extra building expenses, 77l. 15s.; contract for foundation, 516l. 10s.; law expenses, architect, clerk of the works, and various other expenses, with 4,880l. cash in hand, brought the total up to the other side, 5,000l. more were required to complete the contract, and about 2,000l. more for extras, leaving a total of about 8,000l. still required. We gave an engraving of the design as originally selected; but it would seem, from a statement made by Mr. Spurgeon on the present occasion, that the turrets proposed will not be erected. Mr. Pooock is the architect; Mr. Higgs, the builder. We shall hereafter give an account of the structure.

#### THE SANITARY STATE OF ST. JAMES'S, WESTMINSTER.

THE fourth annual report of Dr. Lankester, the medical officer of health to the vestry of St. James's, Westminster, has been printed. It is accompanied by appendices showing the state of the stables and cow-houses in the parish, the houses drained, &c. Dr. Lankester, in his report, says,—There are 392 stables in this parish, in which are kept 1,057 horses. With many of these stables coach-houses are connected, and, above these, each room is frequently set apart as dwelling-places. The number of persons residing in these rooms is 901, or about a fortieth part of the whole population of the parish. Of the stable-yards, 9 were defectively paved; 5 had imperfect drainage; 7 were in a dirty condition. Of the stables themselves, 41 were defectively paved; 38 had bad drains; and 41 had no drains at all: 71 stables were in a filthy condition, requiring cleaning and whitewashing; whilst 238 (considerably above half) were imperfectly ventilated. Of the human dwellings above the stables, 30 were badly ventilated: in 33, the effluvia from the stables was complained of. By reference to the Sanitary Inspector's report, it will be seen that altogether 268 nuisances were complained of, and that up to the end of the year, 208 had been removed or abated. This investigation has led to a great improvement in the condition of the stables, which cannot fail to have a beneficial effect not only on the health of the human in-

inhabitants connected with them, but also on the health of the animals to which they are devoted." While speaking of the parks, and the recreation of the working classes, the medical officer remarks,—"There are no games allowed, and no means of refreshment of any kind exist. A walk in one of our parks is, after all, a dull monotonous affair for a working man, and no wonder that so few are found there. Certain portions of the park should be raised off, so as to allow of cricket and other games,—and in these games we should find at once the means of attraction and relaxation. In most of the parks of continental cities the sale of refreshments is allowed; and if this was done in our own parks, confining the refreshments to tea, coffee, and unfermented beverages, with bread and fruit, I am sure it would be the means of drawing many from the unhealthy atmosphere of the billiard-room and ale-house. Our English notion of the use of a park is too limited."

**METHODIST NEW CONNECTION CHAPEL, LEICESTER, COMPETITION.**

The successful competitor, in a limited competition, for the above chapel, to be erected in Leicester, is Mr. William Hill, architect, Leeds. The works will be immediately proceeded with under his superintendence.

**HEREFORD CLOCK TOWER COMPETITION.**

On the 15th, in pursuance of circular, the subscribers of 5*l*. and upwards to the Hereford market improvements and clock tower assembled in the music-room of the Shire-hall, for the purpose of making a selection of designs to be submitted to the Town Council. There was a large attendance. After various statements and propositions, Mr. Anthony read a proposition as follows:—"That this meeting proceed to recommend to the Town Council three designs for a clock tower and three for a clock turret entrance; but that they are of opinion that the Council should not proceed with the erection of a clock until after the old Town-hall has been removed."

This met the views of all parties, and, the other propositions being withdrawn, it was unanimously adopted.

The meeting then proceeded to make a selection, and handed in their voting papers to the mayor. The result was as follows:—

*Clock Tower.*

- No. 39 ("Tempus Fugit") ..... 22 votes.
- " 50 ("I make aim for the mark") 20 "
- " 41 ("Push Forward") ..... 11 "

*Market Entrance and Clock Turret.*

- No. 39 ("Tempus Fugit") ..... 29 votes.
- " 56 ("Incognito") ..... 5 "
- " 51 ("Belvedere") ..... 3 "

Mr. Anthony, on looking at the voting papers, observed to the Mayor that he was surprised to find that many had voted for only one design, whereas he understood they were to vote for three; therefore the numbers were not a fair criterion of the judgment of the meeting.

The Mayor.—Well, it cannot be remedied now. Mr. Anthony.—No; but I and several others voted for 39 as well as 50, although we regard 50 as greatly superior to 39; now, had we voted for 50 only, 50 would have had a considerable majority.

More recently the town council have selected for the clock-tower No. 50, "I make aim for the mark," and for the entrance, 39, "Tempus Fugit."

**MANUFACTURE OF ORNAMENTAL TILES.**

The expense of encaustic tiles stands in the way of their use to any great extent, and we would gladly see it lessened. Messrs. T. & R. Boote, of Burslem, claim to be able, by means of their patent process, to supply patterns intermixed with luted tiles "at the same price which is now charged for plain tiles, viz. 6*s*. per yard;" and that they are able, under their patent, to inlay or imbed the ornament any depth required into the body of the tiles, which precludes the possibility of the ornament wearing off, as is often seen to be the case with pavements not manufactured under this process.

That part of the mould which is to correspond with the ground-work of the article to be manufactured is made to rise by springs or other means above the level of the mould to a distance equal to the depth which it is thought necessary to give to the ornaments. Suitable coloured clay is placed in the sunk or hollow parts of moulds thus formed, and the clay which is to form the body

or ground of the article is put in, covering the interior of the mould. The whole is then subjected to the usual pressure, which gradually forces the clay last put in down into the various parts of the mould; and, as the springs yield to the pressure, the body or ground clay is forced closely upon and around the coloured clay, which is thus imbedded in the ground of the article to the same depth as that to which the parts of the mould were raised. The article is then withdrawn from the mould, and presents one smooth surface. Or, instead of the arrangement just described, the parts of the mould corresponding to the ornaments may be raised, and the ground part filled in if preferred.

In some simple specimens which have been forwarded to us, the patterns exhibit great sharpness of outline, and the material appears to be good in texture.

**METROPOLITAN WATER SUPPLY.**  
WATER SPRINGS AT GRAYS.

A PAMPHLET titled "The Water Springs of Grays,—their capability of affording a supply of pure water to the metropolis,"—by Mr. Meeson, of George-yard, Lombard-street, one of the proprietors of chalk quarries at Grays, is in circulation, with the view of pointing attention to certain springs of good chalk water which issue from these quarries, and require to be constantly pumped away by engines, to the extent of about 2,000,000 gallons a day. This water, it is suggested, would form a desirable supply in the east of the metropolitan district, as at Grays, Purfleet, Rainham, Dagenham, Lilford, Barking, East Ham, Romford, and Brentwood. It is proposed that a company should be formed to carry out the project; and, from estimates given by Messrs. Easton and Amos, it appears that a far larger quantity than two millions of gallons a day is fully calculated on. Mr. Meeson's statements are also corroborated by reports of Messrs. Prestwich, F.R.S., and Dugald Campbell, F.C.S. Mr. Edw. Amos estimates that a supply of 2,000,000 gallons per 12 hours might be ensured upon a capital of 220,000*l*. being expended in machinery and erections; 4,000,000 gallons per 12 hours for 268,000*l*.; and 6,000,000 gallons per 12 hours for 475,000*l*. He anticipates a profit of from 10 to 15 per cent.

**TESTIMONIAL TO MR. ROBERT HUNT.**  
MINERAL STATISTICS.

RECENTLY, at the Mining Record Office, Geological Museum, Jernyn-street, a silver tea and coffee service, of the value of 250 guineas, was presented to Mr. Robert Hunt, by gentlemen interested in the mineral industries of the kingdom. It consists of a silver tea-kettle, lamp, and stand, tea and coffee-pots to match, cream-ewer, sugar-basin, and hot-milk jug, *en suite*, the whole very elaborately engraved and ornamented, and bearing the cipher of the recipient. A handsome silver oval silver, weighing 200 ounces, accompanied the service, and upon it was engraved the following inscription:—

"Presented by the subscribers, who are interested in the Mineral Industries of this Empire, together with a tea service and a purse of sovereigns, to ROBERT HUNT, Esq., F.R.S., F.G.S., F.S.S., &c., Keeper of Mining Records, To record their sense of the energy and ability which he has shown in originating and carrying out the publication of the Mineral Statistics of the United Kingdom, and their admiration of his public character and private worth.

*Nil sine magno vita labore dedit mortalibus.*  
July, 1860."

A purse of 200 guineas also accompanied the testimonial.

Mr. Josiah Berry presented it, with some eulogistic observations. In the course of his reply, Mr. Hunt said,—When I commenced the work of collecting the Mineral Statistics of the United Kingdom, in 1848, the whole question was of so uncertain a nature, that I then had little hope of advancing it to that condition which has elicited this substantial approval of my labours. I commenced my work with some compilations showing the state of tin and copper mining in Cornwall. It was then extended to the lead mines of the kingdom, at the suggestion, and by the aid of Mr. John Taylor, and eventually enlarged by the recommendation of a Government commission, consisting of Sir Stafford Northcote and Sir Charles Trevelyan, to embrace the coal mines and the iron manufacture of these important islands. I am bound to acknowledge the great assistance which I have received from all parties who are especially

interested in our mineral industries. But for this it would have been quite impossible for me to have published annually, as I have now for some years been enabled to do, a volume embracing returns of all the metalliferous minerals and coal raised in Great Britain and Ireland. This inquiry has extended itself to the earthy minerals; and within a few weeks I shall place in the hands of the public a volume of returns, obtained by the Mining Record Office, of the production of clay, the manufacture of bricks, tiles, &c., and of our building and ornamental stones. I have thus sought to render the Mining Record Office, established upon the recommendation of the British Association, as useful as possible to the public. I can point with satisfaction to the collection of records obtained and preserved, showing the extent of our subterranean explorations in many of our most important mining districts.

**GLASGOW AND SOCIAL SCIENCE.**

THE National Association for the Promotion of Social Science will hold its fourth annual meeting in Glasgow, on Monday, the 24th September, and five following days. The Right Hon. Lord Brougham is president; the Lord Provost of Glasgow, Sir Archibald Alison, and the Very Rev. Principal Barclay are vice-presidents. The presidents of department are, the Lord Advocate, Sir James P. Kay Shuttleworth, the Hon. Arthur Kincaid, M.P., the Viscount Ebrington, and Sir James Emerson Tennent; the general secretary is Mr. George W. Hastings; and the local secretaries are Messrs. W. G. Blackie, Alexander B. M'Grigor, and J. Wyllie Guild.

Our readers will remember that the Association is established to aid the development of social science, and to guide the public mind to the best practical means of promoting the amendment of the law, the advancement of education, the prevention and repression of crime, the reformation of criminals, the adoption of sanitary regulations, and the diffusion of sound principles on all questions of social economy.

The proposed meeting is beginning to have a good effect in Glasgow. In almost every street which had hitherto been obstructed in some way or other, either by a barricade in front of some new building, or embankments of sand and stones consequent on alterations in draining or piping, operations are carried on with an increased energy. In Albion-street the entrance to the city-hall was some time ago rendered more convenient to the public by the demolition of several old houses; and more recently a considerable improvement has been made in Argyle-street by taking away the old-fashioned stairs from the front of the Buck's Head hotel. There is every reason to expect that the meeting will be one of great interest.

**MEMORIALS AND STATUES.**

THE memorial arch to the Royal Engineers at Brompton barracks is now completed, excepting some of the ornamental work. The spandrels and other portions of the arch are carved, some of the designs being copied from works of art met with in the Crimea. The entire work has been constructed by Messrs. Mansfield and Sons, Gray's-inn-road, from the designs of Mr. Digby Wyatt; and the carving and ornamentations are by Mr. Farmer, of Westminster, assisted by some French artists. The iron work has been cast at the foundry of Messrs. Potter, South Molton-street, Oxford-street, the Government giving the captured Russian guns for that purpose.—The statue of Mr. Frank Crossley, M.P., in the People's Park, Halifax, provided by him, at great cost, to the local public, has just been inaugurated. The statue represents Mr. Crossley sitting on a chair or couch, holding in his hand the deed of gift of the park. The pedestal, which is 3 ft. 6 in. high, weighs 34 cwt., and is of Sicilian marble; whilst the figure, which is of pure Carrara marble, is 6 ft. 6 in. high, and weighs 56 cwt. Its cost has been about 1,100*l*. The artist was Mr. Joseph Durham, of London.

—General Jourdan's statue has been placed on the Petit Place en Louvre, opposite the Pont des Arts, at Paris. It is from the chisel of M. Elias Robert, the sculptor of the frontispiece of the Palais de l'Industrie. The statue is of bronze, and is four metres in height. The general wears the uniform of the first Republic, the mantle being thrown over his left shoulder. The statue being thrown for the town of Bourges.—The Prince Regent of Prussia has allotted a sum of 10,000 crowns for the erection of a monument to Goethe, which is to be similar to that now being raised to Schiller.



DRINKING-FOUNTAIN IN THE GREEN PARK, LONDON.  
MR. SYDNEY SMIRKE, R.A. ARCHTGT.

#### DRINKING-FOUNTAIN IN THE GREEN PARK.

THE amiable donors of drinking-fountains throughout the kingdom have been so loud in their self-announcement that it is quite agreeable to hear of one erected by a lady who specially stipulates that her name shall not be made public.

The fountain in question is that which has been erected in the Green-park, and is visible from Piccadilly. Annexed is a view of it. As we have already mentioned, it was designed by Mr. Sydney Smirke, R.A., and is executed in Koclie Abbey stone, by Messrs. Edwards, of Newman-street.

It is a triple fountain, comprising three basins and three separate jets. The water is laid on by the Office of Works, the filtering apparatus being under the pavement of Piccadilly.

#### ART-UNION OF LONDON COMPETITION.

THE Council of the Art Union have not considered that the statutes sent in would justify the award of the prizes offered. They have, however, adjudged the premium of 30 guineas to the group (several figures), "Alfred in the Camp of the Danes." The artist was found to be "Mr. Thomas Dnebett, at Mr. Thornycroft's."

The premium of 100 guineas offered for the best set of drawings in illustration of "The Idylls of the King" has been awarded to No. 18, marked "Constancy," subject to a satisfactory reply from the author, (who is understood to be a foreigner,) to certain inquiries.

Nos. 22, 24, and 25, were other favourites.

It is to be hoped that artists will now send their names to be affixed to the designs, which will be open free to the public all next week.

#### FIRE! FIRE!

ANOTHER fire, of wonderful fierceness, has threatened the famous old church of St. Saviour's, in the Borough. Within the memory of those living, the extent and number of fires which have taken place within little more than a stone-throw of this ancient building are surprising. One of these destroyed the nave, and the place has been so beset by fires, that it seems almost as if by a miracle that the remainder of the fabric has been saved.

On the last occasion the West Kent Wharf, a building which extended in one direction 160 feet, in another 80 feet, and a range of older buildings running along the river to the extent of 100 feet, were burnt.

Once set on fire—it is said, by the accidental lighting of some rags—in a short time, in spite of the most vigorous exertions of the firemen, the fire obtained such strength that the whole of the City was lighted up. In vain the steam and other fire-engines threw vast quantities of water: the fire raged and roared in a manner which will not readily be forgotten by those who witnessed it

and in a few hours property of the value of probably not less than 200,000*l.* was destroyed.

Shortly after this calamity, another fire, also very destructive in its effects, took place in the Phoenix Mills, when a large stock of manufactured food, ready for exportation to the troops in China, was burnt.

The frequent occurrence of fires in the metropolis, the completeness, when the fire has once obtained any footing, of the destruction; the value of the goods and property annually consumed, give these disasters great importance, and show that measures more adequate than those which have hitherto been taken should be employed for the purpose of rendering safer the national wealth. Such burnings are a loss not only to individuals, but to the whole community.

Notwithstanding the numerous warnings, modern buildings are put up little if in any way different from those which have been burnt. Of late, by means of party-walls and the exertions of the firemen, fires are mainly kept within the extent of particular premises. In the case of warehouses, such is the nature of their construction, and so great is the size of the area which is undivided by walls, that, in nine cases out of ten, when a fire has established itself, it is impossible to prevent the destruction of the premises.

If, in the arrangement of warehouses, &c., the area within the outer walls were properly subdivided by other walls, of sufficient strength to stop the progress of fire, and the area was of such a size that only a moderate amount of flame could be produced, the firemen would be able to operate with more certain effect. The requirements of the Building Act, with this end in view, have been set aside by the decisions of magistrates.

At Messrs. Mandalay & Field's works, as we have before noticed, the place is divided by walls, and the doors are of thick metal; besides, there is a regularly organized band of firemen, composed of the workmen who live near: pipes of large diameter are also carried throughout, from which, at a moment's notice, a great quantity of water can be poured on any part. At the General Post Office the water-pipes are laid in all quarters: besides, there are in all the passages buckets and other means of quenching fire provided. There is also a regular attendance of firemen in the building.

At the Earl of Salisbury's, Hatfield House, since a fire which took place there a few years ago, water-tanks of large size have been placed on the roof, and such other arrangements made, that this stately abode is now comparatively safe. If proper provision were made in the first instance in warehouses and manufactories, a great annual saving would be the consequence. They should be built with little that could burn. If the cost were more, it would be a saving in the long run. We cannot but look with dread to several places in the metropolis in which are articles of priceless value; and it would be well to make a careful inquiry if the best arrangements which experience

could point out have been made to prevent loss. The probates of wills, the loss of which would cause endless litigation and confusion, are at any moment in danger from fire. To what extent are the King's Library and some other parts of the British Museum safe? Underneath St. Paul's Cathedral there is a large collection of seats and other woodwork; and if, by any accident with the gas or warning apparatus, it were to take fire, a great flame would be the result. Probably, however, the vaulting would prevent it from spreading to other parts.

Gas-lighting has been introduced into Westminster Abbey. The pipes are carried amongst the carved stalls and woodwork. Are the arrangements now made, to quench a sudden fire in this invaluable relic of times gone by, sufficient and satisfactory?

There are many other places which might be mentioned. In some of the larger town houses there are rare and invaluable works of art. In these buildings fires are liable to happen, which, before the arrival of the brigade engines, might cause serious damage. The most careful arrangements should be made to prevent such a possibility.

It is to be hoped that the subject will meet with the attention which its great importance demands. In considering the question, the introduction of large quantities of inflammable materials into great cities should not be overlooked. In some warehouses, even in the docks, saltpetre is stored with materials likely to produce spontaneous combustion. Rags and greasy matters are not far from each other; and naphtha, spirit of turpentine, and other dangerous compounds are brought *ad libitum* into the midst of populous neighbourhoods.

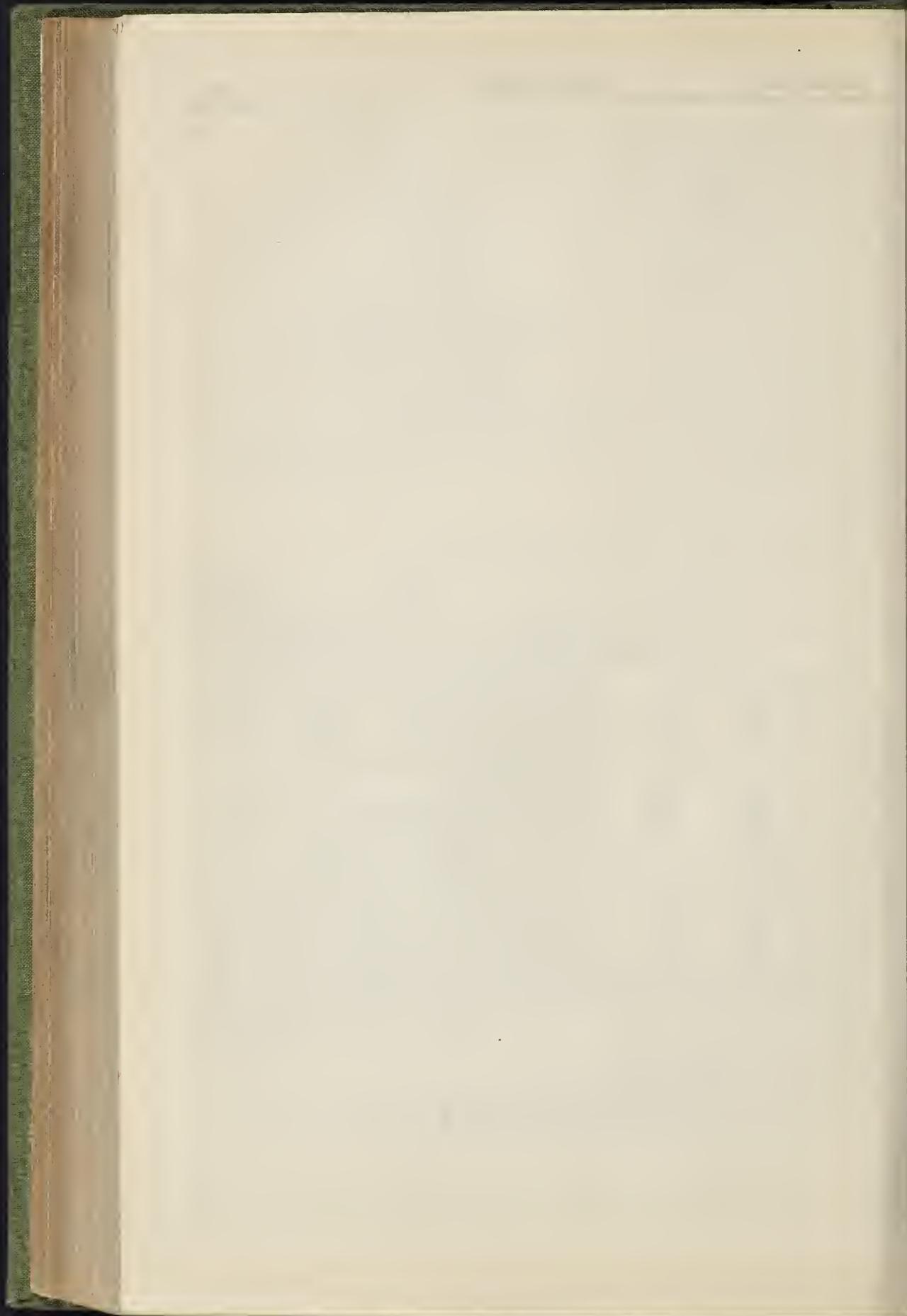
The cause of all fires in large towns should be fully inquired into, with the view of preventing the waste which is caused by the frequent conflagrations which now disgrace and damage us.

#### MESSRS. WRIGHT'S BANK, NOTTINGHAM.

OUR engraving illustrates the banking-house, which has been erected for Messrs. J. C. & J. Wright, in Carlton-street, Nottingham, under the superintendence of Mr. Charles H. Edwards, of London, architect. The front, immediately in connection with the banking-room, is entirely of stone, comprising one large window divided by stone columns, whose proportions and mouldings throughout, with the entablature, are of the Corinthian order, excepting that natural foliage is given for the caps and mouldings, in lieu of that commonly used. These columns stand upon pedestals, forming the base of this front, with moulded caps and bases having large groups of natural foliage carved in each panel. The entablature is adorned with the leaves of trees and flowers. The entrance to the banking-room is in the centre of this front, having two large double lights on either side, with smaller columns of serpentine marble with stone carved caps and bases of natural foliage supporting a circular head, the crest of the firm being carved on and forming the key-stone, above which is a moulded cornice. The glazed windows have mullions formed by twisted columns with foliated caps and bases, all of iron. The other portions of the facade of this building, comprising the manager's-room, &c., are faced with Portland cement; the ground-floor windows having columns circular on plan at top, and octagonal at bottom, whose caps and bases are also foliated, and which rest upon a moulded string. In the circular heads, and also the strings, encaustic tiles are introduced, and the whole is crowned with a moulded and foliated cornice, supported by double-moulded cantilevers. The walls of the interior of the bank are of rough stone, having a dado with moulded coping, neck, and base of polished marble cement. The ornamental architraves to the doors and windows are also of polished marble cement. The ceiling is coved, and divided into panels by ribs, at whose intersections are introduced foliated and moulded drops, the panels throughout being filled with foliated work in high relief. The counter is of oak, divided into panels. The top of the counter is of glass, divided into spaces by brass beading. The gas-fittings throughout are of foliated bronze work, made by Messrs. Tomason, of Birmingham. The floors are of Maws & Bales's tessellated pavement amalgamated. The ironwork is by Messrs. Gilbert & Frasi, Golden-lane, Barbican. The ceiling is of papier maché and carton pierre, executed and fixed by Messrs. White & Parly, of Great Marylebone-street, London. The whole of the works have been contracted for and executed by Messrs. Evans, Brothers, of Whitecross-street, London, at a cost of 3,000*l.*



MESSRS. WRIGHT'S BANK, NOTTINGHAM.—MR. C. H. EDWARDS, ARCHITECT.



PROVINCIAL NEWS.

**Welbeck Abbey.**—A costly range of stabling, coach-houses, fowl-buildings, dairy, laundry, hot-houses, pine-pits, and other offices is now in course of erection at Welbeck Abbey, the seat of the Duke of Portland, at a cost of nearly 100,000.

**Trowbridge.**—The Lord of the Manor has decided to erect a commodious market-house in this town, and it will be commenced immediately. Mr. C. E. Davis, F.S.A., of Bath, is the architect; and Mr. W. Long, of Bradford, has contracted for the masonry work; Messrs. Davis, of Frome, for the carpentering; Mr. Berry, of Trowbridge, for the plumbing, glazing, and painting; Mr. Harris, for the slating, plastering, &c.; and Messrs. Davis & Son, for the iron work. The building will be about 144 feet in length and 80 feet in width, with a frontage of 100 feet, and a considerable elevation. The roof will be of iron frames with a large area of glass, supported by iron pillars similar to the Salisbury market-house.

**King's Weare.**—The prospectus of the South Devon Hotel Company, with a capital of 50,000*l.*, in shares of 5*l.* each, has been issued, the object being to establish a first-class hotel on the King's Weare side of the river Dart, a picturesque locality in South Devon, favourably spoken of by Sir James Clark in his work "On Climate." The directors have entered into a contract with the proprietor of the Brookhill estate for a seventy years' lease of the mansion and grounds, with the option of purchasing the freehold. It is proposed to enlarge the mansion, so that it may contain 150 guests' bed-rooms, and 100 other rooms, including dining saloons, ladies' coffee-room, library, ball and billiard rooms. The cost of the alterations has been estimated at 22,000*l.* by a builder, who is willing to contract for the construction of the hotel for that sum; and the whole cost, including every necessary building, is estimated not to exceed 44,000*l.* The estate is said to be conveniently situated for railway and river carriage.

**Devonport.**—At the monthly meeting of the Devonport Board of Surveyors, five tenders were opened, responding to an advertisement for the widening and other alterations of the Rectory Bridge, at the bottom of the parsonage field, near the Rectory. The tenders were:—

S. Hallett .....	£ 87 18 3
T. Perkins .....	69 0 0
Joseph Tyler .....	64 19 0
Symons & Hoskings .....	63 15 0
W. Smith .....	60 10 0

**Merthyr Tydfil.**—Subscriptions to the amount of 1,150*l.* were collected at a first committee meeting towards erecting the new Town-hall. The Treasury have since promised 2,000*l.*, so that it only remains to raise the remaining 1,000*l.* to realize the amount originally named as being sufficient for the purpose. It is arranged to provide rooms for the Library in connection with the Hall.

**Northallerton.**—The late Mr. Adam F. Weston, of Bombay, has left a bequest of 150,000*l.* to the town of Northallerton, Yorkshire, of which he was a native. The object is to form a botanical museum for the northern counties.

**Middlesbrough.**—The foundation-stone of the new North Riding Infirmary, at Middlesbrough, has been laid with masonic honours, by the Earl of Zetland, grand master of the order of Freemasons. The entire cost of the building is computed at between 3,000*l.* and 4,000*l.* The site has been granted by Mr. Hinstler, of Acklam Hall. In competition twenty-eight designs were sent in, and the plan of Messrs. Oliver & Lamb, of Newcastle, architects, having been selected as the most suitable, that firm was engaged to superintend the erection of the building in accordance with their design. The arrangement of the plan is that of two corridors, open at the ends, of the shape of an inverted T, with wings at each end. The principal wards are designed to hold ten patients each, and the smaller wards four each, 2,000 cubic feet of air being allowed to each patient. The windows are to be placed opposite to each other, with single beds between. The wards will be 16 feet in height, and the building, it is asserted, will be ventilated throughout, by natural means, as recommended by the Crimean Commissioners and Miss Nightingale. In every ward there are to be two large open fireplaces. The wards will face the north-east. The style of architecture will be Italian, and the structure will be of brick, with stone dressings. The house for the matron, surgeon, &c., will be placed in the centre of the corridor, parallel with the road. The operating-room, with a ward for the reception of patients after operations are performed, will be in the middle of the cross aisle, and the extension wards are intended to be built at the end of the cross corridor. The present buildings will comprise the

erection of wards and accommodation for forty patients, out-door dispensary, and surgeon's, and matron's apartments. The building, however, will be so arranged that it can be extended so as to accommodate 120 patients, the maximum number, and the infirmary then will be 200 feet in length.

**Sedgefield (Durham).**—The tender of Mr. Barton, builder, Hartlepool, has been accepted for the erection of Sedgefield Union new workhouse, at a cost of 1,975*l.*

The first contract for the extensive buildings now being carried out for the "Tyneworth Promenade and Assembly Room Company" in this rising watering-place has just been completed and inaugurated by a banquet held in the new ball-room. The block consists of an hotel, and, connected with it by a covered arcade, a range of building, containing the ball-room, reading-room, and billiard-rooms, and a ladies' saloon, with washing-rooms, cloak-rooms, &c. The ball-room is 70 feet long, separated from the ladies' saloon by folding-doors, which, when drawn back, make the ball-room in all 100 feet long. Both rooms are ornamented. The ceilings are divided by curved and moulded beams, with metal scroll-work in the spandrels, and subdivided again into a fretwork of smaller geometrical panels, filled in with fruit and flowers, &c. The rooms are lighted by a chandelier in the saloon, and sunlights hung with crystal pendants, supplied by Messrs. Faraday, of London. Staining and varnishing have been adopted throughout, instead of painting. The principal entrance from the arcade is laid with Maw's encaustic tiles. Underneath the ball-room there is a supper-room of the same size, and on the upper story a suite of sitting and bed rooms, both the lower and upper story being in immediate connection with the hotel. The buildings are carried out in moulded and coloured brick-work, partaking of the character of the brick buildings of Northern Italy, and the internal fittings and decoration are designed in the same style. The architect is Mr. Archibald M. Dunn, of Newcastle. The contractors are Messrs. Wait & Howard, of Newcastle, who have taken the contract for the second block of buildings connected with the scheme, consisting of a range of shops and houses in the front street, with the completion of the arcade, &c.

CHURCH-BUILDING NEWS.

**The Hemans Window.**—By a slip, recently, the window by Mr. Warrington, put up in memory of Mrs. Hemans, the poetess, was said to be in Glasgow. It is in St. Anne's Church, Dublin.

**Aceton.**—The foundation-stone of the new church at Aceton, says the *Lincolnshire Chronicle*, will, it is expected, be laid in a few days. A limited number of builders were some time ago requested to send in tenders for the performance of the necessary work, which were opened on Saturday before last. The one submitted by Mr. W. Huddleston, of Lincoln, which amounted to between 5,000*l.* and 6,000*l.*, was accepted. The architect is Mr. Scott.

**Oakham (Rutland).**—Oakham Cemetery was consecrated on the 2nd of August, by the Bishop of Peterborough. It is situated a short distance from the town, and is 4½ acres in extent. The chapels are approached by a carriage-drive in the centre of the ground, and are midway from back to front. The external walling is executed in dark rubble stone with Bath stone dressings. The chapels are placed with their sides parallel to each other, having the vestries and an open carriage-drive between them. Over this carriage-drive is a groined roof, and tower and spire. At the angles of the tower and chapels there are angle buttresses, with carved and crocketed pinnacles. The gables have perforated ornamental parapets carried out in the Early Decorated style of architecture. The chapels have been executed from drawings prepared by Messrs. Bellamy & Harjay, of Lincoln, architects, and executed by Mr. Robert Young, of Lincoln, contractor. Mr. Thomas Barlow, of Oakham, acted as clerk of the works.

**Moggerhanger.**—St. John's Church, Moggerhanger, has been consecrated. The architect was Mr. Slater, of London; and Mr. Congest, of Kempston, was the builder. It is of Kempston stone, varied with red sandstone from the quarries at Silsoe. The cost has been defrayed by Mrs. Dawkins, of Moggerhanger House, as a memorial to her late husband, the Rev. E. H. Dawkins, whose remains lie under a brass monument in the chancel. She has also given a large burial-ground fenced by a stone wall, and is building a parsonage adjoining. The edifice, according to the *Bedford Times*, consists of a nave and aisles, central tower, and chancel with an

apsidal end. The pillars are of Ancaster stone with carved capitals; the arcades are of the same material, intermixed with Harlestone stone for the sake of variety and effect. The apse is of a more decorated character than the rest of the church, as containing the mausoleum in which the remains of Mr. Dawkins are to rest. The roof is open, and constructed of oak grown on the Moggerhanger estate. The three east windows are filled with stained glass (by Messrs. Clayton & Bell, of London), the centre being the Crucifixion, with the Resurrection and Ascension on either side.

**Landaff.**—From the annual report with reference to the restoration of the cathedral of Landaff, it appears that during the past year the nave has been covered with green Bangor slates, in place of lead, the side aisles of the once ruined portion of the building are being roofed with lead, the windows glazed, and temporary doors provided, so that the whole fabric will soon be covered and enclosed: and it is hoped that ere long the wall which still divides the two sections of the nave, and which is now the last relic of the hideous attempt at restoration in 1752, will be removed, and an uninterrupted view afforded from the western to the eastern end of the cathedral. The floor, however, has yet to be laid, suitable doors provided, and some means adopted for heating this large additional area for the comfort of the congregation. A special fund has been opened for the purchase of an organ, which it is estimated will cost from 800*l.* to 1,000*l.* The bishop's throne and the stalls are in progress of construction; but there is still very much to be done in the work of restoration. The eastern portion of the side aisles require the re-construction of their roofs and the relaying of the floor with encaustic tiles, while there are many other objects which bespeak attention, such as the repair of the monuments, the perforated parapet for the northern tower, the provision of a suitable font and lectern, the substitution of painted windows for those of ordinary glass, and the restoration of the southern tower.

**New Basford.**—St. Augustine's Church has been opened for divine service. The edifice is built of brick and stone in the Decorated style. There is a small tower, with a spired roof of stone surmounted by a stone cross. The east window is adorned at the summit with a vine and grapes, a crowned bend of the Queen, and the head of a bishop mitred, carved in stone. The two next windows (those of the vestry) on the south side have two human heads with a winged dragon in stone. Other carved heads and non-descript animals also decorate the exterior of the edifice. The archway of the western porch is carved, so as to have a lace-like appearance, and rests upon two pillars, the capitals being of carved foliage. All of the windows are of stained glass. Those of the nave are blue cathedral glass. The pulpit is of carved stone. The entrance to the chancel is through an ornamental arch in a carved screen, with metal gates, partly gilt and painted. Over the chancel screen are angels, animals, fruit, foliage, &c., carved in stone. Mr. Arthur Wilson, of Nottingham, was the architect.

**Stanton (Derbyshire).**—Stanton church was reopened on the 11th of July, having undergone a partial restoration, consisting chiefly in removing the inconvenient and unsightly square pews and west gallery, which blocked up the lower arch, taking away a singular wooden division between the nave and chancel, and the very unsuitable communion rail. The whole available space for the congregation has been fitted up with open benches, stained and varnished; a new pulpit, desk, communion rail, chancel door, &c., have also been added; the whole of the aisle and floors relaid with Staffordshire tiles in alternate red and black; the corbels of the tower arch replaced by new ones (the old having been cut away for the convenience of gallery occupants); and a new chancel arch and wall with buttress has been introduced at its intersection with the nave. A memorial window has been placed in the south side of the chancel by the Rev. S. Eversfield, the present curate, to the memory of his mother, and the nave also contains a window in memory of the late Earl Stanhope, given by the present rector. The work has been executed from designs and under the superintendence of Mr. R. Barber, of Eastwood, architect. The contractors were Messrs. Kerry & Allen, of Smalley. The heating apparatus is by Mr. Mitchell, of Lomington. The whole available space for the congregation has been filled up with open pine seats, stained and varnished, and accommodation is now furnished for 100 more than could be seated previously. The work has been executed at a cost of 360*l.* Mr. Howard, the rector, has been at the sole ex-

pense of the works in the chancel, hut the Earl Stanhope was the largest contributor to the general restoration.

**King's Heath (Birmingham).—**A new church has been consecrated at the village of King's Heath by the Bishop of Worcester. The church, which has received the name of All Saints', has been built from designs of Mr. Frederick Preedy, of London, architect, in the early Decorated style, and consists of a nave, chancel, and vestry. At present there is but one aisle, though the plan will allow of the erection of the corresponding aisle when circumstances may require it. The tower is also intended to carry a lofty spire of stone-work, and this is much needed to complete the uniformity of the structure. The roof is open-timbered, stained, and varnished. In the interior the arches are constructed of Bath and Bromsgrove stone in alternate bands. The church contains 430 sittings. The contractor was Mr. Isaac Clulee, of King's Norton.

**Epworth.—**The New Methodist New Connection Chapel was opened on the 25th ult. It is called the Killam memorial chapel, and is built on a site in the centre of the town, of about 1,500 square yards in area. The style is Decorated, modified to suit requirements. The building is about 55 feet long to the apex in front. The plan is a parallelogram, 62 feet by 30 feet. The seats are arranged in three blocks, approached by two side aisles running the entire length of the building. The main entrance is by a porch on the south front, and forms a prominent feature, projecting several feet from the face of the building. On each side of the porch are small windows, over which a string course is placed, directly above which are two large windows filled with tracery, and over these springs a relieving arch encircling a large stone containing a band, on which is an inscription. The gables are surmounted with stone terminals, and the apex with a gilt cross about 6 feet high. The chapel has a very high-pitched roof, surmounted with an ornamental ridge-cresting. In the interior the roof is open to the tie, and celled about 30 feet high, so as to appear octagonal in form, and the bays are divided by circular trusses. The pulpit, which is of stone, is semi-octagonal, with moulded capital base. The new school is similar in design to the chapel: it has a porch, and open timber roof of light and simple character. There is also a superintendent's room and library. The total cost, including land, chapel, and school, will exceed 1,600*l.* The architects are Messrs. R. C. Sutton & H. Paull, of Nottingham, the work being carried out under the superintendence of Mr. Sutton. The contractor for the chapel was Mr. G. Hall, of Nottingham, and for the school Mr. Henry Kelsey, of Epworth; and Mr. J. T. Cockayne, of Nottingham, undertook the stonework for both buildings.

**Hulme.—**The new church of St. Philip is now nearly completed. The church stands at the corner of Chester-street and Newcastle-street, Hulme, and is built of Peel stone, in the Gothic Geometric Decorated style of architecture, from designs by Messrs. Sheldrick & Brown, architects, Manchester. It consists, according to the local *Advertiser*, of a nave with side aisles, and a chancel with a north side aisle. The tower, with spire, stands at the corner, and fronts both Chester and Newcastle-street, and by its breadth the north aisle of the nave is shorter than that of the south side. The total length of the church, internally, is 117 feet 10 inches; the width, 50 feet 2 inches. From the floor to the ridge of the roof of the nave the height is 54 feet. The tower, with its spire (which is crowned with a vane), is 155 feet 3 inches high. The seats are open benches, and free to all comers, the accommodation being for 670 adults. The principal front of the church is that in Chester-street. The chancel, nave, and aisles, are paved with Maw & Co's red and black ornamental tiles. The roof is open timber work, and, like the benches, is stained to imitate oak. The covering is of Welsh slates. Messrs. Ellis & Hitchell have done the masons' work; and Messrs. Boden, Edwards, & Foster, the brick and joiners' work, &c. The gas-fittings, by Messrs. Thomson & Co., of Birmingham, are in design Gothic; and the organ is being built by Messrs. Eccleston & Bowles, of Manchester. All the windows are to be filled with stained glass by Messrs. R. B. Edmundson & Son. The principal chancel window is completed, and has been on exhibition at Messrs. Edmundson's gallery. It is 24 feet by 12½ feet. The three centre lights have for their subject the "Ascension." The light on the right, looking at the window, has for its subjects "St. James the Minor" and the "Last Supper," while the outer light on the left, looking at the window, contains "St. Philip" and "Christ Feeding the Five

Thousand." The tracery is filled with the subject of the "Pentecost," the figures having tongues of fire upon their heads. When completed, the edifice will have cost upwards of 7,000*l.*, nearly all subscribed by the Birley family of Manchester. The incumbent will be the Rev. Robert Birley. On the south side of the church, and fronting Newcastle-street, a parsonage is now in course of erection. The schools belonging to and adjoining the church have been completed some months since, and they will accommodate about 400 children.

**Prestwich.—**The Prestwich parish church has recently been repaired and partially restored. The repairs, &c., have been executed from designs by, and under the superintendence of, Messrs. Travis & Mangnall, architects. The nave and aisles have been repewed, the pews being open and of oak, with carved ends. The stonework round the windows has been redressed, and the windows filled in with diamond quarries, and finished with a coloured margin. The walls and piers have been replastered, and the whole of the nave and chancel ceilings have been repainted and redecored. The panels of the ceiling are powdered with gilt stars and the Tudor rose (red and white), and the beams have upon them imitation diaper work in party colours. The restorations are not quite complete as yet. In the autumn of the present year it is proposed to fill in the chancel end window with stained glass, to the memory of the late Countess of Wilton. The window is to be the work of Messrs. Ward & Hughes, of London. The design contains seven lights (being the number in the present window), the three centre ones being filled with "The Crucifixion," Christ in the middle, with the thieves on his right and left; while the two outer lights on either side have for their subjects the six acts of Mercy, "Feed my Lambs," and the "Good Samaritan." The tracery is filled in with attending angels.

**Kilmore Cathedral.—**The windows in the south transept, we are now informed, were executed by Messrs. Ward & Hughes.

#### SCHOOL-BUILDING NEWS.

**Shrewsbury.—**The opening of St. Chad's Schools has just taken place. According to the local *Chronicle*, the total cost of the buildings exceeds 3,150*l.* The architect was Mr. E. Huxcock, of Shrewsbury, and the contractor, Mr. J. Treasurer, of Newport. The buildings are of Elizabethan character, and constructed of brick, with Gristhill stone dressings. The east end is surmounted by a bell-turret and cross of free stone. The roofs are covered with blue tiles, and ornamental ridge, roll, cross-troughing, and down pipes. All the walls are plastered internally, with the exception of the lavatories, which are whitewashed. The master's house is situate about 22 yards from the street, with boys' play-ground in front, 52 feet long by 26 feet wide. The boys' school is 65 feet long by 18 feet wide, and 14 feet high from floor to ceiling. The class-room is entered from the school-room, and of the same height as the school, 18 feet long by 14 feet wide, fitted with seats on raised platforms. There are four air extracting fans formed in the walls, and ventilating grates in the floors. The floor of each school is laid with red deal boards, with air-space to the depth of 3 feet: there is also an open fireplace, with stone chimney-piece. To the upper school adjoining the master's house is the boys' entrance-porch, from which you enter the boys' school and lavatory. The girls' school is entered by the end of the mistress's house, up a flight of Yorkshire stone steps. The school and class-room are the same size as the boys', and similarly fitted up: the roof of the school and class-room is an open-timbered one, constructed with framed and stop-chimbered circular principals and purlins, plastered between the rafters, stained and varnished, with longes in the gables. The mistress's house is next the street. The girls' play-ground is in front of the schools, and is 66 feet long and 32 feet wide. The boundary-wall is built of pressed brick and Gristhill free stone coping, gate piers with a single cast-iron gate for mistress's and girls' entrance, a cast-iron double gate for boys' entrance, and cast-iron ornamental railing led to same coping.—The new schools, at St. George's, or Pain's-lane, near Oakengates, have also been opened. Earl Granville, who is the principal proprietor in the Lilleshall iron works there, was present, and delivered the inaugural address. The schools have been in course of construction eleven months, and cover one acre of ground. The establishment includes boys' school, girls' school, lavatories, and two residences—one for the master and the other for the mistress. The design was by Mr. Henry Clutton, of London; Mr. Mil-

lington, of the Steam Saw-Mills, Oakengates, being the contractor; whilst the works have been carried on under the superintendence of Mr. John Jones. The general tone of architecture is Gothic, the schools being made with open roofs and lancet arches. The length of each of the schools for boys and girls is 55 feet, or, including the passage, 61 feet 6 inches. The infant school is 42 feet long; the three being respectively 18 feet wide. The contract for construction was 2,000*l.*

**Leeds.—**St. Stephen's National Schools, Burmantofts, have just been opened. The new schools are erected on a triangular piece of land on the north-west side of the church. The buildings consist of two school-rooms, one for boys and one for girls; a sliding screen being placed between the two schools, so that the two rooms can be thrown together for meetings. Each school has a separate entrance porch, fitted up with lavatories. The size of the school-rooms is 36 feet 6 inches by 18 feet 6 inches, and 26 feet by 18 feet 6 inches, and they afford accommodation for 248 children. The rooms are 18 feet 6 inches high to the ceiling, and 13 feet 6 inches to the wall plate. The class-rooms are 20 feet by 14 feet, and fitted up with galleries, and the same height as the schools. The play-grounds and out-buildings are provided at the back of the schools. The building is in the Decorated style of architecture. The principal front facing Accommodation-road combines a centre and two wings. There is also a bell-turret. The cost of the schools, towards walls and out-buildings is about 1,200*l.*, beyond which, we understand, the Committee of Council on Education have made a grant of 559*l.* The schools have been erected from the designs of Messrs. Dobson & Chorley, of Leeds, architects. The contractors for the various works were—masons' work, John Holdsworth; carpenters' work, Charles Dalton; plumbers' work, Messrs. Bradshaw & Myers; plasterers' work, Mr. W. H. Barker; slaters' work, Mr. S. Croft; painters' work, Messrs. Wood & Son; and iron-founders' work, Mr. Green.

#### ECCLESIOLOGICAL SOCIETY.

At a committee meeting held August 1st, amongst other business, Mr. Burges laid before the committee his designs for a small brick church to be built at Fleet, in Surrey. He also described the original purpose of the Maison Dieu, at Dover, and the history of the building, which, after many alterations and mutilations, has been lately repaired, and to some extent restored. Referring, also, to the Liberate Rolls of Henry III., Mr. Burges discussed several questions connected with Medieval domestic architecture, and in particular called attention to the fact that although pine timber was often used in the Middle Ages, no works in that material of that date remained, whence he inferred that our present use of pine, instead of oak and chestnut, in church roofs, was a mistake, inasmuch as it was not likely to last for many years.

Mr. Pritchard, Mr. White, and others submitted designs for works in hand.

The committee, having considered the following extract from a letter from Mr. Robson, agreed that it was impossible to lay down a general rule for such cases, but that it was a right principle to preserve, as far as possible, what was good in itself, or historically valuable, or not plainly incongruous with the rest of a building. The particular case at Durham might depend on the nature of the inserted tracery, and on the extent to which the restoration of the other windows had already proceeded.

I wish to consult you upon the question of restoring First or Second Pointed tracery when inserted in Norman windows. In Durham Cathedral, all the windows on the north and south sides of the nave have had the tracery which formerly filled them removed, before I had any connection with the building. There are, however, yet remaining two or three windows in which the tracery (placed there by the architects of the end of the thirteenth and beginning of the fourteenth century), has escaped, but has recently attracted the attention of the dean and chapter, who propose to take it out as inappropriate.

I have given it as my opinion that preservation, not restoration, should be our object, and that there is at present no ground for destroying the tracery.

But I should very much like to know your views on the question in general, for it is one of no little difficulty. Did the Medieval architects insert it to give a richness to the otherwise bare Norman window? Or did they do so for constructional or glazing purposes? I think the former; and that we, so far from straining after a "purity of style," which they despised to some extent, should even restore First and Second Pointed tracery in Norman windows."

Mr. Clarke having described the present state of the proposed fund for endowing a Travelling Studentship in memory of Augustus Pugin, it was agreed, at the suggestion of Mr. Beresford Hope, that the small balance (of 3*l.* 6*s.* 6*d.*) remaining

from the Carpenter Memorial Fund might most properly be devoted to the Pugin Fund.

Mr. W. J. Hopkins, of Worcester, wrote to say that there was now every hope of the preservation of the Guesen Hall, but that funds were urgently needed for its substantial repair.

THE COST OF CRIME.

AMONGST the estimates granted by Parliament during the present session, we notice the following items in connection with the suppression of crime:—

For convict establishments at home	£368,329
Inspectors of prisons (United Kingdom)	17,000
For the maintenance of prisoners in county gaols, reformatory institutions, and the removal of convicts	159,367
For the transportation of convicts.....	20,671
For convict establishments in the colonies.....	173,000
For salaries, &c., of the metropolitan police	21,337
A further grant for ditto	136,860
For police,—England, Wales, and Scotland.....	223,000
Expense of prosecutions at assizes and quarter sessions.....	100,000
Criminal prosecutions in Ireland.....	64,634
Criminal prosecutions carried on by the authority of the Lord Advocate.....	5,500
	£1,239,793

One million two hundred and eighty-nine thousand seven hundred and ninety-eight pounds! And this is only a part of the formidable account, to which must be added the cost of private prosecutions, the county and other rates for prisons, police, &c., to say nothing of the amount of plunder and the waste of time which might have been devoted to profitable labour! Gradually, it may be hoped, we shall learn how to prevent rather than to punish, and so save part of this frightful expenditure. Schools are cheaper than prisons.

AMUSEMENTS.

Floral Hall, Covent-garden.—The music-loving public left in town have reason to thank Mr. Alfred Mellon for his promenade concerts at this time of the year, when comparatively little is going on. In conjunction with Prince George Galitzin, a great Russian composer and conductor,—in one sense at any rate,—he provides each night a very admirable entertainment, a little less lively, perhaps, than was had from Julien, but more sound. An excellent band, with Miss Parepa, Miss Augusta Thompson, and Mr. Wilbye Cooper, as vocalists, will surely give a good shilling's worth. The building appears to be exceedingly well adapted for musical performances.

St. James's Theatre.—Mr. Barry Sullivan, who has been absent from this country for several years, has improved with time, and is not to be disregarded. He has played Hamlet and Richelieu, and is very well received. Mr. Pianchi's Fortunio has been revived, and is found as sparkling as ever.

The Alhambra.—Mr. E. T. Smith has added, to the horse-riding and gymnastic attractions here, a live hippopotamus, docile as a cat and uglier than a pig. It opens its monstrous jaws to receive its Arab keeper's head, and does not snap it off; and it obeys its master, and ultimately rides off with him in an unnatural and altogether delightful manner. The Brothers Berri are remarkable performers on the flying cord. Horse-riding is looking for its Luther.

ART AND SCIENCE IN THE COMMONS.

THE National Gallery, the Kensington Museum, the British Museum, and the Gallery of Historical Portraits, have been the subjects of a good deal of talk in the Commons this last week or two, mainly on questions of supply.

On the vote of 15,000*l.*, granted, after much discussion, and by a small majority of eight, or thirty-one to twenty-three, for National Gallery improvements, it was explained by Mr. Cowper and Lord Palmerston that the purpose of asking for this sum of money was, that the hall of the picture might be "docked over," in order to provide a spacious saloon, 75 feet by 40 feet, and 35 feet high, giving an additional space of 3,000 feet superficial for pictures, besides a new room of nearly the same size, on the ground-floor, for sculpture. It was also explained that when the Royal Academy was removed, a new staircase would be made and the entrance greatly improved. The removal of the screen dividing the Gallery from the Academy was also alluded to, and the formation of a new facade at the back, the workhouse being removed, was spoken of by Mr. Cowper as a possible though distant future contingency.

On the vote of 17,000*l.* for the Kensington Museum, also granted, it was explained by Mr. Lowe that the present iron building was cold and damp, and therefore

injurious to the articles placed in it, and that the object of the present vote was to enable the Government to give it a space, and to remove the collection contained in the iron building into the building so formed. Mr. Coningham said he believed this vote was a mere drop in an ocean, and that it was intended to enter upon an enormous expenditure at South Kensington.

The vote granted for the British Museum was 89,000*l.* Several members urged the opening of the Museum to the public in the evenings, and others spoke a good word for the officers at the present Treasury, present under consideration of the Treasury. The Chancellor of the Exchequer, while expressing his regret that the Government had been unable to make better use of the site of Burlington House, said it was "owing to the wretchedly inefficient management of our public works, which was marked by vacillation, indecision, nigardliness, extravagance, and every opposite vice. There was no absolute authority, and there was a consequent waste of public money. He should not be sorry to see some sort of revolution overtake this department, for he despaired of ever seeing it brought into proper order by any other means."

On the vote of 2,000*l.* granted for the British Historical Portrait Gallery, Mr. Coningham objected strongly to such a multiplication of establishments, and said this Gallery was another instance in support of the opinion expressed by a great orator that the administration of this country in respect of its art-establishments was marked by vacillation, uncertainty, costliness, extravagance, means, and all the evils which might be enumerated." The purchase of the portraits of eminent persons was an object well worthy of a national institution, and one from which he could not dissent. But he did not think it would be a very desirable or responsible trustees, and he thought there ought to be some means of testing the purchases which were made.—Sir G. C. Lewis defended the purchasing committee, stating that an immense amount of professional knowledge, historical and otherwise, was required for the selection of such portraits, and was possessed by the committee, one of whom was Mr. Carpenter, the custodian of engravings at the British Museum.

A question was asked by Sir W. Gallwey, as to the ruinous state of things in Victoria-street, a site which he said, "presented a scene of ruin and desolation a parallel to which in no country of the world is to be found in any capital of the world. Here were plots of ground selling at prices of which, if a title could be made to them, would be worth a weight in gold, but which were now the receptacles of the filth of the neighbourhood, and the resort of the vice that existed around."

Mr. Cowper said he agreed with the hon. baronet that the present condition of Victoria-street was a most lamentable indication of the mismanagement and misconduct of the building society called the Westminster Improvement Commission; but the Government had nothing at all to do with it. If there were good grounds for appointing a committee, he (Mr. Cowper) for one should not feel disposed to offer any objection to it.

The discussions on art-matters in the House of Commons are seldom very creditable to that body.

THE MASONS' STRIKE.

THE following circular has been issued in connection with the dispute in Leeds:—

Observing that the operative masons in Leeds challenge their employers to a public discussion of the differences which caused the present strike, we think it desirable, while respectfully declining such a challenge, to lay before the public a statement of the case, which we conceive will answer the purpose without the excitement of the disputation sought for by the men.

In March last the masons sent to their employers a "memorial," asking for an advance of wages at the rate of 6*s.* per week, and that the rule of the trade should be signed by the masters. After careful consideration it was unanimously resolved to give the additional shilling per week, but that the hours of labour and the customs of the trade should not be disturbed. The advance was taken by the men, and it was believed that other demands would not be pressed; but it was shortly after insisted that the rules be signed by each employer, or a strike would take place. Such is the nature of the document, and the manner in which it is presented to the masters, that they cannot with any feeling of self-respect submit to it, nor can they agree to allow any irresponsible committee to dictate the manner in which their business shall be conducted.

It was afterwards thought that a deputation of masters and men might, by free discussion, bring about an amicable settlement; but, after three hours' talking, the matter remained as before.

In as brief a manner as possible we beg to draw attention to the rules of the operatives, leaving the public to judge on whom rests the onus of the present strike.

It will be observed that many things already the custom of the trade have been introduced, and we cannot conceive why we should be called upon to sign what has long been acceded. We look upon it as a blind to make the objectionable clauses less "odious."

The following are the rules in question:—

"Rule 1. That the hours of labour commence on Monday morning at seven o'clock, and close at half past five in the evening; and that the other five days be from six o'clock in the morning to half-past five in the evening, except Saturday, to close at four o'clock throughout the year."

The memorial accompanying the rules the men say,—"Employed as we are at a laborious and unhealthy occupation, we have not hitherto had sufficient leisure to enable us to obtain any of the usual recreations, or to visit our friends; and we are shut out on secular days from public parks, libraries, galleries of art, &c. . . . Most of us have long distances to walk to and from our employment, consisting of a low unsheltered street, and must be in the evenings alone for self-improvement, when his physical powers are nearly exhausted." We ask, will the hour required on Monday morning be conducive to the realization of the desire to attend libraries, &c., in the evening? or are the men more unfit to resume their labours at six o'clock than after a Sabbath-day's rest—than on other days?

As to closing at four o'clock on Saturdays, it was conceded to the men several years ago, and no attempt has been made to regain the hour then granted.

It. That, during the winter months, namely, twelve weeks from the first Monday after the 16th of November, to commence work at daylight and close at dark; in no case to work later than half past five in the evening.

III. That nine o'clock be starting time for three quarters of a day during the summer months, and half-past a day's work during the winter months; and one o'clock for half a day's work throughout the year.

IV. That one hour be allowed for dinner throughout the year, and half an hour for breakfast during the summer months.

These rules are the ordinary practice of the trade.

"V. That the summer rate of wages be 4*s.* 6*d.* per day, for forty weeks; and the winter wages be 4*s.* per day for the other twelve weeks in the year."

This request has been acceded to, as already mentioned.

"VI. That sub-contracting and piece-work be abolished.

If the workman cannot make as much or more by piece-work than his rate of wages, he need not enter into a contract; but why should the skilled and industrious be debarred the opportunity of earning as much as they can? Sub-letting is not generally resorted to, but surely a master and his men ought to be at liberty to make any bargain.

"VII. That overtime be not allowed, except in cases of emergency; and not to work more than two hours for a quarter of a day; and to be allowed time and half for all time worked after the first quarter, and double time for Sundays.

No one is required to work overtime except in cases of emergency; it is generally wished for by sensible men, in order to make up the time lost by bad weather, &c. Time and half is always allowed after the first quarter.

"VIII. In yards, or jobs, the nature or extent of which render the demand reasonable, sheds shall be erected. The society, in conjunction with the masters, to have a share in directing, where a dispute exists, relative to the erection of sheds. Any employer not acting in accordance with this rule to pay half the time his men lose in consequence of wet weather."

The masters find it advantageous to erect sheds, and generally do so, as the works now on hand do not, but to require pay for half the time lost by bad weather, under any circumstances, is most unreasonable, while the arbitration demanded in case of dispute is one which no contractor would submit to.

"IX. Walking time in the morning to be allowed to all jobs outside the Parliamentary boundary of Leeds, at the rate of three miles per hour; and any employer having work above three miles from the boundary, to pay 2*s.* per week for lodgings. In cases where lodgings are paid, to work the same hours as in the town, except Monday, when walking-time to be allowed, as above. In cases where men are sent by railway, to have fare and time allowed going and returning."

Walking-time is allowed to men working outside the town, but to grant it because the job is "outside" the boundary of Leeds, is absurd. Do men require walking-time from Leeds to Holbeck? or, if the borough is meant, would the men like to observe the rule, and begin work at six o'clock at Bramley?

"X. Where wages are paid on the Saturday, to commence paying at four o'clock every week; and the men working beyond the boundary to be paid on the jobs, or be allowed to leave work to reach their respective offices at four o'clock. In no case are wages to be paid at a public-house."

If wages were not paid punctually every week, there might be some reason for this rule. Some masters, out of a kindly feeling, pay their workmen when out of town, by the job; but to be compelled to do so, or forfeit the amount of work which might be done in the time calculated to reach the office (at a not over-quick pace), is just the way to lose the present boon.

It appears that the men who receive their wages on the Friday are to work full time; this is unjust.

"XI. That in all cases where disputes arise, a committee be called, consisting of an equal number of masters and men, to settle such disputes."

This rule would create more disputes than it could settle, and entail a vast amount of uncalculated labour upon a "committee," besides interfering with the rights of masters and men to arrange their own differences. We think both would sooner "agree to differ" and part rather than spend their time and patience in altercation with the "committee." It might do for some half-dozen of the "irresponsible," especially if the pay was good; they would then have nothing to do but to walk about in their frock, trying to settle disputes, and so on. It would be easy to multiply until even the former part of the rule would require to be abolished, and the latter clause found very lucrative.

"XII. That these rules be equally binding on both masters and men; and, should any alteration be required, six months' notice shall be given by either party; such notice to expire between the 1st of May and the 1st of August next ensuing."

Here is a fair specimen of the selfishness which pervades the whole. The men dictate their own terms, and finish with the offer of redress, if found unbearable, but fix it at a time "between the 1st of May and the 1st of August," when it will be all but impossible for the masters to alter their position.

In conclusion, we are glad to find that there are men who have the wisdom to discern that the combination for the enforcement of the rules is unnecessary and unreasonable; that there are "other and more solid and practicable remedies for low wages than can ever be effected by a combination;" who have the moral courage to withstand the tyranny of the leaders of the strike. We only wish that others who have similar views had the same moral courage, and would dare to vindicate their right to dispose of their labour according to their own judgment; then would there be hope for a true bond of union between masters and men; then they would never allow one class to trample on the liberties and rights of another class; but would, both by precept and by example, defend their halibut-bright—the freedom of labour.

Signed on behalf of the Leeds Branch of the West Riding Association of Master Builders,

JOHN WOOD, Chairman.  
WM. LONGLEY,  
JABEZ WOOLMAN,  
Leeds, August 10th, 1860.  
DAVID BOOTHEMAN.

Bristol.—At the adjourned meeting of the Master Builders' Association (of Bristol), held on Wednesday afternoon, the following resolution was unanimously agreed to:—"That this meeting does not see any reason to depart from the resolution passed at the last meeting relative to the de-

mands made by the operative masons." The meeting was again adjourned for a week.

The demand, as we understand it, is 4s. 6d. a day instead of 4s., and two hours less labour in a week. The advance does not appear to be objected to so much as the proposed reduction in time. Moreover, some time ago, the "wallers" (less skilled bands), who had received less wages than the free-stone men, struck, and with the aid of the free-stone men obtained an advance, making all equal. These now strike again for the further advance.

#### THE SHORTCOMINGS OF ARCHITECTS.

Sir,—Believing that your pages are open to the opinions of all who may in a friendly spirit think proper to differ either from you or those whose cause you more especially advocate, I am induced to make a few remarks on this delicate subject. In doing so, I by no means intend to disparage that useful and intelligent class of architects who, employing the means which you so judiciously advise and recommend such a building as suits its purpose, as well as becomes an ornament to the district where it is erected, but I find fault with another class altogether, and this is, perhaps, the one which constitutes itself the most revered in ancient as well as modern lore. I mean a no less eminent body than our present church architects! In making the bold complaint, I fear I am laying myself under a charge of something like insensate scolding, or scolding. Nevertheless, let the matter be judged fairly, not by prejudiced professional men, but by the all-important public, and we shall see how much we have to find fault with on this head.

Let us suppose one of the most common of all occurrences, the rebuilding or enlarging of a parish church, for which a reasonable sum is forthcoming. A committee undertakes the duties of arranging with the architect, and one of the highest standing is consulted on the job, and furnishes plans, which of themselves would grace the walls of any one particular church, and which, if they can call them by any other name, are approved of, and the work either contracted for by competition, or by the architect's design, put into the hands of some competent builder, and the work done according to his instructions to the very letter, we may say. Allowing all this to be done, the congregation assemble when it is opened, expecting to find a building adapted to the wants of the present generation; which, alas! the first visit convinces every one that the new edifice is little, if not a contempt of the old one—all the evils of the old one remaining without its benefits. In other words, the architect, in his zeal for antiquarian restorations, had forgotten that people nowadays wear broad cloth, and such delicate fabrics as silk and muslin, instead of sheepskin jerkin, and home-spun linsey-woolsey petticoats, &c., and that no provision whatever was made for the heating of the building, but that the congregation would keep themselves warm by their admiration of the beautiful, such as our professional gentlemen will have them believe the pippit and abstract art. Unfortunately our ancient generation are mortals of a kind accessible to cold, if not to the fire, and a complaint is made that the new church ought to have been heated. Another still more serious complaint is made, that they do not hear the minister so well as in the old building; and many other faults of a similar kind are made.

Now, as a plain unprofessional looker-on, I do not set up myself to be a judge of what a church ought to be; but this I assert, that all of the public buildings adapted for a public purpose, an English church is in general the worst contrivance for the object it is intended for. When we enter a church, it is expected that we must take our hats; but where are they to be put? Under a seat, perhaps, where they receive many kicks and knocks during the service. The fabric also hinders us when we kneel, but the architect has provided no accommodation that way. We complain of not hearing one half of what the minister says; but we are told the design of the building is handsome, and sound being clearly conveyed. And if it be hot weather, we ask why could not some of the windows be opened; but we are told to supply hinges or opening contrivances would mar the beauty of the design, and we must endure the close atmosphere. Whereas in winter, there being no permanent heating contrivance, an Amiot stove is stuck in the aisle, with its long iron tube of a chimney running up to the roof; otherwise I have seen an opening made for it by taking some of the glass out of an ornamental window, and putting it through there. How much the architect might be horrified by this I cannot say; one thing is certain, the churchwardens received credit from their parishioners for the comfort they afforded them, how much soever the self-complacent professional might find fault with the misappropriation.

Now, having taken a view of what architects are doing every day in our churches, let us look at what is done in another quarter. A body of dissenters, by great perseverance, collect a sum of money to build a place of worship; but they do not go to a first-class architect, but consult a well-known practical builder, and explain to him that they want a good comfortable building that will seat the greatest possible number of worshippers in the best manner, and at the least cost—warmth, ventilation, and the prospect of hearing the speaker distinctly, being all considered; and after due consultation this building is erected, and in every respect comfortable to the congregation with its more ambitious neighbour. In the chapel, the windows are to let the light in, and give ventilation; in the church, they are to obstruct both light and ventilation. A row of pews very often surrounds the outer walls, on which hats hang in safety: this homely usefulness would horrify our High Church professional. A useful kneeling-board is also provided in the chapel; whereas the churchman is expected to hang forward on his seat, pressing his forehead against the back of the seat in front of him, until perchance the softened paint or varnish sticks to it, and he has to endure a sort of penance to release himself again. And finally, he quits the church with but a very imperfect notion of what the sermon was upon. The indistinctness in which the sound reached him made it impossible to catch it. Whereas, in the chapel, though containing many worshippers, every one hears distinctly what the minister says; and the shivering in winter, or stifling heat of summer, are alike rectified, much better in the cheaper building than in the more expensive one.

Now I believe there are hundreds who will confirm what I have here stated, that churches in general are not well adapted as places of worship; and, as an English churchman, I say it with regret; and certainly much of the blame lies in our architects, who as a class are more fettered by red tape, and a rigid adherence to certain forms, than any other class; and I feel sorry to see you, as the editor of a paper devoted to building, supporting them in what they call their prerogatives, for assuredly they often fail in accomplishing what the public expect of them. Most callings are the better off by being strictly admitted outside assistance, however derogatory it may seem to be, for a contracted action, like the breeding in and in of cattle, tends to feeblity: let us hope architects will take a lesson, and build us churches wherein we may worship our Maker with the same comfort we enjoy in our homes; and, if they be unable to do that, in their highly ornamented buildings, why, I would advise, where the means allowed, to build a place expressly for worship, and have the fantastic church to look at, or for use on grand occasions: in this they might even have their much-vaunted precedent to guide them, for state coaches and court-dresses are used in this manner, and why not churches.

A LOOKER-ON.

#### Books Received.

*The Uses of Animals in relation to the Industry of Man.* By E. LANKESTER, M.D., F.R.S. Hardwicke, 192, Piccadilly.

DR. LANKESTER delivered a course of lectures on this subject, at the South Kensington Museum, of the animal product and food collections of which he is superintendent; and the present little volume has been prepared from a shorthand report corrected by Dr. Lankester himself. The lectures are essentially contemporaneous and popular, and were designed rather to excite interest in the subject than to exhaust it. Nevertheless they are full of curious and useful information as to various matters, but particularly on leather, bone, hair, silk, wool, soap, and waste.

We shall take a few passages at random, by way of specimen.

Here is an economical view of "shoddy," or new cloth made from the wool of old cloth torn to shreds.

"The cheap clothing of late years has depended upon the introduction of this shoddy; and, provided the price is not larger than gives the fair profit to the manufacturer, we cannot object to it, as it enables many to put on, at least once a week, a decent-looking coat, who otherwise would not have a cloth coat at all; and if the wear only answers to the price given, I do not think any one can find fault."

We recollect an anecdote in connection with shoddy, which shows to what an extent it must be made in some towns, and how universally it must be worn in such places. A gentleman who happened to have "a good coat upon his back," in traversing the streets of one of these towns, to his surprise found himself an object of marked and close attention amongst numerous girls who worked at the factories, and felt, no doubt, a little flattered thereby, till the sentry became rather too close, and too many pairs of eyes were exercised in it to continue at all pleasant; and at length he found, from their whispered *paroles*, that the fact of having on his back a genuine broad-cloth fabric was the sole attraction, as they had never seen such a thing in their lives before, although they had, doubtless, often heard of it.

Passing on from shoddy to leather clippings, I will mention that a patent has been recently obtained for cutting up the clippings of leather, and introducing them into the soles of boots and shoes, rendering them easier to the wearer and quite as durable, thus saving new material.

This reminds us of an attempt, some years ago, by a correspondent, to respond to an idea of ours as to the possibility of producing gutta percha or india-rubber from bituminous or other substances, by chemical means. Our correspondent, misunderstanding our meaning, and having a laudable desire to put waste leather cuttings to use, had reduced some to shreds, and made up a sort of leather shoddy with it, by help of a bituminous cement; but it was quite unfit, in the state we saw it in, to form a substitute for leather. Doubtless, it may have suggested the patented invention, however, mentioned by Dr. Lankester.

The number of uses to which a dead horse is put is really surprising. The only part to which we shall here allude, however, is the tongue, respecting which there was some mystery, till Dr. Lankester incidentally suggested that it was probably sold for export to the doctor of a newspaper, which reported the doctor's lecture, declared to be a libel on horse tongue, as it never was sold for anything so "low;" being "always sold as reinder tongue."

"Gather up the fragments that nothing may be lost" is a scriptural motto peculiarly suitable to many such uses as those to which waste substances are put; but it would scarcely form a decent covering to cloak such a purpose as this.

#### Miscellanea.

**METROPOLIS LOCAL MANAGEMENT AMENDMENT ACT.**—Mr. Tate has withdrawn his bill, adding that he intends to bring in a similar bill next session.

**Gas.**—The Ashford Gas Company have unanimously resolved to reduce the price of their gas from 5s. 10d. to 5s. per 1,000 cubic feet. At Abergaveenny it has been arranged between the commissioners and the company that the latter are to supply all private consumers with good and sufficient gas, by meter, at a maximum rate not exceeding 6s. per 1,000 feet, such arrangement to remain in operation for three years. An extension of pipes through the Grofield district has also been resolved upon.

**ST. SWITHIN DEPOT.**—There is now before the Academy of Sciences at Paris "a wonderful invention" of Mons. Helvetius Ote, of Leipzig, by which he promises to "insure fine weather." He erects a platform at a considerable height in the air, on which he places a "propeller," or huge bellows, worked by steam. With these bellows, which are "very powerful," he blows away the clouds as they gather; and, as rain comes from the clouds, it must necessarily follow that where clouds are not allowed to gather there can be no rain. He maintains that if a certain number of his "Rain Propellers," or "Pluvifuges," as he has named them, are placed at intervals over the city, he can provide for the inhabitants a continuance of fine weather, and a certain protection from sudden showers and muddy streets, so long the terror of fair pedestrians. The poor inhabitants of adjoining towns would be benefited. What would become of them? As for the Pluvifuge proprietors, their motto ought to be "Après nous le déluge." Victims, however, as we in England have of late been to wet weather, still we cannot blame the Frenchman's "Pluvifuges," inasmuch as France itself has been in nearly the same predicament,—at least the northern parts of it.

**RUINS OF AN ANCIENT CITY IN THE UNITED STATES.**—A discovery is alleged to have been recently made some ninety miles north-east of Fort Stanton, a long account of which has just appeared in the *Fort Smith (Ark.) Times*. The city, it is said, is quadrangular, and arranged with skill, many of the buildings on the outer line being pierced with loopholes. Several of the buildings are of vast size, and of massive blocks of dark granite rock, which could only have been brought to their present condition by a vast amount of labour. There are the ruins of three noble edifices, each presenting a front of 300 feet, made of ponderous blocks of stone, and the disparted walls are even now 35 feet high. There are no partitions in the area of the (middle) supposed temple, so that the area must have been vast; and there are also carvings in bas-relief and fresco work. The blocks of which these edifices are composed are cemented together by a species of mortar of a bituminous character, which has such tenacity that vast masses of wall have fallen down without the blocks being detached by the shock.

**TERRA-VOLTAISM FOR SUBMARINE TELEGRAPHS.**—Mr. Septimus Beardmore, C.E., has written a pamphlet on this subject (Stunford, Charing-cross, publisher), in which he gives an account of some hopeful experiments made by him, between Cromer and Heligoland, through a line 300 miles in length, with a simple terra-voltaic apparatus, such as he seems convinced must ultimately be used for long submarine telegraphs, instead of the battery system heretofore in use. The new apparatus consists merely of a couple of earth plates, positive and negative, one at either extremity of the line, no other battery being used. By such means it is anticipated that all necessity for insulation of the wires, or at least dependence on perfect insulation, will be obviated, the electricity evolved by a single voltaic couple, while connected with the respective ends of the wire, having no tendency to escape to earth through transit. The chief difficulty relates to the question of intensity; as, by the single arrangement, increase of surface only affords increase of quantity, and not increase of intensity, as by the battery apparatus. The thickening of conducting wires appears to be a desideratum; and certainly, since the failure of the ponderous iron envelope of the Atlantic line, this would otherwise be an improvement. Mr. Beardmore seems to agree with us in thinking that the present line across the Atlantic is not useless,—at least on his terra-voltaic principle. Surely it will not be finally abandoned without such renewed experiments with it as we have suggested.

**NEW SCHOOLS AT BRIXTON.**—The first stone of Christ Church National Schools, Brixton, has been laid by the Rev. McConnell Hussey, the Incumbent. The buildings comprise school-rooms for boys and girls, and master's residence. It is proposed to lay out about 1,700. The architect is Mr. H. Currey, and the builder Mr. Wm. Downs. The ground was the gift of Lord Holland.

**TRAFFIC RETURNS.**—The traffic returns of railways in the United Kingdom for the week ending August 4 amounted to 588,310*l.*, and for the corresponding week of last year to 549,020*l.*, showing an increase of 39,290*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 265,236*l.*, and for the corresponding period of last year to 249,727*l.*, showing an increase of 15,509*l.* The receipts on the other lines in the United Kingdom amounted to the sum of 323,074*l.*, and for the corresponding week of last year to 299,293*l.*, showing an increase of 23,781*l.*

**THE DOINGS AT GUILDFORD COUNTY COURT.**—The clearing of the court by Judge Blackburn, against which Sheriff Evelyn protested, arose, it appears, from that rampant evil, to which we have in other cases so often drawn attention, the bad construction of the court-house. "In this most inconvenient court," said the Lord Chief Justice, in his reprimand to the sheriff, "the noise from the street was found by my learned brother to be very much aggravated by that which proceeded from the lower part of the court. It did not arise from the disorderly conduct of the people assembled there; but, as no seats were provided for them, much movement naturally ensued, and a stone floor, as we understand, added to the disturbance. Moreover, the prisoners' bar intervened and separated the lower portion of the audience from the immediate supervision of the court. My learned brother found himself unable to hear the witnesses and prisoners; and from this motive, and this alone, — for the proper conduct of business — he directed the lower part of the court to be cleared. The necessity for that step arose from the defective construction and arrangement of this court. Your representation of the case goes forth to the public with a perversion of the truth, though not an intentional one, I believe, that the whole court was cleared. A portion only was cleared, the rest was occupied by the public, and they were freely admitted."

**THE STEAM PLOUGH.**—The "iron horse" has not only "taken to the road" but to the field; and seems quite ready, in this as well as in other directions, to send his fleshy protuberance quietly and gently down into the lethargic miryams of "utter extinction," along with his respected conductor, Giles Chawbacon, whose "place" is about to be taken by the engineering John Gliese, who tend the iron horse. In full view of this imminent contingency, — and doubtless devoted to the interests of "No. 1." — Mr. John Giles, of Cannon-street, City, has issued to the commercial public an address on "The Steam Plough, and its prospective influence on the Ships, Colonies, and Commerce of Great Britain," in which, recommending the "steam plough" for use in Australia, he says:—"It is the present land system of the colonies, combined with the want of an efficient agricultural engine, that checks the activity of industry and commerce, and which has led the colonies, in many cases, to the adoption of a protective policy, they hoping by the taxing of British manufactures not to provide an extended field for the employment of that industry shut out by legislation from its legitimate channel (agriculture). A steam plough will remove this tendency to a protective policy; will open up the fields of legitimate employment both for capital and industry, and there will be no need to create artificial ones by protective legislation; will result in abundant and cheap staple produce, and will subject its supply to the wholesome influence of free trade in production as well as in distribution. The steam plough, then, is a commercial question; and, unless the colonies can collectively make some effort to give it a practical solution, it will never be effected by the local trade societies which now have it in hand. In conclusion, I beg to call your attention to the accompanying advertisement, and to solicit your interest on behalf of this question, and the endeavour to give it a commercial as well as an agricultural character." The advertisement referred to, of course, relates (and quite fairly, too) to "John Giles's steam horses" and "free trade in agriculture." These horses, he says, are also suited for road transport. Their efficiency, he adds, is based on a newly-discovered principle in locomotive mechanics, and their range of speed, as ploughs, is one to six miles an hour.

**COPPER.**—A reduction of one halfpenny per lb. in the price of copper took place on Tuesday, making the wholesale price of tough cake and ingot 98*l.* per ton; best selected, 101*l.* per ton. The price of rolled brass, brass tubes, and brass wire has been generally reduced also one halfpenny per lb. in consequence. — *Birmingham Daily Post.*

**PAPER AND A DYE.**—Mr. John David Barry, of Thurlow-square, Brompton, announces the discovery of a new material for making paper, by a patented process; and he also states that "the pulp," used for the manufacture of this paper, is produced from the residuum of the plant, after chemical treatment for the production of a colouring matter, susceptible of crystallization, and applicable to the dyeing of silk, wool, and all similar animal substances.

**REMOVAL OF THE EAST-INDIA BOARD.**—The work of removing from the old India House to the Victoria Hotel, in Westminster, will commence on the 1st of September. The rent to be paid for the portion of the hotel to be occupied by the various offices is 6,000*l.*, in addition to one-half of the rates and taxes. Nothing is yet known as to what is intended with respect to the Museum. The furniture for the new offices at the hotel, with the exception of the carpets, which are to be provided by the Company, will be supplied from the present India House. The cost of the removal will be 6,000*l.*

**METROPOLITAN BOARD OF WORKS.**—On the 17th Mr. Lowman Taylor moved that three committees be formed, consisting of fifteen in each, of the members of the Board, viz., "The Finance Committee," "Works and Improvements Committee," "Building Act and General Purposes Committee" (the Main Drainage Committee still continuing a committee of the whole Board). The motion, after a long discussion, was agreed to. Mr. Aird's tender was received for the execution of the works for the southern low-level sewer through the Surrey Consumers' Gas Company's premises at Deptford, at a schedule of prices, or at a lump sum, and to take such steps as may be necessary in order to re-commence the works forthwith.

**THE GATESHEAD MECHANICS' INSTITUTE AND MR. CLEPHAN, LATELY EDITOR OF THE "GATESHEAD OBSERVER."**—The Gateshead Mechanics' Institute has unanimously adopted resolutions strongly expressive of their esteem for and many obligations to Mr. Clephan, who is one of their vice-presidents, and their regret to learn that he is in ill-health and about to quit Gateshead, after resigning the editorship of the *Gateshead Observer*; and also intimating their intention to subscribe for a testimonial which is about to be presented to him. The *Gateshead Observer* has long been celebrated for the excellent manner in which Mr. Clephan has conducted it: indeed, besides its never wanting stores of the freshest and most useful intelligence, to which we, as well as others, have for many years had constant recourse; it was often more like a sparkling repository of wit and humour than an ordinary newspaper; and we cannot help expressing our regret to hear of the ill-health of its very able late conductor.

**HONOUR TO AN ENGLISH ENGINEER IN BRAZIL.** The Emperor of the Brazils has conferred upon Mr. W. G. Ginty, formerly of Manchester, the rank of a knight or Chevalier of the Imperial Order of the Rose, inclosing along with the notification of this honour a jewelled box containing the insignia of the order, to be worn on the breast on public occasions. His Majesty has conferred this honour in acknowledgment of Mr. Ginty's general services, and for the able manner in which he has discharged the duties of Engineer-in-Chief of the new city canal and other important public works of Rio de Janeiro, of which Mr. Ginty has had the superintendence. Mr. Ginty has, during the last six years, been the managing engineer and director of the Rio gas works, and has raised the condition of that enterprise so that a dividend of 18 per cent. per annum is being made on the amount of capital, in addition to the 10 per cent. per annum paid into the reserve fund.

**THE PRAYER OF A TAUNTON BELL.**—Mr. Editor, — Knowing from experience that you take a great interest in matters connected with the "Bell family," you would be conferring a kindness if you or any of your correspondents could prescribe a remedy for my complaint, and to save me from certain death. I am pronounced to be *cracked*, and as I am inclined to believe there is some truth in the statement, I must admit that I am not in a proper state to resume my place as leader to that noble peal of "Old Martin Bells;" but still my motto is "Live and let live."

"TENOR TAUNTONIAN."

**THE COUNTY SURVEYOR FOR TIPPERARY.**—We understand that Mr. John L. Wortall, C.E., has been appointed county surveyor of the South Riding of Tipperary, in the room of Mr. William Henry Deane, C.E., nominated by His Excellency to the county surveyorship of the eastern division of Tyrone.

**NEW MILITARY HOSPITAL AT WOOLWICH.**—Tenders will be received at the Royal Engineer Office, Woolwich, in September next, for the immediate erection of the new military hospital, on a site of Government land for the use of the Royal Artillery, it being intended to convert the present Ordnance Hospital into barrack quarters.

**DEATH OF MR. CHARLES MAY.**—With regret we have to record the demise of Mr. Charles May, C.E., of Great George-street. Mr. May was well known in the profession he had embraced. He was for several years a partner in the Orwell Works at Ipswich, then carried on by Messrs. Ransome and May. He was a Fellow of the Royal and of the Royal Astronomical Societies.

**THE ERECTING OF SCHOOLS.**—It appears from a Parliamentary return that the sum expended in erecting schools since the year 1853, under the minutes of the Privy Council of Education, is 1,137,112. Of this large sum, 632,398*l.* was supplied by local rates, 79,735*l.* by non-local subscriptions, and 424,979*l.* was furnished by Parliamentary grants.

**PROPOSED PEOPLE'S PARK AT GLOUCESTER.**—The town council of Gloucester have resolved, by a majority of twelve to ten, to accept the offer of the Spa grounds, to be devoted, with sixteen acres of corporation ground, to a people's park, provided the incidental expenses, estimated at about 1,000*l.*, be raised by public subscription. About 700*l.* have been promised, but the desirable improvement will in all probability now fall through in consequence of a hitch with the Spa proprietors as to the offer not having been accepted within six months.

**IMPROVEMENTS AT THE GENERAL POST-OFFICE.** A glass flooring has been laid over the Circulation Department, under the superintendence of Mr. Gould, the clerk of the works, and Mr. Williams, the surveyor of the department of the Board of Works. The panel flooring (1½ inch thick), which is intended to give light from this office to the lower apartments, has been protected by iron bars, with a network, to prevent any of the officers from falling through to the adjacent floor, or being otherwise exposed to danger. The roof of the "newspaper office" is being composed of glass.

**THE CO-OPERATIVE NEW MILL AT ROCHE-DALE.**—The large new mill, erected at a cost of 34,000*l.*, by the co-operatives of Rochdale, was recently the scene of an event of some interest to that body. The two new engines erected by the Messrs. Petrie, of Rochdale, at a cost of 2,400*l.*, giving a nominal power of 120 horses, were for the first time set in motion, and one was named the "Co-operator," the other "Perseverance." The large mill is fast being filled with first-class machinery, and it is supposed that in a month or six weeks all will be in working order, when work for about 300 hmds will be found. This body will now have embarked about 50,000*l.* in their undertaking.

**ESTABLISHMENT FOR CONVALESCENT WORK-WOMEN AT VESINET.**—The admission of the public, on Wednesday in last week, for the first time, to a view of the establishment founded by the French Empress at Vesinet, for the convalescent work-women discharged from the hospitals, has given publicity to this foundation. "The benevolence of the undertaking," says the Paris correspondent of the *Star*, "is evident throughout the arrangements, which are all on the most liberal scale, and even carried out with a degree of elegance which cannot fail to be appreciated as the graceful homage of a woman to the artistic sensibilities of women."

**M. HITTOFF ON SIR CHARLES BARRY.**—The Five Academies at Paris held their annual sitting on Tuesday in last week, and many of the most distinguished celebrities in art, science, and literature, were gathered in the circular theatre of the Palais Mazarin. M. Hittoff, the architect, chose for the subject of his reading a notice on the life and works of the late Sir Charles Barry. English excellence is beginning to be appreciated by French artists at length; and as the individual perseverance of the Anglo-Saxon character is being revealed, a new field of art is opened to their view. The origin of Sir Charles Barry, contrasted with his end and burial, amongst the kings and most illustrious men of his country, was warmly dwelt upon, and elicited great applause.

**BOW STEEPLE.**—The statement made in some of the newspapers, that Wren's steeple of St. Mary-le-Bow was injured by lightning, appears, we are glad to say, to be incorrect.

**THE TIMBER TRADE OF BRISTOL.**—Messrs. F. K. Barnes & Sons, in their timbor circular for August, say,—"The importation during the month of July was considerable, but not anything near what it was during the last few previous years. The falling off is entirely in New Brunswick goods, and particularly in spruce deals: only 36,420 pieces were imported, against 288,441, the average of the last three years, while the tonnage from the same ports is only 2,630 tons, against 11,328 for the same period. The arrivals for the past month have been 24 vessels, 13,430 tons register (against 24 vessels, 14,526 tons for the corresponding month last year), and consist of 12 from Quebec, 8,025 tons; 4 from New Brunswick, 1,292 tons; 2 from Memel, 626 tons; 3 from St. Petersburg, 2,934 tons; 3 from Norway and Sweden, 590 tons."

**"THE LONDON REVIEW."**—The public are under so many literary obligations (for pleasure and profit received) to the poetical and political pen of Dr. Charles Mackay, the excellent editor of this new and cheap weekly paper, that we are anxious to do our best, as others are doing, not only to promote its interests ourselves, but to afford the public, as far as the *Builder's* very miscellaneous circulation extends, an opportunity of paying up a small weekly instalment towards the debt they owe Charles Mackay, by taking in his new paper regularly, as one of the best exponents "of politics, literature, art, and society" attainable at any price, much less at 3d. only, which is the price of the new *Review*. The current number (for Saturday, 18th August), like all the six which have already preceded it, is a varied and good one. One paper in it treats of the Thames embankment. The social and commercial leader is on the momentous subject of food and money prospects; and there are various other articles on fresh and interesting topics, besides a little poetry, town and table talk, sketches in Parliament, review of political and other questions of the day, book reviews, &c. &c.; the whole forming an exceedingly cheap and good weekly paper, interesting and useful to all classes.

**THE STRIKE AT COVENTRY.**—Work, it appears, has been partially resumed, although there is said to be, "on the whole, an absence of that cordial good will which should exist between employers and employed;" and the workmen are senselessly rejoicing in the damage they have done to the capital by means of which alone they can obtain employment. The *Steele*, in allusion to some of the proceedings, as reported in the *Coventry Herald*, justly remarks, that instead of denouncing "the atrocious treaty of commerce," and the "want of patriotism" in those who purchase French ribbons, the weavers ought to have been made sensible that "their looms were behind the age, and required improvements." It is only in the perfection of machinery, adds the *Steele*, that the workmen will find an end to their miseries; why, then, should they not be frankly spoken to, and the means of procuring the best and most perfect pointed out? The silk-weavers in Sudbury, Braintree, Coggeshall, and other places, we regret to learn, threaten to strike, in consequence of an intended reduction of wages.

**ELECTRO-TELEGRAPHIC PROGRESS.**—The laying of more deep-sea cables after the failure of the Atlantic one, and before something was done to improve the plan and construction of such cables, has, as we fully anticipated and pointed out, not only been followed by repeated further failures, the last of which are the Red Sea Telegraph, the Maltese cables *via* Sardinia and Corin, and the Channel Islands one; but has completely checked, if not finally destroyed, all chance of the laying of more of such lines, at least for some time to come. Can nothing be done to obviate so undesirable a result? The Government ought certainly to appoint a scientific commission, with power to experiment as well as to examine those acquainted with the subject, and those who pretend to the invention or possession of improved methods. As for those practical men who persisted in the formation of cable after cable after receiving such a warning as that of the Atlantic failure, their evidence is clearly out of court. Both gutta percha and iron, as we anticipated, are in disfavour; and the recourse we advised to renewed experiments with india-rubber as an insulator appears to be likely to be justified by the result of the experiments already made. The non-insulating or terra-voltaic system should also be experimented on; and, indeed, there is much to do before another deep-sea line is laid.

**BRIDGE-STREET, WESTMINSTER.**—In answer to Sir J. Shelley, Mr. Cowper said it was not likely that the houses on the south side of Bridge-street would be purchased for two or three years. It would then be for the House to determine what should be done with the site.

**MAGNITUDE OF THE RAILWAY INTEREST.**—Nothing, says the *Times*, can be more impressive than the magnitude of these concerns, if carefully contemplated. They probably represent at this moment at least 350,000,000l. of money actually invested. There are but 380,000,000l. in consols. Last week the chairman of a company, while performing the grateful task of announcing a large increase of traffic, felt bound to explain that a small fraction of it—some 6,000l. or 7,000l.—was accidental. The fact was that this is leap-year, and the odd day in February had added these four handsome figures to the receipts. One per cent. more or less in a dividend means comfort or pressure in thousands of households: a rise or fall in shares decides the market value of millions of property. Take, again, the people employed on the various lines. It is a new profession, and a comprehensive one too. It has a place for every class, for marquises and earls, for country gentlemen, for professional men, for engineers, for book-keepers, cashiers, ticket-takers, porters, constables, and labourers. The North-Western pays its lawyers (unluckily for it) 30,000l. a year, and took over its counters last week upwards of 13,000l. a day.

**THE ALPINE TUNNELLING AT MONT CENIS.**—The following particulars, from a review of the preliminaries regarding the process of tunnelling now in progress at Mont Cenis, we condense from the *Engineer's Journal* of Calcutta. We have before given some of these details, but it is now several years since, and the works have been for some time in actual and successful progress. The tunnel under Mont Cenis is, without exception, the most gigantic individual work that railways have given rise to. It is about seven miles and a half long, and as the depth of the tunnel is about 2,600 feet below the surface of the mountains, it is impossible to make use of even one shaft throughout the whole length. But a tunnel of seven miles and a half, through rock, and without a shaft, according to the means heretofore used for the excavation of tunnels, would be a task, the completion of which one generation would scarcely see. The longest tunnel yet completed on any railway is not quite three miles long; and that, with the advantage of many shafts, took nearly five years to complete. How long would it take, then, to complete one of twice and a half the length, and attackable only at the ends? Compressed air constitutes a motive power which serves to drive the tools into the rock, and to open out holes for mining by gunpowder. A column of water, of 18 inches in diameter, gives an oscillation about every twenty seconds, and the power it exerts amounts to several horse power. As there happens to be, near Mont Cenis, and at each extremity of the tunnel, considerable waterfalls, this hydro-pneumatic machine is particularly applicable to the tunnel in question. The excavation of this tunnel, through the solid rock, is composed of several different successive operations, which may be resolved into three principles:—to break up the rock; to remove the blocks and broken pieces; and to cut the excavation out to the exact profile of the tunnel. The use of gunpowder accelerates greatly the breaking up of the rock, but in no way contributes to the removal of the pieces. It seems to be agreed that the first operation of breaking up the rock, will be greatly expedited by the use of the mechanical appliances of Colladon, Bartlett, Grandis, Grattone, and Soumeiller. The tunnel is considered certain of being completed in about seven years, at a cost of something under 60l. sterling the yard forward of double line. This figure is very low, and many of our tunnels at home, not a quarter the length, have cost nearly double. The commencement of the works of this gigantic tunnel took place on the 1st of September, 1857. With great pomp and solemnity, the king of Sardinia, the prince Napoleon, and a vast number of distinguished persons, were present to witness the first explosion, which was made by means of electricity. The progress forward at each end seems to be about 10 feet a day, or 20 feet altogether. This gives upwards of a mile a year; and, if this rate be continued, the promised time of completion will be kept. The quantity of air used in the twenty-four hours amounts to 2,792,600 cubic feet, which is, however, compressed to one-sixth of that volume as it is used at a pressure of six atmospheres. The waterfalls are found quite enough to produce this effect.

**THE RAGGED SCHOOL MOVEMENT IN EGYPT.**—The London correspondent of the *Scottish Guardian* says:—"To show how London example and influence act, I may mention that there is now a ragged school about to be established at Cairo, in Egypt, for Moslem children."

**PROPOSED NEW STREET FROM COVENTRY-STREET.**—A plan is under consideration for a new street commencing from Coventry-street, passing south of Leicester-square, and in a south-east direction, and continuing along Orange-street at the back of the National Gallery, and in a line with King William-street. The plan has the support of the parishes of St. James and St. Martin. Funds to carry it out are in hand.

**THE DRINKING-FOUNTAIN MOVEMENT.**—At Aldershot, a public drinking-fountain has been erected by Major-General A. J. Lawrence, C.B. It is placed at the west end of the East-Block Permanent Barracks. The design was by Mr. Pepper, of Brighton. Bas-reliefs, dolphins, &c., ornament the sculpture.—At Sheffield a fountain, in the Italian style, has just been erected by public subscription, and, in great part, by gratuitous production. It includes, besides the fountain proper, a cattle trough, a wayfarer's seat, a barometer and thermometer, and a lamp surmounting the whole. The pedestal bears a medallion of the Sheffield poet and publicist, James Montgomery, the gift of the council of the local School of Art.

**MALVERN.**—Considerable additions are being made to Townsend House, Great Malvern, for Dr. Grindrod, under the superintendance of Mr. E. C. Allatt, architect, of Malvern Link. The works now in progress are a new wing, containing twenty-two additional rooms, with large dining-room (40 feet by 31 feet, 16 feet high); hall, staircase, observatory tower, finishing with a lead flat, piers, and open balustrade, the whole forming part of a plan involving an outlay of many thousand pounds. The contractor for the works is Mr. W. Nott, of Malvern Link. On the 27th ult., the roof of the new wing having been completed, through the liberality of Dr. Grindrod the workmen, to the number of eighty-five, were invited to a substantial dinner, to which they did justice. After dinner the grounds were thrown open, and the band of the Malvern-hill Volunteer Rifles (11th Worcestershire), were in attendance, and played a selection of music. In the evening, the workmen, with their wives, who had been invited to join them, to the number of 150, sat down to tea, after which the Rev. G. Fisk (the vicar of Malvern), with Dr. Grindrod, addressed the meeting at some length, and the vicar, at the request of Dr. Grindrod, presented to the architect a case of mathematical drawing instruments (by Archbutt, of London), in testimony of his satisfaction. A Bible and a waterproof coat were presented to Mr. Freherne, the foreman.

**TENDERS**

For alterations and additions to National School, Sutton, Surrey; Mr. Richard Gover, architect:—  
Ware ..... £127 0 0  
Foster ..... 165 0 0  
Cuff (accepted) ..... 163 0 0

For alterations and additions to Camilla Lodge, Sutton Surrey; Mr. Richard Gover, architect:—  
Giem ..... £790 0 0  
Foster ..... 738 0 0

For Villa, at Sydenham; Mr. Richard Gover, architect:—  
Humphries & Ludford (accepted) ..... £1,600

For enlargement of All Saints' Church, Norwood; Mr. Nash, architect:—  
Dove, Brothers ..... £2,057 0 0  
P'Anson ..... 2,944 0 0  
Ashby & Son ..... 2,855 0 0  
Ashby & Hornet ..... 2,830 0 0  
Nicholson ..... 2,800 0 0  
Jackson & Shaw ..... 2,800 0 0  
Deards ..... 2,750 0 0  
Paper ..... 2,700 0 0  
Mlyers ..... 2,700 0 0

For alterations to Warehouses, 56 and 26½, Milk-street City; Mr. William Nunn, architect:—  
Larke & Son ..... £3,243 0 0  
Gadsby ..... 2,798 0 0  
Todd ..... 2,712 0 0  
Brass ..... 2,700 0 0  
Turner ..... 2,580 0 0  
Day ..... 2,550 0 0  
Wills ..... 2,493 0 0

For the enlargement of St. John's Church, Penze; Mr. Edwin Nash, architect:—  
Rudkin, Junr. .... £1,650 10 0  
Watts ..... 1,525 0 0  
Hollidge (accepted) ..... 1,390 0 0

For Works in the formation of Cemetery, Aldershot; Mr. T. Goodchild, architect, Guildford:—  
Two Chapels, Lodge, Dead-house, and Laying out Boundary Walls, and Draining Martin ..... £1,280  
Swayne (accepted) ..... 1,200 ..... £190

# The Builder.

VOL. XVIII.—No. 917.

The Lambeth Wood-Carving Works.



BEFORE now we have mentioned the Wood-Carving Works in the Belvedere Road, Lambeth, which, now as Jordan's and then as the property of a company, have been carried on for several years without any great amount of success. Carving by machinery, as was professed there, did not commend itself to the artistic mind. In carving we look for heart-work, as well as hand-work,—variety, freedom, and individuality. Carving by machinery could not give these; and implied the necessity for repeating the same form. Had less been claimed for the machinery, or had it better understood that less was claimed for it, especially as it could not produce complete carving, it would have been viewed with more favour. The works are

now in the hands of Messrs. Cox & Son, who seem to take a right view of the matter, and do not profess to produce carvings by machinery, but to execute carving with the aid of machinery.

The longer the results of the application of steam-machinery to works of general utility are studied, the more clear becomes the impression that although, for a time, it may press upon individuals and disturb the current of industry, all that lessens the cost of production is a general advantage, ultimately felt even by those interfered with. Unfortunately, however, it is too frequently the case that classes of persons engaged in industrial pursuits, and even those engaged in pursuits which may be considered more purely intellectual, take their view from one point only, and this leads to much of the misunderstanding which prevails.

From time to time we have shown incidentally what the effect of machinery has been. We have noticed the improved condition of the Lambeth potters and the glasscutters; the vastly increased amount of employment, and more comfortable condition, enjoyed by the cottonspinners; how much greater is the number of persons engaged since the introduction of the locomotive in comparison with the old stage coach days; and how, in our great manufactories, the introduction of the steam-engine, so far from having been the means of destroying the value of the labour of men's hands, has increased the demand, and been the means of raising the social position of workmen and the amount of their earnings.

It is difficult to imagine what would have been the state of this and other civilized countries but for the application of steam,—that vast power which seems to have been put into the hands of man by an all-wise Providence to meet the necessities of increased population, and to advance the position of mankind. But for this, how could we at the present day drain from the bowels of the earth in sufficient quantities the coal, iron, and other minerals, which are the very main-spring of our manufactories and great ministers to our comfort? Every tool is a piece of machinery: the most complicated machinery is, after all, but a more perfect tool.

As it is in certain mechanical trades, so it is in departments of art, that aids which would save a vast amount of labour, and not affect

the artistic merits of a particular work, are objected to. In engraving, for instance, Woollett employed assistance in etching large portions of his plates. By his skill in working on this foundation, or what may be considered the "dead colouring" of his plate, he produced original effects, and so we have prints which, in many respects, have not since been equalled. But for this help we should have had fewer engravings from his hand. Many engravers of eminence have declined such assistance, and spent months on parts of plates which might have been quite as well done by inferior hands, or by a competent machine, tastefully and skilfully employed.

In sculpture, when the model has been created by the artist, to hew it from the solid marble or stone is very hard and mechanical labour, and mechanical appliances are used to bring the block to the shape of the model: meaner hands than his own may carry the work still farther, and then the sculptor adds the finishing touches, which give perfectness and value to the work.

As regards carving in wood, and some kinds of metal-work, the same considerations will apply; and it is on this principle that the machinery is used in Lambeth. A visit to the works is interesting.

In commencing a wood carving, as in stone, a large amount of labour is required to shape the material, and bring the work into such a condition as to enable the skilled carver to produce the greatest effect with the least expenditure of time,—giving those delicate touches which make all the difference between perfection and mediocrity. This preparation the steam machinery founded on Jordan's patent executes. Without entering into mechanical details, we will endeavour to give a general idea of the manner in which the work is managed. On the centre of a metal table is a convenience for fixing either a drawing or model of any description which requires to be copied. Supported by an ingeniously contrived apparatus, is a point which with the greatest facility can be made to move not only in all directions, forward and backward, but also to rise or fall with the various depths and sinkings of the carving. We will suppose that a wood panel which it is required to produce is fixed in the centre of the table below the point mentioned, and that one, two, or more plain panels of the proper thickness on which it is intended to operate are fixed in position on either side. Above each of these panels is a drill or cutter which, in an upright position, moves round with the swiftness of lightning: so rapid is the motion that the cutters make from 6,000 to 7,000 revolutions in a minute—driven by the steam-machinery: the cutters whirl with a whizzing noise; but until the central point is made to touch the model, the smooth wood on either side also remains unmarked. When, however, the manager of the machine, by a particular power which it is difficult in words to describe, passes the movable point just mentioned over the outlines of the model,—at the same moment the whirling cutters move over the wood, all acting in exactly the same way, and cutting; as the central point is passed over the ornament, the exact outline of the tracery. Not only do the cutters follow the lines on the surface, but by raising or lowering it to the different depths of the model, as we have said, the whole of the panels become fashioned in a wonderfully short time. It matters not whether the design consists of foliage, figures, scrollwork, letters in relief, diaper patterns, or what not: by the clever guidance of the workman who has charge of the machine, the seemingly magical operation goes on; and soon the panels, or whatever else may be required, are copied, and, in a rough form, ready for the carver to finish.

On examining a number of preparations made in this way, consisting of pinnacles, stall ends, open tracery work, corbel heads, and a quantity of other ornamentation of both large and small size, it is seen that as a preparation for the hands of the finishing carver nothing could be better: the roughness which is left would be suggestive to an artistic mind.

The operations of the machine are limited to the preliminary preparation of carving: the

completion of the work depends on the skill of the carver.

In this place we noticed works in progress for Limerick, Cheltenham, Hemel Hempstead (under Mr. Christian), the Scotch Church, Regent-square (Mr. Gibson), Barbadoes, and other places at home and abroad. It is asserted that, by the application of the machinery, a saving of from 25 to 50 per cent. is made in the cost of most descriptions of carving. About 100 men are now engaged here, whose wages are said to be more than could be earned by them if engaged on the old method. The process can be applied to stone and metals. The saving of labour, in open and other brass-work, is considerable. It is not necessary that all work should be finished in this establishment. The models of other carvers might be sent, and the work prepared in the rough, to be finished according to their taste and skill elsewhere. Nor is it necessary that forms should be largely repeated, although thus of course the greatest saving can be effected: but traceried panels, for example, all differing, can be produced at comparatively small cost, with the assistance of the machine. By thus lessening the cost of carving for ordinary works, it is calculated to lead to an increased demand for it, and consequent greater employment for carvers, who would thus get the means of improvement to fit them for works where cost is of less consequence.

## MEDIAEVAL SCULPTURE; ILLUSTRATED IN GLOUCESTER CATHEDRAL.

In the notice which appeared in our pages of the Gloucester Congress of the Archaeological Institute, mention was made of an address on Mediaeval Sculpture, by Mr. Richard Westmacott, R.A. Let us return to it.

Some have considered, he said, the Church architecture of particular periods to be the indication of the moral and religious condition—the gauge, as it were, of the degree of goodness or piety of a nation; and thus have begged a question, rather than established a temporary connection between the two. It is extremely difficult to account for any particular mode or form of architecture by a reference to a particular class of feelings or sentiment in a people. No one can for a moment bring himself to believe that religious impressions are of such a nature as at one time to be expressed by the round arch, at another by the pointed, at another by the most elaborately decorated double arch, and so on. And yet we should be obliged to admit something of the kind, if the assertions of some admirers of peculiar styles of architecture were founded on true grounds. This character of the art, as eminently expressive of religious orthodoxy, has been attributed especially to the Pointed and Decorated styles of Gothic, according to the fancy of the admirers of each. They have dwelt upon the peculiar forms of these styles, and seem to have assumed that, as these were departed from, it proved the deterioration of the religious element in society—that the architecture is the expression of the religious sentiment—and that it is owing to the more intensely pious impulse of those ages, that edifices of such magnificence and heauty were erected all over this country; and secondly (and it is a sort of logical consequence), that had architectural design proved the diminution of religion in a people. There can be no doubt that in the twelfth and three following centuries, ecclesiastical edifices were erected of a character that succeeding ages have not approached in beauty and richness of decoration; and, on the other hand, at and for some time after the Reformation similar edifices existed. But it would be exceedingly unsound to found upon these facts an argument to prove that the age of beautiful architecture was *ipso facto* an age of morality and piety; and then, *pari ratione*, that the reformers, even of the most extreme school in England, namely the Puritans, were less moral and religious, because their ecclesiastical architecture was of a very low character. The history of the respective periods, and of individual habits, at once would show how fallacious such a test must be. We know that, narrow as were some of the religious opinions of the more modern period, there was an infinitely wider spread of religious interest in the masses, and a greater craving to be taught what is the truth after the fifteenth century than before it. Prior to this all men howed uninquiringly and mechanically to a system that worked conveniently for particular

interests, and which could only so work through the general ignorance of the community.

The earliest style with which we are acquainted, the solid severe Saxon and Norman, by degrees changed its character—almost Egyptian or Hindu in its heavy sobriety—for a lighter form: this was the Early English or Pointed, which again took another character in the Florid or Decorated style. These seem to have been developments of principles discovered or deduced from practice; but the particular styles cannot be referred to any moral causes, or special phases of religious teaching or feeling. But how, it may be asked, can it be accounted for, that so marked a deterioration or degradation of ecclesiastical art occurred, if there was not a decline of religious impulse as a cause? Simply, that having reached a degree of beauty beyond which it seems the artists of that age were unable to carry it, like everything else it underwent a change, and that change was deterioration; not because the religious sentiment was weakened, but because it is in the nature of man not to be satisfied, and desiring change or novelty, he is too frequently tempted to loosen his hold of what is good in art, and, by straining after new qualities, to fall into whatever is weak and bad. What happened in Greece in the best times of fine art? After Phidias had in the age of Pericles wrought sculpture to its highest excellence, and made the art the handmaid and expression of the most sublime sentiment, a change was required from that which had satisfied, till then, the feeling of the time. Praxiteles then introduced the fascination of the material and sensuous style; and later, in the age of Alexander, Lysippos introduced the energetic and exaggerated style, which referred rather to physical than to æsthetic art qualities. And so it was in the history of Ecclesiastical design. There is no reason to imagine that such change was to be considered a proof that there was less real religion in the world, or that when art was in its full glory, the world was also all religious. Diana was not less fervently worshipped at Ephesus, nor Minerva less honoured at Athens, because the sublime sculpture of Phidias, or the exquisite architecture of Ictinus had suffered eclipse, and had given way for less admirable productions. No; the ecclesiastical art of our middle ages shows the immense force and influence of the church at that time as a body politic. The art expresses a fact; but because the art changes, it is no reason that religion dies.

It is a curious and pregnant fact, that all the earlier monuments bearing effigies are of ecclesiastics. The most ancient examples in this country represent two abbots. One is Vitalis, Abbot of Westminster; the other Crispinus; they are in the cloisters of Westminster Abbey. The earlier monument dates in 1086. There is nothing so early in Gloucester Cathedral, for the monument with the effigy of Osric, which has been referred to the eighth century, evidently belongs to a later date. The first monuments, beginning from the period of effigies, were very simple. Usually the figure was in very flat relief, scarcely raised above the plane of the coffin-shaped slab, which represented the lid or cover of the receptacle which contained the body. The figure was usually dressed in the official garments; if a dignitary, with the mitre on the head, or the pastoral staff in one hand. Sometimes the hand is raised, as if in the act of benediction; sometimes both are in the act of prayer, or one is holding the chalice, or other emblem of church service. The design and relief of the figures is sometimes varied, but the usual type is that above described. As a higher degree of finish was attained, and facility acquired by practice, the execution improved, and the details were more elaborate. The effigy of King John, of 1216, in Worcester Cathedral, is the first instance of a regal effigy. The effigies of knights and others, who exhibit many particulars of great interest as the centuries advance—the details are more studied, and there is considerable variety of action within prescribed limits; for such representations were always subordinate to a fixed idea that the figure should be supine, stretched out in a recumbent position. In the fourteenth century the addition of extensive architectural accompaniments mark a novelty which led to very interesting results. The figure of the person represented was not left simply lying on the tomb, as in the earlier examples, but accessories were introduced, relating either to the personal or family history of the individual. Then, again, in order to do it more honour, to protect it as it were, or to enshrine the monument itself, architectural enrichments grew up around it. Canopies were introduced, and similar architectural details. Within niches around the sides of the tombs figures were introduced, either of saints or ecclesiastics,—members,

probably, of the family of the occupant of the tomb: these exhibit various forms of expression. Some are in the act of offering incense, some in grief. As figures they are always very subordinate in dimension to the chief effigy. Some very beautiful *volutes* are seen in some of the works of this age, in the small accessory figures of ministering angels at the head and feet of the deceased. Sometimes they are introduced in the spandrels and hollow mouldings of the architecture, and Salisbury and Lincoln Cathedrals boast of some beautiful specimens of the kind. In the monument in Gloucester Cathedral, called Osric, the figure scarcely exceeds with the earliest type of such works. From his being represented with a crown on his head, and a sceptre in his hand, there can be no doubt a sovereign is here represented; but the style of the work, and the introduction of angels at the head, establish, I think, the fact of the execution of the monument being of a much later date than the presumed period of Osric. If it were desired to commemorate a founder, there would be nothing remarkable in its being done at a late period, when possibly some repairs or enrichments were being added to the church; and thus an opportunity occurred of doing this honour to a benefactor. The next monument, well worthy of notice, is celebrated as the "bracket" monument, from the effigy being placed on a projecting bracket or corbel, panelled on a hollow or OG surface, which takes from it the appearance of a tomb or coffin. The real person intended to be commemorated is not known. Some have conjectured it to be Aldred, who is said to have died in 1069; others Scro, who died in 1104. The latter re-founded a new church, and this seems implied in the accessory of a church beld in the left hand of the effigy. This monument bears evidence of being of a much later date than Aldred; nor can it be attributed to the later period of Scro. No design of the kind can be referred to in the beginning of that century. The same may be said of that of Corthose, son of William the Conqueror, whose effigy is on the monument, in chain mail. He died in 1134. The figure is carved in wood, and thickly and clumsily painted. He was a great benefactor to the church, and, though he died at Cardiff, after an imprisonment of twenty-six years, his body was brought to Gloucester, and was interred near the high altar, where a "wooden tomb" was erected over him. But the object of paramount interest in Gloucester Cathedral is a monument whose history is well ascertained, and with which are connected many affecting associations. This is the enriched tomb erected by Edward III. over the remains of his unhappy father, King Edward II. This interesting monument comes under the head of highly decorated tabernacle work, and is, perhaps, the finest specimen extant. Its composition is rich, but at the same time light and elegant. The details are of great beauty, and show throughout the most careful finish. Within this elaborate shrine, if it may be so called, reposes the effigy of the unfortunate king. This is equally deserving of attention from the simplicity of its face and the generally calm and tranquil expression that pervades the figure, affording suggestive reflections upon the anxious, suffering life of the subject of the sculptor's art, and the contrast of repose, which could only be had in the silent tomb. There are peculiarities observable in this effigy that lead to the impression it may be intended as a portrait of Edward. This, if so, gives the work considerable additional interest, and one would be sorry altogether to give up that claim to our attention. I would direct your attention to one peculiar characteristic of mediæval monuments, and that is the universality of the design of recumbent figures. It is the sentiment that should pervade a monument of one gone to rest, when the tenant of the tomb is represented dying in prayer, or reposing before death in calm contemplation or devotion. It is an idea with which all persons of feeling must sympathise. It is remarkable that when a more debased style of architecture, and of art generally, came in, there was still sufficient respect paid to this *idea*, originated and established by the mediæval artists to preserve the religious sentiment in monuments. Effigies are still represented recumbent on their tombs, with the hands raised in prayer, though all the accessories may be of a most anomalous and uneclesiastical character. In the next innovation, change producing deterioration, the figure was taken from the quiet, recumbent position, and made to kneel up; but still, whether male or female, the subject was engaged in prayer, sometimes before a lectern and book, sometimes simply praying. In monuments of this time, where there was a family, we often see Hues of sons and

daughters kneeling also, arranged behind the parents according to sex. In the sixteenth and seventeenth centuries a change still further for the worse took place in monumental design. To say nothing of the great beds or catafalcs that had been erected, superseding the beautiful Gothic canopies, the figures now begin to show more movement, and, as if tired of the recumbent attitude, they sit up, lean on their elbows, and seem to look about them. The next still more offensive change is when the figures are represented seated and loling in arm-chairs, quite irrespective of the sentiment that belongs either to their own condition or to the sacred edifice in which they are so indulging. But it is painful to dwell upon this degradation of taste, and I am still less disposed to speak, except in strong reprobation, of another still more offensive style of art, when employed in churches. I allude to the class of personal boasting, or glorification, in figures wielding swords, making speeches, or exercising other common worldly occupations. Of the utter absurdity of some monuments that could be pointed out, in the naked, half-naked exhibitions of the figures, or in the Greek and Roman costumes of the English generals and worthies in our English churches, it will be sufficient to record our dissatisfaction without detaching you with unnecessary illustrations. But permit me to say one word in conclusion. The existence of, and perseverance in, this bad taste, is owing to our own fault. If all each one of us would not only protest against, but discontinue to employ artists to produce such works, there would soon be an end to them, and then probably, nay, certainly, a better feeling would induce a purer taste. Figures brandishing their swords, as if in the thick of battle,—senators and legislators making speeches,—men of science pointing to their discoveries,—or scholars and divines over their books and papers,—may all be well and consistently placed in halls, market-places, libraries, or other public situations; but let our memorials of the dead—of those we have loved and lost—of those who have died in humble hope and prayer—be in character with the sentiment of religious thoughts and reflections. In this respect we cannot do better than follow in the steps of the Mediæval artists. We may avail ourselves of our increased artistic knowledge in all respects; but, though we may justly improve upon their works in form, we should admit our debt to them for the true, deep, and appropriate sentiment of monumental design.

#### VIENNA: NEW OPERA-HOUSE COMPETITION.

THE Council of the Royal Institute of British Architects have forwarded to the members copies of the following correspondence:—

"Office of Committee of Privy Council for Trade, Whitehall, 9th August, 1860.

"Sir,—I am directed by the Lords of the Committee of Privy Council for Trade to transmit to you for the information of the Institute of British Architects the enclosed documents, which have been received through the Foreign Department, stating that it is open to all architects, foreign as well as native, to submit plans for the building of the new Opera-house at Vienna, and explaining the conditions upon which they will be received.

"I am, Sir, &c., J. EMERSON TENNETT,  
The Secretary to the Institute of British Architects."

\* At the same time were issued.—

1stly. A copy of a letter which has been addressed to the Mayor of Hereford, respecting the threatened destruction of the old Town-hall of that city.

2dly. A copy of a letter on the subject of architectural examination, which has been addressed to various architectural societies in the provinces, and which we have printed.

3dly. A copy of the report of the proceedings of the Council in attempting to ensure the safety of certain churches, towers, and steeples in the City of London, which were considered to be endangered by the future operations of the Act for the Union of Benefices.

4thly. A copy of a communication received from the Belgian Government, announcing postponement of competition for the Palais de Justice at Brussels, until the 1st of October next.

The circular said,—

"We beg further to call your earnest attention to the assistance that you may be able to render towards the preservation of architectural work of interest, which so much assist, in the words of our charter, in 'the public embellishment of our towns and cities.' If you will send immediate notice to the Institute of any proceedings, commenced or proposed, within your knowledge, affecting the safety of any such structures.

Any such notice should be given with as much detail as possible, and be accompanied with information as to the proper parties with whom action should be taken, the most advisable course to be followed by the Institute, and the name of any architect or person assuming the name or position, who may be engaged in the works to which the attention of the Council is to be directed."

(Copy.)

"Wiener Zeitung, 15th July.

"A public competition for plans of the new Opera-house, which is to be erected outside the Kärnthner Gate, is hereby announced by imperial order.

The plans for this competition, in which foreign architects may take part, must be handed in before January 10, 1861.

A commission will be appointed to consider these plans, three of which at least will be selected to receive a prize of 1,000 Verein thalers.

Authors of plans so selected will be expected to furnish all practical details and estimates.

When this further explanation of the plans has been submitted to a commission, the latter will distribute prizes of 3,000, 2,000, and 1,000 Verein thalers.

Plans that have received no prize will be returned on application, but all those plans which have received prizes become the property of the Imperial Government, to be by them applied as they think fit."

(Translation.)

VIENNA, NEW OPERA-HOUSE.

"By order of the Emperor, plans are to be prepared for a new Opera-house, in Vienna, and foreign architects are to be allowed to compete.

The building will be in the situation determined by His Majesty, between the Kärnthner Gate and the intended Ring-street.

The site, a rectangle, has a length of 57 and a breadth of 50 Viennese fathoms.

The block plan and section of the ground, and the prospect or programme of the building, together with all the necessary particulars, can be obtained by competing architects at the office of His Majesty's High Steward (i.e. K.K. Oberstbottmeister).

In the first instance, general designs only are to be considered, wherein each competitor will show how he would treat the arrangement of the space and other dispositions required by the programme.

The designs are to be forwarded to the High Steward's office by the 10th of January, 1861, at the latest.

They are to be marked with a device, and to be accompanied with a sealed letter, the cover of which is to be marked with the said device, and in which the name and address of the competitor are to be given. The bearer will receive a receipt worded according to the device. If sent in too late, the designs will not be received in competition.

The designs sent in by the time named shall be publicly exhibited for ten days, and then shall be submitted to a commission, composed of persons connected with the und-r-taking, and of professional men, for examination. This commission will select three at least as the best designs for premiums, or more, according to circumstances. The premium will be 1,000 Verein thalers for each of the designs selected. The devices of these designs so chosen shall be published in the *Vienna Gazette*.

Should any competitor, having gained a premium, wish to receive his premium before the termination of the competition, he must send in his name, address, and the receipt for his device to the high steward's office, where his sealed letter will be opened. Those designs not premiated shall, so soon as the award is made public, be returned with the unopened letters. But the successful competitors shall be bound to deliver detailed plans and estimates. The necessary particulars for these plans and estimates are given in the programme.

The period when these plans must be sent, and when the prizes will be awarded for the selected plans, will be published in the *Viennese Journal*.

The detail plans must be made upon the basis of the general designs.

They will undergo an examination by the adjudicating commission, and the three considered as best will be selected for prizes, after which the sealed letters will be opened, unless previously opened as above mentioned.

The prizes will be of 3,000, 2,000, and 1,000 Verein thalers. The award of the commission will also be made public. Lastly, the detail plans which have not received prizes will be returned to the authors. But the general designs of the premiated competitors, as well as the detailed plans of those who have received prizes, will become the property of the Government, who will have the power of making whatever modification in them they think fit, and of intrusting the execution to whomsoever they please.

Given at the Imperial and Royal High Steward's Office, July 10, 1860.

## EXAMINATIONS INSTITUTED BY THE SOCIETY OF ARTS.

PRIZES.

THE Society of Arts has published their list of subjects for examination in 1861. The primary object of these examinations, it will be remembered, is to encourage, test, attest, and reward efforts made for self-improvement by adult members and students of the Mechanics' Institutions, Athenæums, People's Colleges, Village Classes, and other bodies of the like character, that are in union with the Society of Arts. Such members and students are commonly mechanics, artisans, labourers, clerks, tradesmen and farmers not in a large way of business, apprentices, sons and daughters of tradesmen and farmers, assistants in shops, and others, of various occupations, who are not graduates or undergraduates of any university, nor following, nor intending to follow, a learned profession. To all such, male and female (not being under sixteen years of age), the examinations are open on certain conditions. Persons also of a higher grade in society than those mentioned in the opening paragraph are found to be desirous of having their knowledge tested by the Society's examiners; and it has been decided to admit them to examination on payment of a fee of 10s. 6d. for each candidate. Such persons, however, and also certificated teachers, and pupil teachers, though they may be examined and receive certificates, are precluded from competing for the prizes offered by the Society of Arts.

The following is a list of the prizes for 1861\* offered to the candidates, viz.:

One first prize of £1. and one second prize of £1. in each of the twenty-nine subjects of examination.

No prize in any subject will be awarded to a candidate who does not obtain a certificate of the first class therein.

The prize will be given in money or in books, at the option of the candidate.

The following prizes are offered to the institutions, viz.:

To the institution whose candidate obtains the above-mentioned first prize of £1. in any of the twenty-nine subjects, one prize of £1. An institution can take more than one such prize; but no such prize can be taken by an institution unless the Council of the Society of Arts is satisfied that the candidate, in respect of whom the prize is claimed, has received in a class at the institution systematic instruction in the subject for a period of not less than three months.

The following prizes are offered to the local boards, viz.:

To the local board where the total number of certificates awarded to the candidates at the final examination (these candidates being not fewer than twenty), bears the largest proportion (not less than three-fourths) to the total number of subjects in which they were examined;—one prize of 10l.

To the local board where the total number of certificates awarded to the candidates at the final examination (these candidates being not fewer than sixteen), bears the largest proportion (not less than three-fourths) to the total number of subjects in which they were examined;—one prize of 8l.

To the local board where the total number of certificates awarded to the candidates at the final examination (these candidates being not fewer than twelve) bears the largest proportion (not less than three-fourths) to the total number of subjects in which they were examined;—one prize of 6l.

To the local board where the total number of certificates awarded to the candidates at the final examination (these candidates being not fewer than eight) bears the largest proportion (not less than three-fourths) to the total number of subjects in which they are examined;—one prize of 4l.

No local board can receive more than one of these prizes. These sums may be applied by the local boards to the payment of the expenses of the examination, or otherwise, as the board may deem best for the promotion of the objects for which it was instituted.

## ETRUSCAN ART.

WITH a single exception—some coarse canvas discovered at Volterra—the whole of the Etruscan antiquities with which I am acquainted are made of mineral substances, either directly, as metal, stone, or pottery, or indirectly, as frescoes; these throw considerable light on the customs of this ancient people, for of their literature we have no remains. The Egyptian forms of the earliest Etruscan alabaster gods, no less point to their intercourse with Africa than the exquisite figured work introduced by them from Egypt into Italy, where this art seems to have been preserved up to the present time. By a more thorough and thoughtful examination of their works of art, I

\* The fund for the prizes is raised annually by subscription from the members of the Society of Arts and others interested in the success of the examinations. Annual subscriptions and donations to the prize-fund may be forwarded by Mr. Samuel Thomas Davison, the financial officer, Society of Arts, John-street, Adelphi, London, W.C.

feel persuaded that we might become far better acquainted with the social condition of the Etruscans. A mere glance at the graceful designs and fine features observable in their statues leads one to form a very favourable opinion of the Etruscans as compared with the Egyptians. There is more action in their figures: a fine open brow, a handsome nose and well-chiselled mouth, and eyes which bespeak less of the sensuous and more of the intellectual, take the place of that stern fixedness of expression and the hard features so conspicuous in Egyptian types. In Etruria, too, we never find representations of monsters—half-man, half-beast—such as the Egyptian sphinxes. Many other circumstantial evidences might be adduced confirmatory of this remark. Thus, their mode of writing. In Egypt, mysterious and difficult hieroglyphics were employed, in which, probably, the priesthood and government were alone skilled, while the masses were entirely ignorant of any method of embodying their thoughts in a material form.

I am well aware some might object that this was during the infancy of knowledge and art, no better means of writing being yet known; but I would give a conclusive argument against such a theory, since the Israelites sojourned 430 years in Egypt, and we are acquainted with the simplicity of the characters they employed, so that the Egyptian hierarchy—or, at any rate, the government—must have had great dealings with the Jews, at least during the time that they lived in the land of Goshen, and evidently preferred keeping the lower orders in ignorance and slavery, by enshrouding all knowledge under a veil of mystery. In Etruria, on the other hand, we see how, by the simplicity of their alphabet, they early brought the art of writing down to the level of the people. Finding, as we do, coins struck by numerous cities in Etruria, we learn that these possessed somewhat equal rank, incompatible with the idea that the princes who held sway were under a single despot, such as the Pharaohs. The Etruscans were, however, neither socialists nor republicans, for they honoured certain great individuals, statesmen, and warriors, and were prouder of perpetuating the memory of their virtues on tombs than were the Greeks, who, more fickle, and divided into numerous factions, could allow an unappreciated Solon to be banished, and witness a Socrates perish before their eyes, in the full vigour of his giant mind, without the least remorse. It is, indeed, to the tombs of the Etruscan chiefs that we must have recourse to find their professions, the majority of their best works of art being there deposited, as a grateful memorial to departed worth.

Etruscan art has been divided into three periods, corresponding with contemporaneous phases in their political history.

The first period of art in Etruria points to intercourse with Egypt, but it appears that it was the Pelasgi from Attica and Arcadia, who, leaving Greece and settling in Etruria, gave the inhabitants the idea of an alphabet and the principles of architecture. The statues and bronze work of this time are characterized by an inferiority of execution, though they exhibit an appreciation of beauty. The eyes are raised obliquely upwards, like those of the Tatars and Egyptians.

The second period was inaugurated about the time of Sargon (B.C. 1,000), by the arrival of fresh colonists from Greece. The country became too densely populated, so that the inhabitants divided into two portions. One branch emigrated eastward into Asia; the other remaining in Etruria, along the coasts of the Mediterranean, giving to that country the name of Tyrrhenia. Twelve cities, each governed by a chief, and collectively placed under an elective king, now rose to greatness, and even magnificence, while the arts arrived at a high degree of perfection. Their statues made about this time are recognized by their energy of conception and execution. They had also a custom of representing their deities with wings, by which we are at once able to distinguish them from the work of all other people.

Third period (B.C. 500). Meanwhile the Romans, increasing in power, carried their victorious arms into Etruria, enfeebling the nation, so that a year after the death of Alexander the Great (B.C. 324), it was almost entirely subjugated, and the Etruscan language, after having blended with Latin, rapidly became obsolete. Soon after (B.C. 280) their last king, Etrius Volturrius, was killed in battle near Lake Lucerne, and Etruria was formed into a Roman province.

About B.C. 265 the Romans took Volturnum (Bolsena), carrying away 2,000 statues. Bolsena is situated in the States of the Church, but in all probability other cities on the Tuscan territory

were equally rich in similar productions, since metal statues and ornaments are so abundant in all their ruins. The influence of Greek art on the Etruscans now became apparent from the great similarity of styles and of subjects. Thanks, however, to the Etruscan habit of writing inscriptions on their vases and metal-work, we are thus frequently able with certainty to distinguish these objects from Greek productions, when no other clue can be obtained. Some of the finest known specimens of art relating to this epoch are, the candelabra, formerly held in such high esteem by the Romans; the lamps, often similar to those of the last-named people; and the beautiful metallic mirrors with engraved groups of figures.

W. P. JERVIS.

#### THE ARRANGEMENTS OF THE BRITISH MUSEUM.

THE REPORT of the Select Committee appointed to inquire into the arrangements of the British Museum has been published. The special mission of the committee was—

"To inquire how far and in what way it may be desirable to find increased space for the extension and arrangement of the various collections of the British Museum, and the best means of rendering them available for the promotion of science and art.

The questions discussed were—

I. Whether all the collections in the British Museum should be retained in the present locality, or whether any and which of them should be removed elsewhere.

II. What amount of space is requisite for the proper accommodation and exhibition of the collections proposed to be retained, and of those likely to accrue within such a period as it is prudent to provide for.

III. Whether such space can, with due regard to economy, be contained in connection with the British Museum.

IV. What structural conditions in the buildings provided are indispensable for the proper arrangement of the collections.

1. *Natural History Collections.*—The removal of the natural history collections, from the discussions that have taken place both in Parliament and among the trustees of the Museum, and from the general interest which this question has excited both in the scientific world and among the public at large, primarily engaged the attention of your committee.

The arguments against removal may be summed up as derived—

1. From the central position of the British Museum.

2. From the advantages of connection with the great national library.

3. From the expense involved in the construction of a new Natural History Museum, and the transfer of the collections to it.

4. From the risk of injury to valuable specimens, and the interruption to scientific inquiry consequent upon the time unavoidably requisite for packing, transporting, unpacking, and rearranging the collections.

The evidence taken was almost unanimous against the removal of the natural history collections, which are the most numerously visited. The report asserts the necessity of retaining these different collections in connection with the library; should they be removed, the purchase of a special library of reference would be indispensable. The estimates of the expense of the construction of a new Natural History Museum and the transfer of the collections to it are given. They are the same as those presented separately to the House of Commons in February last. Three sites have been proposed—one, a portion of the land in the neighbourhood of Kensington, belonging to the Royal Commissioners for the Exhibition of 1851; the second, the present site of Burlington House; the third, a plot of ground near Victoria-street, Westminster. The cost of the first site would be £3,750; the site of Burlington House covers an area of only three acres, and the new museum would require five acres and a half; in Victoria-street more than sufficient space might be obtained at the rate of 7,000l. per acre. Ground enough might also be obtained in the immediate vicinity of the present museum, but only at a cost of 240,000l.

The formation of a special library of reference for the natural history collections would be about 30,000l., and the addition of all new works would be constantly required. The nation would have to support two librarians and a double staff of attendants.

#### Ethnography.

"Your committee have received evidence from every witness examined on this subject in favour of the removal of ethnographical collections. Great additional space would be required if it be intended that the British Museum should be the depository of a complete ethnographical collection, and it is probable that a more suitable receptacle might be found for it elsewhere."

#### British and Medieval Collections.

"The evidence received upon the subject of the retention or the removal of these collections has been most conflicting, both proposals having received the approbation of high authority. But, having considered the arguments on both sides of this question, your committee would observe that the British Museum is a repository in which objects of historical or archaeological interest ought to find a place without limitation to any particular time or country."

The committee then state the demands for increased space made by the keepers of the natural history departments. They are largest in the department of zoology, which requires ten rooms and a gallery, the dimensions of which are not stated. For the collection of antiquities—

"The keeper of this department has put in a demand for 61,469 additional superficial feet of floor space for exhibition."

The report continues:—

"Your committee, in contemplating an extension of the Museum, have been disposed, in the Natural History Department, in consequence of the gradual but constant increase referred to, to allow for space likely to be required within a moderate period of time; but in the case of the Department of Antiquities, from not being able to form any idea of the character of the accessions that may eventually accrue, and consequently of the nature of the galleries, and of the light that may be required, your committee would suggest that while ample space should be secured for future extension, buildings should not be constructed with a view to the future, but for the present, and always on such a plan as would admit of easy, cheap, and systematic extension.

The total amount of space, therefore, which would be required, so far as an accurate estimate has been laid before your committee, is 81,268 superficial feet. To this must be added the unascertained space required, as before mentioned, for the department of zoology, and for the studies and working rooms which have been recommended. On the other hand, 10,000 feet would have to be deducted if the ethnographical collection should be removed. At the same time it is obvious that the total area thus required need not be all on one floor.

Whether such space can, with due regard to economy, be obtained in connection with the British Museum?

It appears, from a former portion of this report, that the ground immediately surrounding the Museum, within the adjacent streets on the east, west, and north sides, comprises altogether about 5½ acres, valued by Mr. Smirke at about 240,000l. As the proprietary interest in all this ground belongs to a single owner, your committee are of opinion that it would be a convenient, and possibly even a profitable arrangement, for the State at once to purchase that interest, and to receive the rents of the lessees in return for the capital invested. The State would then have the power, whenever any further extension of the Museum became necessary, to obtain possession of such of the houses as might best suit the purpose in view.

*Prints and Drawings.*—A convenient site for this department would, in the opinion of your committee, be provided by the suggested acquisition of additional ground on the north side. A building might there be erected in continuation of the present east wing of the Museum, to contain on its upper floor the mineralogical collections, and on its lower the prints and drawings, with adequate space both for their preservation and exhibition."

The plans of Mr. Smirke, Professor Maskelyne, and Mr. Oldfield, are adverted to—

"Your committee have reason to think that if any of these plans were adopted, involving the purchase of not more than two acres of land, with the requisite buildings and alterations, the cost would not exceed 300,000l. If, however, only this limited portion of land should be at once required, it is probable that the price of what remains would be enhanced. If the whole were to be purchased, as your committee have already recommended, the cost above stated would be, of course, increased.

The cost of the land and buildings required to

carry out the plan for the removal of the natural history collections to Kensington, according to the estimate contained in the report, of the Special Committee of Trustees, which was founded on the assumption that 5½ acres of land are necessary, would amount to 620,000l.

To this sum would have to be added the expense of a departmental library, of packing and removing the collections, and of the extensive fittings and cases required in the new museum—expenses all forming part of the first cost of this plan, and independent of the additional annual charge for augmentations of the departmental library, and for the maintenance of the requisite staff both for that library and for the greatly enlarged public galleries of exhibition.

If, however, the limited principle of exhibition for the natural history collection should be adopted, less land would be required, and the estimate for buildings might be greatly reduced.

But neither of these arrangements would obviate the necessity of providing the additional space required for the department of antiquities at the British Museum.

Your committee can form no accurate estimate of the cost, if either of the other two sites before-mentioned should be selected.

Under all these circumstances, and upon a full consideration of the evidence adduced, your committee have arrived at the conclusion that sufficient reason has not been assigned for the removal of any part of the valuable collections now in the Museum, except that of ethnography, and the portraits and drawings, as previously recommended."

With regard to the last branch of the reference, namely, the means by which the collections in the British Museum may be made most available to the interest of science and art, the committee look on the British Museum as primarily being a great consultative repository, and are decidedly against the proposal for giving lectures in the Museum.

#### ART-UNION OF LONDON COMPETITION.

The author of the set of illustrations marked "Constancy," to which the premium of 100 guineas has been awarded, is Mr. Paolo Priolo, resident in Edinburgh. The council of the Art-Union, anxious to show their appreciation of the response made to their advertisement, have awarded two honorary premiums of twenty guineas each, one to No. 24, and one to No. 25. The artists were found to be respectively Mr. Alexander Rowan, of Stockwell, and Mr. Edward Corbould, the well-known water-colour artist.

The following names have been affixed to designs exhibited:—

- No. 1. W. Chappell, Holloway-road, London.
  - " 2. R. Jefferson, Lambehth.
  - " 10. B. Riviere, Oxford.
  - " 15. W. G. Smith, Askle-street, London.
  - " 22. (Consuelo) A. W. Rayes, near Manchester.
  - " 28. C. M. Dobell, Cheltenham.
  - " 37. Mary Elizabeth Dear, Camberwell-grove.
- The exhibition has been open to the public, free, without the slightest limitation, during the week, and has been very numerously attended.

#### FOOD SUPPLIES: FISH AND FISHERIES.

EVEN although a favourable change in the weather at so late a period of the season should now happily take place, as there seems reason at last to hope, we may have a somewhat short supply of some of the necessities of life, notwithstanding the splendid harvests elsewhere. Even the slightest addition to present high prices must press sorely on the general bulk of the people, but especially so upon the great masses of the poor. It is, therefore, all the more necessary in every way to economize the principal articles of food, and look in directions not so usual, or so much depended on in ordinary times, for the increase of supplies. Of late years much has been done, by means of steam packets and the locomotive, in bringing fish in great quantities to the metropolis, and the large towns throughout the country; and it seems to us that there is yet a great deal more which might be done, and that the sea, to a far greater extent than at present, might be made a means of feeding the multitude. Thinking of this, and that our supply of this wholesome description of food might by well-directed exertions be vastly increased and cheapened, we may glance at a few statistics which will show the progress, and may give some idea of the extent, of the British fisheries.

In 1578 France had on the bank of Newfoundland 150 fishing vessels, Spain 120 to 130, Portugal 50, and England only from 30 to 50.

The regulation and management of fisheries in times gone by seems curious in these free-trade times.

In 1633 Charles I. ordered an association of the three kingdoms, governed by a standing committee; and, for the better encouragement of the adventurer, enjoined the strict observance of Lent. During the Protectorate little was done, except the reduction of the duty on salt; but Charles II. appointed, in 1677, a council of royal fishery; and, for the encouragement of those engaged in this branch of commerce, a lottery was granted for three years; a collection was made in the churches, and an exemption for seven years from customs, both inwards and outwards, on the sale of fish exported to the Baltic, Denmark, Norway, and some other countries.

Moreover, all victuallers and coffee-house keepers were compelled to take a certain number of herrings each year, at 30s. per barrel, until a foreign market could be established to the satisfaction of the council. Beyond these encouragements, a duty of 2s. 6d. was imposed upon foreign herrings imported, and a promise was made of all such other advantages as experience should discover to be necessary. No advantage seems to have permanently resulted from these stringent and singular regulations. After sixteen years of disappointment a charter was granted to a new fishing company, having a capital of 11,580*l.* This seems to have also ended in failure. In the year 1749, the Society of the Free British Fishery was established, with a capital of 500,000*l.*; a bounty of 36s. per ton on all decked vessels of from 20 to 30 tons employed in fishing, was granted for fourteen years. In 1757 the bounty was increased to 56s. per ton, and in 1759 to 80s. per ton, besides a grant of 2s. 8d. per barrel upon all fish imported. Interest, moreover, at the rate of 3 per cent., was secured to the subscribers, payable out of the customs revenue. This scheme, however, also proved a failure.

In the same year, 1759, the whole of the small fishing vessels of Scotland only brought in four barrels of herrings cured at sea, each of which, in bounties alone, cost the Government 113*l.* 15s., and each barrel of mercantile herrings cost 159*l.* 7s. 6d.

In the reign of George III. (1786) a fresh Act of Parliament was made: a bounty of 4s. per barrel was given on the fish, and the tonnage duty was reduced to 20s. By this regulation, on an average of ten years, 54,394 barrels were annually taken, at a cost to the Government of about 7s. 6d. per barrel.

In 1808, the bounty was again raised, to 60s. per ton, on decked vessels of not less than sixty tons burden: other grants were made, but the old system of forcing trade by such means being radically wrong, each of these efforts ended in failure.

In 1830, the tonnage duty and all protective duties were repealed; and, in the year 1837, the Fishery Commissioners reported that 397,737 barrels of herrings had been cured. In 1832, the average produce of the fisheries of all sorts, carried on by the inhabitants of Newfoundland, is stated to have been then worth 516,417*l.*, and from the ports and harbours of Nova Scotia, Cape Breton, &c., large quantities of fish were brought to England. From the coast of Labrador, the year's produce was estimated, by McCulloch, at 350,000*l.*

In 1836, the number of British vessels engaged in the Newfoundland and Labrador fisheries amounted to 94, with 721 men. The boats employed were in number, 11,427;—fishermen and boys, 49,720; coopers, 1,916; fish-curers, 1,916; persons employed in cleansing, drying, and packing the fish, 26,038; labourers, 7,235; barrels of herrings, 497,615; quantity of cod cured and dried, 38,040 cwt.; pickled, 6,276 barrels.

Large supplies, besides, were obtained from the home fisheries, that of herrings being an important item.

On the coasts of Devon and Cornwall, about a thousand boats are, during portions of the year, engaged in the pilchard fishery, giving employment to about 3,500 men at sea, and 5,000 men and women on shore. The fish are pickled in barrels, and exported to the continent, to the extent of about 30,000 hogheads per annum. Besides, there are the mackerel, oyster, and other shell-fish. The supplies from the British rivers and lakes, &c., are also great. Nevertheless, it seems to be clear that,—considering the increase which has taken place since the trade restrictions of the fisheries have been abolished, and the improved methods of conveyance, &c.,—we should look for a more plentiful supply than comes to market at present.

A few years since we recollect noting in the

*Builder* a hope that a movement then in progress for the working of the excellent and abundant fishery fields on the west coast of Ireland would shortly lead to a greatly increased supply to the metropolis and other towns of England, while providing a profitable field of labour and livelihood to the idle Irish, resident on that coast. We regret to say that nothing has come of this hopeful prospect as yet, so far as we can learn. Can it be that Paddy, with his hands in his pockets, still objects, on moral principle, to "take all the fish out of the sea"?

#### PARIS IN 1860.

THE *Moniteur* devotes several columns to an article under this heading, written by Dr. Veron, and the *Times* correspondent gives a general review of it. Dr. Veron starts across Paris, notebook in hand, on the look-out for novelties, "along streets either paved or macadamized, along roads planted with trees, along promenades and boulevards, and through squares, finding frequently upon our path benches of stone, iron, or wood, offering repose to the idler or the weary, to old men and children." He then gives lists of the buildings that have been constructed, completed, or enlarged, from 1852 to 1860,—religious edifices, schools and asylums, hospitals, bridges,—of gardens that have been planted, and thoroughfares that have been opened,—including among them many works that are not yet finished, but are being actively prosecuted.

"Old Paris now reckons forty-seven Catholic churches (the Assumption included), five Protestant temples, and two Israelite temples. The annexed communes have nineteen churches, but they are much less spacious than those of Old Paris. These latter are able to contain one-eighth of the population, while the suburban could admit at one time hardly a twentieth of the population of the annexed communes."

Barracks are a class of buildings with which the second Empire has largely endowed Paris. Under this reign, besides the two vast buildings near the Château d'Eau and the Hôtel de Ville, there have sprung up the barracks near the Bank of France and in the Bois de Boulogne. These are a species of construction for which London will hardly envy brilliant Paris. You would prefer, perhaps, to be more on an equality with the French capital in respect of fountains. Of these there are eighty-two in Paris, besides an immense number of what are called *borne-fontaines*, equivalent to our street pumps. And everybody who has visited Paris knows how highly ornamental most of these fountains are, and will think, with a smile and a sigh, of the soda-water bottles in Trafalgar-square. Squares, or small public gardens, tastefully planted with flowers, have been made within the last eight years in various parts of Paris, in the poorer quarters as well as in the more aristocratic ones, and the gardens of the Champs Elysées have wonderfully beautified that favourite promenade, which we all remember a barren waste.

Dr. Veron reckons eight new bridges built since 1852, besides that of Austerlitz, which has been almost entirely reconstructed, and the Pont Neuf which has been greatly improved. There are now twenty-six bridges open on the Seine at Paris, at only two of which (those of Bercy and Grenelle), toll is paid. Other bridges are projected, of which the most important, it is said, will be that of Louis Philippe—to be placed opposite the street of the same name—and of the Louvre. The cost of all the great works enumerated and projected has caused some uneasiness with respect to the finances of the city, but Dr. Veron assures us that such anxiety is groundless, and has been completely dissipated. He declines entering into details of the municipal budget, but gives a brief summary, which, I presume, must be taken as official:—

"The receipts of the city of Paris in 1859 amounted, in round numbers, to 100 millions, and this revenue is enough to meet all the indispensable municipal expenses: it suffices for the interest and sinking fund of the various loans made for the expenses of great public works, and for the bakers' fund: in short, it suffices for all ordinary expenses: the annexation of the suburban zone has alone given rise to the new loan. The credit of the city of Paris annually improves: not only have all its loans been eagerly taken, but its bonds, issued last year at 400*l.*, are now quoted at 455*l.* In matters of credit the public is the best judge. Moreover, the great works of the city of Paris have not only a moral and political object, but the expense is productive. The revenues of the capital will increase by the influence of strangers its splendour attracts."

According to the article under consideration the number of paved streets in old Paris (not including that is to say, in the *arrondissements*) is 1,215, and of shingled (*empierreées*) or macadamized streets, 254. In the annexed communes most of the streets are neither paved nor macadamized. A square metre of pavement costs about 12*l.*, and of macadam from 3*l.* to 3*l.* 4*l.*; but the difference of cost is considered to be more than neutralized by the difference of wear and of expense in keeping in repair. The great streets and boulevards opened since 1852 are macadamized. In 1859, 1,126,475*l.* were expended in pavement, and 214,5,597*l.* in shingling and macadamization. There are about 400 kilometres of paved street in Paris and about 100 of shingle and macadam, 390 of flag or asphaltic footpath, and 350 of planted ways, boulevard, promenade, and squares. The sewers are 196 kilometres in length. The expense of street-cleaning in 1859 was about 61,000*l.* sterling, and of street-watering something less than 8,000*l.*, which latter item appears by no means large, considering that this department is now well attended to in Paris. This summer the expense of watering the streets ought, one would think, to be extremely small, seeing that we have hardly ever been twenty-four hours without rain; but the watercarts are extremely zealous in discharge of their duty, and it is curious to observe how, as soon as a shower ends and a faint sun-ray appears, they emerge from their retreats to irrigate the already soaked ground.

Paris has five slaughter-houses for cattle and sheep, and two for pigs, and there are three others in the newly-annexed communes. The Prefect of the Seine has a plan in agitation for uniting all these establishments into one.

The population in Paris, we are told, was, in 1856, 1,174,346, including the garrison. The recent annexation has brought into Paris 395,454 inhabitants, also including troops. This would give a present population of 1,569,800; but, allowing for progressive increase, it is supposed that in 1861 Paris will contain 1,700,000 souls. This does not include the floating population of visitors who do little more than pass through.

#### THE WILTS ARCHÆOLOGICAL SOCIETY.

THE annual general meeting of this Society took place on Wednesday in the week before last, at Swindon, and the proceedings were by no means of an uninteresting character, notwithstanding that the attendance was somewhat smaller than usual. The gathering took place at the Town-hall, which had been converted into a temporary museum. Only a comparatively few relics were exhibited.

The chair was taken by the Right Hon. T. H. S. Estcourt, M.P., and the Rev. A. C. Smith read the report, which was received and adopted.

The Rev. Canon Jackson then read a long paper on "Swindon and its Neighbourhood."

The Society's dinner took place at the Goddard Arms Hotel, and the company shortly afterwards re-assembled at the Town-hall, where the Rev. W. C. Lukis read a paper prepared by Professor Donaldson, on the cromlech known as "Wayland Smith's Cave," near Swindon, a legend respecting which is to be found in Scott's novel of "Kenilworth." In the course of his paper, the learned professor expressed an opinion that the boulders, known as Sarsen stones, so abundant in various parts of Wiltshire, are the result of glacial action. Referring to the cromlech shape of the chamber in the cromlech itself, he suggested that the centre contained the remains of one or more deified persons, and that as there were some traces of a ditch, the whole enclosure was probably once dedicated to public worship, and that the covering stones had served as altars for human sacrifice. Mr. Lukis said he was sceptical as to the sacrifice of victims upon these cromlechs: they were, in his opinion, purely sepulchral. He also thought that the cromlech was originally covered with a mound of earth.\*

\* The cromlech cell, and what is here called the ditch, remind one much of New Grange in Ireland (see article on "Symbols" in the *Builder* of 16th October, 1858). At New Grange, the chamber or cell is not only cromlech, but one branch of the cross is inscribed as "the House of the God," and "dedicated to the great mother Ops," while the other is named "the tomb of the hero." A long low, and narrow passage, tunnel, or "trance," as they might call such a passage in some parts of Scotland, runs along the ground from the foot of the cross to the surface of the pyramidal mound of earth under which the cell was built. The ditch here referred to may be the remains of just such a passage; and the Cromlech, as remarked by Mr. Lukis, may have originally been covered with earth. But the Cromlech was probably only typically, or rather mystically, sepulchral and sacrificial, as shown in the article on Symbols just alluded to.

The Rev. W. H. Jones, vicar of Bradford-on-Avon, then read a paper on Lord Clarendon and his Troubridge ancestry; and Mr. Cunningham offered some observations on the geology of Swindon and its neighbourhood, with particular reference to the Portland and Purbeck beds. He was followed by Mr. Moore, of Bath, who gave an account of some discoveries he had recently made in the dirt beds of the neighbourhood.

By permission of the directors of the Great Western Railway, the immense works connected with their locomotive department at New Swindon were thrown open to the inspection of members of the Society.

On Thursday, there was an excursion to Ludington Castle (visiting Ludington Church by the way), Wanborough Church, Wayland Smith's Cave, and other places. In the evening there was a *conversazione* at the Town Hall, and Mr. Poulett Scrope read a paper on the Roman Excavations at North Wrexhall.

On Friday, the excursion included a line of country rich in churches of more than ordinary character. The route lay through Stratton St. Margaret, Highworth, Hamington, Kempford, Castle Eaton, Chicklade, Purton, and Lidard Tregoz.

After quitting Highworth, the excursionists visited Hamington Hall, the seat of Captain Wilkes Johnson, R.N., who courteously received them. The history of the building of Hamington Hall, in 1653, is curious.

Two brothers, who were perpetually disagreeing and quarrelling, combined to execute one work in concert. Accordingly they set to work to erect a house, and it is supposed that they experienced such unusual satisfaction and cordial brotherly love during the progress of the work, that they resolved to record the fact. They therefore had the following inscriptions carved in large stone characters upon the outside of the house:—"Ecce quam bonum et quam jucundum est habitare fratres in unum. Ps. 133." Then to show how completely they were of one heart and mind, they represented two hands drawing open the same money-bag, and upon the bag two hands holding the same heart, with their own names opposite to each hand, viz., Ranfo and William Freke, and the inscriptions "Quo communis eo melius," and "Semper idem." Their cordiality and kindness of feeling towards one another found expression in other words, and they repeatedly gave God thanks for it in these words, "Non nobis, Domine, non nobis, sed tuo nomini, sit gloria." As soon, however, as the house was completed, and there was nothing else to do, they returned to their old habits, and quarrelled and disagreed worse than ever. Why did not these intuitive freemasons go on with their brotherly love and their building?

This excursion closed the meeting of the society.\*

#### VICTORIA PARK CEMETERY.

The costly monuments of men remarkable for talents, rank, or wealth, have their impressive teaching. So also have the memorials which in a humble way are raised in many a quiet church-yard, to show those natural affections which are as remarkable in this land as in the cottages as in homes of more lofty pretensions.

Ramblers are often struck by the touching inscriptions and simple menus which have been taken to mark the spot where some loved companion has found his rest. In some parts of the South of England wooden rails—more or less ornamented, and inscribed with the name, time of birth and death—contain the "short and simple annals of the poor." Perhaps to this is added a plain text, which improves the circumstances of the death, or suggests hopeful feeling for the future.

In the solemn but pleasant country church-yard, a couple of names may be found marked above one grave: in other instances, the members of the same family lie side by side; but in few cases is that shocking packing of the dead into indiscriminate masses practised, that was and still is the case, to some extent, in certain of the suburbs of the metropolis and in large provincial towns. Where this is done, and from twenty to thirty bodies are hurried in one grave, the practice, so far as we had been able to discover, of placing any memorial on such general graves has been neglected. We lately found that this is not always so, and that in the Victoria Cemetery, although the burials are managed in the old fashion, the graves are decorated in a most peculiar manner. In one part of this burial-place

\* A fuller account of the meeting than we can give appeared in the *Wills Mirror* for 22nd August.

a large space is set apart for the graves of the children of the poorer classes; these pits are made about 10 feet 6 inches deep, 6 feet long, and 2 feet 8 inches wide. As funeral after funeral arrives on the ground on Monday afternoons in an almost constant stream, the funeral service is delivered with considerable expedition. One of these graves, it has been admitted, will hold about twenty bodies, in layers. The long rows of these sepulchres, disposed with geometrical exactness, and numbering to three or four thousand and upwards, give one some notion of the vast number of little children who have there found their last rest. Nor can this be wondered at, when we are told that on some days a hundred bodies are buried.

There are many peculiar and painful sights to be met with in the metropolis, and a visit to this cemetery on a busy hurrying-day is one of them. Two, or perhaps three, clergymen are, in different parts, intoning the solemn service for the dead. "I am the Resurrection and the Life," "I know that my Redeemer liveth," and other passages, mingle strangely together. At one grave Irish mourners are sounding their peculiar dirge over their departed friend: in other places women and children are kneeling on the yellow mounds of earth. Funerals ambitiously performed, with nates and feather-men; and others in different descriptions of mourning carriages, pass on: some in cabs, roll along the broad central avenue. Outside, the dull tolling of the chapel bell, the noise of manufactories, the lowing of oxen and bleating of sheep, with sounds peculiar to the railway, which is nearly adjoining,—cause feelings so mingled that they cannot be well expressed.

On observing more closely the children's graves it will be noted that, on most of those which have been banked up, there is a curious variety of ornament. On many are large shells, on some of which are inscriptions: in one, for instance, is "Rosetta Eliza, aged 2 years." Close by is a little plaster cast of the Virgin and Child, and the popular cast of the infant Samuel. There are also chimney-piece ornaments of various value, which had probably been familiar play-things with a poor child who sleeps below. There are little toys, too, mugs with names on them, china figures, dolls, little china basins and vases, in which flowers are sown or planted. On some graves are little wooden memorials, with epitaphs painted in white and black on clouds or rays. On nearly all attempts are made to cultivate flowers. It seems strange, at a first glance, that in this neighbourhood there should be a fashion in the decoration of graves which is not to be met with in other metropolitan cemeteries. This is, however, not so, when we consider that a large portion of the surrounding population in Bethnal-green and Spital-fields, engaged in the silk-weaving trade, are, as has been before mentioned, of French extraction; and in this way are shown the manners of the land of their ancestors. Many were searching for graves, and difficulty seemed to be experienced in discovering particular numbers. They generally, however, recognized them by the little mementoes to which we have referred. A man and his wife had found "little Charley's glass peacock, which his aunt had given him," and were sowing flower-seeds close by. On this grave there were portions of glass and porcelain vessels, of choice shape and manufacture, probably amongst the last treasured relics of more prosperous days, before persecution obliged many thousands of the French Huguenots to fly for shelter to London.

For a certain money consideration the graves can be tarred and edged with wicker-work. This is often done by subscription. In our matter-of-fact times, such observances as these are pleasant, and it is to be hoped that care will be taken to preserve these memorials which, although they have but little market value, are, notwithstanding, prized by those who have placed them here. Centuries hence, when the present level has been raised, and the appearance of the site changed, antiquaries of that period may find, in the excavation, matters which will cause discussion.

#### SCHOOL OF ART AND SCIENCE AT THE CRYSTAL PALACE.

It was a leading purpose in the first foundation of the Crystal Palace that its courts and collections should be a means of education by the eye, and that the treasures of art and beauty, collected and stored up from every part where greatness and civilization had left them, should here present a new and advanced starting-point for the student. With lavish means the directors have been enabled to bring together the most complete collections of their kind in the world; and now what formerly occupied years of study, and difficult and costly

travel, may be judged of in almost as many hours. This bringing together and into series the great examples of art, so that comparison may enlarge and amend our judgment, is, perhaps, the greatest aim achieved by the Crystal Palace. We have often pointed out the value of the collections, and urged making use of them. In the Crystal Palace has been collected such a complete representation of the schools of antique sculpture as no academy or single collection in the world can show. The same may also be said of architecture; and other arts and sciences could be particularized. It is especially with a view to utilize all these particular advantages for purposes of education that the directors have organized the School of Art, Science, and Literature; while at the same time they have borne in mind the necessity of making the system pursued as complete as possible in all its branches, and capable of every practical development. The directors have also extended many privileges to the pupils, such as the free admission to the Palace on all days when the classes are attended, and the purchase-right to a full season ticket, admitting to the Palace on every occasion when open to the public, with some other rights, for 10s. 6d. Professorships have been arranged to utilize the whole eastern range of Fine Art Courts, and also the series on the western side. The magnificent collection stored in the Industrial and Technological Museum, arranged by Dr. Price, in the galleries at the end of the central transept, and described by us in some detail, may also be particularized as thus available. For the use of these and other collections every practical facility is given. The artistic classes are superintended by Mr. Edward Goodhall and Mr. W. K. Shenton; those for Languages, History, Physical Geography, &c. by M. Roche, Dr. Scudler, Signor Volpe, Rev. C. Boutel, M.A., and Herr Somschenich; the Music and Singing by Mr. J. Benedict, Mr. Lindsay Sloper, Mr. Pratt, Signor Garcia, Mr. Henry Leslie, &c.; and even Dancing is not forgotten. Mr. S. Leigh Sothey has offered a prize to be competed for in the class for figure-drawing, and other similar prizes will, doubtless, be announced.

#### IRELAND.

The Carmelite Fathers at Dublin have built a small church in the rear of their schools in Dominic-street. It is 60 feet by 26 feet, divided into nave and chancel, and has a cloister along the side and back, and serving as a vestry. The ceiling is groined in five compartments, and the interior is lighted by five double lancet Gothic windows at each side. Externally, the walling displays alternate courses of granite and black stone (calp), with a double plinth course of granite, wrought and chamfered, and red bricks are introduced alternately with granite in the window arched heads. A crenellated parapet extends on the top, and the roof has a crested ridge. Mr. O. T. Healey is the architect.

The works on the Athenry and Tuam Railway are in a forward state, and the officers travel on the line as far as Ballyglinnon. This railway will be a great advantage when complete, as the present "carrig" system from the stations of the Midland Railway to the several towns in the counties of Sligo, Mayo, and Galway, is miserably tedious.

The Roman Catholic Cathedral at Armagh has been twenty years in course of erection, and upwards of 30,000l. have been expended thereon, independently of a contract for 15,000l. recently entered into to complete it. The roofing is now being proceeded with.

It is stated that a new town-hall for Sligo is projected. The rising town of Ballina requires some public hall likewise, and a little more energy and earnestness of purpose infused into the Town Commissioners' Councils.

A new church is to be built at Sydenham, near Belfast, according to designs by Mr. W. J. Darro, of Belfast and Newry, architect.

The Police Valuator of Belfast reports that 198 new houses in that town have been occupied for the first time since 1st January last.

A new line of railway, from Downpatrick to Newry, is projected, and will pass within three-quarters of a mile of Clough and Seaford respectively, along the western shore of Dundrum, close to the towns of Dundrum and Maghera, within two miles of Newcastle, 1½ mile from Bryansford and Castlewelan, and crossing the Bann at McComb's-bridge, thence to Rathfriland and the terraces at Newry, which will be in Edward-street, in common with the Newry, Warrenpoint, and Armagh Railway.

Mr. Richard Williamson, C.E. (for many years surveyor for the east division of Omagh), has been

appointed surveyor for the city and county of Derry, in the room of the late Mr. Stewart Gordon, C.E.

Alterations and additions are to be made to Dunamway National School, Cork, by the Board of Public Works. Tenders to 6th of September.

THE LONDON MASTER BAKERS' ALMSHOUSES.

AN addition has been made to the Bakers' Almshouses. When, some ten years ago, a society was established in London for the purpose of endeavouring to abolish the system of Christmas boxes, it was, at the same time, deemed desirable to request the millers, who were in the habit of presenting to their customers, amongst other good and seasonable gifts, whole flocks of Christmas turkeys, to divert the flight of their donations into a new channel; and the millers, entering at once into the spirit of the suggestion, converted the turkeys into sterling value, represented in pounds sterling at the sum of 700*l.* This donation, an annual one, accumulated rapidly; and in 1857 the money was converted into the row of almshouses—fourteen in number—in the Lea Bridge-road, Essex. Each tenement (consisting of a bed-room, sitting-room, and kitchen) is an asylum for a decayed master baker, either alone or with his wife, who is besides provided with fuel and a money-payment of 30*s.* a month. The expenses are defrayed by annual subscriptions and donations. A desire has been a long time existing to extend the advantages of the institution; and the late Mr. Waters, of the firm of Waters & Steel, Bucksidge, having left 1,000*l.*, which the committee came into possession of this year, towards carrying out the design, it was at once determined that a wing (on the eastern side) should be added to the building. Mr. H. W. Nevill, the Welsh bread manufacturer, of Holborn, has contributed the expense of one of the additional tenements,—an example which, it is expected, will be somewhat extensively followed. The architect is Mr. T. Knightley; the builder is Mr. E. Clark, of Tottenham. It is intended that ultimately there shall be fifty-four of these tenements, and the whole will then form three sides of a quadrangle.

VENTILATION.

UNTIL a very recent period the proper admission of the atmosphere to residential or other buildings was but little studied, and it was not until the evils arising from the unwholesome condition of barracks, hospitals, and private dwellings attracted observation that structural improvements were called for in the public as well as domestic edifices of the day.

A very simple and effective ventilator, as patented by Mr. W. Cooke, of Upper Stamford-street, has been exhibited in model at the office of the *Builder*. It appears to be peculiarly adapted for the use of dwellings in which no structural provision had been previously made. It is constructed of wire gauze, or perforated zinc, and is fitted to the aperture of the window above, and to the sash below, folding in widths, and lying horizontally beneath the reveal, and out of sight when closed. The fitting up, as well as the removal of the apparatus, is easily effected, and it can be detached with facility. The intervention of the coarse gauze or perforated zinc breaks the draught, but admits sufficient to sustain the vital current in freshness, and at the same time guards us against too sudden changes of temperature.

There are, however, other objects to which these ventilators are peculiarly applicable, such as the cabins of ships, and to carriages generally, and to stables. The patent we suppose simply applies to the mode of fitting up.

HARBOURS OF REFUGE.

The following is the report of the Select Committee appointed to inquire how far it may be practicable to afford better shelter to our shipping upon our coasts than is at present afforded, by the adoption of some plan for the construction of break-waters and harbours less costly and better adapted for certain localities than the system of solid masonry hitherto in use, and whether any such plan appears likely to be also serviceable for the improvement of our national defence, and to report to the House:—

"The committee have met and considered the subject matter referred to them, and have examined several witnesses in relation thereto, and various designs of floating and other breakwaters have been laid before them.

The committee feel the importance of seeking every means by which harbours and breakwaters of a less costly construction than those at present in course of formation could be placed on various parts of the coast.

They have taken much evidence on this subject, and have had their attention especially called to floating breakwaters, of which several plans have been submitted to them. Upon the advantages to be derived from these constructions the evidence is conflicting.

The committee are not prepared to recommend that the Government should undertake the task of constructing breakwaters on these principles; but, looking to the vast cost of harbours constructed upon the systems hitherto in use, they are of opinion that a moderate sum may be advantageously expended by Government in testing any plans which may offer a probability of important results in great future saving of money, and in giving protection to life and property in various localities.

To carry this object into effect, the committee recommend that a sum, not exceeding 10,000*l.*, be placed at the disposal of the Admiralty.

The committee have received evidence on the question of the deposit of silt in the large harbours now under construction. Some witnesses have stated that these harbours are gradually deteriorating from the accumulation of silt. The hydrographer of the Admiralty has, however, informed the committee that at Dover, Portland, Plymouth, and Kingstown, recent soundings show that there is no deposit. The slight silting of a few niches at Holyhead Refuge Harbour may, it is stated, fairly be attributed to the millions of tons of stone, fresh from the quarry, that have been tipped into the sea in the construction of the breakwaters, and that this cause of deposit will consequently cease when the works are brought to a close.

The Committee further recommend that the attention of the Admiralty and Board of Trade should be invited to this important subject, to consider whether any facilities can be given to public bodies or to private companies who may desire, at their own risk, to improve our harbours, or to give increased priority to our coasting trade.

And the committee have directed the minutes of evidence taken before them, together with an appendix, to be laid before your Lordships.

August 2<sup>d</sup>.

THE "BUILDER'S" LAW NOTES.

**Drinking-Fountains.**—A recently passed statute provides that if any person do any damage, whereby any well, fountain, or pump is fouled, he shall be liable to a penalty not exceeding 5*l.* The same Act provides that all wells, fountains, or pumps, provided for the use of the inhabitants of any place (and not being the property of any person or corporation, other than the officers of such place), are to be vested in the local authority of the place under the Act, who are from time to time to cause them to be kept in good repair and condition, and free from all pollution.

**Family Deed.**—A person, against whom two actions of trespass had been brought, executed, several days before the trial, a conveyance of all his property to his daughter without valuable consideration. The deed was declared to be fraudulent and void under the statute of 13th Elizabeth.—*Barling v. Bishopp.*

**Proof in Bankruptcy.**—A married woman lent a person money out of her own earnings while she was living apart from her husband and not maintained by him. The debtor became bankrupt, and it was held that the wife might alone prove the debt, the husband refusing to join in the proof.—*Ex parte Coles.*

**Landlord and Tenant.**—An owner agreed to grant to a tenant a lease for twelve years of certain lands, on condition that the tenant would cultivate the lands in a good and husbandlike manner. The tenant entered into possession, but the lease was not granted; and, after four years, he received notice to quit, on the ground that the farm had not been properly farmed. He applied to the Court of Chancery for the enforcement of the covenant to grant the lease, and the Court decreed in his favour, as it was not proved that there had been such a departure from good husbandry as would have worked a forfeiture of the lease if it had been granted.—*Rankin v. Lay.*

ARCHITECTURAL EXAMINATIONS.

The following letter has been addressed to various architectural societies in the provinces:—

"9, Conduit-street, Hanover-square, W., August, 1860.

SIR,—We are instructed by the President and Council of the Royal Institute of British Architects, to request that you will be good enough to bring before the notice of your Society the enclosed proposal of the Council for establishing a system of Architectural Examination; and we should feel much obliged if you would, by the end of September, if possible, favour us with the opinion of your Society upon the said proposal, and with any suggestion or modification which may be recommended by its members collectively or individually.

We should, of course, be happy to receive such suggestions in any form which may be considered best by your Society; but we may be allowed to mention that, as there are several societies whose opinions we hope to elicit, it would serve to put the whole matter in a clearer way for working out if your suggestions could be embodied in a series

of resolutions, which should either adopt, alter, or reject those put forward by the Council, and, so far as possible, run parallel with them.

We could then collate together, without much difficulty, the opinions of the several Societies, and ascertain how nearly they coincide, or wherein they differ most importantly.

We annex also a copy of the resolutions passed by the members of the Institute, the adjournment having been agreed to in order to ascertain, if possible, the opinion of those gentlemen whose residence and practice are away from London, and who are no doubt fully represented by your Society and others.

We need scarcely mention that the Council attach great importance to the success of this movement, and would wish to know whether (although perhaps differing as to the detail) your Society would be in a position to assist in carrying it out effectually.

We remain, &c.,  
(Signed) T. HAYTER LEWIS, } Hon. Secs.  
JAMES BELL, }

HEREFORD CLOCK-TOWER AND ENTRANCE COMPETITION.

THE selected design for the clocktower (mentioned in our last) is found to be by Mr. C. H. Edwards, of London; the design for the market entrance, by Mr. J. Clayton, of Hereford.

SIR,—As the author of the two designs, numbered 39, one for the proposed clock-tower, the other for the clock-turret gateway, selected by a majority of votes of the subscribers as described in your last number, allow me to correct an impression which might otherwise prevail as to the correctness of the proceedings, owing to the observations made by Mr. Anthony at the close of the meeting.

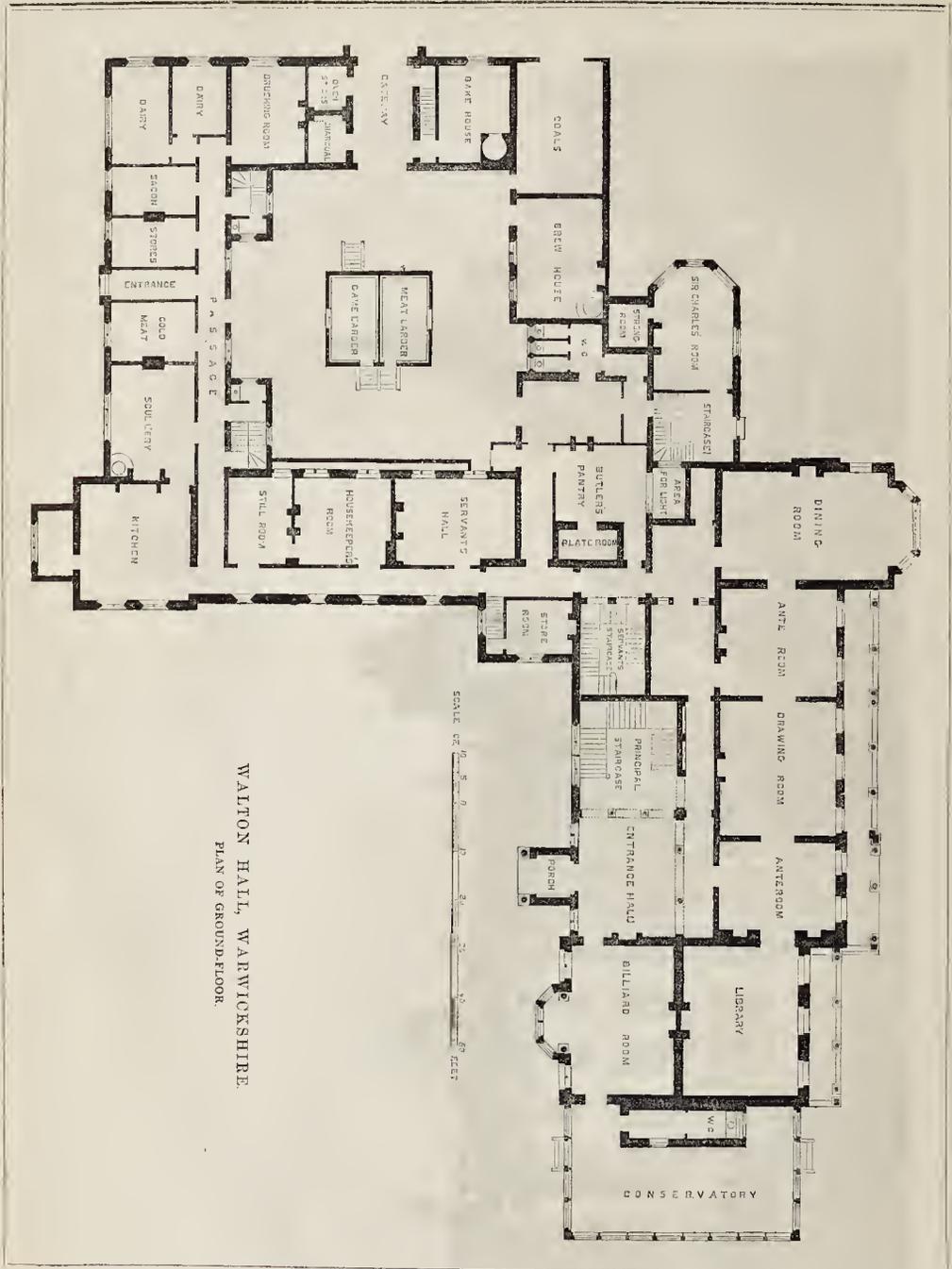
It appears Mr. Anthony observed "on looking at the voting papers, that he was surprised to find that many had only voted for one design, whereas he understood they were to vote for three." Mr. Anthony also gives his impression, that had this been otherwise "50 would have had a considerable majority." From this it may be inferred, that 39 had surreptitiously obtained the advantage by single voting, and that the same was a mode of proceeding not understood or warranted by the meeting. As to single voting, if Mr. Anthony had also taken the trouble to have scrutinized the votes recorded for No. 50, he would have found single votes amongst that list, though, unfortunately, only two! to four! of his opponents, and which, had they all been struck off, would not have given 50 a majority.

As to the general impression of the meeting, it will be at once evident that more than one-half those present must have voted plumpers or single votes for the clock-turret gateway, No. 39, or there would not have been a majority of twenty-four over the other two designs. This having passed unnoticed, your readers will be able to form an opinion of the motive and good taste of the observations alluded to, and also of any subsequent proceedings which may be brought before their notice.

All that I have now to observe, beyond reminding your readers that I hold the appointment of architect, and am now proceeding with the works of the *Hereford Market Improvements*, is, that I could some tales unfold with reference to the proceedings of this competition (in which competitors play their part), not calculated, I should imagine, to increase the zeal of those members of the profession who now so greedily grasp at the paltry bait, and so recklessly enter the unwholesome ranks of competition. JOHN CLAYTON.

P.S. You will perceive, by the resolution relating to clock-tower, that the fine old-timber Town-hall seems doomed to be removed. I should mention, that I had also a drawing of the restoration of this building, without the upper story, giving block at west end, in the Clock-tower Competition.

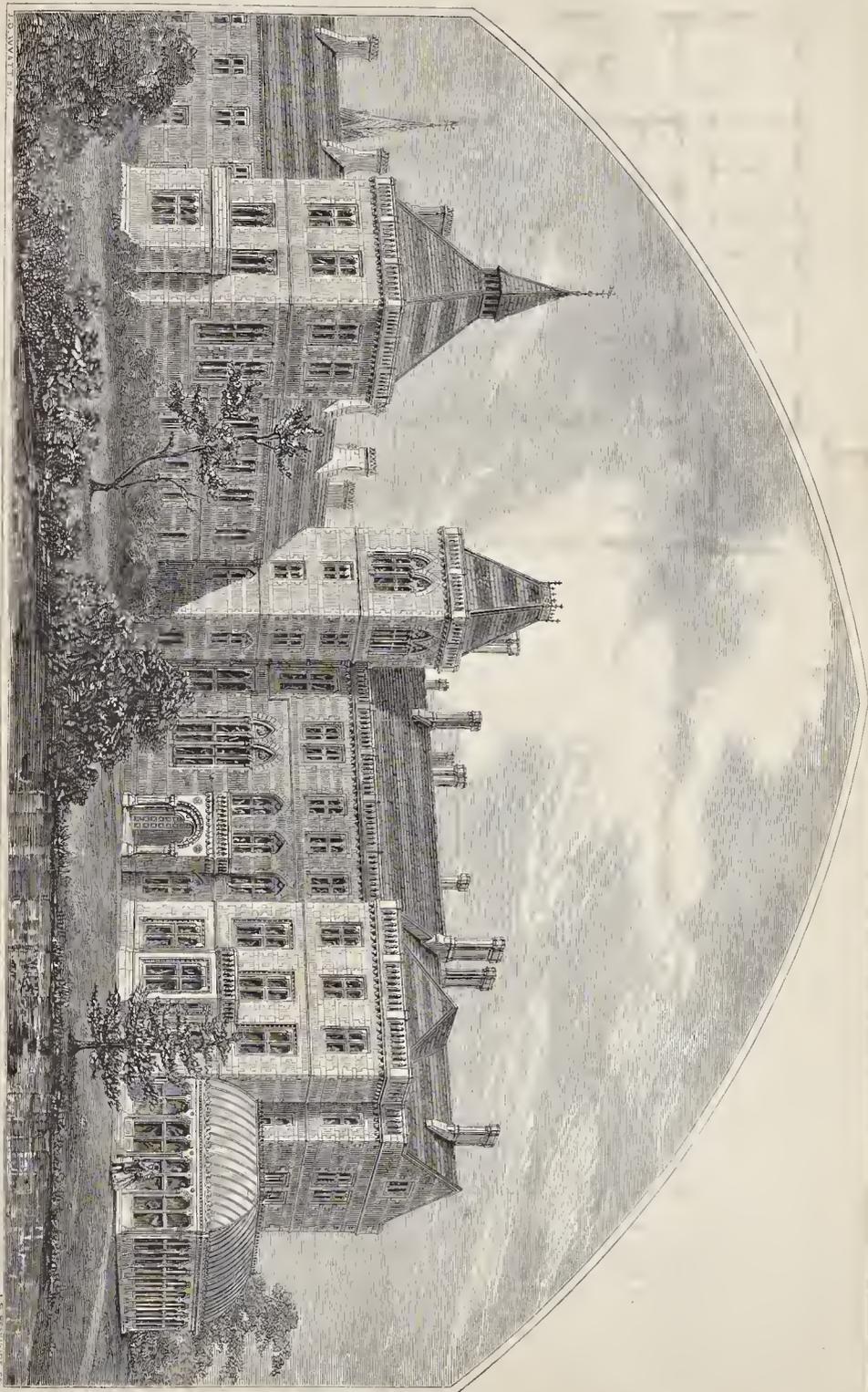
ALL SAINTS CHURCH, KENSINGTON-PARK, NOTTING-HILL.—There is again a report that the works at the above church (of which we gave an engraving in 1855) will shortly be resumed, with a view to its consecration on the 1st November next. 3,500*l.* are required for fittings and debt. The Rev. John Light, M.A., of Ashton-under-Lyne, has been appointed the first incumbent. A daily cathedral service will be performed morning and evening. Dr. James Peel, of New College, Oxford, and Mr. William Sudlow, are the organist and choirmaster.



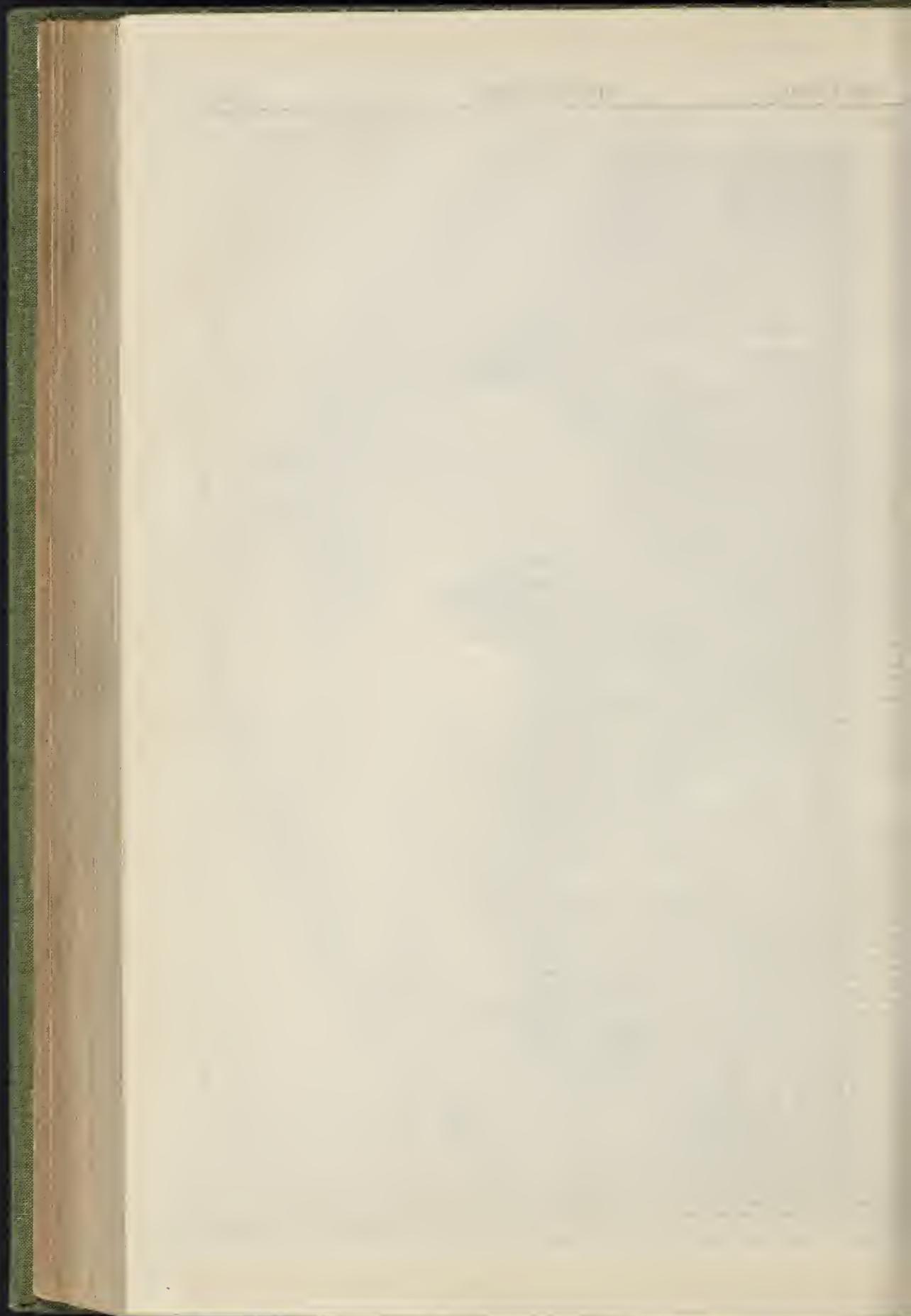
**WALTON HALL, WARWICKSHIRE.**  
 WALTON HALL, situate about eight miles south of Warwick, and the seat of Sir Charles Mordaunt, Bart., has been undergoing considerable alteration and enlargement during the past two years, under the direction of Mr. Scott, and our engraving shows the present appearance, now that it is nearly completed. The buildings occupy a considerable space of ground, as may be seen by referring to the annexed plan, and each elevation of the principal mass possesses architectural features. A spacious conservatory, too, forms an important addition to this portion of the house, of which most of the old walls remain.

The entrance-porch, hall, and principal staircase are, however, wholly new. Considerable attention has been paid to the arrangement of the several offices, which are planned in a quadrangular form. The kitchen occupies one of the angles, and the larder a detached building in the centre.  
 The walls are constructed of local stone, with Bath stone for the dressings. The roofs are of green and blue slates, used alternately. The metal work has been chiefly supplied by Potter, of South Motton-street. The general contractor is Mr. Norris, of Henrietta-street, Cavendish-square, and the clerk of works is Mr. Walter Scott.

**KETTERING CEMETERY COMPETITION.**  
 SEVERAL architects replied to the advertisement of the Burial Board. Recently the Board selected the design marked "Dum Spiro Spero," which proved to be by Mr. R. W. Johnson, architect, of Melton Mowbray, under whose superintendence the works will be at once carried out.  
**CITY AUTUMN EXHIBITION.**—Messrs. Hayward & Leggatt have opened an exhibition of modern paintings under this title, in their gallery, 28, Cornhill. It includes several well-known excellent works.



WALTON HALL, WARWICKSHIRE.—ADMITTED BY MR. G. G. SCOTT, ARCHITECT.



MESSRS. EVANS & PULLAN'S DESIGNS  
FOR LILLE CATHEDRAL.

The design for Lille Cathedral submitted by Mr. G. G. Evans and Mr. R. Popplewell Pullan was not amongst those rewarded, but it was warmly commended by some from this country who viewed all the drawings sent in, and this has led the architects to publish it by means of photography.\* The design is set forth on thirty-one sheets in a portfolio, with some printed observations inscribed to Mr. A. Beresford Hope. The drawings show considerable acquaintance with Mediaeval models, and a ready pencil.

We may mention that progress is being made with the cathedral for Lille rather by preparing stones, for columns and other parts, than by setting them. A lottery is on foot for 18,000*l.*; the sum of 3,200*l.* is to be distributed in prizes. Meantime service is performed in the crypt under the Lady Chapel.

## ELECTRO-TELEGRAPHIC.

As was to be expected, it now appears that the iron covering of the Red Sea telegraph was quite rotten, like that of the Atlantic telegraph, and in course of a single year. The gutta-percha covering is also said to have been defective; but is it not quite likely that the rusting iron will eat into the gutta-percha itself, and destroy it as an insulator? Ship timbers, at least, become curiously changed and blackened where iron bolts pass through them; and this appears to arise from the catalytic action of the oxygen, which rusts the metal, and is transferred to the adjoining material, and replaced by new oxygen in the rust, by a now well-known chemical action. This will only form an additional reason for rejecting iron as a covering to telegraphic lines. Copper, as we have ere now said, would be better and cheaper in the end, were any such ponderous covering still held to be essential; and, indeed, this is now suggested in the *Malta Times* for a new Red Sea cable. Iron, too, being a positively electric metal, and copper a negatively electric one, may not the insulating material, thus placed between two fires as it were, in iron covered cables, be actually destroyed by electrical action? In every way iron ought to be rejected; and, if the telegraphic wires were made of greater calibre, as they really appear to require to be in long lines, the only additional strengthening, besides a good insulating material, such as India rubber, if it can now be rightly and economically applied, would appear to be an outer covering of tarred rope-yarn. The French threaten to cut us out as layers of an Atlantic line, but are they properly prepared with a really improved cable?

## CHURCH BUILDING NEWS.

**Edenbridge (Kent).**—The church here has been restored and reopened. The old pews have been removed; the gallery at the west end, in which the organ stood and the choir were seated, has been taken down; the partition in the south-west corner, which rudely served the purpose of a vestry, has disappeared; the chancel has changed its appearance considerably; a fresh pavement has been laid throughout the church; a vestry has been added on the north side; and the pulpit, organ, and baptismal font have changed their positions in harmony with other alterations. The whole restoration has been effected by the application of the voluntary principle, which has lately been so greatly developed throughout the country. The sittings consist of open benches, providing accommodation for upwards of a thousand persons, a large proportion of them free. In the body of the church they are made of deal, stained and varnished; those in the chancel being of varnished oak. In the chancel, Mr. W's hand have been used for the flooring. The altar, in all its appointments, is entirely new, the cloth of red velvet; and there is a new pointed window, the gift of Mrs. F. R. Gore, which makes a graceful addition to the ornamental part of the chancel. All the doors of the church are new, and amongst other additions is a window at the south-west end, where the partition used as a vestry originally stood. There is a new apparatus for the heating of the church.

**Marborough.**—The cemetery chapel has been commenced. Mr. J. May, builder, has taken the contract for 610*l.*, including the lych gate, of which sum, in addition to the presentation of the land, the Marquis of Ailesbury has contributed 200*l.*

**Guernsey.**—A small chapel in St. Peter's Port, Guernsey, hitherto known as Bethel Chapel, has been reopened, after enlargement and decoration, under the dedication of All Saints. In spite of difficulties of site and space, says the *Dorset Chronicle*, a chance has been won from the adjoining house, small indeed, yet proportioned to the size of the chapel, which will accommodate about 330 worshippers.

**Worcester.**—A rectory-house for St. Nicholas is about to be erected. A suitable site, says the local *Herald*, has been purchased at Lansdowne-crenset; and, by an advertisement, builders' estimates are to be sent in at once to the architect, Mr. William Jeffries Hopkins.

**Bristol.**—The foundation-stone has been laid of a new church, to be added to the list of sacred edifices with which the extensive parish of St. Philip and Jacob abounds. The building will be in the Early Gothic style, and consist of a nave and two aisles; and it is proposed to add a chancel at a future time, while a portion of the ground adjoining the site is reserved for a school. The length of the church will be 86 feet, with a breadth and elevation of 50 feet, the material employed being Hanham stone, with freestone dressings. The aisles will be divided from the nave by rows of pillars, with ornamental stone capitals, and the church is laid out for 700 sittings. The principal entrance will be at the west side of the building, facing the New-road, the porch being on the south. Space will also be left for a gallery.

**Cardiff.**—The foundation-stone of the new Roman Catholic Chapel, in Pucca-lane, has been laid. The architect is Mr. C. F. Hauson, of Bristol, and Mr. Webb, of this town, is the builder. The size of the chapel will be 140 feet by 70 feet. The style will be Gothic; and, when the necessary funds are raised, a tower will be built.

**Welby.**—The church belonging to this parish is undergoing a thorough restoration, including re-roofing the whole and re-building a portion of the south wall, together with a new porch, &c. Situated in an obscure position, at some distance from the lodges which constitute the parish, this church is almost unknown to the public. It has, however, some points of interest to the antiquary, and will doubtless be brought into notice by the effort now being made to render it fit for divine service. The works are being carried out under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray.

**Calderbrook (Manchester).**—The foundation-stone has been laid of a new church, to be dedicated to St. James, on the hill-side, within a short distance of the entrance to Summit Tunnel, near Littleborough, in the township of Calderbrook. The new church will have a spire 155 feet high; it will contain sittings for 500 people. The style of architecture will be the Decorated. The edifice will have a chancel, nave, north aisle, and a chapel for the family of the Deardens, similar to the Trinity Chapel in Rochdale parish church. The seats will be open stalls, the roof timbers visible, and the chief windows are to be filled with stained glass.

**Whitwell (Yorkshire).**—At Whitwell, near Malton, a new church has been erected at a cost of several thousand pounds, and also endowed to the amount of 150*l.* per annum, by Lady Lechmere, the wife of Sir Edmond A. H. Lechmere, Bart., of Rhydcourt, Worcestershire. Lady Lechmere devoted 3,700*l.* for the purpose of building the church, but this sum is exclusive of the cost of the site, which contains between two and three roods of land, the greater part, of course, intended for a churchyard. The architect selected was Mr. Street. The style of the building, says the *York Herald*, is Geometrical Middle Pointed. Its extreme interior length is 80 feet, the breadth of the nave 18 feet 6 inches, and of the chancel 17 feet 3 inches. It will accommodate 180 persons. The church is built of Whitby stone of two colours, the dark colour being inserted as bands. There is a lych gate at the principal entrance, and the yard is entirely enclosed by a stone wall. The tower is on the south side of the chancel, and the height from the ground to the top of the spire is 113 feet. The tower contains a peal of six bells, which were cast by Messrs. Warner & Sons, of London. An apparatus has been fixed under the central passage of the church for warming the building. The floor of the nave is laid with Milton tiles—black, red, chocolate, and buff. The chancel is laid with figured encaustic tiles of various patterns, and the walls up to the string course, internally are also laid with coloured tiles and encaustic figured bands. The reredos is by Mr. Earp, of London, and is composed of Mansfield yellow

stone, Staffordshire alabaster, rouge Royal, Languedoc, Galway, Devonshire red marble and pebbles, and Derbyshire spar. The east window is a three-light, presented by Sir E. Lechmere. This window, which cost 140*l.* and is by Messrs. Clayton & Bell, of London, represents the crucifixion in the centre, with St. John and the centurion on one side, and the mother of our Lord and the two Maries on the other side. The two side windows of the chancel were presented by A. Stephens, esq., of Postyn Hall (late of Whitwell Hall), and Mrs. Stephens, Lady Lechmere being the daughter of the latter. These windows cost about 50*l.* The west window, representing the four evangelists, is the gift of the tenantry. This window will also cost about 50*l.*, and it, as well as the windows just mentioned, is the production of Mr. Wallis, of Newcastle. The seats are composed of movable open oak benches. The font is of Caen stone, inlaid with discs of coloured marbles and spars. The pulpit is of Caen stone, with red Mansfield steps. The carving, both in the interior and exterior of the church, is by Mr. W. Pearce, of London. The roof of the building is open timbered, and covered with red tiles, manufactured by Mr. Shafroe, of York, the contractor for the work. The organ, supplied by Mr. Willis, of London, is placed under the tower. The woodwork was executed by Mr. W. Cook, of York; and the sconces and other wrought iron work were supplied by Mr. Lever, of Maidenhead. The clerk of the works was Mr. J. Chick, agent of Sir E. Lechmere, in Worcestershire. The church has been dedicated to St. John the Evangelist, and consecrated by the new Archbishop of York.

**Howsham (Yorkshire).**—Mrs. Cholmley, of Howsham Hall, has caused a new church to be erected at the pleasant village of Howsham, which is only three or four miles from Whitwell, where Lady Lechmere's church has just been opened. Mrs. Cholmley's church has been built in memory of her late husband, Col. Cholmley. Like Lady Lechmere, she has also endowed her church, the entire cost of which will amount to between 2,000*l.* and 3,000*l.* The church is dedicated to St. John the Evangelist. The style of architecture is Geometrical Middle Pointed. The nave is 40 feet, and the chancel 29 feet in length. The breadth of the nave is 20 feet 9 inches, and of the chancel 15 feet. Accommodation has been provided for about the same number of persons as in Whitwell church. The porch occupies a portion of the extreme west end of the building, the remainder of which is occupied by the tower, which has a pyramidal capping, supported by Mansfield stone and marble columns. In the tower are four bells, which were cast by Messrs. Warner & Son, of London. The church is built of Whitby stone, from the quarries of Mr. John Bolton, similar to that used at Whitwell, and it is relieved by coloured bands. The chancel terminates with an apse in the wooden groined roof of the same, which is in seven compartments, and has been painted in varied colours, by Mr. E. O. P. Harrison, of London. The remaining portion of the roofing is open timbered, and of stained deal. The three apse windows contain six lights. The one to the north represents the Last Supper and the Agony in the Garden; the centre one contains the Crucifixion, and the Taking-down from the Cross; and the next represents the Resurrection and the Ascension. The south window of the chancel is of three lights, and represents the Six Acts of Mercy, as recorded by Christ, in the twenty-fifth chapter of Matthew. The two easternmost windows of the nave are of two lights each, and represent the Four Evangelists. The third window is of three lights, representing the Baptism of Christ, Christ inviting little Children to come unto Him, and the other represents Him as Feeding the Lambs. The circular west window represents Christ Judging the World, and six lights contain the evangelistic symbols. The window in the chancel, representing the Six Acts of Mercy, was given by the tenantry on the Howsham estate. The whole of the stained glass windows were supplied by Messrs. Clayton & Bell, of London. The reredos is in three compartments, and is of Caen stone, inlaid with marbles and spars. The centre compartment contains a Maltese cross, which is composed of Languedoc marble. This reredos was supplied by Mr. Earp, of London. The paving of the floor of the church is the same as at Whitwell, being composed of Milton tiles; and the chancel is figured with encaustic tiles and white marble. The pulpit is at the north-east corner of the nave, the base and steps being of red Mansfield stone, and the remaining portion of Caen stone, with inlaid patterns of various coloured marbles. The sconces and other wrought-iron work were supplied by Mr. Lever, of Maidenhead.

\* Published by the Authors, Winborne Minster.

Mr. G. E. Street was the architect, and Mr. Shaftoe, of York, the contractor; and the seats and other woodwork being supplied by Mr. W. Cook, of York. The edifice has been consecrated by the Archbishop.

**Barnby Dun (near Doncaster).**—The church of Barnby Dun is about to be restored. Messrs. Harbald & Goldie have been called in by Mr. J. H. Newsome, who proposes to restore thoroughly the chancel: the nave and aisle have already been repaired to some extent; but it is intended to complete the good work to well begun. The church is of the thirteenth and fourteenth centuries.

**Dewsbury Moor.**—The *Leeds Intelligence* states that the whole of St. John's Church, Dewsbury Moor, has recently undergone some necessary repairs. The roof of the tower has been entirely renewed. It had been for some time in a very dilapidated condition, owing to the decayed state of the woodwork. The exposed parts of the exterior of the church have been pointed with mastie, to exclude damp. The interior of the building has also been renovated. The ceiling has been coloured in panels with a brown mather, and the ribs or spandrels are thrown up in white. The walls are done a warm stone colour. The heating apparatus has also been renewed.

**Bradford.**—That portion of the borough cemetery at Solenemoor appropriated to the Church of England has been consecrated by the Bishop of Ripon. The works have been executed under the direction of Mr. Gott, the borough surveyor. The twenty acres of ground already appropriated appear to form almost a square. The entrance boundary in Necropolis-road consists of palisading and entrance gates. A large house, the residence of Mr. Scanton, the registrar of the cemetery, stands near the entrance. Two sides of the ground are enclosed by high stone walls. A low boundary wall divides the cemetery from the unappropriated ground at the bottom. A carriage road, running from the entrance gate to the bottom, divides it, nearly in the centre, into two portions; one, on the western side, being intended for the Episcopians, and the other, on the eastern side, for the Nonconformists. The two portions of ground are crossed near the middle by a broad terrace. On each side of the terrace is erected a chapel. The registrar's house and the chapels were erected from the designs of Mr. E. Milnes, architect. The style of architecture is the Geometrical Decorated. The cost of the building and the boundary walls was about 2,500*l.*—St. Thomas's Church, designed to accommodate 750 people, will shortly be commenced. The site has been presented to the committee, and plans have been prepared by Messrs. Lockwood & Mawson, of Bradford. The estimated outlay is 2,500*l.*

**Harrogate.**—A short time ago several architects were invited to furnish designs for the new Independent Chapel proposed to be erected at Harrogate. London, Bristol, Leeds, Bradford, Cardiff, and Darlington, responded to the call. The designs sent in by Messrs. Lockwood and Mawson, of Bradford, were selected. The building will occupy a prominent position at the entrance of the Victoria Park. The style is Geometric. A tower and spire rise at the south-east angle to a height of 150 feet. The estimated outlay is 4,000*l.*—Christ Church, High-Harrogate, is also to be considerably enlarged, by the addition of new transepts, chancel, organ-loft, and vestries, and by other alterations, also under the direction of Messrs. Lockwood & Mawson.

**Hull.**—The foundation stone of a new Wesleyan chapel has been laid on the Beverley-road, by the mayor, Mr. Z. C. Pearson. The edifice will be in the Gothic style of the Decorated period. The internal dimensions of the chapel are 90 feet by 54 feet, and accommodation is provided for about 1,200 persons. On the sides of the main buildings in front are projecting wings, with stone staircases to the galleries. The principal front has a large four-light tracered window in the centre, and the gable is finished with an ornamental stone turret. The design was furnished by Mr. W. Botterill, of Hull, architect, and the edifice will be erected under his superintendence. The walls externally are to be of white brick, from Wallingford, with dressings of Bredsworth stone. The contractors are R. Bailey, bricklayer and plasterer; Simpson & Malone, stone-masons; James Jackson, carpenter and joiner; P. T. Harrison, plumber and glazier; Pearson, Dannatt, Kruger, & Co. ironfounders; Dawber & Son, slaters; and W. Wardale, painter, all of Hull.

**Ryth.**—The foundations of a large Roman Catholic church for the Benedictine order have just been commenced, upon a site close to the railway station. It will consist of near 120 feet in length, and transepts, with a bell-turret, and when

completed will contain about 1,000 sittings. The plans have been prepared by Mr. Archibald M. Dunn, of Newcastle, architect, under whose superintendence it will be carried out. The contract has been taken by Mr. James Howe, of Cowpen, for 2,200*l.*

**Walker.**—Another R. C. church at Walker, to contain 700 sittings, from the designs of Mr. Dunn, is about finished and will be opened this month.

#### THE FOUNTAIN MOVEMENT.

SIR,—As an admirer of all modern embellishments in our fair metropolis, and above all of that philanthropy which induces the wealthy to devote their substance to the public good, I approve the Samaritan virtue that founds and dedicates fountains for the relief of all who are athirst; but, in common with all with whom I have conversed, having an artistic tone of thought, I cannot but deplore the paltriness of design which characterizes the majority of these monuments.

Look, sir, at this marble tablet of sable hue and gilt letters, enframed with the same material, varicoloured,—is it not the repetition, only slightly diversified, of the dismal mementos of a country church? It is true there is a living dribble of a pint per minute, and two cups inviting way-farers to toast the founder or each other; but where is munificence fled—such munificence as in bygone days led the really benevolent to found hospitals and charterhouses?

One hundred pounds sterling is about the average cost of these pious consecrations generally: some are much less: we shall soon have model castings in iron at the standard price of 20*l.*, pipes and all; and yet the name of the donor, as you have rightly observed, is ostentatiously emblazoned, perhaps with his arms, as the preeminent benefactor of his fellow-citizens! Here is the fountain of health, the purchase of so great a popularity is cheap, and the smallness of the gift is well contrasted, and at the same time delicately satirized, by that lady (we may guess her name) who benignantly placed a really tasteful fountain in the retirement of the Green-park, containing to arrogate to herself the credit of being the fountains.

The fountain of honour was in past ages supposed to have its seat on a throne: in A.D. 1860 every aspirant to public fame can originate glory for himself. Would it not be in accordance with the system of ancient monumental inscriptions to place on the marble or casting, "Sacred to the memory of" my Lord, or Baron, or Sir James So-and-So? Or if men will seek popular recognition, with the fame of a name, let them erect something respectable, although it be neither colossal nor pyramidal; let them give a bench where the weary may rest while they quaff; let them place over it a friendly shade, and thereupon inscribe, "Stat nominis umbella."

HABITANS INTRA FONTES.

#### WALL PAINTINGS: WEST HAM CHURCH.

I HAVE lately seen in your interesting journal some remarks on the decorating of the walls of public buildings in the city of London. If you will allow me a portion of your space, I will give a description of the decorations on the walls of All Saints' Church, West Ham, Essex. This church being under repair a few years ago, the workmen, in washing off the old whitewash from the walls, discovered they were painted, from the organ-loft, north and south, above the gallery, to the end of the building, in the most showy and beautiful colours and gold. I was sent for to examine the pictures, and intended to have traced the whole of them, if there had been sufficient time; but, being afflicted with giddiness, I could not stand on the scaffold. The ultimate design and purpose of them, however, is quite manifest, by an exhibition of sensible figures to inculcate the doctrine of Purgatory. Over the pulpit, in front, are several figures of females in full length, half naked: they are descending, and seem passing onward to a certain point. Further on are a great many entering the door of Hell: it appears to represent a long river of fire. Further on still are many persons in it, tormented in the flames, all sad and in extreme distress, looking upwards, and their hands folded. One chief figure seems to represent a friar: he has a long, thick beard. Another tall, handsome figure seems to represent royalty, having a gilt crown on his head; the others, a general class of figures, all in torment and fervent prayer. In the upper part of the picture there is represented the exterior of a

noble edifice or temple: at the entrance is one person half-way in the doorway, and guarded by a second person, who has him in custody, and forcing him in, but he appears reluctant to go in. Near the door is another figure, attired in a grave costume, who also appears to be an officer, to execute the will of the judge, who is richly attired with a sort of turban on the head, and his countenance serene and happy. There are two figures, who appear like angels, as porters of the gate. In a line with the door, in the interior of the temple, is a grave person, seated in majesty, with a desk before him, like our courts of justice. On his right is another person to assist in judgment. Beneath these figures is seen the place of torment, all along the lower part of the picture. Extending to the end is continued the place of torment. About midway is a very graceful figure, of a heavenly countenance, and with a gilt crown on her head, who appears as if moved by compassion and tenderness. She is leaning forward and helping one out of the lake of fire by the hand, and another by the arm, as if she would succeed in delivering them from their deplorable situation. This figure I suppose is intended for the Virgin Mary. At a little distance is another figure of consequence, a female, probably an angel, as if assisting the Virgin in her work of mercy, and raising another out of the burning lake. There are some at the entrance of the dreadful cave: these look rather pleasant, and seem as if their punishment was but slight. On a noble figure that spans the north and south walls of the building is represented the bottomless pit, with vivid flames and smoke. On the edge of the pit are two devils, or demons: they are standing one above the other. They are made like brutes, having long horns growing upright, large ears, wide ugly mouths, very large glancing eyes, and cloven feet. One has a person in his arms, lying crossways, and looks in extreme misery, while they are grinning at having gained their prey. There were a great number of figures defaced by the plasterer's trowel scraping off the whitewash to recolour the walls; but the colours were as brilliant as at first executed, and the gliding in good preservation. The large Gothic arches stand on the pillars were painted in stripes, crossways, zebra-pattern. There was a motto in old English characters, as follows:—

"Wisdom's ways are ways of joy."

These paintings were well executed, and must have been done by first-rate masters of the art; the colours have stood well for hundreds of years.

JOHN WILSON, C.E.

#### THE PROMOTION OF SOCIAL SCIENCE.

SIR,—“Social” science is yet in its infancy, and the laws and principles which influence the condition of human kind generally are but imperfectly understood and as feebly enunciated. The Social Science Association which has been recently established may be a step in the right direction, but is not calculated to effect any great advantages to society. The very fact of its meetings taking place only once in the year is an evidence that little good can be expected to result; yet the “social” economy of the human race is, it can scarcely be gainsaid, the most important of all the sciences that can engage the attention of the world. In order that a knowledge of social economy may be attained and disseminated by and amongst the community, every city and principal town in the United Kingdom should have its social science institute, where lectures may be delivered by its members or others; having also its discussion-class or classes, and a library of works relating wholly to social economy. The subject is by far too important to be treated as an amusing and interesting adjunct for the occasional delectation of the members of our various literary institutions, whether supported by the aristocratic or democratic portions of society, as is now most undeniably the case. As a powerful auxiliary to the institutes now suggested to be established, the Government could give effective aid by granting or giving copies of the “blue books” published under its auspices, many if not most of them containing much valuable information in relation to “social economy.” They must not take as their standard of faith the dogmas of the “economists” of the old school, who are now seen to be unsafe guides in many instances, leaning too obviously to the side of wealth or power; nor indeed holding by the creeds of any particular writer, but eulging from all matter worthy thought and discussion. It may be incidentally observed, that the study of “social” economy *per se* is one that should have a place in *all* schools, and indeed a foremost rank

therein. The subscriptions to such institutes now suggested should be very moderate, so as to be accessible to those of humble means, who form a majority in the community, assisted, it may be, by the voluntary aid of the wealthier classes. Already there is a *Journal of Social Science*, and one or two others more or less directly bearing upon the subject, whether able or feeble exponents of the cause: were such institutions organized upon an efficient basis, we might hope eventually to see most if not all of our cities and large towns having their own local "journal of social science," distinguished by the name of the city or town being prefixed to it. E. A. I.

JOHN BUNYAN IN THE LONDON GUILDHALL.

For some days past the model for a statue to this worthy has stood in the Guildhall for the purpose of view. The famous author of the "Pilgrim's Progress" is represented about life-size, seated, the countenance raised upwards. The expression of the face is good. There are books, a broken chain, and other accessories, but as a whole it is not quite satisfactory. The model is placed on the ground near the Pitt monument, with which it does not interfere.

With one exception, the monuments in this place are to the memory of statesmen and warriors. Many would like to see added memorials of men who have been connected with the City, and have distinguished themselves. Daniel de Foe lived for long a city life; Hervey, the discoverer of the circulation of the blood, died within the City bounds; John Bunyan, who often preached within those limits, and died there. There are others of note who might most worthily find a place within the walls of the Guildhall, and the model which has thus been temporarily set up shows that the introduction of statues of a smaller size than those which are already there would vastly improve the appearance of the hall, be honourable to the City, and interesting to numerous visitors who call here. Honest John Stowe should not be forgotten in any such arrangement. AN ARTIST.

VENTILATION OF WAREHOUSES.

SIR,—Having read the interesting paper "On the Arrangements of Warehouses," by Mr. John Roberton, in your valuable periodical of the 18th ult., I am led to call your attention to the following quotation:—

"As connected with salubrity, it would be wrong to omit the mention of an atmosphere loaded with *dust* and *filamentous particles* in certain quarters of shipping warehouses, produced in preparing goods for packing. I know not how the evil is to be remedied; but I am assured, that it gives rise to coughs and ill health, in those (often ladies), who from morning to night, are inhaling it."

Mr. Roberton suggests a way, by means of flues in the wall, and a current maintained by a ventilating wheel at the top. This would be of very little use employed in an atmosphere like that of the Manchester warehouses; and the quantity of air carried off by the ventilating wheel would be a drop in the ocean, in comparison to that required to purify the rooms, and carry away the *dust* and *filamentous* particles.

What is required in these warehouses, where the outward and inward atmosphere have little or no circulation, is a powerful system of *mechanical ventilation by propulsion*, without which you may as well try to find the perpetual motion as to obtain perfect ventilation and remove the filamentous particles contained in the air.

I might bring forward a great many examples, where mechanical ventilation by propulsion has been employed with great success in buildings similar to those referred to in Manchester; but I will content myself with the following one:—

"A great complaint was made by the printers of the daily paper, *Le Moniteur Belge*, for want of ventilation in their printing-office, where some fifty men were assembled daily, with a cubical space of not more than 700 cubic feet per man; the atmosphere was so foul, and the circulation being impeded by the dense outward atmosphere, which always surrounds densely populated quarters, that the men were generally in a bad state of health. Their petition having been agreed to, a mechanical system of ventilation, by propulsion, conducted with warmth, was adopted."

It proved a perfect success, the office being perfectly ventilated and cooled during the summer, and agreeably warmed in winter, and that at a very little cost. Since then no complaints have ever been made as to the ventilation, which, when I visited the office, was perfect.

I inquired whose plan had been adopted, and found that it was that of Dr. Van Hecke. This

system you gave a description of in your number of June 2, 1860.

May we hope that our great manufacturers will not be slow to follow so good an example, and thus alleviate, as far as in them lies, the sufferings of mankind. M. G.

"THE STEAM PLOUGH."

I THANK you for drawing attention to my circular on this subject, and agree with you that it savours strongly of the predominance of No. 1 interests. But even supposing this to be true in its strictest sense, it is only in accordance with the healthiest expression of commercial principle. However, if my object had been merely to say something on this subject, merely to complain of an existing evil, I should have been satisfied with having had my say without suggesting a remedy; but I believe that a great material result is within the scope of accomplishment; therefore, with the statement of the evil, I thought it best to set aside appearances, and plainly state my belief in the existence of a remedy. You are aware, no doubt, that "authorities" on this point say, with much confidence, that steam will never take entire control over all the various operations of the farmer, and that a hilly, soft, and uneven surface presents obstacles to the application of steam-power which mechanical science will never overcome; it would be useless, therefore, for me to complain against those efforts which are being made, unless I was prepared at the same time to point to a more effectual method of attaining the same end. Now I do affirm, with all the modesty with which such a statement should be made in the teeth of "scientific dictum," and yet with all the confidence and boldness that the statement (if a truth) demands, that as the tractive power of the quadruped (which at the present time is the chief agent in agricultural labours) is based on *mechanical principles*, and subject to absolute and definite law, the same principles, if applied to the same purpose through the medium of iron and by the agency of steam, are equally sufficient and equally capable of contending with every difficulty of soil or inclination. These principles have never yet been embodied in an engine, and they consist in developing the tractive power which is due to *gravity directly*, in contradistinction to the present system, which gets all its tractive power from *friction*. Neither a biped nor quadruped could exert a tractive force if the centre of gravity was forcibly kept directly perpendicular to the resting point of the foot; but in drawing, the body is instinctively thrown forward, and both the muscular power and the friction is *subservient to the direct* development of the tractive force due to gravity. Friction, which is most efficient on a hard and smooth surface, and will yield only 20 per cent. of power to the weight it carries, cannot be relied on for half that under unfavourable circumstances. Gravity, however, is more efficient on a soft or impressible surface, and will yield a tractive power from 50 to 100 per cent. of the weight it carries, according to the condition of the soil.

Having spent a great portion of my life in America and the British colonies, I have been struck with the immense extent and fruitfulness of their agricultural resources, and with the immense contrast that is exhibited between the progress of this branch of industry in America and in the British colonies. In India and Australia every effort of legislation and other influences is used to check the flow of enterprise and industry to this legitimate channel; and, as there is no other employment except that offered by manufacture which will absorb the industry of the population, efforts are constantly being made to tax the importation of British manufactures; whilst, at the same time, an irritating social and political agitation is kept up, which is simply due to the absence of a legitimate field for remunerative employment. Now I contend that a steam plough put into the soil of India and the colonies would at once develop the most accessible of their resources, give abundant employment to all, give to industry a natural channel for its energies, and do more to promote internal security and commercial prosperity than 300 years of legislation, while at the same time the vast increase of material wealth, and its distribution, would yield abundant employment to the shipping interests, and a cheap and reliable supply of raw materials to the manufacturing interests of home.

Many seasons of commercial depression, of high-priced food, and of general distress, have afflicted our country; yet all have led to some great and good end by drawing attention to the elements of commercial and social disease, and by concentrat-

ing the efforts of society towards their removal; and if the disasters which in a ruined harvest and a decreasing export trade now seem to hang over us should be the means of drawing the attention of the *commercial community* to the vicious influences which are now at work in every part of British territory, either by legislative restriction or by the creation of social disorder, to check the abundance of staple produce (with no other object but that the antiquated rotten and artificially sustained *prestige* connected with the land here should not be encroached on, or its fictitious sanctity invaded), we shall in a few years look back to the present with a feeling of gratitude, conscious that, although bitter to the taste, it was but a blessing in disguise.

I will conclude by stating that, as the industry of man has three eras of progression, so has steam power, *viz., manufacture, transport, and agriculture*. The third has not yet been accomplished. *Before it* the fetters of negro slavery will fall, and the darkness of superstition and barbarity, now protected by the forest and the jungle, will disappear; *with it* will come the advance of commerce, industry, civilization, and constitutional freedom; and behind it the bright noon of Christian light. With such a prospect, who would not shout with the full force of his lungs, "Help! Help forward! a steam plough for the idle soil of the world." JOHN GILES.

THE SALTING OF BRICKWORK.

THE question was, I think, asked some time since in your paper, whether any means could be adopted to prevent the salting of brickwork. In a building to which I was architect last year, we tried, by the advice of a chemist, oiling the facing bricks with linseed oil. The oil was applied with a brush to one face and one end of each brick; and, as no salting has appeared on any part of the brickwork, which was finished about twelve months ago, the experiment seems to have been in this case successful. I have found the same kind of facing-bricks become salted considerably where they have been used without oiling; and, from the appearance of the mortar joints in the case in question, think that the same would have occurred in the present instance had the oiling not been adopted. The salting of brickwork is so detrimental to its appearance that any means of preventing it is of value; and I therefore send you the result of my own experience on the subject. The oiling rather improves than otherwise the colour of the brick. JOS. A. DAVIES.

TO PREVENT ROT IN DWELLING-HOUSES.

Make two or more openings in the external walls, and put gratings on them to keep out vermin, from below the basement floor. Insert a tile pipe into the fire-wall, with one end open to the space below the floor, and carry the pipe up the centre of the fire wall as close as possible to the fire-flue, and out at the chimney head. The air in the pipe will be rarefied, being in close contact with the fire-flue, thus causing a continuous upward flow, sweeping the space below the floor of all the foul air, which, in my opinion, is the chief cause of dry-rot. The whole of the apartments in the house may be ventilated by means of this pipe, by inserting a tube into it at the level of the ceiling, with a valve in it to prevent down-draught. I have adopted this system for the last ten years, because I know of no better. A WORKING-MAN.

STAINED GLASS FOR ST. PAUL'S CATHEDRAL.

MUCH having been said and done lately tending to increase the funds necessary for putting St. Paul's Cathedral in an efficient and suitable state for public worship, it may not be amiss to offer a suggestion relative to the adornment of the windows with stained glass.

Surely there could scarcely be a more fitting way of settling this desideratum than by the Corporation of the City of London giving one large window or series of windows in the choir-end of the cathedral: if this were done, there is no doubt the great City companies would not be backward in filling several more.

Supposing they each gave a window, it would not only do a great deal towards satisfying the present much-felt want, but would give to the building the character that it should have, of not only being our great national church, but of being in spirit and motive the Cathedral of the City of London. Typical designs might of course be chosen by the respective companies which would thus symbolize the idea. P. H. N.

## AMUSEMENTS.

*The Adelphi*.—The powerful drama of "Jaquet Pride" has been revived here, and the public have fully recognized its merits as a striking picture of life, and the excellence of the acting in it, especially on the part of Mr. Webster, Miss Woolgar, and Mr. Toole. There are others engaged who also efficiently aid in carrying on the story, but with those named rests the burden. Of Mr. Webster's *Richard Pride*, one of those minute and elaborated delineations in which he excels and delights, we have before now spoken. The Greeks who made slaves drunk before their children to disgust and waru would have seen in this remarkable personation a lesson of no trifling value.

*The Princess's*.—"Macbeth," the first of Mr. Kou's archeological and architectural revivals, has been produced here, with the original scenery and accessories: Mr. James Anderson playing the tyrant, and Mr. Weiss and Miss Rebecca Isaacs setting forth the middle Frenchman in "The First Night" with great vivacity and humour, to introduce Miss Maria Harris as his daughter, a promising very young *débütante*.

PROCEEDINGS UNDER THE METROPO-  
LITAN BUILDING ACT.

## ROOF-COVERINGS: ASPHALTE.

At the Wandsworth Police court last week, *Mr. Henry Boughton*, of Mendip-wharf, Battersea, the works of the Asphalt Company, was summoned before Mr. Ingham J. by Mr. Henry Taylor, district surveyor, for covering a certain building upon his premises with asphalt instead of slates, tiles, metal, or other incombustible material, contrary to the provisions of the Act.

The question in dispute was of considerable importance to the company.

A gentleman present said he had been in the business a number of years, and could state that asphalt was incombustible. He stated that Mr. Taylor was a practical man in the case of asphalt, and therefore he was unable to give an opinion. Asphalt was now used for covering the roofs of gunpowder magazines at the Tower of London and other public buildings. He then instructed a case to show its incombustibility. At the late fire at Harley's wharf, London-bridge, the flames spread rapidly throughout the building until they came to a roof which was covered with asphalt, when their further progress was stopped, and in fact the roof extinguished the fire.

A piece of asphalt was produced, and his worship thought it would be desirable to try whether it was combustible or not.

All the parties, with the magistrate, proceeded to the reserve-room of the station, where there was a fire in the grate. The fire having been poked, Mr. Ingham thrust the piece of asphalt into the burning coal, which it immediately bore away, to use the words of a constable who was present, like a rindie. Upon the asphalt being picked out of the fire the flames instantly went out.

The gentleman interested contended that on a roof the fire would burn to the asphalt covering, and would go no further.

Mr. Taylor was unable to make out his case in consequence of his not being able to prove the service of a notice.

On the part of the defendants it was stated they were ready to waive that informality, and to have his worship's decision upon the merits of the case.

Mr. Ingham said that, with the experiment just made, he should rather decline to say whether asphalt was combustible or incombustible within the meaning of the Act, and he therefore dismissed the summons on the grounds of the informality in the proof of the notice.

Mr. Taylor said he should serve the parties with another notice.

## Books Received.

*Notes on Nursing; what it is, and what it is not* by FLORENCE NIGHTINGALE. New edition, revised and enlarged. London: Harrison, Pall-mall, 1860.

FLORENCE NIGHTINGALE is no less distinguished for her intellectual ability, and originality of thought, than she has long been for her benevolence, her moral energy, and her enthusiastic devotion to the good cause to which she has so disinterestedly devoted her life, and so unmercifully sacrificed her health. She is moreover one of the most animated and skilful of writers, as the public have now the advantage of knowing through the publication of her very valuable "Notes on Nursing." Yet she is by no means what is commonly called a "strong-minded" or "masculine" woman; none was ever more womanly in every turn of thought and act—in every sense of the beloved and beautiful expression. This leading feature of her character shines out everywhere throughout her work, but one can especially perceive it in her occasional exhortations to those for whose benefit she designs her "hints," as she modestly terms them. Thus, at the very close of her volume, she says,—

I would earnestly ask my sisters to keep clear of both the jargons now current everywhere (for they are equally jargons); of the jargon, namely, about the "rights" of women, which urges women to do all that men do, including the medical and other professions, merely because men do it, and without regard to whether this is the best

that women can do; and of the jargon which urges women to do nothing that men do, merely because they are women, and should be "recalled to a sense of their duty as women," and because "this is women's work," and "that is men's," and "these are the things which women should not do," which is all assertion, and nothing more. Surely women should bring the best she has, whatever that is, to the work of God's world, without attending to either of these errors. For what they should do (the one just as much as the other, but listening to the "what people will say," to opinion, to the "voices from without"? And, as a wise man has said, no one has ever done anything great or useful by listening to the voices from without.

You do not want the effect of your good things to be "How wonderful for a woman!" nor would you be deterred from good things by hearing it said, "Yes, but she ought not to have done this, because it is not suitable for a woman." But you want to do the thing that is good, whether it is "suitable for a woman" or not.

Oh, leave these jargons, and try your way straight to God's work, in simplicity and singleness of heart.

It requires very little examination of the book to convince any one who does not already know the fact, that Miss Nightingale is no mere dilettante nurse, with an imaginary mission to carry out, but a most skilful, common-sense, enlightened, and experienced mistress of the ministering and angelic office, to which nature has in every way adapted her,—unless it be on the point of physical strength, which she has so overtasked; but where is the woman who could have made with impunity her superhuman exertions during the late war? These exertions, nevertheless, and their laudable result, have by no means diminished her enthusiasm in the cause which she advocates. Its prosaic repulsions are still completely obliterated in her estimation by its poetic attractions. "This book," she remarks, in a supplementary chapter, "takes away all the poetry of nursing it will be said, and makes it the most prosaic of human things. My dear sister, there is nothing in the world, except perhaps education, so much the reverse of prosaic, or which requires so much power of throwing yourself into others' feelings which you have never felt; and, if you have none of this power, you had better let nursing alone." And this Samaritan power, we may add, combined with a vigorous and penetrative intellect, constitutes the chief secret of her own genius and talent for nursing the sick.

The "Notes on Nursing" contain not a few "hints" of importance to architects and builders. Indeed, as respects the right construction of hospitals and dwellings for the promotion of convalescence in the sick, the whole work is well worthy of their perusal; but especially so where the distinct and separate sections in which the author treats of "Ventilation and Warming," and of "Health of Houses."

In the following remarks on pure air to a dwelling, Miss Nightingale, while stating what is otherwise perfectly true, hints architects for that of which they have, but seldom an opportunity of being guilty. This arises, however, simply from her adoption of a popular use of the word architect,—all builders, in that sense, being dignified with the (very erroneously applied) name of architect:—

To have pure air, your house must be so constructed that the outer atmosphere shall find its way with ease to every corner of it. House architects hardly ever consider this. The object in building a house is to obtain the largest interest for the money, not to save doctors' bills to the tenants. But, if tenants should ever become so wise as to refuse to occupy unhealthily constructed houses, and if insurance companies should ever come to understand their interest so thoroughly as to pay a sanitary surveyor to look after the houses where their clients live, speculative architects would speedily be brought to their senses. As it is, they build what pays best. And there are always people foolish enough to take the houses they build. And if in the course of time the lambs die off, as is so often the case, nobody ever thinks of blaming any but Providence for the result. Ill-informed medical men are in sustaining the delusion, by laying the blame on "contaminated air." Badly-constructed houses do not for the healthy what badly-constructed hospitals do for the sick. Once insure that the air in a house is stagnant, and sickness is certain to follow.

Drainage, slugs, papering, light, noise, draughts and many other points of importance, come under the author's careful and all observant notice. In her remarks on drainage, she says,—

It would be curious to ascertain by inspection, how many houses in London are really well drained. What people would say, surely all or most of them. But many people have no idea in what good drainage consists. They think that a sewer in the street, and a pipe leading to it from the house, is good drainage. All the while the sewer may be nothing but a laboratory from which epidemic disease and ill health are being distilled into the house. No houses with any untrapped ventilated drain-pipe communicate immediately with a ventilated sewer, whether it be from water-closet, sink, or gully-grate, can ever be healthy. An untrapped sink may at any time spread fever or pneumonia among the inmates of a palace.

The ordinary obliging sink is a nuisance. That great surface of stone, which is always left wet, is always exhaling into the air. I have known whole houses and hospitals smell of the sink. I have met just as strong a

stream of sewer air coming up the back staircase of a grand London house from the sink, as I have ever met at Sutar! and I have seen the rooms in that house all ventilated by the open doors, and the passages all ventilated by the closed windows. In order that as much of the sewer air as possible might be conducted into and retained in the bedrooms. It is wonderful!

Another great evil in house construction is carrying drains under the house. Such drains are never safe. All house drains should begin and end outside the walls. Many people will readily admit, as a theory, the importance of these things. But how few are there who carefully trace the consequences of such causes! Is it not a fact that, when scarlet fever, measles, or small-pox appear among the children, the very first thought which occurs is "where?" The children can have "caught" the disease? And the parents immediately run over in their minds all the families with whom they may have been. They never think of looking at home for the source of the mischief, if a neighbour's child is seized with small-pox, the first question which occurs is whether it had been vaccinated. No one would undergo vaccination; but it becomes of doubtful benefit to society when it leads people to look abroad for the source of evils which exist at home.

On the subject of servants' bedrooms, — a too much neglected one, certainly, — Miss Nightingale remarks, —

I must say a word about servants' bedrooms. From the way they are built, but fewer from the way they are kept, than from the intelligent inspection that never been exercised over them, they are almost invariably dens of foul air, and the 'servants' health' suffers in an 'unaccountable' way, even in the country. For I am by no means ignorant of London houses, where no other servants are put to live under the ground and over the roof. But in a country 'mansions', which was really a 'mansions' (not after the fashion of advertisements), I have known three maids, who slept in the same room of scarlet fever. 'How catching it is!' was of course the remark. One look at the room, one smell of the room, was quite enough. It was no longer 'unaccountable.' It was a fact. It was a small one, and it was a fact. It had two large windows—but nearly every one of the neglects enumerated above was there.

As to healthiness of site,—

There is a great difference between Hampstead, Camberwell, and Belgravia. The most densely populated and most filthy parts of a town are not the best neighbours to windward. The most elevated and exposed positions are generally the healthiest; the lowest to leeward of nuisances, under the shelter of the more elevated parts, generally the unhealthiest.

The low western districts, under the lee of London nuisances, are the recipients of foul air from the less healthy districts of London, whenever the wind comes from that direction; and yet people like to live there, because it is the "west end."

A house in the country, isolated in healthy and pure air, defies almost any amount of ignorance to malt unhealthily (and often one sees no little), but in the atmosphere of London very little indeed will do.

Houses generally are not built to be ventilated. There is no way for the foul air to go out, and there is no way for fresh air to get in. The best popular test, because almost universal, of the healthiness of a house, is the number of times which most houses retain the smell of dinner: some houses are seldom without it in the garrets. The only place where the air of many a house is drawn is the basement and the kitchen.

The air both of basement and kitchen should be so pure as never to be offensive. Nothing offensive has any right to be there. Keep the air inside your house as pure as the air outside, by all means; a proper use of windows will enable you to do this, but never think of ventilation as a substitute for cleanliness.

A dark house, as the author remarks, "is always an unhealthy house, always an ill-odoured house, always a dirty house. Want of light stops growth and promotes scrofula, rickets, &c., among children. People lose their health in a dark house; and, if they get ill, they cannot get well again in it." And this she proceeds, with sagacious hints and advice to her sister nurses, through the whole range of sanitary science, so far as it directly or indirectly bears upon the recovery of the sick, or indeed upon the preservation of health as well.

The only other quotations we need present by way of showing how the author deals with her many-sided subject relate to house papering and painting, and these we confess we select partly as an acknowledgment of the compliment she is therein pleased to pay the *Builder*.

In the supplementary chapter she says,—

I wonder whether many housekeepers' experience is the same as mine—viz. that in London houses "newly papered" and "newly painted" means putting a fresh paper atop of a dirty one, and tacking a fresh chintz atop of a dirty one,—aye, to three and four deep! No wonder some London houses are always musty, if cleanliness has nothing to do with it. This clearly affects all the inmates: children only suffer in a greater degree.

Again, under the head of "Cleanliness of Rooms and Walls,"—

As for walls, the worst is the papered wall; the next worst is plaster. But the plaster can be retouched by frequent lime-washing; the paper requires frequent re-papering. A glazed paper gets rid of a good deal of the dirt of the ordinary bedroom paper is all that it ought not to be.

A person who has accustomed her senses to compare atmospheres proper and improper, for the sick and for children, and for babies, means putting the difference of the air in old-painted and in old-papered rooms, *ceteris paribus*. The latter will always be musty, even with all the windows open.

The difference between ventilation and cleanliness is shown in this. An ordinary light paper will last clean much longer if there is an Arnett's ventilator in the chimney than if otherwise would.

The best wall now extant is oil paint. From this you can wash the animal exuvia.

These are what make a room musty.

The best wall for a sick-room or ward that could be made is pure white non-absorbent cement or glass, or glazed tiles, if they were made slightly rough.

"That excellent paper, the *builder*, mentions the lingering of the smell of paint for a month about a house as a proof of want of ventilation. Certainly—and where there are amule windows to open, and these are never opened to get rid of the smell of paint, it is a proof of want of management in using the means of ventilation. Of course the smell will then remain for months. Why shouldn't it go?"

### Miscellaneous.

**LIVERPOOL SOCIETY OF FINE ARTS.**—The annual exhibition of this flourishing society has been opened to the public. The different London societies have contributed largely to the collection, and many good names in English art are represented. Specimens of the French, Belgian, Prussian, and Dutch schools are also in force.

**NEW BUILDINGS AT CHATHAM BARRACKS.**—A lecture-theatre, schools of design, class-rooms, and rooms for the instruction of the officers and men of the Royal and Indian Engineers, are to be erected at the Brompton Barracks, Chatham, by the Government. The entire work is to be completed by February next, at a cost of several thousands of pounds, which have been voted by the House of Commons.

**THE ELLACOMBE TESTIMONIALS.**—A pair of silver candlesticks were recently presented to the Rev. H. T. Ellacombe, the rector of Clyst St. George, as from "every householder in the parish." The churchwardens, in their address to the rev. gentleman on the occasion, said,—"We have witnessed and admired the great skill, taste, and exertion on your part, under which the body of our parish church has been substantially rebuilt and greatly beautified; under which, also, the school, with a master's residence attached (which has lately been opened for use), has been erected. We are, moreover, mindful of your earnest and judicious efforts to promote our temporal as well as our moral and spiritual welfare. We desire, therefore, to testify to you, by this slight memorial, our sincere gratitude and affectionate esteem and respect." The gratitude and regard of the subscribers were also expressed towards Mrs. and Misses Ellacombe, for their kind and active interest in the well-being of all around them, and their exertions on behalf of education, their attention to the church music, and in many other respects; and small mementoes were presented to the young ladies. The children presented to their worthy rector a silver pencilcase, and the parents an inkstand to the schoolmaster, and Prayer-book to his wife. It is pleasant to note so much unanimity and good feeling between pastor and people. Clyst St. George seems to be a model parish in these respects.

**CARTOON BY KAULBACH FOR BERLIN MUSEUM.**

—Kaulbach has completed the cartoon for the last of his frescoes in the hall of the new museum at Berlin. After some difficulty and discussion, the subject given to the painter was the age of Reformations, and the general reawakening of the intellect and heart of Europe. A correspondent of the *Telegraph*, in describing the cartoon, says it is "a collection of individuals—contemporaries brought together by no tie of mutual action, and having nothing in common, save, indeed, that they lived in the same era, and worked in the general direction of their age. Thus we get Luther in the centre, though not in the foreground of the fresco. On either side the reformer Melancthon and Zuingle are imparting holy communion of both kinds to imaginary communicants. Behind Melancthon, the old and morose-looking Copernicus, in the act of drawing planetary rings, may be noticed; whilst, as a counterpoise to the dry study of mathematics, Albrecht Dürer takes up his position in the rear of Zuingle, painting—luckily behind the iconoclast's back—unarmored saints. Round about these prominent personages are grouped hosts of others. On Dürer's side of the canvas appear Michelangelo, Leonardo da Vinci, Raphael, and Pope Leo X., the latter the Mæcenas of his time. The space in front of Copernicus is taken up Gutenberg, with a crowd of Protestant students, as if they were of his own creation, and two sovereigns, Gustavus Adolphus of Sweden, and Queen Elizabeth of England, nearest to the spectator. The centre of the foreground is taken up by a warrior in full armour, cutting asunder with his sword a parchment scroll, tremulously held by a Roman Catholic priest. The two latter figures are purely symbolical, and may be interpreted as the bold emancipation of the Protestant mind from the fetters of priestly tradition."

**A NEW KIND OF BRONZE.**—We learn from the *Manchester Guardian* that workers in metal are finding good uses for a new kind of bronze, made by melting together ten parts of aluminum with ninety of copper. It is described as being tenacious as steel, and well adapted for the bearings of machinery. A polisher, who used it for bearings in his lathe, which made 2,000 revolutions a minute, found it last six times longer than bearings made of other kinds of metal. Is not this the bronze with which some ancient nations made their cutting tools?

**THE DRINKING-FOUNTAIN MOVEMENT.**—At Chatham, the Government has given a portion of land in Military-road, near the first drawbridge, as the site for a public drinking-fountain, which will be erected as soon as the necessary funds have been obtained. The present fountain in High-street, erected through the liberality of Mr. E. Winch, has already proved a great boon to the public. Steps are being taken to erect another at the lower end of High-street, Chatham, and also two in Rochester.—At Gravesend, another fountain has been placed at the bottom of Windmill-street, in front of the Alms-houses, so as to face High-street and the New-road. The design is the figure, in bronze, of a Naiad, pouring water from an urn.

**EXTENSIVE FIRE AT LONG-ACRE: DESTRUCTION OF ST. MARTIN'S HALL.**—Mr. Hullah's fine hall and lecture and singing-class rooms were almost completely destroyed by fire on Sunday morning last, the 26th August, together with an extensive carriage factory at the corner, erected, if we mistake not, under the late Mr. Bezley's direction after the fire which destroyed its predecessor about nine years since. Many other houses besides have been damaged, and flying fragments of burning timber were scattered over the back premises of others along to Great Queen-street. The carriage factory presents a singular appearance, having been entirely gutted, so that nothing remains but a gaunt skeleton of great height and circumference, without a morsel of internal wall or structure. St. Martin's hall, as seen from the back of the block along which it runs, has a scarcely less desolate aspect, although the fireproof structure of the lower portion has partially protected the basement. The hall took fire from the roof, after originating, it is thought, in the painters' shop of the carriage factory, and extending its ravages over the latter building. Both the hall and the factory, it is said, were insured. The cause of the fire was probably what is called spontaneous combustion, arising from such substances as greasy or oily rags, which, as we have occasionally shown (and, indeed, no longer ago than in our impression of the very day before the fire, in the warning article titled "Fire! Fire!"), are apt to take fire if allowed to lie about, as also lamp-black, of which we have also repeatedly spoken as a cause of fire.

**ROYAL ACADEMY FINANCES.**—The receipts at the door during the season which has just closed are said to be 11,600*l.* In an article on the Royal Academy last week, the *Athenæum* says,—“The maintenance of the schools is, of course, dependent upon the receipts at the doors of the exhibition. What these are is stated in the report. From this we condense:—Total sums received from the Annual Exhibition, from 1769 to 1859 (inclusive), less the expenses attending the same, 267,583*l.* 15*s.* 5*d.*—sums received by dividends on stock, &c., 91,567*l.* 8*s.* 9*d.*—sums received from His Majesty's Privy Purse, from 1769 to 1780, 5,116*l.* 2*s.*—Turner bequest, 20,000*l.*—sums expended by the Royal Academy, from the commencement of the institution, in the gratuitous instruction of the students, general management, &c., 218,469*l.* 5*s.*—paid in pensions to distressed and superannuated members and their widows, from 1802 to 1859, 28,739*l.* 0*s.* 7*d.*—donations to distressed and superannuated artists and their families, from 1769 to 1859, 32,772*l.* 5*s.* 10*d.* We may state, that we never met with a finer example of the truth of the old adage, that 'charity begins at home,' than this statement. The Royal Academy has taken care of its own, for the former period is shorter by thirty years than the latter; yet the sum distributed at home is but some 3,000*l.* less than that given to the incalculably more numerous body. Yet we find Sir Joshua Reynolds regretting that the institution could not insure the building it gratuitously occupied, because so doing would deprive the poor and needy of their mite. A system of professional and not Academic charity was one of the most frequently advanced claims to public support made by the early Royal Academicians. This statement does not look as if these promises had been fulfilled. To resume.—The balance in favour of the Academy is 104,499*l.* 19*s.* 8*d.*”

**SCOTLAND.**—A design for a public hall for Galashiels, by Mr. Lessells, of Edinburgh, architect, has been exhibited at the office of the *Zorder Advertiser*. A contract has been entered into with Messrs. Herbertson & Son, to carry out the design, minus the porch and spire, which would cost 250*l.* to 300*l.* The building is to be erected for a company.—There is a renewed movement at Hawick for the erection of a new public hall and corn exchange.

**TRANSPARENT METALLIC COLUMNS.**—According to the invention of Mr. G. K. Geyelin, the metal, either solid or in tubes, is twisted in one or more threads round a mandril, which can then be withdrawn. The ends can be fixed in a plate by casting or otherwise. For ornamental or strengthening purposes, the centre of the column can be filled with a coloured glass tube or other materials, and the outside with a reversed thread. The same principle may be adopted for twisting glass.

**RESPONSIBILITIES OF EMPLOYERS.**—Mr. Bedford, the corner, has instituted a lengthened investigation at St. George's Hospital into the circumstances attending the death of Thomas Sandler, a teamster, in the employ of Mr. Gamon, of Lambeth, builder. At Westhill, Wandsworth, while driving a waggon, loaded with timber, deceased, who was driving up the hill, was suddenly knocked down, by a rope apparently giving way, and the load of timber falling upon him, thereby inflicting dreadful injuries, from the effects of which he expired, four days afterwards. The evidence was conflicting, the point at issue being whether the deceased had made choice of the defective rope, or whether it had been supplied to him by his master's foreman. The coroner dwelt upon the responsibility attached to employers in such serious cases as the present, if defective materials were known to have been supplied to those in their employ, and the jury returned a verdict of "Accidental death."

**THE CHANNEL ISLANDS.**—The brick-manufacture of Jersey has of late largely developed itself, says the local *Times*, the exports of bricks having greatly increased. Mr. John Moiss n, shipbroker, has already shipped half a million for Portland, and holds an order for the shipment of another half-million, as speedily as possible, for the same destination. They are of course for use in the public works in progress there.—The Hanois Lighthouse, at Guernsey, of which the first stone has just been laid, will have a height in masonry of 92 feet, its height above high water at spring-tide being 80 feet. The diameter of the base course will be 32 feet 7 inches; its least diameter, 17 feet; the diameter of the gallery course, 20 feet 6 inches. Ascent to the summit of the tower will be gained by means of a spiral staircase of 7 feet diameter. The whole structure will be of dressed granite, from the Crnsev quarries, near Penryn, in Cornwall. The stone is supplied by Messrs. W. & J. Freeman in rough blocks, and dressed at St. Peter-Port. The designing engineer is Mr. James Walker, C.E.; the superintending engineer, Mr. W. Douglas.

**THE BUILDING TRADES MOVEMENT.**—The master joiners and builders of Blackburn and its vicinity have received from their workpeople a circular, of which the following is a copy:—"We, the operative carpenters and joiners of Blackburn and its vicinity, assembled at a general meeting, desire to inform you that, according to a resolution passed at the above meeting, we apply to you for an advance of one shilling per week on our present wages, or a reduction in the hours of labour of two-and-a-half hours in the week, to come into operation on the 23rd of March, 1861."

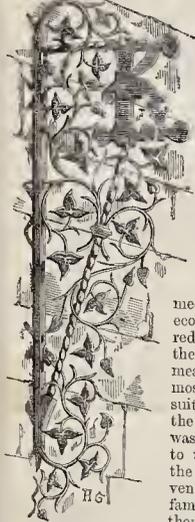
—A misunderstanding has lately arisen between Mr. Darby, the contractor for the new Union Workhouse, at Swansea, and the masons in his employ, the differences have been amicably adjusted. The men contended for the same hours as worked by the London operatives, whilst the contractor required the men to work the hours of the town, which, according to the *Cambric*, are about one hour per diem more than in London. The men, refusing to comply, were suddenly discharged in the middle of the week; and on Wednesday they applied en masse for a summons against Mr. Darby, for having suddenly discharged them. The men, however, were strongly advised to go to work at the usual hours of the town; and, when they accepted a job for the future, always stipulated at the commencement what the hours of labour should be. They ultimately gave in upon this point; and some other matters, with reference to the contractor providing sheds in which the men should work during the wet weather, having also been satisfactorily arranged, the whole of the men consented to resume work on the following morning.



# The Builder.

VOL. XVIII.—No. 918.

History and Construction of the Pianoforte.



KNOWLEDGE of music, however slight, has of late years become as essential an item of a liberal education as any other of the numerous studies and accomplishments that have gradually been added to the time-honoured indispensables,—reading, writing, and arithmetic.

Improvements in mechanical science, by economising labour and reducing cost, have put the possession of this most captivating pursuit within reach of the many, where it was formerly limited to the few; and, as in the sixteenth and seventeenth centuries no family of consideration thought its establish-

ment complete without a "set of viols," so now, in the nineteenth century, but few families, however limited their means, consider their comforts even provided for without the possession of a pianoforte of some class or other, from the Grand to the Piccolo. But of those who possess one how few know, or care to know, the history of the origin and gradual development, or nature of the mechanism of an instrument whose vast compass, adaptation for brilliant and varied display, and general utility constitute it emphatically and literally the "household orchestra." The want of a convenient and easy road to such knowledge is now, however, supplied. In 1855 we called attention to the work of Dr. Rimbault and Mr. Hopkins, entitled "The Organ, its History and Construction," wherein the antiquarian learning of the one and the constructive knowledge of the other had found a congenial task in a valuable historical and critical account of that noble instrument. We now have to speak of a new work, by Dr. Rimbault, upon "The Pianoforte, its Origin, Progress, and Construction,"\* wherein this most useful, universal, powerful, and, in many respects, most perfect of instruments, receives that amount of critical and historical investigation which the importance of the subject so well deserves.

There are few sciences more illustrious in pedigree, more remote in origin than music. Pythagoreans, Platonists, and Peripatetics—in fact almost all the Greek philosophers—either wrote treatises upon it, or alluded to the subject more or less in their writings, but the greater part of them are unfortunately lost: unfortunately, we say, on account of their antiquarian interest, but not for any benefit they might have conferred upon the science. In tracing its first beginnings we find ourselves bewildered in their speculations, and, accepting their assurances for our safe guidance in our search, we are persuaded to abandon the

realms of reality for the fields of fiction, and undertake a journey into the clouds with Aristoxenus and Aristotle, Plato and Pythagoras, Apuleius and Athenæus, Pausanias and Plutarch, and other celebrities, as our travelling companions. Having made the round of the heathen mythology, listened to the rival claims of Egyptian, Greek, and Indian deities, to the "invention," and ascertained to our own satisfaction that Ostris and Isis, Hermes, Brahma and Vishnu, Apollo, Mercury, Minerva, and Pan had an equal share in it, we feel a particular desire to descend from our uncomfortable elevation, and throwing out our grappling-irons to the tones of Burney and Hawkins for aid in our perilous descent, with thankful hearts find ourselves once again on terra firma.

The beautiful myths that entwine their graceful flowers of fiction round each page of the legendary history of ancient Greece, investing each hero with the attributes of a demigod, covering each ruin with an undying verdure, and endowing each event with a charm unspeakable, constitute a halo of glorious uncertainty, to probe which too closely is a task the scholar shrinks from undertaking, lest, by exposing the frail foundation upon which the beautiful fabric of the Classic is erected, his reliance on the faith of ages might be shaken, and, its gorgeous imagery removed, the poem of his admiration be reduced to the unadorned simplicity of sober prose. With quiet enjoyment, therefore, albeit with certain mental reservations, does he listen to the speculations of Plato and Pythagoras, Varro and Lucretius, upon the philosophy of sounds, and with them detects the first beginnings of the science of music in the noise occasioned by the revolutions of the planets, or the rustling of the wind amongst the trees and hal-rushes, or the mighty rushing of the torrent, or the silvery murmur of the stream, or the sweet melody of the birds, or other sounds occasioned by the agency of natural causes, and is satisfied. The antiquary, on the other hand, finds his keenest enjoyment in the task of penetrating mystery and removing error; and rejecting the myths and fallacies that form the scholar's happiness, and abandoning theory in his search for truth, he concentrates his energies in unravelling all that relates to mechanical contrivance, relying more upon one actual specimen, however mutilated, than upon fifty descriptions, flowery, but fallacious. Thus does the fact of many figures of ancient Greek lyres hearing the form of a tortoise bring more conviction with it than the account of Apollodorus, who attributes the invention of the art (he meant the form of the instrument) to the cucumber of Hermes with the shell of that animal: thus does the actual form of the Egyptian harp, as shown by their paintings, betray more indubitably its type in the form of the bow, than the classic story of the adoption of that form by Apollo, upon hearing the twang of the how-string of Diana; and the more so as the Greek and Roman monuments do not bear that form, whilst the Egyptian invariably do.

Music is an art that, disconnected from spoken language that it may serve to illustrate, receiving no aid from anything tangible or defined, appeals more to the imagination of those to whom it is addressed to adopt, embody, and mould into material form the picture intended to be conveyed through the medium of melodious and harmonious sounds alone, than any other of the circle of the imaginative arts. A statue, or a painting, or a building appeals to the heart through one sense—the sight, and presents the same appearance to all who behold it, and it is but in our different powers of appreciation, or our different degrees of cultivation, or of taste, that the impression conveyed by it will vary in character or intensity. A musical composition appeals also to one sense,—the hearing; but its form is immaterial, and cannot be defined, its visit is instantaneous, and cannot be prolonged, its beauties are a mystery, and cannot be explained. There is nothing positive in its construction, yet we seem to grasp it; it speaks a language we have never learnt, yet we comprehend it; it bids us follow it, we

know not why or whither, yet we obey it. Our imagination completes the form it shadows forth, and fills in the landscape presented to us hot in outline; and with every phase of difference in our mental conformation, so do we contribute more or less reciprocity of intelligence to its action, and reap more or less effect from its cause. Fortunate are we, in the nineteenth century, in the possession of a musical wealth that cannot be exhausted; a musical knowledge that cannot be disputed; when the compositions of the ancients have become matters hut of history, and their speculations have succumbed before the light of true knowledge and real science. For whether we look at the subject of music as scholars, or antiquaries, or musicians, no amount of argument can hide the fact from us that it is to the three last centuries that we owe the development of the power of sound as a medium for the soul's expression, as mighty in its operations as the painter, or sculptor, or architect's art, or poet's pen. When, with the ancients, poetry, painting, sculpture, and architecture had attained a high perfection, music was but in its infancy; and the reason was simply that the latter is an art dependent upon a particular branch of manufacture, requiring a technical knowledge and mechanical skill with which the ancients were totally unacquainted. What representations of Greek musical instruments have come down to us betray a means so totally inadequate to its end, that we can but wonder how the art became of such national importance, that to attempt to improve the cithara was considered a capital offence.

Greek instrumental music was but of two kinds, ἀόλιος and ἀόλιος, and the imperfections of the ἀόλιος, a pipe pierced with holes, must have been as great as those of the αἰθάρα, or χάλος (in Latin, *testudo*), an improvement upon the original λάρνα, or lyre (in Latin, *fides*), the varieties in the forms of which latter defy classification. These primitive instruments seem to have been the only medium to which music looked for its expression; and thus we can scarcely wonder that harmony was unknown, rhythm not observed, and the two grand distinctions of major and minor not discovered. Their abstruse calculations, as set forth by Aristoxenus, Euclid, and others, produced most un satisfactory results. Some specimens of Greek music by Kircher and others, are given by Burney, with an imaginary rhythm and in modern notation; but nothing satisfactory can be gained from them; and, as old Roger North observes in his "Memoirs of Musick," "for want of real or practicable specimens, it is not understood what their music was, nor yet, by means of all the pretended discoveries, can any piece he accordingly frauded that mankind will endure to hear, although Kircher hath vainly attempted it."

The Romans, though they did not advance the science, yet invented a new notation, and improved the construction of their instruments. The flute was held by them in most esteem, and its players most honoured, but the

\* *Decus Phœbi, et dapibus supremi Grata testudo Jovis*

is equally sacred to classic Rome as to classic Greece.

Abstract calculations were with the ancient Greeks the point to which their musical studies were directed; and, in the pursuit of the phantom they lost sight of the true principles upon which as a science it is founded, as an art it is developed. "Thus," says Macfarren, "the Greeks had their three genera and their six modes; thus these latter were adopted in the Christian Church; thus a knowledge of the ancient rules, as transmitted by Boethius—not a practical capability in composition or performance,—became the acknowledged test of musicianship; thus when, some six centuries since, the combination of sounds inducing harmony was first practised, the purely artificial rules of counterpoint were invented; and these retained their despotic authority to stifle the imagination, to limit the means of expression, and so to contract music within the arbitrary bounds of scholastic contrivance, from which, about two hundred and fifty years ago, scarcely an effort was made to emancipate it.

\* "The Pianoforte, its Origin, Progress, and Construction, with some Account of Instruments of the same Class which preceded it, viz. the Clarichord, the Virginal, the Spinet, the Harpsichord, &c. To which is added a Selection of Interesting Specimens of Music composed for Keyed Stringed Instruments, by Blytheman, Byrd, Bull, Frescobaldi, Dumont, Chambonnières, Lully, Purcell, Muffet, Couperin, Kuhnau, Scarlatti, Seb. Bach, Matthieson, Handel, C. P. Emanuel Bach, &c." By Edward P. Rimbault, LL.D., Member of the Royal Academy of Music in Stockholm, &c. &c. London: Robert Cocks & Co., New Burlington-street, Regent-street, W. 1860.

Greatly as we must admire the ingenious labours of that galaxy of musicians, the brightest star among them still shines the honoured Palestrina, it is for their ingenuity—for the studied research they evinced,—and not for their power over our feelings, nor for any token of inspiration they present, that we admire them."

The descent from the primitive lyre of all those instruments which preceded the invention of the key-board, including the ancient harp and Medieval psalter, dulcimer, and citole, is a subject of much antiquarian interest, as showing the progressive steps that led to results so inestimable; but of far greater interest is the history of those instruments which succeeded that invention, and which, embracing the successive varieties of the clavictherium, the clavicord, the clarichord, the virginal, the spinet, and the harpsichord, finally resulted in the pianoforte. "And here I may remark," says Dr. Rimbault, in his preface, "that a much greater antiquity is assigned to instruments of this class than has hitherto been accorded to them; although I do not go the length of the learned Abate Pietro Giannelli, who, in the article 'Cembalo,' in his 'Dizionario della Musica,' says 'that King David knew something of this instrument, is apparent from the 130th Psalm, where occurs the expression, *Laudate eum in cymbalis jubilationis*, which is, of course, to suppose that King David wrote and spoke the Latin language; for 'cymbalum' is but the Vulgate translation of a Hebrew term!"

The *clavier*, or key-board, having been applied to the organ at the close of the eleventh century, the adaptation of so great an improvement to stringed instruments would probably soon follow. The clavictherium, or *keyed cithara*, was the first simple result: a small oblong box containing the strings, of catgut, which were sounded or snapped by quill *plectra* attached to the keys.

The clavicord, or monochord, or clarichord, was the next phase of the instrument, and the engraving from Luscinus—the earliest extant—conveys the type of the square pianoforte. Its strings were of brass, and its action simply a piece of brass wire, placed vertically at a point where it could be either struck or pressed against its proper string, and where it might be retained at pleasure by the firm pressure of the finger. The affection of the elder and younger Bach for this instrument is well known, and Mozart himself, when travelling, always included one in his baggage. Dr. Rimbault hazards a derivation of the term clarichord, and its probable point of difference from the clavicord. The clavicymbal was another variety of the same class, and was probably, as Hawkins considers, the origin of the harpsichord. It was sometimes upright, sometimes horizontal, with strings of steel wire, struck by quill-*plectra*.

Dr. Rimbault has diligently collected his authorities upon these various instruments of a common type, and learnedly helps us to make the best of them; nevertheless, the perplexities of the *monochord*, the *cembalo*, and other obscure points, still leave a wide field for future explorers. "The last maker of the clavicord in Germany, of any note, was Krämer, of Göttingen, some of whose instruments may still occasionally be met with in the old baronial residences with which that romantic country abounds." Contemporary with the clavicord, though not superseding it, as it continued in use up to the introduction of the pianoforte, were the virginal and the spinet. M. Fétis, in a "Sketch of the History of the Pianoforte," from the *Harmonicon*, thus describes their peculiarity:—"When the defects inherent in the construction of the clavicord were discovered, a plan was devised of striking the strings with small pieces of quill affixed to minute springs, adjusted in the upper part of small flat pieces of wood termed *jacks*. These jacks were directed perpendicularly upon the key, and when the jack had made its escape, after the string had been struck, the jack fell in such a manner as to be able to reproduce anew the sound at will."

The virginal was of a rectangular form, like a small pianoforte; the spinet was of the

form of a harp, laid horizontally, and both were much in vogue towards the close of the sixteenth century. The etymology of the virginal seems probably derivable from its use by young ladies; but a modern writer, with refined taste, has referred its name to the conventional custom of accompanying hymns upon it to the *Virgin*. The etymology of the spinet is from *spina*, a thorn or quill, the tone being produced from a crow's quill inserted in the jack. Its chief difference from the virginal was in form, and certain alleged differences of construction Dr. Rimbault has not been able to recognise, at least, in any that he has examined.

The next and most perfect of the progeny of the key-board, and the immediate precursor of the pianoforte, was the harpsichord. Its form was precisely that of the grand horizontal pianoforte, and its origin suggested by the harp, from which instrument it derived its name. In the spinet and virginal there was but one string for each tone; but another was added to the harpsichord, the mechanism of the jack remaining the same. At length, Hans Ruckers, of Antwerp, effected an important reform in its construction. "He gave his harpsichords a more powerful and connected tone, by joining to the two strings in unison a third range of shorter and finer strings, tuned to the upper octave of the others, and which could be intoned at pleasure, either together with them or separately. He mounted his harpsichords partly with catgut strings, and partly with steel wire. In imitation of the organ, he added a second key-board to his instruments, the object of which was to allow three strings to be heard at once, or only a single one, at pleasure. In fine, he extended the compass of his harpsichord to four complete octaves (from C to C), by adding four grave sounds to the forty-five which existed before." It was towards the close of the sixteenth century, about 1590, that Ruckers first began to manufacture his harpsichords, and a prodigious number of these instruments, by himself and his sons, were sent into France and Germany.

Many were the varieties and improvements afterwards effected in the seventeenth century. In Italy, Farini produced an instrument to which he gave the old name of *clavictherium*, then long obsolete, wherein he employed catgut strings instead of wire, which gave them a more mellow and soft quality. His example was followed by several German makers. Rigoli, of Florence, invented the vertical harpsichord, taking the idea from the earlier clavicymbal,—an idea since imitated in all pianofortes of the upright class; and Richard, in France, improved the tone by substituting small slips of cloth in the place of the quill for producing the sound. Instruments, too, were constructed, with various modifications, to imitate the tones of the harp, lute, mandolin, violin, &c., wherefrom tones were elicited for which no analogy could be found, and which were honoured with such new and fantastic names as *jeu céleste*, *angélique*, &c.

The result of these various experiments led to the invention of the stops, and from them the *pedals*. Shobert, the composer, was the inventor of a harpsichord with a double bottom, in which was placed, above the first sounding-board, a range of strings of two octaves, of considerable size and length, to strengthen the bass, which were sounded by mechanism, acted upon by a range of pedals. Others followed. Hopkinson, of Paris, substituted metal tongues for crowquills; Sillerman, of Freyberg, invented the *claviccon d'amour*, and Stein, of Augsburg, the *vis à-vis*,—a harpsichord with a key-board at each end, by which means two could play at the same instrument. "But perhaps," says the author, "the most extraordinary invention of the time was that of Louis Bertrand Castel, a Jesuit of Montpellier. This worthy monk, whose 'Physical System' ranks among the best philosophical works of the early part of the last century, and whose 'Optics of Colours' is still esteemed, studied vision and the nature of colours, as blended or contrasted with each other, till his imagination getting the better of his understanding, he confounded the eye with the ear, and associated the harmony of tints with that

of sounds. Infatuated with this idea, he invented what he called an *ocular harpsichord*, which was strung with coloured tapes instead of wires; and, being placed in a dark room, when the keys were touched, the transparent tapes which respectively corresponded with them became visible; and the various successions and combinations of colours, consequent to this operation, produced effects on the sight which his fancy assimilated to the impression made on the ear by melody and harmony."

The inherent defect of the instrument—its affinity in tone to the class of instruments struck by the finger or *plectrum*—had long occupied the attention of three men of different countries, and a threefold claim was almost simultaneously made to the invention of the Pianoforte.

We have thus far very briefly followed Dr. Rimbault, in the leading phases of that class of musical instruments which finally resulted in so marvellous a triumph; but must reserve our remarks upon the history and construction of the perfected instrument itself for another occasion. To examine all the works, or passages from works, that might throw light upon his subject has been the author's aim; and as he himself observes, "the task has been one of no small difficulty, the materials being widely scattered, and in some cases almost inaccessible. The amount, too, of miscellaneous reading required, was almost enough to deter the most ardent explorer after hidden treasure, from pursuing his labour." A rich mine of entertaining anecdote is presented to the reader, and the sources of the author's information are freely exposed for the benefit of those whose love of the antiquarianism of the art may prompt them to inquire into the subject more deeply; whilst for those who desire to study the mechanism of the pianoforte itself, the second division of the work is specially reserved.

The account of the ancient Egyptian and Greek stringed instruments is short, but sufficiently comprehensive for its purpose as an introduction to what follows, and some interesting discussion upon the harp, from the accounts of Bruce, Rosellini, Wilkinson, Layard, &c., is of value. The Biblical instruments of the Hebrews are wrapped in still greater uncertainty, the various translators of the Bible all differing as to the nature of the terms there found, and the Jewish rabbins themselves knowing no more of the matter than those least acquainted with Jewish matters. Thirty-four different instruments are there enumerated, supposing that the titles of several psalms, as *Michlam*, *Syriam*, *Sheminith*, &c., indicate the names of the instruments used in performing them. But the authority for this is very doubtful. The "Harmonicorum Libri xii." of Merseennus, a Frenchman, and a great Hebrew scholar of the seventeenth century, and the "Musurgia Universalis" of Athanasius Kircher, a German Jesuit of the same period (much referred to in the work), to describe these instruments; still their interminable details only perplex still more the question, and it is to the wonderful discoveries in Egypt that we must now look for information.

The Medieval instruments that preceded the invention of the key-board, receive much assistance from the "Musurgia, seu Praxis Musica" of Ottomarus Luscinus, 1536,—a valuable work, from which numerous illustrations are copied.

Mr. Hendrie's well-known translation of a manuscript of the thirteenth century, by the monk Theophilus, "De Diversis Artibus," has afforded Dr. Rimbault a valuable chapter on the subject of "cymbal-making for the use of the church," which he has transcribed entire.

The nature of the cymbal has never been properly understood. It is generally considered as simply rhythmic, producing sounds unappreciable by the ear; but this was not the case with those of the Middle Ages. From the treatise of the monk Theophilus, we now for the first time learn that they were capable of being tuned to the various sounds of the scale.

The psalter, the dulcimer, and the citole, and twenty more obsolete instruments of the Middle Ages, all bearing some affinity

either in name or character to those of antiquity, and alluded to in the romances and ballads of the fourteenth, fifteenth, and sixteenth centuries, are brought to our notice in the introductory portion of the work of Dr. Rimbault, and many valuable illustrations from books and rare manuscripts render it more intelligible to the general reader.

THE ROYAL ACADEMY AND THE NATIONAL GALLERY.

THE National Gallery is closed to admit of the proposed alterations being made in the building. A return to the House of Commons, moved for by Mr. Adderley, has been published, giving the correspondence between the First Commissioner of Works and Capt. Fowke, relating to his plan for alteration of the National Gallery. This plan, we may mention (which has since been much talked of), was briefly described in our pages as long ago as April, 1855. When it was received by the First Commissioner, he sent it to the council of the Academy for their observations. In reply the council returned a long list of comments, in the course of which they said,—

"It will be at once evident from even a cursory examination of these plans, that Captain Fowke has not made himself acquainted with the requirements of the Royal Academy. No offices are provided for the secretary, the clerk, or the porters. No separate access is afforded as at present for the keeper to his apartments, for the students to the schools, and for the public to the exhibition galleries, but all will have to enter by one great hall, common to the National Gallery and to the Royal Academy, this arrangement would be quite inadmissible, and productive of the utmost disorder and confusion, rendered all the greater by the very imperfect lighting of this hall."

These important defects having been pointed out to Captain Fowke by the president and treasurer, he first proposed a supplemental plan, which is annexed to his first plan, but this suggestion the Council has been appropriated to them for so many years, although it is certainly very insufficient for the great objects of the Royal Academy, viz., 1st, The gratuitous instruction of students in the fine arts; and, 2nd, The annual public exhibition of works of art.

A separate entrance and a separate hall are absolutely necessary for each of the two Institutions; for the Royal Academy especially; and a hall is necessary for the reception of their large collection of casts and models. Unless, also, a separate entrance be provided for the students, any rooms that may be appropriated for schools could not be used during the period of the exhibition, and they would thus be rendered altogether useless during that time."

Capt. Fowke replied at some length, expressing his surprise at starting that—

"The Royal Academy should have felt themselves at liberty to put a veto upon any alterations being made in a public building, in which they are only tenants on sufferance, more especially when such alterations are proposed with a view to remedy the inconveniences and expense which their continued occupation will entail upon the public;"

but he did not succeed in removing the First Commissioner's objection to adopt the plan.

The plan which is about to be acted on is Mr. Pennefather's, and includes flooring over the central hall at the level of the galleries, and an alteration of the staircases which, in the case of the Royal Academy, will, if we understand rightly, come up into the middle of the "Miniature-room," somewhat awkwardly. We have reason to believe that the council of the Academy are far from satisfied, and that some of the members are most anxious that Government should postpone what seems to be mere patching, and give the Academy a proper site whereon to erect, at the Academy's own cost, a fitting building for their purposes,—the instruction of students, and the public exhibition of works of art.

The report recently issued by the council of the Royal Academy shows that the secretary's salary is increased from 140*l.*, with 150*l.* per annum in lieu of apartments, to 250*l.*, and the same allowance for apartments. That of the keeper is made 200*l.* in place of 160*l.* The treasurer remains at 100*l.* per annum. The librarian has had his salary doubled, being originally 60*l.*, but now 120*l.* The clerk is paid 150*l.*, and has an apartment provided for him. The housekeeper's salary, for herself and assistants, is increased from 70*l.* to 100*l.* per annum. The two porters receive 60*l.* instead of fifty guineas, each, and the assistant 50*l.*, in the place of 40*l.*

The allowance of pensions now stands thus:—1. To an Academician, a pension not exceeding 150*l.* per annum, provided the sum given does not

make his annual income exceed 200*l.* 2. To an Associate, a pension not exceeding 75*l.* per annum, provided the sum given does not make his annual income exceed 160*l.* 3. To a widow of an Academician, a pension not exceeding 75*l.* per annum, provided the sum given does not make her annual income exceed 160*l.* 4. To a widow of an Associate, a pension not exceeding 45*l.* per annum, provided the sum given does not make her annual income exceed 100*l.*

THE CAMBRIAN ARCHÆOLOGICAL ASSOCIATION AT BANGOR.

At the Bangor Congress of the Cambrian Archaeologists, Mr. Charles G. Wynne, M.P., presided, and delivered an interesting opening address. In the course of it he said,—I shall endeavour to show that archæology, far from being a mere unprofitable dilettantism, has a positive value, one appreciable not only by the literary or scientific mind, but even to those who look exclusively to material interests—that commerce, in a word, no less than history, or art, is under obligations to archæology. I allude to the case of our pottery and earthenware manufacture, which is now an important branch of our national trade. At the time when Wedgwood first began his operations, England was an importing country with regard to this article of trade, drawing her supplies from the Continent, from Holland, from France, and from Germany. About the year 1760, Wedgwood established himself in Staffordshire. The models which he selected for imitation were all taken from the antique, from the Portland vase—Greek vases, cameos, and old coins,—but above all from the magnificent collection of Etruscan vases and earthenware, which were purchased about that time from Sir William Hamilton, for the British Museum. Such was the immediate improvement in classical elegance and purity of design which the manufacture derived from these sources, that, within a very few years, England became an exporting country in this article, and the trade in it has been steadily developed since, until, in the year 1857, the declared value of the earthenware exported from the United Kingdom was 1,488,688*l.* Wedgwood's own sense of the obligation under which he was to his imitation of his ancient models, was marked by the name he gave to the new village, formed round his works in Staffordshire, which he called Etruria in honour of them. More recently still, the collection of Etruscan antiquities made by Prince Caiano, and brought to England by Signor Campanari, has marked another stage in the progress of this branch of industry; and it is a fact that at this moment the best silversmiths and jewellers in London resort constantly to the British Museum to study these models, and copy them for reproduction. The well-known Minton ware—to which belong the most beautiful specimens of fictile art in the present day, are either copied from, or due to the study and imitation of, the Majolica ware of Medieval Italy; whilst the smaller objects of Assyrian art, brought from Nineveh by Mr. Layard, are extensively copied by artists, and reductions of them made, on a smaller scale, in Parian, in marble, or in bronze.

The first paper read was on "The Military Architecture of Wales," by Mr. G. T. Clark.

"The greater number of the existing buildings," he said, "are probably of the reign of Henry III., or early in that of Edward I. Some of the grander examples, such as Caerphilly, Kidwelly, Beaumaris, are regularly concentric, and quite equal to anything in England. Others, as Conway, Caernarvon, Caldeot, are a mere inclosure, divided into courts, and contained within curtain walls thickly studded with towers, and broken by regular gate-houses, and having the hall and other buildings disposed against the curtain along the sides of the principal court.

The smaller castles of this type, as Dinas Powis, Penard in Gower, perhaps Whitecastle, and many others, seem to have been a simple inclosed court, with walls from 10 to 30 feet high, mural towers, and a gate-house, but with small permanent accommodation within. The dwellings were chiefly structures of timber placed against the walls, and have in consequence long disappeared.

When a castle, as Neath, Caernarvon, Newport, and Cardiff, was placed close to a town, it usually formed a part of the circuit of the walls. At Chepstow this does not appear to have been the case."

On the second day an excursion was made to Beaumaris, where the castle was specially illustrated. In the evening the Rev. John Griffith, rector of Merthyr Tydvil, read a paper, entitled, "The Diary of John Taylor, Water Poet to his Majesty King Charles I., through Wales in the Year 1652, in the place of 1604."

The Rev. H. Longueville Jones delivered to the meeting the result of his summer's study of the "Ineised Stones" with which Wales abounds, and which are most important to the proper and correct study of archæology. They had very few

old MSS., but they were exceedingly rich in these stones—richer than most part of the countries of Europe, of which they ought to feel very proud and do their utmost towards their preservation. The rev. gentleman pointed out to the audience by means of diagrams, several inscribed stones some of which had been only recently discovered. Amongst the most remarkable were those of Llansawdn and Llangadwaladr: the latter, in his opinion, could not have been so early as the former. He pointed to others of a very early date found at Penmachno, preserved through the exertions of the president (Mr. C. Wynne) and his family. One of them had the Greek monogram, and the following inscription:—

CARAVSIVS  
IHCICACIT  
INHOCCON  
GERIESLA  
PIDVM

It means that "Caravus lies here in this heap of stones," that is, in a carned. It was rescued by Mr. Wynne, but was well known to Pennant, who met with it in going from Penmachno to Ffestiniog. The other stone had the following inscription:—

CANTIORIHCICACIT  
VENEDOTISCIVEFVIT  
CONSOBRINO  
MAFILI  
MAGISTRATI—

which showed that he was a Venedocian (Gwynedd) citizen. The last word "Magistrati," was never found upon any other stones, and it must carry them back to a very early period. It is hoped now that those stones are going to be placed in the new church at Penmachno, they will be handed down unimpaired to future generations. He (the rev. gentleman) had himself found one some few weeks ago at Spittal. It commemorated the burial of a man and his mother, and was very ancient. The emblems and the Christian characters which the stones bear, formed a very important link in the history of the British church, and established its independent existence, not by theory, but by facts. He next called attention to the Irish oghams found upon the stones, which were the work, no doubt, of Irishmen who came over and marked those they met with in this country. He hoped that some Irish scholar would ere long come over to decipher these characters, which to them was still a mystery. The following inscription is from a long rounded water-stone along the pilgrim road going to Bardsey Island, which Mr. Westwood thinks is of a late period, but which he (Mr. Jones) thought was rather early:—

MERACIVS  
PBR  
HIC  
IACIT

That meant "Meracius the Presbyter lies here." He next came to the famous Frondeg Stone, in Anglesey, which still, he was sorry to say, served as a gate-post, and was certainly not safe in that position. It bore the following inscription:—

N NII FILLVS CUURI CINI EREXIT  
HUNC LAPIDEM.

He alluded to another stone from Pentrevelas which bore a very early inscription, commemorative, some say, of Prince Llewelyn, which might be; but he thought it was much older. However, the inscription could not be read. The rev. gentleman concluded his very interesting and instructive address by impressing upon the minds of his audience, and especially those concerned in the restoration of churches, the importance of preserving from obliteration such ancient monuments of the past, which indicated to them the early national history of the country.

On Wednesday there was an excursion to Plas Newydd, Llanidan, &c., in Anglesey.

On Thursday the places of interest in Bangor were visited. Bangor, the *North Wales Chronicle* remarks, is a compound Welsh word—*Ban* signifying high, *gor*, choir. It was formerly known as Bangor-fawr-yn-gwynedd. Leland says that Condate, a British prince, erected and dedicated here a temple to Minerva. A stone, 3 feet 3 inches long, was discovered at Tyeoch, with an inscription:—

N.V.MN.C  
IMP. CAESAR.M  
AVREL—ANTONINUS  
PIVS. PIX—AC—ARAB.

Cressy says that Malgo Conant built a city called Bancor. On a rocky eminence, about a quarter of a mile east of the city, are to be found the remains of a castle built by Hugh Lupus, Earl of Chester. At the cathedral, Mr. Kennedy officiated, and

pointed out the principal architectural details and history of the edifice. It appears that the cathedral church of Bangor is dedicated to St. Daniel, by whom it was first founded, about the year 525. He was elected the first bishop about 550 (but according to Usher, 522), and was the son of Dunawd Fyr, or Dinotus, abbot of Bangor Isoyd, in the reign of Maelgwyn Gwynedd, Prince of Wales, who was the founder of Penmon and patron of Taliesin. He is said to have been the most liberal prince of his time. The cathedral was destroyed in 1071, by the Saxons, but was rebuilt by King John in 1212. It suffered greatly, as did the cathedral church of St. Asaph, in the wars between Henry III. and the Welsh, about 1247. During the rebellion of Owen Glyndwr the cathedral was destroyed by fire, A.D. 1402, and rebuilt in 1492 by Bishop Derwis or Dennis, temp. Henry VII. The tower and nave of the cathedral were added by Bishop Skelington, in 1532. The ground plan of the cathedral church is cruciform, and comprises the following,—a nave, 138 feet long from the eastern side of the western wall to the western side of the archway of the chancel, and 25 feet wide between the inside of the arcades, which are 3 feet thick, and 34 feet high, including the clerestory, north and south aisles to the nave, extending to the transept, 110 feet long, and 15 feet wide, from the outer sides of the arcades to the north and south walls, which are 4 feet thick and 20 feet high; north and south transepts, each 34 feet long, 25 feet wide, and 34 feet high. The choir or chancel, from the outer or western side of the eastern arch to the inside of the eastern wall, is 55 feet long, 27 feet wide, and 34 feet high, the walls being 3 feet 6 inches thick. The tower at the west end is 18 feet square, and 61 feet high. The pinnacles are 7 feet 6 inches high.

Penrhyn Castle, Llandegni Church, and Ponaemaunawr were visited in the course of the week, and various papers were read besides those already mentioned.

The next meeting of the association (for 1861) will be held in Swansea.

#### STEAM PRINTING.

The great lesson of the rights and duties of labour and the working of commerce is yet to be taught to the great masses of the population. We, therefore, continue to direct attention to circumstances which show the advantages which have resulted to all classes from the introduction of steam power.

To set forth a fresh phase of the subject let the mind's eye penetrate the precincts of Westminster Abbey, where Caxton first in England used type to supersede the pen. It is not precisely known in what part of the Abbey this important event in the world's history took place. Nevertheless, from that time to this, printers meet in "chapel"! Of course the process found opposition on the part of the comparatively small number of persons who were engaged in the production of books by hand. It may be that the clever penmen in "cloisters grey" looked upon Caxton's introduction with objection, and upon that worthy with anger and distrust, saying that no good could come of such new-fangled ideas. This is the kind of treatment which has been received by some of the world's best benefactors.

For long after Caxton's application of types in printing the onward progress of the art was not great. Useful and glorious ideas were, however, spread abroad; intelligence advanced, and a portion of the multitude were, although at a distance, put into communion with men of learning and intelligence. The demand for printed books and papers was great. The energies and skill of several persons were directed towards increasing the producing powers of the old-fashioned printing press.

For centuries after the introduction of type-printing, but little if any change seems to have been made in the construction of the machines. At length, various improvements were effected, chiefly by the Earl of Stanhope; Mr. Ruthven, a printer of Edinburgh; Mr. G. Clymes, of Philadelphia, who invented what is called the Columbian press. Then followed the invention of working a press by steam-power, which, in contradistinction to the old process, was called steam-printing. On the 20th of April, 1790, Mr. William Nicholson, a gentleman well known in the literary and scientific world, obtained a patent for a machine for printing on paper, linen, cotton, woolen, and other articles, "in a more neat, cheap, and accurate manner than is to be effected by the machines now in use." It does not appear that his plans and experiments ended in any practical results. Another machine for printing was

invented by Messrs. Bacon & Donkin, for which they obtained a patent in the year 1813. This machine was so far different from that of Mr. Nicholson, that, instead of requiring the types to be cast so as to arrange on the surface of a cylinder, they were firmly fixed in pages on the face of revolving prisms, having four, five, or any required number of sides. The structure of the machine, however, proved too complicated.

After this, M. König, a native of Saxony, and a printer, introduced another machine. For some years this ingenious inventor had directed his attention to the subject, but his endeavours in the first instance were chiefly to accelerate the motion of the common press. Perhaps in some measure guided by the experiments made in England, M. König's labours were the first that produced any useful fruit. Requiring means to carry out his experiments, the German printer applied without success to many eminent printers in several of the continental capitals. He then turned his eyes towards this country, and arriving in London about 1804, he submitted his scheme to several printers of repute, who were not disposed to incur the risk of expenses: finally, he was introduced to Mr. Bensley, who speedily entered into an arrangement with him.

After a short course of experiments on the fabrication of a press which should have accelerated motion, and, at the same time, render the work of the man who inks the type unnecessary, the above gentlemen were joined by Mr. G. Woodfall and Mr. R. Taylor, both printers, the former of whom, however, soon retired. After great perseverance on the part of the remaining partners, it was discovered that the intended improvement of the common press could not be brought to bear, and that much labour and expense would be incurred, unless some radical alterations were invented. Cylindrical printing was then thought of, and after two or three years of renewed exertion, a small machine was produced, the characteristics of which were that instead of the printing being produced by a flat impression, similar to the ordinary press, the sheet passed between a large roller and the types still flat, and in lieu of the old-fashioned balls used by hand to heat over the types, so as to communicate the ink to their surface, skins were strained round smaller rollers, on which it was contrived to spread the ink, and under which the frame in which the types were fixed passed in its way to the printing cylinder. So much promise of success was given by this machine that it was deemed advisable to construct one on a larger scale. In order to carry out this idea the model machine was shown to Mr. Walter, the proprietor of the *Times* newspaper, and after settling what further improvements were contemplated, an agreement was made with that gentleman for the erection of two large machines for printing his journal. So secret had been the operations of the patentees, that the first public intimation of their invention was given to the reader of the *Times* of Monday, the 25th of November, 1814, who was told that he then held in his hand one of many thousand papers thrown off by steam.

The next advance in improvement was the manufacture of a machine for Messrs. Bensley, distinguished from those before mentioned by the mode of printing on both sides at once. Amongst other improvements was a method of register, which caused the pages to fall precisely on the back of each other. Deficiencies were now discovered in the inking: the strained skins were found to be uneven on the surface, and attempts were made to clothe the rollers with an elastic preparation of glue, treacle, &c., which has at length been brought to a certain perfection.

Another improvement which followed this was the mode of inking the types invented by Mr. Cowper, which was so superior, that Mr. Bensley adopted it for the use of his machines. Together with the successful application of steam machinery to this work, books and other publications for the use of the multitudes, rapidly increased, and printing establishments on a scale which had not before been thought of, sprang into existence. In 1827, Mr. Applegarth, of the Belvedere-road, in his machine printing-office, employed upwards of 100 persons. Here were carried on typesetting, stereotyping, composing, and printing: here were printed extensive works for Government and private individuals. Amongst them may be mentioned the *John Bull* and *Examiner* newspapers, the "Encyclopædia Metropolitana," and "The Every-Day Book."

Since the last-mentioned date the extension of the use of printing has been enormous; newspapers and other serial publications have multi-

plied, and so vast is the circulation of some, that the copyright of a penny journal has been sold for 20,000*l.* Other improvements have been made, and the speed of printing is constantly increased.

Again, we have been indebted to America for improvement in the steam-printing, and by means of an American machine, 12,000 copies of the *Illustrated London News* can be thrown off in an hour. For the purpose of printing this paper and its supplements, there are besides the large machine just mentioned, about a dozen others of various sizes and construction, to drive which requires four steam-engines, altogether of a nominal power of about forty-eight horses. It is almost needless to say that, but for the application of steam, the production of this and many of the other serials would be impossible: besides the general advantage, the application of steam to printing has created a vast demand for various descriptions of labour. These machines, so beautiful in their construction, that their working seems almost like the effect of magic, must have for long kept busy many hands in the making of them. To work and attend to the engines some fifty or sixty persons are required: more employment is given in dampening and preparing the huge stacks of paper for printing. The manufacturing of the paper, too, has been another means of providing labour. Then there are the compositors, numbering over thirty; preparers of box-wood, artists, and engravers. As regards the latter, although a number are employed on the premises, so many of the blocks are cut by various engravers at their own homes that it is not easy to get the exact number who are in this way employed; but we think that it is far within the mark when we put the number of draughtsmen and engravers at 20, who are required to produce each week's illustration. Besides these are editors and writers, a large staff for publishing, and other business arrangements; preparers of printing ink, electrotypers, &c.

If we glance at other great printing establishments of the metropolis,—at the *Times* and the Queen's printing-houses, the offices of the various daily and weekly newspapers, at the office at which this journal is printed, for example (Messrs. Cox & Wymau's), which is amongst the oldest of the printing establishments; the printing offices of Messrs. Petter and Galpin; at Mr. Stiff's—the place where the enormous impressions of the *London Journal* are thrown off,—at the great towns of the provinces, where also printing operations are going forward which are extraordinary for their extent, and which are constantly increasing;—we shall find that the immense army of workers who are in this way engaged are paid good wages, which with care enable them to support a respectable position; and contrasting the wonders which have been done, the present great and constantly increasing numbers who in this way find employment, and the early condition of the art, it must be plain that the application of steam power to the printing press, while it has been a blessing to the world at large by the dissemination of knowledge and the cultivation of mind, has provided fresh means of remunerative employment for thousands.

#### ETCHING.

ORNAMENTATION on metals, glass, and porcelain, has come into considerable use; and, believing, as we do, that such work would not only be pleasant to amateurs, but might also be useful to others, we think that a few brief and practical notes on the subject may not be out of place.

First, as regards copper-plates—which in many respects have an advantage over steel for the use of amateurs,—procure a thin plate, properly polished on the surface, at any of the regularly established copper-smiths. These can be had of the size of several feet down to a few inches. The surface of the plate being bright and free from tarnish, remove all grease with great care by washing with spirit of turpentine and then rubbing with very fine whitening and wash-leather. Care must be taken not to scratch the plate.

Having got rid of all grease, fix a hand-vice to one corner or some other convenient part of the plate; it is then ready for the reception of the etching-ground—a preparation chiefly composed of asphaltum, pitch, and virgin wax: there is, however, a great art in making this sufficiently plastic, so as to admit of its being properly spread upon the plate when heated. It is better for ordinary purposes to purchase it at the copper-smith's or tool-shop, where a supply can be had for about 1*s.* A dabber, for the purpose of laying the ground on the plate, is also necessary. This

is of a mushroom shape, and composed outwardly of very fine silk or kid leather, free from grease: the inside is padded with wool. This can be readily made by any person who has seen one of them. In order to prevent any grit or impurity which may chance to be in the etching-ground, it is better to tie it in silk. For the purpose of beating the plate, a hot iron, or a spirit-lamp, placed below an iron frame on which the plate may rest, or other contrivance, may be used. Care is to be taken to make as little dust as possible. The metal must not be allowed to get too hot, for that would burn the etching-ground, and prevent it from sufficiently resisting the acid. The plate being of a proper heat, by drawing the etching-ground over the face, a small quantity will be lodged upon it. This in the first instance is uneven; but, may be spread in a flat, thin, even manner. Every part must be covered by the ground, or else the acid would leave such places as are bare liable to be corroded into holes. The ground, when this is spread on the surface, is of a light brown colour, so delicate, that it is difficult to see any pencil outline which might be transferred, or properly to see the scratches made by the etching needle. In order to darken this, it is necessary, while the plate and etching-ground are still warm, to smoke it by the flame of a wax-taper or candle. The flame must be kept moving about, and not allowed to touch the plate so closely as to burn the ground.

These operations, although simple, require some little practice and experience; and it is, perhaps, a good plan either to take a lesson or two in ground-laying, and the other parts of this process, from an engraver, or else to get one of this profession to lay the ground, and bite in the plate when etched.

The ground having been made ready, and the plate cold, an outline of the subject, prepared on ordinary or tracing paper, should be damped and transferred by means of pressure. The best way to manage this is to take it to a copperplate printer, who will do it effectually for a few pence: for those living in the country where such convenience cannot properly be had, this transfer can be made by one of the ordinary letter-copying-machines, or by going very delicately over the back of the outlines with a pencil or other instrument which is not too sharp.

This having been done by means of an etching-point, which can be had at the tool-makers, the design can be readily scratched upon the plate. Attention is needed to mark the lines quite through the ground. The hand should also be prevented from coming in contact with the ground, and all unnecessary scratches be carefully avoided. This may, to a considerable extent, be done, by forming a bridge of a flat ruler, supported by pieces of card-board or folded paper.

Wherever the etching-ground has been passed through by the etching-needle, that part is liable to be eaten into a line by the application of acid: on no other portion, however, if properly done, should the acid work.

It being necessary to cover the etching with an even depth of diluted acid (from a quarter to half an inch), in order to produce equality in the biting, it is needed to form a wall of wax round the margin of the work. The best material for this is bees-wax, with a small part of Burgundy-pitch added, and then the mixture boiled until the whole is well mixed. This, when needed for use, should be put into warm water, and then it can be readily raised round the plate and pressed down by the fingers, and after that more firmly by the handle of the etching-point, so that a sort of tank is formed, which will contain the acid as long as it may be necessary.

With the greatest care scratches may be made, or it may be necessary to erase parts, or the wax-wall may not be sufficiently tight. In order to remedy this, turpentine-varnish, or the ordinary "Brunswick black," used for stores, may be employed, thinned to a proper extent by turpentine, and applied with a black-lead pencil.

For the purpose of "biting in" the plate, as the engravers call it, nitrous acid of the purest description should be mixed—one part of acid, and three parts water—which should be stirred up with a feather or pencil: soon the lines will be covered with minute globules; and, in proportion to the time the acid is allowed to remain, the etched lines will become thicker and deeper.

As a matter of course, in order to produce a delicate and refined effect a variety of thicknesses of line is desirable; and, although much can be done by the pressure of the point, by hatching, doubling lines, &c., it is in most cases necessary to allow the acid different times of action: for instance, it will be desirable to keep distant moun-

tains and landscape thin, and to bring out the foreground by bold and deep lines. In order to manage this, the acid must be poured off into a vessel for further use, and then the plate must be well washed with clear water, and afterwards dried with a bellows or other means; then such parts of the etching as are of sufficient depth should be covered with the varnish in the same manner as the blemishes to which we have referred. This operation may be performed any number of times, each time washing and drying the plate: this must be also done when the biting is completed; and then, by gently heating the back of the plate, the wax may be drawn off, and by means of a little spirit of turpentine and oil the surface of the plate may be cleared of the etching ground. There are other operations, such as re-biting, re-etching (by touching with the graver), and by working with a point without the use of acid, &c. &c.: these, however, would require much space to describe, and this we will not just now do, as it is more particularly our object in mentioning the above to make operations which might be useful in many manufactures more readily understood.

In the same manner, but with the use of different acids, and on any scale, etching may be applied to steel, iron, brass, glass, and, lately, we are told, to porcelain. For steel, nitric acid very largely diluted with strong vinegar, is best. On brass we have seen deeper and other ornaments produced with great clearness and rapidity in the following manner. On large works, such as monumental brasses, experience has shown that in the biting, either by nitric or nitrous acid, before a great depth is got the biting of the lines is stopped by the formation of a black oxide, which it requires a very strong preparation of nitrous and sulphuric acid to remove and keep in solution; and this after a time proves too strong, and tears up the ordinary etching-ground: it has, however, been found that turpentine varnish, if allowed for a few days to harden, has a great resistance; and by the use of this when diapers, &c., are outlined, the raised parts may be painted with the varnish; and, when hard, the acid applied; and it is astonishing what good effect may be produced by these means. Large surfaces for the relief of foliage, figures, letters, &c., may, by this means, be executed with rapidity, either for filling in with coloured shellac or pigments.

The painting of these ornamental plates with varnish might be the means of affording employment to females, and probably the preparation of cubbing, and otherwise ornamenting glass to be bitten by fluoric acid, might also be brought into far more extensive use than it is at present, and would also provide a certain amount of respectable labour for females.

#### AMENDMENT OF THE METROPOLITAN BUILDING ACT.

THE following is the whole of the "Act to alter and amend the Metropolitan Building Act (1855)," 23rd and 24th of Victoria, cap. liii. It refers, as will be seen, simply to the size of manufactures:—

"Whereas certain rules of 'The Metropolitan Building Act, 1855,' have been found to operate prejudicially by limiting the contents of buildings to be erected as workshops for the manufacture of the machinery and the boilers of steam vessels, and as the increased and increasing size of such machinery and boilers for the royal and commercial marine of this country requires larger areas for their manufacture than are allowed by such rule, it is expedient to amend the said Act: he it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. This Act may be cited for all purposes as "The Metropolitan Building Act (Amendment), 1860."

2. The rules of "The Metropolitan Building Act, 1855," limiting the cubical dimensions or contents of buildings used either wholly or in part for the purposes of trade or manufacture, shall not after the passing of this Act apply to any building to be used wholly for the manufacture of the machinery and boilers of steam vessels beyond the distance of three miles from St. Paul's Cathedral: provided always, that every such building shall consist of one floor only, and shall be constructed of brick, stone, iron, or other incombustible material; and it shall not be lawful for the owners, lessees, or occupiers thereof, or for any persons interested therein, to use such build-

ing for any other purpose than the manufacture of the machinery and the boilers of steam vessels, until all the rules and provisions of the said Act, as to party walls and other matters which are applicable to buildings of a similar character, shall have been duly complied with: provided also, that every such building, if of greater dimensions than 216,000 cubic feet, shall be subject to the approval of the Metropolitan Board of Works, in the same manner as iron buildings or buildings to which the rules of the said Act are inapplicable as set forth in the fifty-sixth section of such Act."

#### EXHIBITION OF MODERN PICTURES, MANCHESTER INSTITUTION.

THE annual exhibition of works of art in the Manchester Royal Institution is now open. The collection is one of average merit, including works by F. W. Hulme, Cobbett, Edward Davies, Lane, Hook, Egley, Duffield, Anthony, and Kennedy; and from many local artists, particularly Bestock, Brodie, Crozier, Henry Calvert, Duval, Gibson, Hayes, Keeling, Percy, Shields, and Whitte. The Exhibition further contains nearly 250 pictures by foreign artists, French, German, and Belgian. Amongst the artists contributing these we find Meissonier, Decamps, Chavet, Contare, Freer, Bossuet, Achenbach, Jordan, Steffeck, Becker, and others. We should like to know under what circumstances these foreign pictures are obtained.

The council of the Royal Institution have left the management to the local artists, and Messrs. W. Percy, J. Keeling, R. Crozier, H. C. Mitchell, and H. Calvert have hung the pictures.

The general price of admission is, as usual, 1s.; but two new features have been introduced into the arrangements, one day per week (Thursday) having been set aside for the wealthier class of society at 2s. 6d., while strangers coming to town on the other days by railway excursions are to have admission at half-price.

What has become of Mr. Fairbairn's projected public gallery for Manchester?

#### WORKS IN FRANCE.

THE works of the first pavilion of the second block of the *Halles Centrales* are nearly finished, and it soon will be open for the sale of butchers' meat, by wholesale and retail, for which this compartment is specially reserved. Shortly the scaffolding will disappear from around it, and also the wooden sheds now standing on the site of the second pavilion. The second block is to be similar to the first, and will contain six pavilions connected by covered passages. A boulevard, planted with trees about 32 metres wide, will separate the two blocks which will cover in all a surface of 40,000 square metres. If we add to that all the passages and outlets, the whole area of this public market will be 80,000 square metres, 8 hectares, or about 19.75 British acres.

The painter Decamps was killed by a fall from his horse on the 22nd ult., at Fontainebleau, and buried at the picturesque cemetery of that town on the 25th, with military honours in the form of a salute from the troops. He was an officer of the Legion of Honour.

The Solferino-bridge has just received its finishing touch of decoration. On the twelve blocks of Jura stone, which are spaced along the parapets of this bridge, are capitals likewise in Jura stone consisting of inverted consoles, surmounting a small frieze. The tablet, or shield, of the anterior portion of each capital, contains the names of the different victories obtained by the French army in the last French campaign.

The bridge constructed over the Garonne, at Bordenaux, by the "Midi" company, to connect it with the Orleans line, has been just terminated. On Sunday, the 5th August, a train starting from the "Midi" terminus, containing M. Surell, director of that company; M. Duvidant, engineer-in-chief of government superintendence (*contrôle*); and Messrs. De Laroche, Tolay, and Regnault, engineers, who projected the structure, and under whose immediate superintendence it was executed, made a trip over the bridge, and came to a stand at the Orleans station. The aspect presented by this bridge is most noble. It crosses the river about 1,000 metres higher up the river than the old bridge of stone, constructed under the First Empire: its length is about 500 metres. The superstructure consists of boiler-plate, top and bottom webs, with diagonal bracing for the panels, resting on six piers, the bearings being about 75m. for the five middle spans, and 56m. 50c. for the end ones. Each pier consists of two hollow cast-iron columns, filled with concrete, and forced into the ground by compressed air. One of

these has been embedded to the depth of 22 metres below the bed of the river, and stands 6 metres over it, thus making a total height of 28 metres. These cylinders are 3m. 60c. diameter. The apidity with which this immense structure was erected has not been equalled in Europe, it having been finished in two years. The old stone bridge of Bordeaux took ten years to build, with the assistance of the most experienced engineers of the Ponts et Chaussées, all whose talent was required to overcome the extreme difficulty of the foundations, hitherto considered unsurmountable.

The town of Moulins (Allier), has been authorized to raise the sum of 100,000 francs, to be repaid by voluntary taxation in eight years, for the completion of the church of Saint Nicholas.

#### IRELAND.

THE inhabitants of Derry complain that the site of the new bridge has been removed, at a great expense, from that of the old bridge, for the reason that at the former place a rocky bottom had been discovered by the engineer; but that now the contractor can find no trace of those rocks formerly discovered, and has been obliged to purchase a very expensive pneumatic apparatus, which gave promise of enabling him to put down the foundations of the bridge.

One of the principal engineering establishments in Belfast is the property of the Messrs. Rowan, whose father was a native of Drough, where the establishment was formerly located, and whence, in the year 1835, was sent out, on an excursion to Belfast, a locomotive for common roads, which passed through the streets of that town; but, like all the others which have hitherto been invented, was found useless. Perhaps the Scottish nobleman who is now experimenting in the north may succeed better.

It appears, from the half-yearly report of the Belfast and County Down Railway Company, recently submitted to the shareholders, that the gross earnings of the railway for six months was 16,047. 8s. 3d., and expenses 7,357. 0s. 9d., leaving a sum of 8,712. 7s. 6d., of which 6,628. 16s. 6d. were required for payment of interest and preference shares, leaving a balance of 2,087. 11s., which the directors recommended to be carried to the reserve fund. The works on the line from Newtownards to Donaghadee were reported to be progressing favourably, and that it would be opened for traffic early next spring. Also that the railway from Castledouglas to Portpatrick is being carried forward with the greatest possible energy, and will be opened for traffic in August next, and that the Government is proceeding with the improvement of the harbours of Portpatrick and Donaghadee, so as to render them suitable for passengers and mail-packet service.

The directors of the Banbridge and Lisburn Junction complain of the slow progress of their contractor.

The directors of the Dublin and Drogheda, and of the Dublin and Belfast Junction, are taking preliminary steps for the amalgamation of their lines, a matter which the shareholders in both should see carried out at the earliest possible moment. The amalgamation of Irish railways in the north would promote all interests.

The Church of St. Nicholas, Dundalk, is a new edifice, in the Early English style of architecture, consisting of nave and aisles, chancel and sacristy, having on the south side of front a bell tower 40 feet high, surmounted by a broached spire 80 feet in height, terminating with a Mediaeval cross. The external walling is built with local granite—the cut stone dressings of white limestone. The internal arrangements consist of five bays of arches at each side, separating nave from aisles. The chancel has a five-light window. The roof is open timbered. The chancel floor is laid with encaustic tiles.

The loans and grants issued from the Exchequer for public works, drainage, and land improvement in Ireland, amount to no less than 10,036,071.2. Nearly half this amount was advanced for county relief works during the famine, but that was remitted. The sum of 3,556,619. for principal and interest has been repaid to the public purse, and there remains to be repaid 4,832,864.7. The chief public works now being carried on in Ireland, under the supervision of the Board of Public Works, are, Kingstown Harbour, upon which 817,786.1. has been spent, and Donaghadee Harbour (opposite Portpatrick), upon which 160,804.4. has been spent, but both these works are nearly completed. There is also a female convict prison in course of construction, a new Landed Estates Court and offices, and the extension of the Four Courts.

#### REFORMATORIES AND REFUGES.

THE last report of the Reformatory and Refuge Union shows that there are now in Great Britain and Ireland no fewer than 172 reformatories, refuges, and industrial schools, more than 40 of which have been established since the committee commenced upon their labours in 1856. These institutions are capable of accommodating 15,000 inmates; and, from careful calculations lately made, aided by the Government inspectors' returns, it appears that there are, not including the institutions in Ireland, upwards of 11,000 boys and girls under preventive and reformatory treatment. These returns are exclusive of the penitentiaries and homes for females, of which there are more than 60, providing accommodation for 2,300 inmates.

The testimony of the Government inspector of certified reformatories is to the effect that there has been a reduction of 26 per cent. in two years in the number of juvenile offenders committed to prison, and this testimony is confirmed by the reports of the various institutions throughout the country.

But it is not alone amongst the criminal class that this progress has been made. The refuges and industrial schools for the outcast and the destitute, which led the way to the establishment of reformatories, have advanced with the same rapidity, the one acting on the other, and both in their places tending to the accomplishment of the one great design.

One thing is to be noticed in connection with the present working of refuges and industrial schools,—more attention is paid to fitting the children for their future occupation in life than, as formerly, to the mere amount of work.

#### SOMETHING REQUIRING EXPLANATION.

WE find the following in the *Nottingham Courier*:—"A recent case in our local Bankrupt Court illustrated, as we took care to show, the custom of the building trade. It will be found, from the subjoined report, that the Nottingham builder was more fortunate than his Lancashire brother:—

**BANKRUPTCY COURT.**—John Pooley, contractor and builder at Liverpool and Birkenhead, came up on Monday to receive judgment on his application for a certificate. Amongst the objections urged by Mr. Martin on behalf of the assignees, was one that the bankrupt had, at the instigation of an architect in this town, added the sum of 100l. to his original estimate for building a church at Birkenhead, and had thus been a party to defrauding the trustees for the erection of the church. Mr. Evans, who appeared for the bankrupt, said if there was really anything in the objection he thought the court should be in possession of the particulars of the case, as what had been done by his client, he was informed, was almost a universal practice, and he contended that the transaction, if it had taken place, had nothing whatever to do with his conduct in that court. If the bankrupt had knocked a man down and robbed him of 100l., that court could take no cognizance of it. Mr. Martin said that certainly would not be "conduct of a trader," but in the case before them he could clearly show that the bankrupt's creditors were defrauded by the transaction, and he should now ask the court for an adjournment, to have the architect present and examined. His Honour adjourned the sitting till the 11th September.

#### THE ARRANGEMENT OF A KITCHEN.

Now that gastronomy is carried to a state of great perfection in this country, and we may fairly vie with our Gallic neighbours in the art of dining, I venture to trouble you with a few remarks on the proper arrangement of kitchens and the offices connected therewith.

In first-class buildings, whether for public or private occupation, the kitchen often has not sufficient of the architect's care in its details. It is generally too small, ill ventilated, and totally inefficient to meet the ordinary requirements. Let me now briefly describe what, in my opinion, is necessary to complete a first-class kitchen. The chief thing to consider, then, is situation. A kitchen should never be constructed in the middle of the basement, but always built out from the principal walls, so that a large skylight may be placed in the ceiling, and which should be constructed so that it may be opened or shut at pleasure.

Large air-drains should be built under the stone-paved floor, with iron gratings for the admission of air, which air should be in all cases taken from the external wall, to ensure a free circulation. The doors leading to the main building should be made with springs, to swing, so that they may always be kept closed, and prevent any unpleasant smells from penetrating into the house, and the walls should be covered with plain white tiles, from the ground to the height of 8 or 9 feet. Of course the size of the kitchen must depend entirely on the space at disposal; but the

height should never be less than from 15 to 18 feet.

Presuming that we have a building of the kind described, let us now consider the cooking apparatus. In the first place, it is highly necessary to have a good open roasting-range, with a smoke-jack over it. Much controversy has taken place as to the relative merits of roasting by gas; but I am quite satisfied, from experience, that the so-called roasting by such means is not to be compared with the old-fashioned plan. Meat cooked in a gas oven becomes highly impregnated with the carbonic acid, however much the oven may be ventilated, and is not to be compared, for flavour, with meat cooked by an open fire. The roasting-range should be situate in the middle of either of the walls which may be best adapted for carrying up the flues; the flue for the range-fires should not be less than 18 inches square, and invariably carried to the highest point of the main building. A range 6 feet wide, and 3 feet 6 inches high, is a very good size, and ample for all purposes. The back should be built of fire-bricks (Newcastle bricks are the best), and should not exceed 7 inches in depth from back to front. This will ensure a good bright fire, giving an intense heat with a small consumption of coal.

On one side of the range, the broiling-stoves, 2 feet 9 inches to 3 feet wide at top, should be placed, one, two, or three in number, as circumstances may require. These should have a separate flue to the top of the house, to ensure a quick draught. At the end of these stoves, a Bainmarie, heated by steam, for gravies and sauces, and next to this a good-sized hot closet, also heated by steam, for the reception of the viands after being dressed at the stoves, and to keep the plates and dishes hot while waiting to be served up. On the other side of the roasting-range there should be a large baking-oven of cast iron, and not less than 1 inch in thickness, for pastry, &c., with a good-sized wrought-iron closet over, heated from the same fire. The flue for this oven might be taken into the roasting-range chimney; but where there is convenience, a separate flue is preferable. Against the opposite wall should be fixed a series of three or four charcoal stoves, for preparing the lighter and more delicate ingredients. Here a good gas-burner may be introduced to advantage: those which burn atmospheric air with the gas are the best, as they give an increased heat without soiling the steppans. This gas stove may be used, among other purposes, for preparing the stock for soups, as the heat can be regulated so that the stock-pot may be left on all night. A steam Bainmarie-pan, for sauces and soups, is requisite at one end of this series. As near as convenient to these a good substantial hot-plate, with an oven on the top, heated from the same fire, should be placed. This and the charcoal stoves would be chiefly under the control of the principal cook. When the dining-room is on the floor above, a lift to wind up the dinners, joints, &c., is a most useful adjunct, as it saves a great deal of labour in carrying dishes up and down stairs. The lift should be as near as possible to the kitchen, but not in it; and a steam table, with closet under, should be near the lift, to keep the prepared dishes hot previous to their ascent.

In the middle of the kitchen there should be a large table, with a good oak top, 3 inches thick, with drawers under for general use: one or two copper kettles, heated by steam, for boiling fish, and, conveniently situated, will complete all that is really necessary here.

The scullery should open into the kitchen, and should contain a hot-plate for boiling and preparing the vegetables, steam-kettles for meat, potatoes, &c., and double troughs, with hot and cold water laid on for washing plates, dishes, preparing and cleansing vegetables, &c., and a sink. Here, also, the boiler for generating steam might be fixed. The size, of course, depends upon the quantity of work it may have to do, and which, in addition to the steam fittings in the kitchen, might be used to keep a closet hot just outside the dining-room. This latter is a most necessary article; for, with all the pains the cook may take to send up the dinners hot, if they have to wait for five or ten minutes before they can be served, they soon become cold, and give dissatisfaction. An abundant supply of hot and cold water to kitchen and scullery is most essential, and for the former a large galvanized iron tank should be placed near the ceiling, with a coil of pipe inside, through which steam passes from the boiler.

In the pastry-room great attention should be paid to situation. It should, in the first place, be as cool as possible, with a window having a north-easterly aspect, and freely ventilated. This should contain a large marble slab, good pestle and

mortar, ice-drawers, and cupboard for sundries. The larder may be next to the pastry-room, should he lofty, with a rack and hooks dependent from the ceiling, for hanging joints, a table in the centre for prepared meats, and a large wire-work safe for protection against flies in summer, a good-sized weighing-machine, an ice-safe, and plentiful supply of ice, &c. Of course, in the foregoing arrangements, considerable modifications and alterations may always be made. Club-houses or large hotels require more fittings of one class and less of another than a gentleman's mansion; but what I wish chiefly to call attention to is this,—that in the latter, in nine cases out of ten, the cook is expected to perform wonders in a small, dark, ill-ventilated kitchen, where a little oven and boiler-range, and perhaps a very small hot-plate, complete the usual amount of apparatus in what are called first-class mansions. I think a little more care in the arrangement, and a few extra pounds spent in this department, would not be altogether money wasted. The cook would be better able to keep his or her temper, and the major domo would get a better dinner. J. D. A.

#### NOTES CONCERNING THE ORIGIN OF PARISHES AND PAROCHIAL CHURCHES.

PARISHES were first distinguished in England under Honorius, Archbishop of Canterbury, about the year of Christ 636.—"Camden's Brit." clix. ed. 1695.

Ridley, in his view of the civil and ecclesiastical law, tells us that fountains, in the primitive times, were not in churches, but the custom of those elder ages was to baptize in rivers and fountains; and that custom being discontinued through persecution, fountains were erected in private houses; and in more peaceful ages they made bold to build their fountains at a little distance from the church. Afterwards they obtained leave to set them in the church porch. At last they got them into the church. But they were not placed in every church immediately; for at the first they were found only in the cathedral church, where the bishop resided; and, though service might be said in the lesser ministers and rural churches, yet the right of sepulture and baptism belonged to the cathedral church, unless it were a case of necessity. It was therefore called the *mother church*.

In succeeding ages, when it was found that the mother church was too far distant from some villages, and so situated that in the winter the people could not repair thither, consideration was had of this inconvenience. The bishop took occasion hence to transfer the right of baptism and sepulture to the rural churches; and this, together with the right of tithes, made it a parish church of that kind which we have now. But, because also in some parishes many families lived so remote from the church that they could not conveniently frequent the same, it was indulged to such that they might build a private chapel or oratory in or near their mansion-places, reserving for the most part the right of baptism and sepulture to the parish church, which, in respect to these lesser oratories, was to be accounted the baptismal or mother church. It was also provided that these families (notwithstanding their grant from the bishop for a private oratory) should, upon more solemn feast days, repair to their parish church. These private oratories were afterwards called *capella*, chapels.—(Thus Ridley).

Now the word "*capella*," *quasi* "*capella*," is a derivative from *capra*, which signifies a chest, or coffer, because the relics of saints and holy persons were kept in such chests; and the places where such chests were kept were also called *unde nomen capella, capellanus*, &c. So Spelman in his glossary upon that word.

Dr. Prideaux says, "none might of right build oratories without license of the bishop; at least, none might administer divine service there without the bishop's special license."

Oratories erected in the houses of great persons I should call domestic chapels. When built by one or several persons in some convenient place for the use of several families, or of a township or townships, not having liberty of baptism or burial, I call such chapels of ease.

When built by a more numerous multitude of the neighbourhood, consisting of one or more villages, having got liberty for baptism and burial, with consecration thereof by the bishop, and sometimes an allowance in money or tithes from the mother church, I call such parochial chapels; for these have all the rites and ceremonies as the mother church or parish church hath, except the tithes; so that, indeed, they are lesser parishes, created within the greater, for the benefit of the neighbourhood."

As to the consecration of churches, we find that the Jews had their feasts of dedication of their temples (John x. 22; Maccab. iv. 59). But there is no dedication of our Christian churches to saints until praying to saints was in use; and after churches began to be dedicated to saints, their dedication feasts were usually kept on that day which was the feast-day appointed in the calendar for commemoration of that saint to whom such church was particularly dedicated. This time was called by us the wakes, from waking, because at such times the people prayed most of the night before such feast-day in the churches.

The saint's bell, as many admit, was not so called from the name of the saint which was inscribed on it, or of the church to which it belonged, but because it was rung out when the priest came to that part of the service, "Sancte, Sancte, Domine Deus Sabaoth," purposely that they who could not come to church might understand what a solemn affair the congregation were at that instant engaged in; and so, even in their absence, be once at least, moved to lift up their hearts to Him that made them. For this reason the saint's bell was generally hung where it could be heard the furthest, sometimes in a lantern at the top of the steeple, or in a turret at one corner of it, if a tower; and sometimes in an arch or gallery, on the outside of the roof, between the church and chancel. This last sort was so placed, that the rope might come down into the choir, and so being near the altar, the bell might be more readily rung out as soon as ever the priest came to the sacred words.

As regards the position of churches, Dr. Plot believes, that in the setting of their churches due east and west, all the direction which people had in former times (till the compass was discovered), was from the sun itself, which rising in summer more or less northward, and in winter proportionately to the southward of the equinoctial east, in all likelihood might occasion so many churches not to respect the due east and west points, but to decline from them more or less according to the late or early season of the year wherein they were founded. A. B.

#### BATTLEFIELD CHURCH, NEAR SHREWSBURY.

MORE than once we have mentioned the deplorable condition of Battlefield Church, near Shrewsbury, and the claims it has to attention. We are glad to be informed that the church is now undergoing complete repair, under the auspices of Mr. Pountney Smith, architect. A considerable sum having been subscribed by the county towards the restoration, Lady Brinckman, of Sandore Castle, Shrewsbury, has undertaken the remaining expenses, and her ladyship has further instructed Messrs. Lavers & Barraud to fill the windows with painted glass.

#### RE-DECORATION OF ST. PETER'S CHURCH, MANCHESTER.

THE interior of this church has undergone a complete re-decoration, and was opened for Divine service on Sunday last. The body of St. Peter's Church, as it now stands, was erected in 1794, from a design by James Wyatt, and is a modern example of the Tuscan or simple Doric order of architecture. The steeple, which was added about thirty years later, was designed by Goodwin, the architect of the Manchester Townhall. In the new decorations Christian symbols (the Cross, the Lamb, the Dove, the Trinity, &c.) have been introduced into the ceiling and other parts. Texts of Scripture, in the English and Greek character, have also been inscribed on the frieze. The altar recess is elaborately treated, and, in addition to other improvements, the hitherto empty niches, four in number, have had statues placed in them, executed by an Italian sculptor, of St. Peter, St. Paul, St. James, and St. Andrew; whilst the eight oval panels on the side walls over the niches and the galleries are filled with paintings in monochrome, representing scenes in different periods of our Saviour's life. These are studies from pictures by various masters, and comprise "The Infant Saviour," Murillo; "Christ Blessing Children," Overbeck; "The Raising of Jairus's Daughter," Von Holst; "Christ Weeping over Jerusalem," Eastlake; "The Transfiguration," Raffaele; "Christ's Agony in the Garden," Le Jeune; "Bearing the Cross," after the celebrated altar piece at Magdalen College, Oxford; and "The Comforter," Ary Scheffer. The propriety of introducing colour and ornament in buildings of this kind is now generally admitted. The altar piece in St. Peter's is by A. Carracci, or of that

school, and is said to have been bought in Paris at a cost of 1,000 guineas. The organ case, designed by Mr. E. Salomon, of this city, has had the mouldings and enrichments brought prominently out in gold, and the front pipes, which are of pure tin, highly lustrated, have been decorated about the mouths in gold and colour. One of the semicircular windows has been decorated with stained and painted glass by Messrs. Edmondson & Son. The subject represents Christ's charge to Peter.—"Feed my sheep." The whole of the details and decorations of the church have been effected by the firm of Messrs. Samuel Bottomley & Sons, of Crosshills, Craven, Yorkshire.

#### SCHOOL-BUILDING NEWS.

**Twyford (Hants).—**A range of buildings, embracing schoolrooms for boys and girls and a teacher's residence, are being erected by Mr. C. Fielder, of Bar-end, Winchester, at this village, on a piece of ground forming an eminence in the lower part of it, the gift of Couway Sulpley, Esq. The buildings, which are in a forward state, include, according to the *Hampshire Advertiser*, a school-room for each sex, the dimensions of either being 30 feet by 17 feet, and adjoining these are classrooms. The portions dedicated to educational purposes form the wings, the centre of the erection being the teachers' residence. The roofs are of high pitch, and are to be covered with slate and ridge tile of a geometrical character. The materials used are flint with blue mortar, and red and black bricks, with Bath stone window (in the Gothic style), copings, corbels, &c. The open timbers of the roof in the schoolrooms, &c., are to be stained oak colour. The architect is Mr. W. Coles (city surveyor, Winchester). The cost will be somewhat under 1,000*l.*, and is to be defrayed by voluntary subscriptions and a government grant.

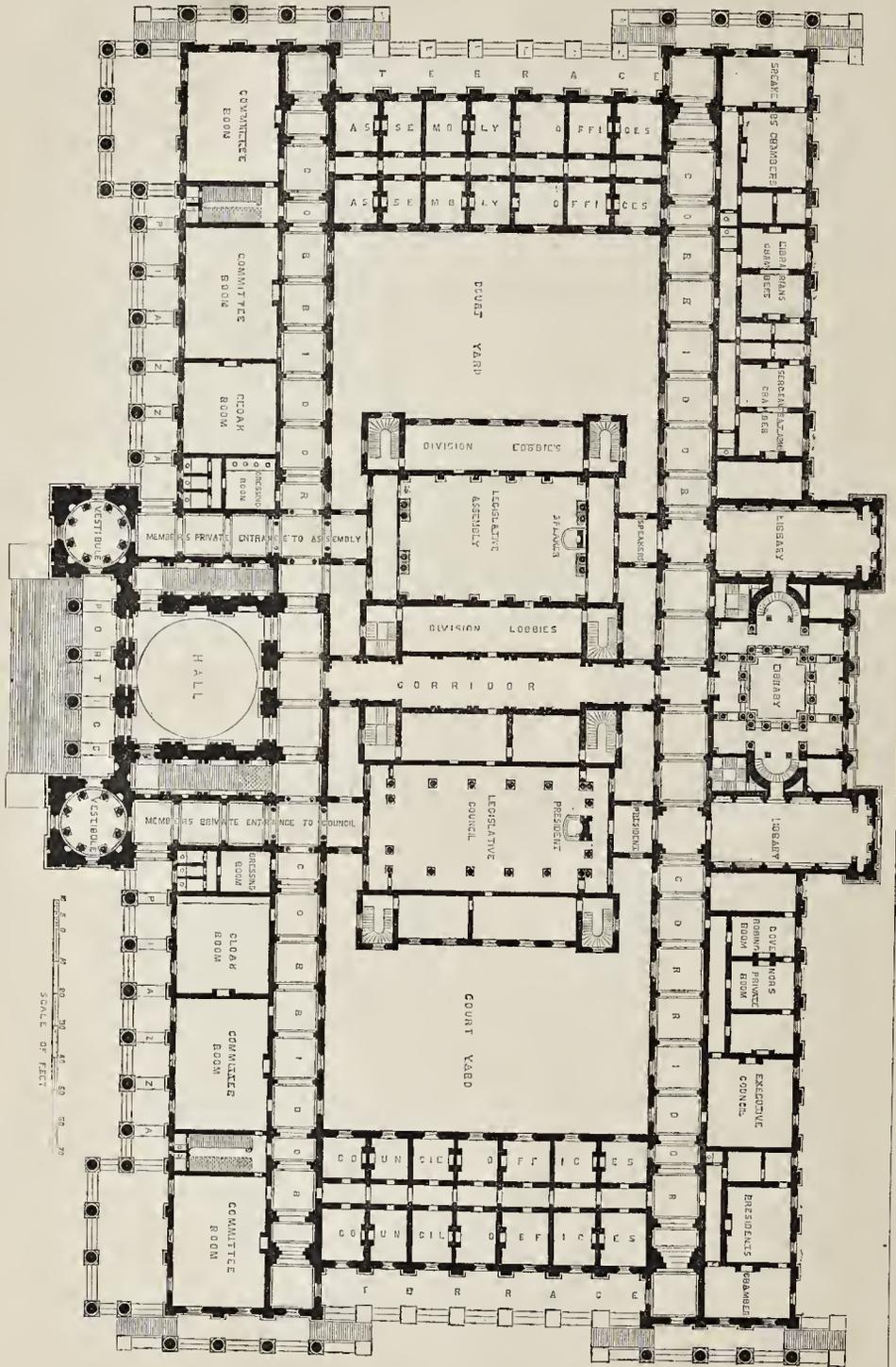
**Driffield.**—The foundation stone of New National Schools, &c., has been laid at Kirkburn. The schools are from the designs of Mr. G. R. Smith, of Hull, architect, and Messrs. Malone & Simpson are the contractors. They include a master's residence. The buildings will cost about 800*l.*, of which 200*l.* will be contributed by Sir Tatton Sykes, the lord of the manor; 50*l.* by Archdeacon Long; 305*l.* by the Committee of Council of Education, and the remainder will be raised by the landowners and parishioners.

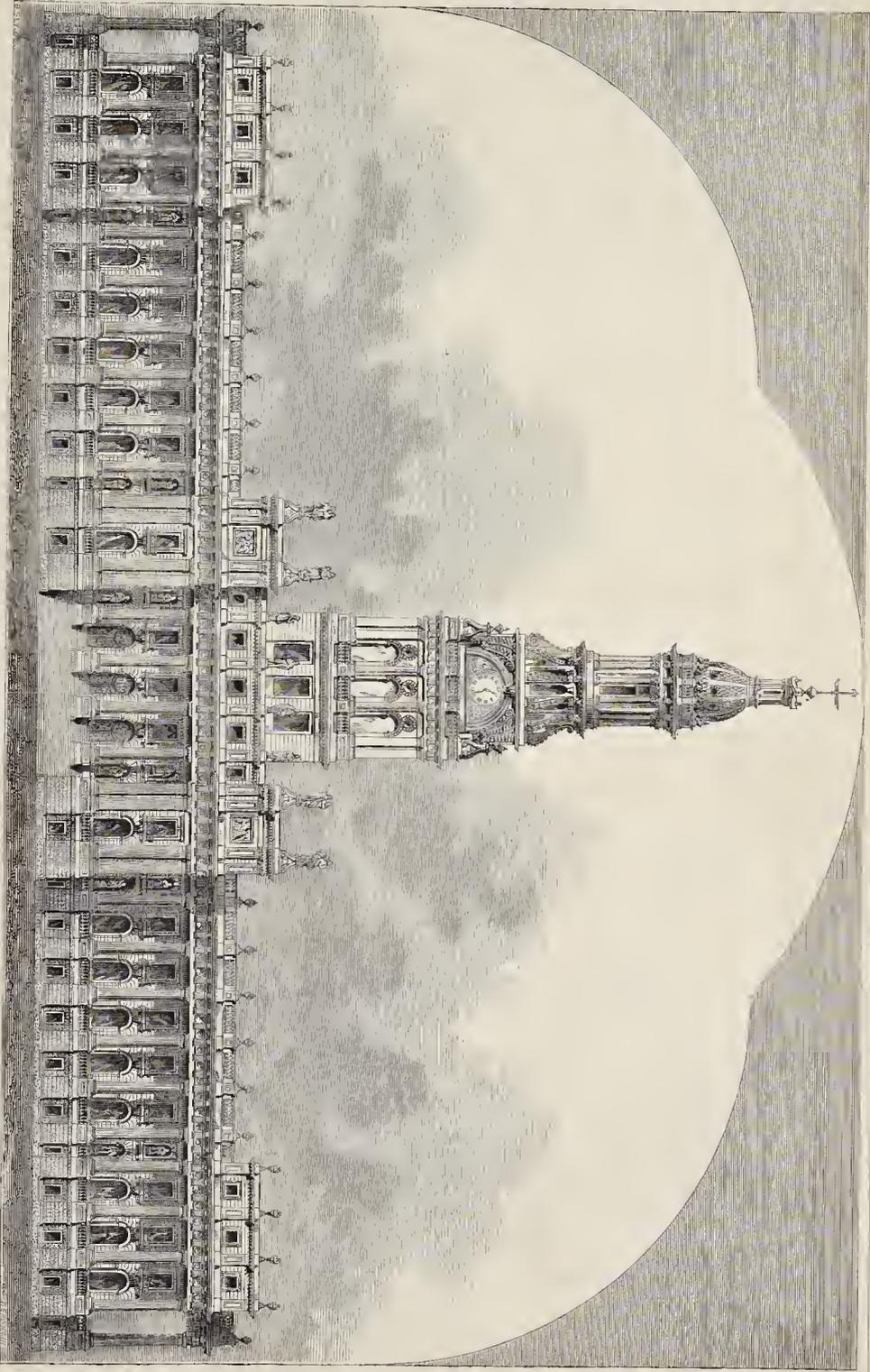
**Manchester.**—New Wesleyan schools have been opened at Newton Heath, according to the *Manchester Advertiser*. The building in style is plain. It consists of one large room on the ground floor, and open to the roof, through which the principal light is received, while on each side a smaller or anteroom is constructed, on the second floor. The estimated cost of the building alone was 700*l.* There is said to be an absence of all proper means of ventilation,—an indispensable requisite, especially where a large number of persons are congregated.

**Kirkdale.**—The first stone of the Kirkdale Industrial Ragged Schools and Church has been laid by the Earl of Derby. The exterior fronts of the building are to be plain brick and stone. The basement floor is planned for a cooking kitchen, which can be used for a soup kitchen during the winter months, and has a separate entrance from Major-street. Adjoining this kitchen is a flagged cellar, intended as a playroom during wet weather, or for workshop when required. The main entrance to the ground floor is from Major-street, to a schoolroom 80 feet long, 25 feet 6 inches wide, and 18 feet high; intended also to be used as a free church for the poor of the district. From this room there is a class-room, large workshop, and store-room, covered lavatories, urinals, &c., and a large play-yard. The upper floor, which corresponds with the ground-floor, and which has also a separate entrance from Major-street, is intended for girls' schoolroom, class-room, printing-shop, and large workshop. The buildings and yard walls occupy an area of about 1,300 square yards, and as it is intended to erect them in as plain a manner as possible, the estimate for the same, exclusive of land and general fittings, will not exceed 2,000*l.*

**A MAN'S HEAD SAWN IN TWO.**—On Monday Mr. William Payne, the coroner for Southwark, received information of the death of Jeremiah Kellimer, aged twenty-seven, who had lived at Deptford. It appeared that the deceased was stooping down to collect some wood dust at a steam saw-mill there, when the circular saw completely cut his skull in two. He was taken to St. Thomas's Hospital, where he expired.

HOUSES OF PARLIAMENT, MELBOURNE.—Plan of principal floor.





HOUSES OF PARLIAMENT, MELBOURNE.—MESSRS. KNIGHT & KERR, ARCHITECTS.



HOUSES OF PARLIAMENT, MELBOURNE.

THE site selected for the erection of the Parliament buildings is at the eastern end of the city, and commands a fine view of the town, suburbs, and adjacent country. The Blue Mountains of Dandenong and the shipping in Hobson's Bay are plainly seen from the upper windows, while the entrance at Port Phillip Heads can also be discerned through the clear Australian atmosphere. The new Treasury, a costly and elaborate building, is in close proximity to the Houses of Parliament. Extensive offices for the chief secretary and executive, the foundations of which buildings have cost 32,000*l.*, are also in the vicinity of the senate house; the eastern end of Melbourne will, therefore, in antipodean position, agree with the western end of London.

The spirit of "fastness" which characterises most of the colonial proceedings does not apply to the progress of the building in question; the portions at present erected are the two Legislative Chambers and the Library, which occupies about a third of the eastern elevation.

The Legislative Chambers are each 72 feet long, 40 feet wide, and 40 feet high. Division lobbies are attached, but the number of members—seventy-eight for the assembly and thirty for the council—being comparatively small, the lobbies are also used for committee rooms. The Corinthian order has been employed for the "Upper" and the Ionic for the "Lower" house; both Chambers are elaborately decorated.

The style and treatment of these apartments have received commendation. The building, when complete, will be about 400 feet long, 220 feet wide, and 74 feet high. The principal order employed for the exterior is the Roman Doric. The Library, now in course of completion, contains a central hall 40 feet square and 40 feet high; two reading-rooms, each 50 feet by 25 feet; and numerous private rooms. The refreshment-rooms are in this part of the building, and comprise two saloons, each 50 feet and 25 feet; smoking-rooms and other accessories.

Messrs. Knight and Kerr are the architects appointed by the Government to carry out the work.

It is understood that the urgent necessity for new executive and treasury buildings referred to above has caused the commencement of the grand front to be postponed longer than was at first intended. It will now, however, we believe, be commenced immediately. The material to be employed is a Colonial stone, called New Darley, and is somewhat of the colour and texture of that used in our own Treasury buildings. The part already completed is of basalt, termed in Australia, "blue stone."

Mr. Knight, as president of the Victorian Institute of Architects, last year, read a Treatise on "Colonial Building Stones," which was afterwards published, and was noticed by us at the time. In this he speaks as follows of the blue stone:—

"Basalt is spread over a large area of the country, and is the most abundant of all the minerals. The stone is too well known to need any technical description; its durability is unquestionable, but its suitability for works of much architectural pretension is generally doubted. In my own practice I have been a great friend to blue stone, but the result of my experience has somewhat altered my opinion of this material, and I am now inclined to the belief that it is unfitted for any public edifice where the design entitles a moderate amount of architectural embellishment.

I fear there is a disposition to tax blue stone beyond its capacity, to produce architectural effects. In Melbourne, thousands of pounds are almost wasted in working delicate mouldings upon this material, such details in many instances being scarcely visible. I have not been free from the committal of this error, but hope to avoid falling into such mistakes in future. I hold it to be an anomaly to spend 10*l.* worth of labour in working a moulding or enrichment which does not pay for the outlay in gratifying the taste to a proportionate extent. We attach a certain idea of beauty to the form of a particular moulding, which beauty is derived partly from the contour of the figure, and partly from the play of light and shade upon it. Now, the colour of blue stone destroys the proper effect of shadows: they are to a great extent absorbed by the stone, instead of reposing distinctly upon it; and, as a natural result, the beauty, proportion, and character of minute enrichments in basalt are comparatively lost, when compared with those of more appropriate colour. While suggesting the exceptions to be made in the use of blue stone, it must be admitted that for ordinary purposes, both in architectural and engineering works, this material could be so generally employed; for foundations it is eminently suitable; for stores, its sombre hue imparts an appearance of commercial as well as structural solidity; for ecclesiastical buildings, it relieved by freestone dressings, it can be used in a cheap and most effective form; while, for engineering works, its moderate first cost, and the facility with which it may be cut into plain forms, leave no occasion to wish for a better material. There is absolutely no waste on blue stone; the smallest chippings are valuable for road making; and, when we further consider the abundance of the supply, and the trifling cost of quarrying it, for ordinary purposes, we may safely say that

blue stone is one of the most useful of the mineral products in Victoria.

It may be asked, if I think so much of basalt, why seek to employ another stone in the erection of the Houses of Parliament?

I confess to feeling very great reluctance in making any exceptions to the employment of blue stone; because, from the nature of its formation, there can be no doubt of its durability. It is more indestructible than granite, not one-third as costly, but, perhaps, not a third so beautiful as that material. In instance of the durability of blue stone, I know of no steps in the entrance to the Government Offices, in William-street, where they will be found to be less affected by time and wear than those which are of colonial granite.

My principal reason for objecting to adopt blue stone for the external elevations of the Houses of Parliament I have already given in the form of a general proposition—that the colour of the material is unequal to the production of those ordinary effects of light and shade which are essential to realize the spirit of classic architecture; and, if the utilitarian proposition be not regarded as untenable, that the money spent upon the execution of architectural details should produce a feeling of satisfaction or pleasure in the mind of the observer proportionate to the amount of the outlay incurred; then I say that ornaments wrought in basalt will not come up to such a standard of

comparison; and, under these circumstances, the expenditure of large sums of money in attempting to delineate minute features is a waste of capital and a misapplication of the abstract forms of beauty in architecture.

If the known durability of blue stone is to be regarded of greater moment than any objections to its colour, let us use it with discretion; let the treatment of the orders be simplified to suit the material; and although such an innovation would detract from the acknowledged standard of correctness, the loss in this respect will be compensated by the saving in cost effected through the omission of those enrichments which show but vaguely on such a gloomy stone.

STRENGTH OF BUILDING STONES.

THE following table (showing the specific gravity of colonial and other building stones, the force required to crush 1 inch cubes, the amount of disintegration caused by the action of sulphate of soda, taking 1,000 as an indication of perfect resistance, and the weight per cubic foot, is from Mr. Knight's treatise mentioned in our notice of the Melbourne Houses of Parliament:—

Colonial Stones.	Specific gravity.	Crushing force per square inch.	Amount of disintegration.	Weight per cubic foot in an ordinary state.	
				In lbs.	In lbs.
Darley sandstone	2,350	2,118	'800	124 7-16	132
Bacchus Marsh sandstone	2,218	1,949	'200	123	133 5-16
Geelong sandstone	2,297	2,150	'900	135 11-16	138 10-16
Kyneton sandstone	2,250		'600	131 7-16	135 11-16
Kilmore sandstone	2,423	3,100	'650		
Bulleen sandstone	2,484	2,100	'750	142 9-16	147 3-16
Doncaster sandstone	2,487	3,153	'800		150
Plenty sandstone	2,455	3,200	'500	146 13-16	150 4-16
Portland (western district) limestone					
Warrnambool limestone, a picked specimen, hardened by salt water	2,508	3,065	'700		
Cape Schank limestone	2,438	2,035	'500		
Balian sandstone	2,446	3,250	'600		146
Keller sandstone	2,477	1,600	'800	145 11-16	149 10-16
Western Port sandstone	2,337	5,490	'900	148 8-16	119 5-16
Apollo Bay sandstone	2,473		1,000		
Granite from the Plenty	2,655		1,000		163 7-16
Sieville from Gabo Island	2,652		1,000		
Templestowe clay slatestone	2,669		1,000		
Mount Sturgeon sandstone	2,386		1,000	142 12-16	144
Intercolonial Stones.					
Pitfield's New Kangaroo Point sandstone from Tasmania	2,207	2,956	'900	132 3-16	134 9-16
Kangaroo Point stone, old quarry	2,252	2,881	'650	135 6-16	137 2-16
North-west Bay sandstone, from Quinn's quarry, Tasmania	2,322	2,089	'700	140 9-16	143
Huon river sandstone, Tasmania	2,417		'901		
Sydney sandstone	2,237	2,228	'300		
Adelaide sandstone		2,809			
Adelaide marble	2,715		1,000		167 5-16
Stones from Europe.					
Fifehire sandstone, Scotland	—	1,814	'100	128 8-16	136
Bath oolite, England	2,241	1,000	'800	124 14-16	126 6-16
Portland oolite, England	2,447	3,135	'550	137 2-16	140 9-16
Park Spring sandstone, from near Leeds, G.B.	2,383		1,000		148
Caen, Normandy	2,076	1,543	'700	134 6-16	136 4-16
Carar marble	2,713		1,000	166	

Table showing the Weight required to crush inch Cubes of the four Building Stones principally used in Melbourne:—

	Crushing force per square inch when dry.		Crushing force per square inch after four hours' immersion in water.
	In lbs.	In lbs.	
Pitfield's new quarry at Kangaroo Point	2,056	1,919	313
Pitfield's old quarry at Kangaroo Point	2,881	1,428	594
Darley	2,118	1,260	351
Bacchus Marsh	1,949	1,073	45

The above results are derived from the average of four samples of each stone in a dry and two of each in a wet state.

Experiments to prove the fitness of the following stones to act as lintels, &c., tried on scantlings 4 inches by 4 inches, having a span of 4 feet, and the entire weight suspended from the centre:—

	Breaking Weight, cwt. qr. lbs.
Fifehire (Scotland) sandstone	1 1 26
Bath oolite (England)	2 2 20
Kangaroo Point white sandstone (from Pitfield's new quarry, Tasmania)	2 2 20
Kyneton (Victoria) sandstone	2 2 21
Kangaroo Point sandstone (Pitfield's old quarry)	2 3 20
Bacchus Marsh sandstone (Victoria)	2 3 24
Darley sandstone (Victoria)	3 0 2
Bulleen sandstone (Victoria)	3 2 9
Doncaster sandstone (near Bulleen)	3 3 20
Geelong (Barrabool Hill) sandstone	4 2 20
Portland limestone (English)	6 0 20
Park Spring sandstone (from Quinn's quarry, near Leeds)	9 3 6
Adelaide marble	10 1 11
Colonial marble	13 0 2
Mount Moriar (near Geelong)	4 3 16

Table showing the comparative Cost of certain Descriptions of Masonry.

Description of Stone.	Price per Foot.	Price of Labour per Foot.		
		s.	d.	q.
1 Granite	8 0	11	2	6
2 Marble	10 0	0	8	6
3 Mount Sturgeon freestone	7 10	0	6	10
4 Bluestone	3 6	0	9	9
5 Bacchus Marsh or Darley stone	6 6	0	4	5
6 Portland from England	5 6	0	5	6

Memo.—The prices of all these materials include delivery at Melbourne. The prices of labour provide for the same amount and description of work being put upon all the different stones. The various prices of labour (with the exception of granite) are taken from actual tenders. The price of working granite is founded on the ascertained cost of dressing samples of that material. All the prices are calculated for large-sized blocks.

PROVINCIAL NEWS.

Northampton.—There is no no doubt, says the local Herald, that a new townhall will be built. Ample premises in St. Giles's-street have been secured for a building worthy of the town and equal to its requirements; but, before the plans are decided upon, it is requisite that a clear understanding should exist as to what those requirements are. The writer then points attention, amongst other requisites, to the importance of making provision for the adoption of the "Free Public Libraries and Museums Act."

Nottingham.—We are asked to state that the carving at Messrs. Wright & Bank, recently illustrated in our pages, was executed by William Sheriton, of that town.

**Derby.**—The following particulars relate to tenders received by the local committee for works connected with the formation and completion of the proposed new cattle-market in the Holmes, and published in the local *Advertiser*. It was agreed that the tenders here specified should be recommended to the council for their acceptance, viz.: Division No. 1. Bridge over Canal, &c., 720l.; by Mr. W. Hyslop.—Division No. 2. Iron Castings, &c., 764l. 13s.; by Messrs. J. and J. Cliff, of Bradford.—Division No. 3. Materials and labour in constructing and completing market, &c., 3,021l. 16s. 9d.; by Mr. Jos. Tomlinson. The above form a total of 4,506l. 9s. 9d., being 37l. 1s. 9d. under the estimate (4,561l. 4s. 6d.) of Mr. Thorburn, the borough surveyor. A further tender of Mr. Hyslop's for Division No. 4, being for the making of the road on the north-east side of the river, amounting to 554l., was also recommended to be accepted. The whole of these tenders make a total of 5,060l. 9s. 9d.

**Ashbourne.**—The committee of the Market Hall at Ashbourne had six tenders sent in for the projected market hall: Robinson, Belper, 1,625l.; Humphreys, Derby, 1,600l.; Thompson & Fryer, Derby, 1,557l. 15s.; E. Thompson, Derby, 1,500l.; Brinsley, Ashbourne, 1,480l.; Cooper, Ashby, 1,151l. Mr. Brinsley consented to reduce his contract to 1,435l., and an agreement was made with him for that amount. Instructions were given for the immediate commencement of operations, under the superintendence of Mr. Wilson, the architect.

**Birmingham.**—The Corporation Baths in Woodcock-street have been opened to the public. The building is of red brick, and the elevation fronting to Woodcock-street has courses of various coloured bricks in the arches, corncices, and piers. There are separate entrances for men and women. The baths comprise, on the men's side, one hot and one cold first-class plunging bath, sixteen first-class private baths, and the same number in the second class. There is also a swimming bath, 80 feet long and 35 feet wide, with a depth of water of 3 feet 4 inches at the top end, 4 feet 6 inches in the middle, and 5 feet 6 inches at the lower end. On the women's side there are six first-class baths, and one first-class plunging bath, with eight second-class private baths. There is a waiting-room on each side, and the ticket-office is so arranged that persons of both sexes may apply at once, and yet be invisible to each other. The cold water comes from the pipes of the Water Works Company, and the hot water is supplied direct from the boiler, by a contrivance patented by Mr. Purnell, the superintendent of the Kent-street and Woodcock-street baths. Attached is a house for the resident engineer, and at the back are the necessary offices for washing towels, &c. The plunging and swimming baths are lined with Rufford's white glazed bricks, and the private baths are also of Mr. Rufford's manufacture. The margin round the swimming bath is laid with lime and red quarries, arranged in patterns. The want of the place seems to be a first-class swimming bath. The original plan, it seems, provided for such an arrangement, as well as for thirty-five more private baths. The architect is Mr. E. Holmes; and the contractors were—for the building, Mr. C. Jones; for the plumbing, &c., Mr. Whitworth; for the cisterns, boilers, and machinery, Mr. Middleton; for the engine and pumps, Mr. Dean.

**South Shields.**—The works for the building of seventeen additional cottages for the trustees and committee of the Master Mariners' Asylum, have been let to Mr. Hoppell, of North Shields. The buildings have been commenced under the superintendence of Messrs. Oliver & Lamb, of Newcastle-on-Tyne, architects.

**Shotley Bridge.**—A townhall is about to be built at Shotley Bridge, and the directors have appointed Messrs. Oliver & Lamb, architects. The style of architecture adopted is Gothic. The building will be formed entirely of stone; and the centre projection will be surmounted by a clock turret, with a slated spire roof.

#### CHURCH-BUILDING NEWS.

**Bromley (Middlesex).**—It is proposed to erect a Congregational chapel and schools in Wellington-road, Bow-road. The style is to be Decorated Gothic, in white Suffolk bricks, and Bath-stone dressings, and coloured arches. The chapel will accommodate 780 adults, with galleries. There will be a tower and spire at the north end of the east aisle. Messrs. Morris & Son, of London, are the architects.

**Eccles.**—The first stone of the new church of St. James, at Hope, near Eccles, has been laid. The new church is intended to accommodate 640

persons, and is in total length, 132 feet; breadth, 57 feet; and height, 43 feet. The style is Gothic, of the thirteenth century. The plan consists of a chancel and a nave, with clerestory, and north and south aisles, divided from the nave by a double row of seven arches, deeply recessed on circular pillars. The chancel is one quarter the length of the whole, having the desk and pulpit on either side of its arch. It is flanked by an organ chamber, and by the vestry on the north and south sides, and, rising three steps from the nave, terminates with a case window, of five lights. The font is at the north-west door. The chief feature of the building will be a tower and spire, 160 feet high, disengaged from the church, except at the base, where it is joined to the north porch. The roofs of the church are open, with the rafters exposed; and the ceiling is of wood, covered with slates in alternate courses of blue and red. The main walls are Yorkshire pierpoint, with dressings from the Storton quarries, Ceshire. The architect is Mr. Walter Scott, of Liverpool.

**Birmingham.**—The chief stone of the place of worship now in course of erection for Dr. Brindley, in Lower Gooch-street, has been laid by Sir J. Ratcliff. The building is to be erected by Mr. Griffiths, from designs by Mr. S. Henning, and will stand at the corner of Gooch-street and Conybeare-street. It will be 86 feet by 60 feet; and, by arranging the pews in the fashion of an amphitheatre, space will be obtained for 1,000 persons. The plan includes school-rooms, arranged under the raised seats, and there will also be a vestry. The cost will be about 1,340l.

**Bilbrough.**—The parish church of Bilbrough, the last resting place of Thomas, Lord Fairfax, the Parliamentarian, has been re-opened, after a renewal of the inner fittings and furniture. The old pews have been replaced by stalls. An oak pulpit and lectern replaced, in new situations, the former pulpit and reading-desk. The total cost will be about 200l., to be defrayed wholly by subscription. The designs were supplied by Messrs. Atkinson; the wood-work executed by Mr. Cook; the stonework by Mr. Wilson; and the painting and staining by Mr. Perfect and Mr. Poulter.

**Halfax.**—Several statues have arrived towards completing the decorations of All Saints' Church, Hales-hill, built by Mr. E. Akroyd. They are all for the exterior.

**Tynemouth.**—A correspondent informs the *English Churchman*, that three new churches are to be built in the parish of Tynemouth, Durham, in addition to the three already existing, so that the parish will comprise six incumbencies. The five new parishes will be endowed with 200l. per annum each. To carry out this plan, the Duke of Northumberland contributes the sum of 30,000l. The Ecclesiastical Commissioners will make a grant of a similar amount.

#### STAINED GLASS.

**St. Mary's, Eynesbury.**—A window, to the memory of the late Colonel Humbley, has been erected at the west end of this church. The window consists of three lights, with a figure of a Scriptural personage in each; and below each figure is portrayed an incident in the life of the person represented above. The figures represent David, Joshua, and Cornelius. Under the figure of David is David slaying Goliath. Under that of Joshua is represented an angel delivering his commission to that leader. Under the figure of Cornelius appears an angel speaking to the centurion. In the tracery, above the figures, are the three emblems of the Christian faith—the Shield of Faith, the Helmet of Salvation, and the Sword of the Spirit, each borne by an angel. This is the third memorial to this officer, which appears in this church. The execution of the work was intrusted to Messrs. Clayton & Bell.

**Oldbury Church.**—The parish church of Oldbury has had several memorial windows lately erected. The large east window is dedicated to the memory of the late Mr. William Chance, of Birmingham, who was a partner in the Oldbury Alkali Works, and represents the entombment, resurrection, and ascension of our Lord. The window is erected by Mr. Chance's family and the inhabitants of Oldbury. The ten clerestory windows have been similarly dedicated by Mr. Dugdale Houghton, of Birmingham, to the memory of his father, and represents the four Evangelists, together, with other designs. The whole of the glass is from the glassworks of the Messrs. Chance, at Spon-lane, and from the designs of Mr. S. Evans, M.A.

**Gloucester Cathedral.**—We stated some time ago (says the *Gloucester Chronicle*) that the Dean and Chapter contemplated the restoration of the magnificent east window of the cathedral, and

with that view had obtained designs from several of the most eminent manufacturers of stained glass. The designs were exhibited at the cathedral, and naturally excited considerable interest. We now learn, however, that the intention of carrying out either of these plans has been abandoned, we believe at the suggestion of the *savans* who lately visited this city, and who stated that the window contained one of the largest collections of ancient glass to be found. A scaffolding has been erected, and the window will be repaired, the old glass being preserved in its present state.

**Church of St. Peter-Port, Guernsey.**—The Lieutenant-Governor Slade's gift of stained glass for the St. Peter-Port Church has been inserted in the oriel of the south transept. The subject is the Lamb, surrounded by six angels, and by the twelve apostles seated on thrones. The artist was Mr. Gibbs, of London. The glass has been fixed in the window by Messrs. De Patron, of Guernsey.

#### CHEAP SCHOOL-CHAPEL.

A SCHOOL-CHAPEL has been lately erected at Crampmoor, in the parish of Romsay, Hants. The building is used as a school during the week, and for church-service on Sundays; and the school-mistress occupies rooms on the south side. The external walls are built of brickwork, 14 inches in thickness, and hollow. The floors are boarded. The roofs are covered with plain tiles. There is a bell-turret, of wood. The nave is 27 feet by 16 feet; the chancel, 10 feet by 9 feet; porch, 5 feet by 4 feet. The living-rooms (two, and a scullery) are plastered, and fitted with range and iron chimney-pieces. The cost of the whole, including frames, seats, and lectern in the chapel, and a well in the garden, was about 225l. Mr. E. W. Lower, of Guildford, was the architect; Mr. T. Hill, of Romsay, the builder.

#### ARCHITECTURAL SOCIETY OF ARCH-DEACONRY OF NORTHAMPTON.

A COMMITTEE MEETING was held on August the 13th; the Rev. Lord A. Compton in the chair. Plans for the re-seating and enlargement of Ketton Church, by Mr. Scott, were examined. The form of heath proposed was disapproved. Plans for re-building Sutton Church, near Harborough, by Mr. Goddard, of Leicester, were examined, and generally approved. A design for the restoration of the chancel of Kilworth Beauchamp, by Mr. Slater, was approved; and also, by the same architect, plans for the National Schools at Islip. Plans of the re-seating of Wallingborough Church, by Mr. E. F. Law, which had been formerly approved, were re-submitted to the consideration of the committee. After some other procedure, the subject of the mode of grants made to new and restored churches by the Church Building Societies was considered, and a memorial unanimously resolved on, to be communicated to the Society of the Archdeaconry and the Incorporated Society in London, and which stated, *inter alia*, that "by the rules and practice of this, as of most, if not all Church Building Societies, the increase of accommodation, upon which grants are made, is estimated by the number of sittings shown on the ground-plan; and this, without any reference to their convenience of site, and only partially with regard to convenience of occupation. The result is, that the architect, in order to gain for his employer the largest amount of grant, is led to reduce his seats to the very narrowest measurement allowed, to cramp his passages, crowd in seats into the most inconvenient places for hearing or seeing, and occupy spaces (as for instance, close to the reading-desk, round the floor, or in the chancel) which the order of the Church service almost demands to be left open. In many cases, for the sake of showing a greater increase of sittings, the whole are spoilt, and kneeling almost prevented. We should respectfully suggest, if the grant were made according to the available ground area, these evils would be avoided without any attendant disadvantage." The annual meeting was decided on for Tuesday, the 11th of September, when Mr. Poole will read a paper "On the Round Church."

The Architectural Society of the Archdeaconry of Northampton purpose to hold their annual meeting in conjunction with the committee for the Restoration and Enlargement of St. Sepulchre's Church, with the view of bringing its claim more prominently before the public. Of the four remaining Round Churches of England, this is the only one allowed to remain in the desecration and em-

brouness which years of carelessness have brought upon it: so unruled and mutilated has it been that it is difficult, on entering it, to detect its circular form, and strangers have left it under the impression that they have mistaken the Round Church. The extended claim which it has upon the antiquarian world of England, seems to have chilled and paralysed local efforts. Of its proposed enlargement, the foundations have already been commenced. The contractor for the work became bankrupt at an early stage of the undertaking; but the committee have persevered in carrying on the work.

WITTON CEMETERY COMPETITION: BIRMINGHAM.

At a meeting of the Birmingham Town Council on the 4th instant, the report of the Burial Board Committee was read by the Chairman, Alderman J. H. Cutler. The following is an abstract:—

"The designs, ten in number, for laying out the grounds at Witton, in the County of Warwick, twenty in number, for the erection of the chapels and other buildings had, since their reception, been suspended in the Borough Surveyor's office for inspection by members of the Council. The committee, after carefully considering the respective merits of the architectural designs, reduced their number to one-half; and, impressed with the importance of the duty entrusted to them, resolved to call in Mr. Stevens, a gentleman whose knowledge of ecclesiastical architecture, and high repute in his profession, fully entitled him to the confidence of the committee, to give an opinion in writing as to the merits of the remaining ten plans, and to state whether in his judgment they could be carried out for the sum specified in the printed instructions issued to the architects—5,000l. Mr. Stevens reported in favour of the designs of Messrs. Clark, Naden, of Nottingham; and Holmes, of Birmingham, without expressing any opinion as to their relative merits; but he also reported that according to his calculations the cost of the buildings, if erected, would exceed the amount to which the architects had been limited. Upon this the committee required the authors of the three selected designs to guarantee the erection of the buildings for the sum specified, to which regulation they replied by referring the committee to estimates obtained from them by builders willing to enter into the contracts for less than the amount named. Mr. Stevens was then called in again to advise the committee as to the relative merits of the three selected plans. The result of a long personal interview with that gentleman was an opinion formed by the Committee that the premium of 500l. should be awarded to Mr. Clark, of Nottingham, and that the prizes of 300l. and 200l. should be awarded respectively to Mr. T. Naden and Mr. E. Holmes. The Committee also recommended that the prizes should be thus distributed, and that the designs of Mr. Clark should be those adopted by the Council, while their author should be appointed to superintend the erection of the buildings in accordance with them. They further recommended that they should be empowered to advertise for and accept tenders from builders for the erection of the buildings, and that, in the event of all such tenders exceeding the proposed outlay, the designs should not be carried out nor the premium be given to their author, but that the designs of Mr. Naden and Mr. Holmes should be taken in their turn. From the ten designs received for laying out the grounds the committee had selected those of Mr. R. Ashwell, of Coventry (estimated cost, 3,610l.); Mr. G. H. Stokes, London (estimated cost, 3,136l.); and Mr. W. Davidson, London (estimated cost, 2,860l.) as being the most satisfactory, entitled to the premiums of 300l., 200l., and 100l., offered by the committee. The accepted designs became the property of the Council; and, as there was no agreement with the competitors as to their employment in any other work, the committee recommended—on the ground that while the three plans were capable of adaptation, none of them were entirely fitted to the purpose—that they might be empowered to amalgamate the designs of the managers as to them might seem expedient. The selected designs were lying in the council-chamber."

After much discussion, and the loss of two amendments, the report was adopted.

VENTILATION OF GAS. CONDITION OF LILLE.

I HAVE for many years lived during seven months of the year in a house composed of a great number of small rooms, lighted with gas. With only a few friends falling in of an evening, the temperature was found very uncomfortable. I set about to find a means to remedy the defect, and employed the following. Over the lustre of three or more burners, and even a single burner, I inserted in the ceiling a cast-iron, ornamental, and very open rosace; and, in the thickness of the joists, a sort of hopper, in zinc, with a pipe of the same, leading therefrom into a flue, or, if below stairs, carried through into a passage and up to the roof, and I have found it peculiarly efficacious, in making a cigar in the room, even at a distance from the centre, the direction of the smoke towards the light and the upward current, is very observable. It is an easy, and not expensive alteration to make to any room. I had a room (bed-room) at the back, to which I was forced to take the dust and dirt of the neighbourhood) to place double windows. The renewal of the air by opening these was very difficult; but, by means of a pipe under the floor, in the thickness of the joists, fresh air was brought in from the street

as you would bring in hot air from a calorifere, with a sort of throttle valve to close when not wanted. It answered remarkably well.

This town of Lille has gained for itself great notoriety: great numbers of the inhabitants live and die in cellars, the arch of many of them being below the level of the street. I have frequently thought of you, Mr. Editor, when seeing the inmates of these subterranean abodes shutting themselves in for the night. A commission was named by the Republican Government in 1818, to visit the dwellings of the poor in Lille. Victor Hugo was one of the commission. He made a report which caused great sensation, not only in Paris, but in the provinces: he drew it and coloured it in the distal style he delights in; but the people still live in cellars and garrets: many prefer the former.

A photographer on the part of Prince Albert, I learn, had been here taking impressions of the greater number of sketches of old masters in the Wicar Collection.

The Picture Gallery in the Town-house is being extended, and will, in a short time, be of great interest.

STABLE FITTINGS.

SIR,—Iron is rapidly and deservedly taking the place of wood for the fittings of stables; but I think it only right to caution the trade and the public against the danger of iron mangers and racks, as they are very generally made. The plate which forms the top should be curved downwards, not only in front, but likewise all round the insides of the manger and rack, and should not offer, in any part, the abrupt edge of the iron plate for the horse to lay hold of. A bad accident has just happened to a horse of ours from this cause. He laid hold of the front of the manger (as horses generally do when being harnessed): the teeth of the upper jaw got under the projecting edge above described: the groom was unable to release the horse's mouth; and the result was that, in struggling to get free, he broke some of his teeth, and has seriously strained, if not dislocated, his upper jaw. A moment's inspection of these fittings, supplied by an eminent firm, will at once show how easily this accident may occur.

A BUILDER.

ILLUMINATING CLOCKS.

THE present mode of illuminating ( ) our public clocks is unsatisfactory, all must admit. Why attempt the lighting of the whole dial? Why not rather point the hands with an electric star, by means of a wire or wires edging the two hands, meeting and producing combustion at each point? The intelligence that will seek the time on a dark night will be satisfied by the relative situation of the two star points of white light so produced, even though the whole dial be utterly invisible. I merely suggest this as probably within the capabilities of science.

C. DENT.

PREVENTION OF FIRES.

THE recent fire at Frost Brothers' rope-work, near the Commercial-road, impels me to revive a recommendation strongly urged years since,—the importance, by the appointment, through the Government or otherwise, of a well-qualified, practical man, as an inspector, to see and report upon the safety of the pitch boilers; also as to the quantity and disposition of the full and empty tar barrels in such works.

I have no hesitation in saying these fires could be made preventable, as they mostly originate in the pitch-boiling.

I have had the misfortune of seeing many destructive fires in London, and was an eye-witness of this at its commencement. In less than five minutes it ran like a train of gunpowder, firing buildings nearly a quarter of a mile in length, and in parts vast sheets of flame ascended a great height: fortunately it was eight o'clock, a.m., and no wind.

Had it been night, with wind, the chances were that the backs of houses to two streets, more or less, would have been destroyed, housing at least from 2,000 to 3,000 souls: even as it is, the fright to hundreds of the women will take a long time to tranquillize.

As a matter of course it is beneath the notice of our M.I.B.A.: as one of the workers, I say it boldly, in these matters it is their duty to suggest plans sufficiently stringent to prevent suffering to hundreds. I should hope the Metropolitan Board will look into this matter; and, if they have the power, they must at once see the importance of appointing such an officer to examine and report

upon the way in which destructive fires may be made preventable, by not allowing the cupidity of large firms to put in jeopardy the lives of persons residing in the localities of such factories as use combustible materials. C. V. BERNARD.

THE WINDOWS OF ST. PAUL'S CATHEDRAL.

I SAW with much pleasure your proposal respecting the filling of the windows of St. Paul's Cathedral with suitable stained glass, suggesting that the Corporation and great City companies should take the lead in so desirable an undertaking. The proposition is "Good! very good!! excellently good!!!" and it is much to be hoped that it may be acted upon. One thing is quite certain, that until the cathedral is relieved from that dreadful chalk-pit effect produced by its present unadorned walls, and gaunt white windows, little can be done to give that solemn grandeur which ought to strike every one on entering the cathedral of the great and wealthiest city in the world.

Something is now being done to remedy the former of these evils, by gilding the four large arches of the dome; but all the gilding in the world cannot compensate for the want of the "dim religious light" which we are accustomed to look for in our cathedrals.

A commencement, however, has been made in the right direction, by the presentation of a stained-glass window to be placed in the nave, which is being executed by Messrs. Clayton & Bell. And it is much to be hoped that not only the City companies and the Corporation of London, but also private individuals, will follow the good example; and that all who delight in the works of our great English architect will throw in their mite to bring to a happy conclusion that which Wren longed to see.

A RECTOR.

HEREFORD OLD TOWNHALL.

SIR,—Will you allow me to submit to your readers a few observations in reference to the censure which, by correspondents of the Builder and other newspapers, has been cast upon the town-council of this city because they are about to take down the old Townhall? Being a member of that body, I, and others holding a similar opinion, feel that we are not oblivious to the charge of Vandalism on account of our advocating the demolition of a decayed building, deformed by successive mutilations, unsuited to the civic requirements of the present day, and an obstructive nuisance, dangerous to the life and limb of wayfarers, and impedimental to the fast growing traffic of the ancient city.

Now, sir, we believe that our perceptions of the sublime and beautiful in art and nature are as deep and as genuine as are those of the fabricators of coarse iron or barbarism; but we believe, also, that where public buildings have not only outlived the offices for which they were erected in a gone-by age, but are likewise detrimental to the public weal, it becomes an imperative duty of those persons having the authority to remove them, and to provide successors more responsive to the exigencies of the present day. Let us then test our old Townhall by this standard.

The old Townhall was erected by John Abel about three centuries ago, and, doubtless, was a magnificent wooden edifice, forming a noble architectural object in the centre of the city. We learn its form and features from an engraving in Price's map of the city, a copy of which is in the possession of our respected town-clerk. At the time of its erection nearly all the houses in the city were timber-built and gable-ended; and this fine edifice must have stood out in the midst a grand building, harmonizing with the surrounding houses. It has been said that it was only repaired by John Abel, the king's carpenter, but tradition attributes the entire work to Abel, and I am not aware of any reliable adverse authority.

The old Townhall was a gable-ended timber edifice. It consisted of three floors. The ground-floor—an open-sided area, of 81 feet by 31 feet, within which are three rows of oak pillars, 18 inches in diameter, supporting the floor above. The first-floor is of the same extent as the ground, and would form a commodious hall of meeting, but along it run three rows of pillars, corresponding with those below; and these pillars render the room most inconvenient for assemblages of people, and inconvenient too for the storage of wool and hops, to which purpose it has of late years been applied. In this room all the public meetings of the city were formerly held. There was a second floor above; and this was divided into fourteen chambers, allotted to the fourteen trades, or rather guilds, or companies. In these rooms the respective guilds held their meetings; for in those days the *modus operandi* of every trade was under the rule and governance of its respective guild. Doubtless on this account the old Townhall was originally called the Guildhall.

The building was crowned with a handsome domed-shaped campanile, or bell-tower, the top of which must have been more than 100 feet, and unquestionably formed a striking object to the surrounding country.

A glance at the engraving in Price's map carries conviction that the old Townhall, two or three hundred years ago, was excellently well adapted for its uses in that day, and was a structure of which the city might well have been proud.

But while these centuries have been rolling away great changes have taken place in the habits of the people in the old Townhall and in the buildings around it, as well as in the manners and habits of the inhabitants themselves: the times have indeed changed, and we have changed with them.

The handsome and lofty campanile, the second-floor, or upper story, with all its guild chambers, and the beautiful single windows, have so long since departed that that very old and interesting personage, the oldest inhabitant, has no recollection of them; while the first floor is covered

with a low, mean-looking roof. This floor is nothing better than a lumber-room, and a very inconvenient lumber-room it is to the exterior, that has been so "mailed" and mutilated, and altogether presents such an architectural monstrosity, that could John Abel himself see it, he would not recognise the bastard edifice as the offspring of his own creation.

Well, but it is asked, why not restore the building to its pristine beauty? The negative answer comprises many reasons: a few of them, with your permission, I will briefly state.

Renovation, complete renovation—and anything short of it would not be justice to the architect or his times—would, I am assured, cost upwards of 2,000l.: besides, when done, the building would remain an obstructive nuisance, casting a still longer shadow and deeper gloom on the fronts of the houses on either side, and affording only a peculiar accommodation not required in the present day, and not meeting our growing civic exigencies, while it would continue to incommode the increasing traffic, rendering it still more dangerous through the High-square. This last fact may be estimated by the stranger to the city, when he is informed that the carriage-way on one side—the principal way through the city from the London and Brompton railway stations to the South Wales, Brecon, and Worcester railway stations—is but 15 feet from curb to curb; the chief entrance to the poultry and butter markets from the High-square opening right into this road, opposite the centre of the old Town-hall.

But if it were restored, as it is presented, the building would not harmonize, as it did in days of yore, with the houses around it. Three, nay, two hundred years ago, Hereford did not number 5,000 inhabitants; it now numbers 15,000. Prior to the year 1774, in which the *improvement Act* was passed, probably all or nearly all our houses were like the old Town-hall—timber-built and gable-ended. Their gables so projected from either side of the streets, we must should call most of them, that the inmates could in many places shake hands; and while the tradesmen sat below, shaded by the gables, discussing civic affairs, their good wives could, from the opposite windows above, discuss the no interesting because more personal, gossip of the city. There was but little if any foot pavement: some of the streets were pitched, both the road and footways, with pebbles obtained from the bed of the Wye; while the surface drains throughout the city were allowed to stagnate, and in summer they so fettered, that on a memorable occasion I doubt not they were one of the principal causes of the visitation in the shape of the plague. In those days the old Town-hall did not, as it does now, rattle and rebound from the busy passage of the "bus and the Hansom; the cart and the gig, the single and pair horse carriage."

Subsequently to 1774, and principally between that year and 1830, a great change was effected in the fronts of the houses of the inhabitants, both trading and otherwise. I believe there is a desire prevailing old enough to remember that a load of hay could not pass between the gable-ends of the houses at the top of Widemarch-street, or in the High-street, near the North-gate; but gables, harmonizing as they did with the old Town-hall, have nearly all disappeared; and mostly by an operation, which I regret to describe as a *sham*, and to stigmatize as detrimental to the architectural character of the city. The common practice has been to cut off the face, or gable end, and to run up a brick wall in front, thereby leaving the interior of the old house untouched, and handing the whole down to posterity, an *old friend with a new face*,—not a desirable possession in houses any more than in social life. With some exceptions the houses on either side of the old Town-hall are of this *sham* character; and although we have many very handsome shop fronts, we have likewise many small, low-roofed, ill-lighted, ill-ventilated, inconvenient houses.

A renovation, therefore, of the old Town-hall, on its present site, would, I venture to submit, be in every respect unwise; it would, indeed, be retrogression in progress; and it would be a course which, if Abel himself were alive, would be opposed by the king's carpenter.

For my part, sir, I consider that a great injustice is often committed on the character of great men of former times; Abel men, who were in advance of their age; who have left a deep mark of progression behind them, a mark which acts as an encouragement to those who come after them, and who, like them, must make up their minds to encounter obstacles in *deeds*, and obliquity in *words*, but who, nevertheless, press forward, and the end reward their highest reward—that of success. To appeal to such men of centuries ago as authorities for standing still, or remaining at the point where they left the world, is unjust to their memories: it belies the history of their lives, and is, indeed, contrary to the practice of the intellectual pioneers of all ages. If John Abel, and such as he, were citizens of Hereford in the present day, I believe we should find them breathing the spirit of progress at our council board; and Abel himself among the first to advocate the removal of the old Town-hall, and the erection of a worthy architectural successor—an edifice which should be consistent with the rising *status* of the city, with the daily increasing traffic in the High-square; in short, an edifice which would meet the wants and requirements of the present day, and in future ages would stand out in the midst of Hereford, as the old Town-hall did during the first two centuries after its erection—one of the principal architectural glories of the city.

I have said that I do not think I am insensible to the sublime and beautiful, in art or nature; nevertheless, am so far a utilitarian, that I would not preserve habitations merely because they are ancient picturesque objects. In Johnsonian interpretation, a knacker's horse is superlatively picturesque; so is a mud cottage with mud floor and fetid pools here and there; a thatched roof, with rotten straw in holes, and redolent of vermin; a small lattice window, through which the light and air of this beautiful world must struggle for admission; I plead guilty to a preference for neat stone or brick dwellings, with boarded floors, airy rooms, and comparatively large windows, for the abode of a poor man, and further, I indulge the opinion that such habitations operate beneficially on the physical, the moral, and the intellectual condition of the occupants of both sexes and all ages. Such improved cottages may be constructed with a judicious blending of the useful with the ornamental.

But the love of the picturesque, when manifested in an inordinate passion for old picturesque buildings, appears to me to be a phase of insanity. The other day, in a garden on our honoured me with a call for the purpose of remonstrating with me on the Vandalian, as he was pleased to term it, of demolishing the old Town-hall. I walked with him to the building, and I regret to say that he was to me as blind to its present hideousness, as I

was to him as to its present beauty. I accompanied him into the country, and showed him some mud cottages, such as I have just described, and which he warmly praised on account of their picturesque, but which I dispraised on account of their unfitness for the abode of a civilized man, his wife, and his children. I pointed out to him some stone cottages, which I have myself erected about two miles from the city, and which I thought were picturesque, and something more; but which he could not admire, as he did the mud cottages, and the fifty mud cottages. I thought, and still think, that such inordinate love for the productions of the past—and it is this extreme veneration that invests every old "inanimate thing with localities, associations, insanity, and that had such a passion been dominant in our city in past ages, the sixteenth century would never have witnessed the erection of Abel's glory—the old Town-hall; and had it been always dominant throughout the nation, I very much doubt whether our forefathers, the ancient Britons, would have progressed so far in art as to clothe themselves in the skins of the wild animals of their country.

There is, however, one suggestion as regards the old Town-hall, which might be carried out. The old Town-hall, being a timber building, might be taken to pieces, and be reconstructed on another site. The building will shortly be offered for sale by the Town Council: let the admirers of the splendid edifice, as erected by John Abel, seize the opportunity, to bid them forth with reasons and description, to purchase the building, to remove, and re-erect it on some site where it may be easily accessible to the stranger visitor, where it will not be a nuisance, but be an architectural ornament and a monument of the noble and edifice erected in England in the sixteenth century. For such a work I would willingly subscribe my mite; and it is a fair test of the sincerity of our censurers, who, by "doing likewise," will demonstrate their love of money.

*Hereford.* CHARLES ANTHONY, Alderman. P.S. Since the above has been written, and commended with as much regard as surprise, two letters from Mr. Clayton, one in the *Hereford Times*, the other in the *Builder*.

In the former Mr. Clayton states, "that the author of Design No. 50 (i.e., Mr. Charles H. Edwards), having given nothing but perspective views, and no geometrical drawings with dimensions, it was impossible to substitute competent architectural designs for those of Mr. Edwards's and Mr. Clayton's." You will, sir, scarcely believe that "no geometrical drawings, with dimensions" or specifications accompanied Mr. Clayton's design, or clock-tower, but three uses, positively had borne his design in order to prepare them. This, therefore, is a fling, as spiteful as unjust, against the successful competitor.

Mr. Clayton observes that his design for a clock-tower was carried by a majority of the votes of the subscribers; to which I again reply, that that majority was an "accident," the result of a "mismanagement," my belief being that a large majority of subscribers at that meeting were in favour of Design No. 50; and this belief is strengthened by the fact, that at the meeting of the Council, at which twenty out of twenty-four members were present, only two (the proposer and seconder) voted for Mr. Clayton's clock-tower. As to "the motives and good taste" of my observation, being myself conscious of the purity of my motives throughout the whole of this business, I am unwilling to impute improper motives to others; doubtless, Mr. Clayton is moved by no other motive than the honour and welfare of the city. As to the good taste,—"the good taste" does not come freely from Mr. Clayton, who has the taste to cast spiteful reflections on his brother architectural competitors.

In a postscript Mr. Clayton affects a sorrow, surely more just than in earnest: he writes as follows:—"The fine old timber Town-hall seems doomed to be removed." Will not you, sir, and Mr. Clayton's brother architects too, be so managed to hear that he has proposed, Mr. Clayton, *de motu proprio*, to have publicly proposed to demolish the old Town-hall, and furnished a drawing of a clock-tower, which he also proposed to erect on its site!—G. A.

#### THE TRADES' MOVEMENT.

At Bristol the strike of the operative masons is virtually at an end. The men have agreed to resume work at an advance of 6d. per day, with a 10 per cent. increase on March 1st, 1861, the two hours' labour less per week will be conceded. Several of the masters have agreed to this compromise; and it is expected the others will shortly follow their example.

At Walspool, the operative joiners are on strike, seeking an advance of 8s. per week, with a reduction of the hours of labour. Two employers have agreed, whilst the others, it is said, are determined not to give way. A guinea per week appears to be the present wages at Walspool, whilst in Chester they are getting 25s., and in Liverpool 28s. and 30s.

At Bradford (Yorksire) a numerous meeting of master builders has been held for the purpose of forming an association in the West Riding, as a means of protection against unjust and unreasonable demands on the part of workmen. The principal towns in the province are represented. Mr. William Beauland occupied the chair. Several resolutions were passed with a view to active organization. The object of the association is said to be purely defensive.

The miserable strike at Coventry is at an end, but numbers of the weavers are now awakening to the conviction that work is not to be had, on any terms, farless on their own—that they be paid by piece-work, and that they be allowed to work have been thankful to accept it on the masters' terms. It is proposed to introduce the cotton trade into the town to make up for all deficiencies in the ribbon trade. Miss Nightingale has again been drawing attention to those interested in the Coventry weavers in this direction, by using efforts to have some of the distressed and starving families transferred to Blackburn, in small detachments, at a time when the weavers are so miserably poor, and most charitable contributors to the wants of the poor; but this is far from being the case in many such instances as this; and the Blackburn operatives are not so miserably poor as they are represented to be, although they have made no objection to Irish immigration under similar circumstances. Is it that they are themselves so miserably poor, or is it that they have twenty-nine looms stood idle, owing to eighty Black-

burn weavers actually struck work because one Coventry weaver was introduced amongst them?

A most nefarious and abominable instance of "the tyranny of strikes" has occurred at Colne, in Lancashire, amongst the power-loom weavers, and has been very properly shown up in the *Times* and the *Manchester papers*. It appears that in this case money is exacted from those still in employment (girls as well as men) by threats and scandal of the vilest description, actually published in a printed form under the guise of "weekly reports of income and expenditure" of the strike, with the name of a fellow called "Abraham Pinder" attached as secretary. The whole affair reminds one of nothing, but the obscene and disgusting publications which once defiled the metropolitan press under the name of "The Statist," "The Town," &c. It is to be hoped Mr. Pinder has placed himself within the long range of the law, and that he will be well clawed before it is done with him.

#### Books Received.

*Lectures, chiefly on Subjects relating to Literary and Scientific and Mechanical Institutions.* By H. WHITEHEAD, M.A., Curate of Clapham; T. C. WHITEHEAD, M.A.; and W. DRIVER, Bosworth & Harrison, Regent-street, London, 1860.

This little volume may be described as a record of addresses to the working man by the thinking man. The Rev. Mr. H. Whitehead displays a special ability for the task he so frequently undertakes, of amusing and instructing those who listen to his lectures; and the Clapham Literary and Scientific Institution is fortunate in having so frequently the benefit of his *con amore* services. The rev. gentleman has hit upon the happy medium between the grave and the gay, and loses no fair opportunity of administering light doses of sagacious thought through an attractive and gossiping medium, which must render it pleasantly and easily digestible, even to tender mental organs of assimilation.

The subjects of the lectures in the present volume, besides an introductory one, are—Lending Libraries—George Stephenson—Literary and Scientific Institutions—Strikes and Documents—System, its use and abuse—Reading-rooms—Silence a Speech—Divide! Divide! The Talking Fish—Step by Step—Birds of a Feather—and Five Curs at St. Luke.

A lecture for a penny appears to be a very good form in which Mr. Whitehead's addresses are sometimes published at Clapham. Thus we observe one in this shape on "The Oldest Inhabitant." Another has been separately published, titled "Beating the Bounds," on the not merely locally interesting subject of Clapham Common.

In reference to the late strike of the London building trade, and to a lecture titled "An Outsider's Views of Strikes and Documents" which was delivered at the Clapham Institution, a correspondence took place between "the Clapham local committee for opposing the Document," and the Rev. Mr. H. Whitehead, in which the latter, who had been invited, but declined, to co-operate with this committee, says—

"We ought not to shrink from discussing such social phenomena, and from endeavouring to ascertain the laws which produce them. My own opinion is, that the particular phenomenon in question are but two of the many pernicious results of the fatal policy with which men now-a-days are compelled and content to think in masses. Commemorative views and commonplace outward measures inevitably ensue. Men who can think out a sound principle get no chance of a hearing. Hence short-sighted 'strikes' and short-sighted 'documents'! There rise to the surface, alike among men and masters, those who are incapable of calculating aught which will be the consequences of the measures they recommend. It is not my business to judge between them; but it is my business—and I trust it is my constant practice at all times and not merely when a dead-lock comes about—to encourage men to think for themselves and to be true to their own individuality and independence of thought and character. A much freer development of individuality of thought than is now prevalent is required to deliver us from 'strikes' and 'documents.'"

#### Miscellaneous.

NATIONAL GALLERY TRUSTEES.—A return recently made, on the notice of Mr. Coningham, shows that the trustees of the National Gallery have met ten times during the present year.

COST OF PUBLIC INSTITUTIONS.—In the evidence given before the South Kensington Museum Committee, it is stated that, taking the cost of various institutions and exhibitions for 1859, and dividing it by the number of persons who visited them, it is found that in the case of the British Museum the cost was 3s. 2d. for each visitor; at the South Kensington Museum, 1s. 3d.; at the Crystal Palace, 1s. 3d. The senior trustee of Sir John Soane's Museum in Lincoln's-inn-fields acknowledged that the expense of keeping it open is actually 10s. for each person who visits it.

**THE MERCAT CROSS OF EDINBURGH.**—A new stone has been laid at the Market-cross, High-street, to mark the site of the ancient cross of Edinburgh. While the street was being laid out, the excavations were carefully watched by gentlemen who have since given a certificate to the effect that nothing in the shape of coins or other deposits were found under the key-stone of the cross. The excavations were carried to the extent of 5 feet in depth, in order to ascertain whether any such deposits had been made. The cross itself was removed, about one hundred years ago, to a park on the Drum estate, and twelve years since a petition to the authorities to restore it was refused. The High-street is at present under repair.

**THE ENLARGEMENT AND DIMINUTION OF ENGRAVINGS AND LETTER-PRESS.**—We some weeks since gave an account of what was shown of the process for enlarging and diminishing engravings at "The Electro-printing Company's," in Burleigh-street, Strand. Our contemporary, *Once a Week*, in its number of Saturday, the 25th August, gives an interesting and illustrated account of this very useful invention, in which the following particulars are further stated as to a part of the various processes not exhibited on the occasion to which we allude. "If the picture has to be worked with type, the enlarged impression has, of course, to be made from block plates, the printing lines of which stand up like those of a wood-cut. This is accomplished by printing the picture with prepared ink upon a metal plate: the plate is then subjected to voltaic action, which eats away the metal, except those parts protected by the ink."

**RUGBY WATER SUPPLY AND SEWAGE.**—The artesian well which was begun in 1857, on Mr. Hawkesly's recommendation, is still in progress, but no water has been reached. A shaft, 50 feet deep, was first sunk, and then the boring commenced. The depth now reached is 1,023 feet. The bore has gone through 545 feet of red clay, and it is the engineer's opinion that water will be found so soon as the red clay is entirely penetrated, but the question when that may be, or how many more feet must first be gone through, seems to be a puzzle. The present cost of sinking the well and bore-holes is set down at 2,500*l.* As yet 200 feet of the bore have to be cased with iron piping. Meantime the work has been suspended, and intimation given that this has been done.—At a recent meeting of the Rugby Board of Health Mr. Edmunds read a report respecting the filtering of the sewage outlet, from which it appeared he had paid a visit, in company with the surveyor, to Ashby-de-la-Zouch, and that they there found the means employed more simple and much more effective than the process at Rugby. The surveyor had calculated that there would not be less than 100,000 gallons of sewage per day in excess after Mr. Walker had used all he could. The chairman said he approved of the way in which the sewage was filtered at Coventry. Mr. Edmunds said if lime was used in filtering, the ammonia would leave the sewage, and render it useless as a manure, and that Mr. Walker pumped, by means of steam, not less than 160,000 gallons daily. Mr. Edmunds said at Ashby-de-la-Zouch the deaths had decreased from 30 to 4 per cent. since the construction of the sewage works.

**FARM IN UPSALL, YORKSHIRE.**—At Upsall, near Thirsk, a farmstead is being erected by Captain Turton, from the designs of Messrs. Hatfield & Goldie. The north front will be seen from a projected mansion. The style of architecture is the Early Gothic. The stone for the most part is local, interspersed with some Whithy stone, brought from the private quarries of Captain Turton, in that district. A belfry ornaments the centre, with a tower to the east, which has a pyramidal capping, supported by columns of calcareous stone (the same as St. Mary's Abbey, York), which contrasts with the yellow iron-veined sandstone of the rest of the buildings. Muir's ventilators are introduced, as well as Richmond & Chandler's steaming apparatus. The site is charming, commanding views along the vale of Mowbray, from York Minster to the Richmond hills. Within a short distance are the remains of Upsall Castle, built by my Lord Scrope,—

"Go therefore hence,  
Poor, miserable wretches, to your death,  
The taste whereof God of his mercy give  
You patience to endure, and true repentance  
Of all your dear offences."

*Shakespeare, Henry V., act ii., s. 2.*

This Henry Lord Scrope was succeeded by his brother, Sir John le Scrope, who was summoned to Parliament as Lord Scrope of Upsall from January, 1426, to May, 1455.

**OPENING OF THE NEW IRON CHURCH AT KILBURN.**—An extensive new iron church has been opened in the Carlton-road, Kilburn, parish of Willesden. It has been erected by Messrs. Tupper & Co., of the City, under the immediate supervision of Mr. Brown, one of the firm.

**DARLINGTON MARKET COMPETITION.**—The Darlington Board of Health, at their meeting on Friday in last week, awarded the premiums for the designs sent in for the proposed covered market, as follows: "Utilitas" (no name accompanying the design), 50*l.*; Messrs. Pritchett & Son, Darlington, 30*l.*; Mr. R. B. Dixon, Darlington, 20*l.*

**THE IPSWICH SHOP-BLINDS.**—A report of shop-blinds under 7 feet, the height allowed by the Local Committee, was presented by the surveyor to the Paving and Lighting Committee, and it appeared that some were extremely low, one being but 5 feet 2 inches from the ground. The Clerk said it was quite understood that the Committee could not alter the law: the law said 8 feet, and any party who might feel aggrieved might summon the owner before the magistrates. The surveyor said that in the principal towns the law was carried out, and 8 feet was the limit. It was determined that all parties whose blinds were less than 7 feet should be proceeded against if they did not alter their blinds by the next meeting.

**AN ERUDITE CONTRACTOR.**—Amongst the replies to advertisements published by the Leek Improvement Commissioners for tenders for the execution of public sewerage works, the following epistle, dated August 20th, was received from a contractor, in the neighbourhood of Manchester. Here it is, *verbatim et literatim*:—"Tender for the Leek sewer per yard at 3 feet 3 inches as the advertisement state 2*l.* 15*s.* per yard or according to the kind of ground as it may be as I have not seen the Specification I am willing to make any agreement of price as will do the work and small sewers and others at a reduced price as one half or one third size just according to be reduced. With having seen the advertisement late I had not to send for a few lines of the specification send a few lines of the work by thursday." This accommodating document was addressed, "Mr. Hacker and Bloore law clerks public office, Leek."

**A NEW PESTILENCE.**—Reports have been received from the camp at Shorncliffe, during the last two or three months, which allude to the prevalence of a disease hitherto totally unknown to the climate of England. It is described in the *United Service Gazette* as "a disease which, although not, strictly speaking, genuine yellow fever, yet is so near akin to that fearful tropical malady as to inspire the medical authorities upon the spot with a due sense of the importance of instantly checking its incursions." The doctors, it is added, trust that, with the help of the continued cool weather and the airy position of the camp, they will soon be able to eradicate a disease for which they cannot account, and which terrifies the neighbourhood like the ancient plague. Another account says this is an exaggeration. Long ago we heard bad things of Shorncliffe.

**THE NEW STAMP DUTIES.**—The new Stamp Act (No. 2 of the late session) has been issued. The new duties are chargeable on the passing of the Act. From and after the 31st December the allowances now made on bill and receipt stamps are to cease, and a new allowance of 10*d.* in the pound is to be made. The duties on foreign promissory notes are to be denoted by adhesive stamps, or impressed stamps, and adhesive stamps or impressed stamps may be used for insurances. The duty on policies of insurance on lives for sums not exceeding 25*l.* is reduced to 3*d.* There is no duty on an insurance of workmen's tools for sums not exceeding 20*l.* The duty of 1*d.* on a delivery order is to be paid by the person requiring the order. Persons in the service of the Post-office may sell postage stamps. This provision states that "it shall be lawful for any person in the service or employment of the Post-office, without any licence or any authority other than this Act, to carry about for sale and to sell at any place or places within the United Kingdom postage stamps and printed forms of any kind, issued or used at the General Post-office, and any other matter and things relating to the business of the Post-office, and such person shall not be subject or liable to any penalty or forfeiture for so doing, anything in any Acts to the contrary notwithstanding." It is provided by the Act that if the Treasury direct that the district registrars be paid by salary, they may also direct the fees to be collected by stamps. The new duties are set forth in the schedule annexed to the Act, and it is expected that the duty on policies against accident will yield a large amount to the revenue.

**FALLING IN OF A CHAPEL AT SWANSEA.**—A portion of the front of the Primitive Methodist Chapel, now being erected in Pell-street, has fallen in, tearing away in its descent a considerable portion of the scaffolding placed at that end of the building. Fortunately the men had left work, and the wall fell inwards. The prevailing wet weather is thought to have caused the mass of brickwork to fall.

**FALL OF A HOUSE IN BOMBAY.**—The papers by the Overland Mail say that a fearful catastrophe happened on the 18th of July, by the falling of a house, burying no less than eighteen of the inmates in the ruins. It occurred at 11 o'clock at night. By the most active exertions of the officials, eighteen were taken out of the ruins in a comparatively short time. Five were dead, two all but dead, and eleven were so horribly mangled that very little hopes were entertained of their recovery.

**SURVEYORS SURVEYED.**—The Coventry Board of Health have just come to rather a novel resolution with respect to their surveyor, namely, to constitute him the successful tenderer for the reconstruction of a culvert, and to appoint "an independent surveyor" to see that the work is rightly done! One of the members of the Board (Alderman Browett) remonstrated with them on the absurdity of such a course; but it was of no use, and the Coventry Board of Health have determined to follow out their Japanese spy system, which they appear to regard as a capital idea. They only require, for their complete self-satisfaction, to appoint, as the "independent surveyor," that enterprising tailor who urged his capabilities for such an office on the ground that he was accustomed to use the tape line, and to take measurements. The precedent, in our opinion, is not only an absurd, but a dangerous one. If the Coventry Board of Health have not full confidence in their surveyor, why not dismiss him, and appoint another in his place? Their present course is precisely that of the Japanese, who appoint one "confidential" agent to act as a spy upon another agent equally "confidential." The following were the tenders sent in for the re-construction of the culvert:—

Mr. Abraham Salt.....	£267	0	0
Messrs. Hallam & Co. ....	240	0	0
Mr. Alfred Maull.....	225	0	0
Mr. James Wilson.....	198	15	0
The surveyor's estimate ..	118	4	0

**STREET TRAMWAYS.**—The horse-railway in Birkenhead, for which Mr. Train, of Boston, U.S., was the contractor, has now been opened. It extends from the Woodside Ferry, the landing-place at Birkenhead, just opposite the centre of Liverpool, by the shore-road, through Angle and Conway streets, and is so on to the entrance to Birkenhead Park. The whole distance is little more than a mile and a quarter. A junction in Conway-street enables the carriages to return from the park by Hamilton-street to the point from which they originally started. The tramway consists simply of two iron plates, each raised about an inch on the outer side. They are fixed upon longitudinal bearers, which rest upon transverse sleepers, and are so let into the street as to run completely on a level with its surface. To ply on these iron plates carriages for 50 to 60 passengers each have been built by Mr. Main, of Birkenhead. They are, of course, more than double the size of ordinary omnibuses, but are somewhat similar in shape, and are provided underneath with wheels like those of a railway carriage, but somewhat smaller in size. Each carriage is 24 feet long by 7 feet wide; 7 feet being also the height of the interior from floor to roof. It furnishes sitting room for 24 persons inside, and for as many more outside, for whose protection a handrail runs round the top. A space of two or three feet intervenes between the passengers on each side of the interior. A small platform at each end, raised about a foot and a half from the ground, and separated from the horses, which may be yoked to either end, affords the means of ingress and egress. The carriages are fitted up in rather a gaudy style. For ventilation, each has its sliding windows, with "louvers" to prevent a draught. An idea seems to be entertained that such a tramway and its adjuncts are unprecedented in Europe; but, for some years, the very same sort of conveyance (which, by the bye, we have for many years advocated, for London and other towns, in the *Builder*) has existed in Paris. There are also tramways (of granite) even in the streets of London, the last of which were laid along new Westminster Bridge; but large omnibuses specially adapted to run along such tramways—and, indeed, tramways specially adapted for such omnibuses, have not yet existed in London.

**STREAM-HAMMERS.**—Messrs. Hewitson & Walker, of Leeds, have patented some improvements in steam-hammers. They propose to apply a lever in such a manner that one end thereof is attached to or near the hammer, so that that end of the lever moves to and fro with the hammer; and by its other end the lever, through the intervention of tappets, levers, rods, or other suitable gearing, gives motion to the valve.

**THE OPEN SEWER IN BATTERSEA PARK.**—Whether in consequence of what was said in the *Builder* recently on this subject or not, we cannot say, but we are glad to observe that the Chief Commissioner of Works has written to the Metropolitan Board, requesting them to order the deodorization of the sewage running through the park, and further requesting that the sewer may be diverted.

**IMPROVEMENTS NEAR VICTORIA PARK.**—For some time past there has been a desire on the part of the inhabitants of the parish of Linchouse to be able to have access to Victoria Park. An intimation to that effect having been forwarded to the Metropolitan Board of Works, measures have been taken to carry out that object, and, in order to effect it, a number of houses on the line of road leading from Linchouse to the Park have been sold, and are to be removed in order to form a convenient communication between the Park and Linchouse.

**PROPOSED STREET FROM SOUTHWARK TO BLACKFRIARS ROAD.**—A large number of houses situate in Gravel-lane, Christchurch, and Blackfriars-road, have been sold, in compliance with directions from the Metropolitan Board of Works, and are to be taken down and cleared away for the purpose of the formation of the new street from Southwark to Blackfriars-bridge-road. The Board, it is said, have entered into arrangements with nearly all the owners and occupiers of property throughout the distance.

**TRAFFIC RETURNS.**—The traffic returns of railways in the United Kingdom for the week ending August 18th amounted to 584,585*l.*, and for the corresponding week of the last year to 546,285*l.*, showing an increase of 38,700*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 255,626*l.*, and for the corresponding period of last year to 240,861*l.*, showing an increase of 14,865*l.* The receipts on the other lines in the United Kingdom amounted to the sum of 329,359*l.*, and for the corresponding week of last year to 305,424*l.*, showing an increase of 23,935*l.*

**REST FOR THE WEARY.**—A seat for tired pedestrians has been conveniently placed within a railed space in front of St. George's Hospital, Knights-bridge, and is made good use of. A few years ago, when we first noted the desirability of providing such seats in towns and their suburbs, the idea was laughed at. Gradually, however, it is making progress. The drinking-fountain at St. George's Hospital, close to the seat in question, is greatly used. We pass it several times a day, and never do so without seeing a drinker or two indulging. The flow here appears to be properly arranged, so that there is no sloppy mess around it. Some of the drinking-fountains, through inattention in this particular, have become a nuisance.

**MONTMENTAL.**—The statue of Dr. Isaac Watts, at Southampton, his native town, has been commenced. It will be erected in the public park in July next, on the anniversary of his birth. The statue and basso-relievos will be of Sicilian marbles, and the pedestal polished Aberdeen grey granite. The total height will be nearly 20 feet. The sculptor is Mr. Lucas, of Chilworth, near Romsey.—A monument to Samuel Crompton, the inventor of the spinning mule, has been resolved upon at Bolton. The movement began with working men. A committee has been appointed, and Mr. R. Heywood has promised 50*l.* It is stated that a bronze statue would cost 1,500*l.*; but there is talk of an educational charity for factory workers.—A piece of sculpture has just been erected on the wall of the north aisle of Glasgow Cathedral, opposite the south entrance, to the memory of the officers and men of the 93rd Highlanders who fell in the Crimea. The memorial has been erected by the regiment, and was designed and executed by Mr. John Steel, R.S.A., Edinburgh, sculptor to her Majesty for Scotland. One of the 93rd Highlanders—the standard-bearer of the regiment—who has received a fatal stroke from the hand of the enemy, is represented as being supported by the goddess Fame. The material is fine white marble. Various designs by sculptors of London were received, but Mr. Steel's was adopted. The colours which the regiment had in the Crimea are to be placed on each side of the monument.

**SELF-MOVING VELOCIPEDES AND CABS.**—We have occasionally pointed attention to the possibility of applying some simple mechanical or other power to the movement of small carriages, such as velocipedes, bath chairs, cabs, &c. Our idea, it appears, is being carried out at Paris, according to the *Star*, which states that "a carriage, propelled by neither steam nor gas, but by the simplest screw imaginable, has recently been beheld for the first time in the streets of Paris, going with such amazing swiftness as to leave far behind the four-in-hand carriages of the Jockey Club, which endeavoured in vain to keep up with it. The inventor is said to be a poor man, who has constructed the vehicle entirely himself."

**THE TAPPING OF THE GANGES.**—"The long-hoped-for, long-wished-for, long-expected, and long-deferred event, of tapping the Ganges at Rajmehal," says the *Engineers' Journal* of Calcutta, "has at last been accomplished. The 4th of July, the anniversary of the declaration of American independence, will be for ever a memorable day in the annals of Indian railway enterprises. On that day the railway was completed from Calcutta to Rajmehal; the rich, fertile, and expansive alluvial plains of the Gangetic valley were placed in direct communication with the great seaport of Eastern India; and the commencement of a new and most brilliantly promising epoch in India's history was inaugurated as the last tremor was well driven home." One of the first runs on the line was that of a party of officials who went from Rajmehal to Calcutta in about four hours, or at the rate of twenty miles an hour, so that the line is in working order throughout. Mr. Turnbull, with Mr. Vigors and Mr. Denham (two district engineers), and other officers of the line, were present at the opening.

**LICHFIELD CATHEDRAL.**—The dean and chapter of Lichfield Cathedral have issued a second report on the restorations now in progress. The sum required for proposed additional works will not be less than 3,000*l.*, together with the ordinary fabric fund. The following estimated sums are still required to complete the choir:—Reredos, 1,600*l.*; to 1,800*l.*; sedilia and canopies, 300*l.*; screen opposite sedilia, 150*l.*; four screens and gates east of stalls, 560*l.*; steps to the communion-table, marble, and encaustic tiles, 60*l.* A proposal has been issued to raise the money for the pavement east of the stalls and below the steps, 270*l.*; pavement between stalls, 147*l.*; pulpit (a movable one), 100*l.*; faldstool, 75*l.*; oak benches for nave and transept (say forty in number, at about 6*l.* each), 240*l.*; remainder of gas fittings for lantern and nave, 200*l.*—by contributions from those numerous parishes the church, school, or parsonage of which has been in some way benefitted through the liberality of the late Mr. Herbert Minton.

**NEWS FROM HAYTI.**—The editor of the *Progress*, of Port-au-Prince, Hayti, says that the elements of great prosperity and high civilization abound in Hayti; that it possesses mines of different kinds, and of surprising qualities. The government of Hayti, continues he, has caused two coal mines to be examined: they are found to be of vast extent, and of a very superior quality. One of these is situated twenty-one miles from the town of Cayes. The coal might easily be transported from the mines to the town of Cayes by means of a railroad. It is the intention of the government of that island to invite foreign companies to work these mines. An iron mine has also been examined. This is found near the town of Anse-a-Year, close by the sea. The quality of the iron is identical with that from Sweden.

**PUBLIC EXHIBITIONS.**—The following table of the number of visitors at various public institutions and gardens shows the extent to which each proves attractive. The first time may be considered as in town, and the remainder as out of town; but in December last the Vernon gallery was removed from Marlborough House to South Kensington, and above 50,000 of the visitors to that gallery in 1859 went to it in that month, after its removal. The Great Exhibition year is given to show its unprecedented numbers:—

	1851.	1857.	1858.	1859.
British Museum ..	2,527,216	621,034	519,565	517,895
National Gallery ..	1,065,705	610,850	553,706	789,401
Vernon Gallery ..	253,152	256,770	238,377	172,227
Zoological Gardens ..	657,243	339,517	331,580	365,255
Kew Gardens ..	327,990	391,798	405,376	384,098
Hampton Court Palace ..	350,818	173,710	218,035	208,264
Science and Art Museum ..	—	284,943	456,288	475,263

**THE GODWIN SANDS: FLOATING SHIPWRECK ASYLUM.**—Rear-Admiral J. N. Taylor, C.B., has invented a floating apparatus for the rescue of the shipwrecked on the Godwin Sands. It consists of an open-framework of timbers, 160 feet long by 36 feet beam, moored by chains, piles, and anchors, and furnished with life-boats, and other requisite means for the preservation of life, together with a cabin for the life-preserving crew, saloons for the shipwrecked, and other requisites. It is proposed to be moored at the edge of the Sands. For forming harbours, a sufficient number of sections are to be placed in a continuous line, the intervals being filled up by a double line or chain-netting. Models are to be seen at the United Service Institution, Whitehall.

**TENDERS**

For the erection of a boundary and retaining wall on the Millbrooks Estate, borough of Plymouth:—

Foot .....	£340 0 0
Blight .....	319 0 0
Hammill & Stephens ..	215 0 0
Clarke .....	299 10 0

For a house at Sawbridge-worth for Wm. Barnard, Esq. Mr. G. Perry, architect. Quantities supplied:—

Markwell .....	£837 10 0
Ball .....	814 0 0
Glascock .....	770 0 0
Dickinson .....	759 15 0
Barton .....	278 0 0
Nicholls (accepted) ..	745 0 0

For building a villa at Wimbledon. Mr. W. A. Bulnois, architect:—

Smith .....	£3,577 0 0
Elliott .....	3,575 0 0
Lucas .....	3,465 0 0
Aviss & Co. .....	3,418 0 0
Holland .....	3,360 0 0
Myers .....	3,245 0 0
Longmire & Burge ..	3,198 5 0
Macey .....	3,141 0 0
Adams & Sons .....	2,911 0 0
Evans, Brothers .....	2,773 15 0

For 3,750 feet of 18-inch and 24-inch pipe sewer for the Commissioners of Pavement, Canterbury. Mr. Collard, surveyor:—

Capon .....	£2,002 15 0
Porter .....	1,678 15 0
Vincent .....	1,676 7 6
Gaskin & Golden ..	1,336 11 8
Garrett .....	1,299 0 0
Stratton (accepted) ..	1,153 5 10
Potter & Love .....	1,074 17 6

For Independent Schools, High-road Well, near Halifax. Messrs. J. E. & J. D. Gates, architects. Quantities supplied by the architect:—

The whole, exclusive of Smith's Work and Heating Apparatus.	
Ambler & Taylor .....	£579 0 0
Charnock & Booth .....	674 0 0
Webb .....	654 0 0
Walton & Dilworth ..	615 5 0
Wals & Sons .....	614 10 0
<i>Masonry.</i>	
Mausley & Turner ..	365 0 0
Greenwood & Wormald	320 0 0
Gledhill & Turner ..	319 6 6
Tully .....	312 10 0
Webb .....	319 0 0
Gates .....	297 0 0
Wals & Sons .....	291 10 0
<i>Wood Work.</i>	
Webb .....	220 0 0
Simpson .....	210 0 0
Powell & Drayton ..	210 0 0
Pulman .....	187 0 0
Bedford .....	185 0 0
Tully .....	172 0 0
<i>Slating and Plastering.</i>	
Taylor .....	86 8 0
Webb .....	85 0 0
Collins .....	78 0 0
Tully .....	77 0 0
Ambler & Taylor ..	76 0 0
R. Taylor .....	75 3 0
Lister & Pickard ..	75 0 0
<i>Plumbing and Glazing.</i>	
Daniel .....	33 5 0
Tully .....	32 5 0
Dyson .....	31 3 6
Stafford & Co. .....	28 10 0

For New Cattle Market, Derby. Mr. T. C. Thorburn, C.E., Borough Surveyor:—

Division No. 1. New bridge over canal for Mill race.	Division No. 2. Furnishing and delivering the iron cast-iron-work.	Division No. 3. Sewering, draining, and completing masonry.	Division No. 4. Making and conveying north-east side river Derwent.	£. s. d.		
				£. s. d.	£. s. d.	£. s. d.
Clarke & Son 1666 0 0	3148 5 0	622 12 6	556 16 0			
Hyslop .....	3350 10 0	564 0 0				
Tomlinson .....	3021 16 9	586 16 0				
Hill & Smith .....	1041 5 1					
Swinger .....	1084 13 0					
Handyside & Co ..	837 15 0					
Haywood .....	813 0 0					
Cliff .....	784 13 0					

\* The Committee recommend the Corporation to accept these tenders.

# The Builder.

VOL. XVIII.—No. 919.

*Strolls in London with a Purpose: The City Road: Needle-women.*



It would need a long life, completely devoted, to acquire more than a very superficial knowledge of the varied features of this vast metropolis. Look at the labyrinth of streets, roads, and lanes, filled with a dense population, getting their living somehow, going continuously from youth to manhood, and from manhood to the grave; and consider how little of all this is known to the generality of those who form part of the remarkable whole. Many of the districts have a character of their own, and all give matter for thought to reflective wanderers. The spot to which accident has led us in the City-road, a triangle bounded on one side by that great thoroughfare, by East-road, Murray-street, and Edward-street, leading up to

Wharf-road, including the Eagle Tavern, is but a small patch, but it is covered with buildings, densely inhabited, and shows a peculiar style of dwelling, which, in consequence of decay and the awakened spirit of improvement, is fast disappearing. The City-road, although lined with buildings that are irregular and without heauty, is picturesque and striking. Trees are struggling in the front gardens of public houses, while in what were the fore-courts of other residences are shed-like shops, occupied by photographers, pigeon-dealers, bird-cage makers, and the pursuers of their unsettled occupations. In one garden are huge iron boilers, while others have become stone-yards and carriage depôts. Shoe-blacks (shining result of modern philanthropy), blind musicians and readers, and other wanderers, throng the pathway, attracting attention in their various ways. Here is an unfortunate mechanic, who has lost a limb by machinery; his case is painted on a large canvas, which is unrolled to view. It shows the accident, the conveyance of the sufferer to the hospital, a medical operation, the sick ward, and other scenes. There are others who also employ art for the purpose of exciting the charity of the passengers: shipwrecks, fires, and coal-pit explosions are shown in a peculiar style. Heavily-laden omnibuses, cabs, and other carriages, roll thickly along, ploughing up the macadamized roadway, and making such furrows as to suggest the desirability of tramways forthwith.

Walking along Mount-row—a short cut, which in the morning and evening is thronged with well-dressed wayfarers, proceeding to and from business—we come to Winckworth-buildings, on which is the date 1766, at about which time many of the dwellings here were built. Long streets of small two-story houses run in various directions, some in irregular lines; others, of a more modern build, are on a regular plan, the streets running at right angles; and it is worthy of remark, and very fortunate, that the chief thoroughfares are wide and of great length. There are, however, some narrow passages, in which the corresponding amount of sickness is to be met with.

It is understood that the neighbourhood is generally well drained and tolerably healthy. This may partly be attributed to the gravelly soil. Moneyer-street, Union-street, Cross-street, and some other parts must, however, be excepted, and steps should be taken to get rid of the cesspools which are

there to be met with. There are in Hoxton persons who think that the District Board are not sufficiently active in this and some other matters connected with the public health. Most of the rooms in the houses are very small, and many of them overcrowded with families. Here the usual complaint is made of the want of cleanliness and sanitary knowledge. One visitor, who is much engaged amongst the poor, complains of the difficulty there is in getting them to attend to matters which are actually for the benefit of their families, and may save life and health. Some think themselves insulted if suggestions be made to them. As an instance of the need there is for diffusing knowledge of the means by which life may be preserved, it may be mentioned that a decent-looking woman lately hurried to a surgeon in this neighbourhood and stated that her child was in convulsions. He gave her some medicine, and told her to put the child into a hot bath. Some hours afterwards she came back to say that the child was still in fits. On this the surgeon, surprised to hear that the child had been so long in such a state, went at once to see what was the matter, and found her standing in a pail, naked, in the draught of two doors, with her feet in about three inches of water! Such an occurrence and a hundred others that might be mentioned show, as we have often urged, the great need which exists for making the general laws of health a part of education in our national and other schools. It is difficult to deal with the adults of the present generation, but we may work usefully on those who are rising. The Ragged Schools and Reformatories are proving their usefulness. These are checking juvenile crime, which, in a large majority of cases, is the result of the want of right employment, or the chance of doing well. Reared in poverty and under miserable conditions, accustomed from the earliest years to neglect and the worst kinds of vice, thousands have been made into dangerous and expensive criminals with little will of their own. In a marked way Ragged Schools are improving the children in some of the worst parts of the metropolis. Boys and girls, who were formerly in the most deplorable state, may now be seen cleanly dressed, practising orderly habits, and looking hopefully to the future. Some are put into the way of going to sea, and others recommended to situations, where, instead of being in misery and disgrace, they are made comfortable themselves and useful to others. These schools, in which earnest men and women devotedly labour, are hidden in back slums from the view of the more prosperous classes of the community. It is most important, however, that they should be visited, and that all should in their various ways assist in supporting them and extending their usefulness.

In connection with many of the Ragged Schools there is a voluntary Reformatory and School of Industry, where, according to the extent of the means available, boys are sheltered, fed, and provided not only with book knowledge, but are taught by the labour of their hands to earn an independent livelihood. Many of the boys who have (to them) the great privilege of occupying these homes, were found in a state of destitution; others either had committed, or were on the brink of crime; some, the children of respectable parents, had become so spoiled by associates, that it was necessary, to prevent further contamination to the family, to remove them to where they could be kept under proper control: for the support of such children the parents contribute according to their means. During the stroll of which we have been speaking, we heard of one case worth mentioning. It was of a widow left with six children, whom she managed with difficulty to support by her labour. The oldest boy, twelve years of age, had fallen amongst had companions, and had been persuaded to commit a trifling act of theft. Whenever he went into the street, the older boys persuaded him to do worse; causing him to commit acts which they, being well known by the police, were unable to execute. This boy was on the highway to ruin, when a person who had influence with a Ragged School obtained admittance to it for him.

Since then the lad has been educated, fitted for and apprenticed to the sea; and it was but the other day that he, on returning from a voyage, was able to assist and comfort his mother. But for the Ragged School and Reformatory, this boy would not only have been lost to good himself, but would probably have led his brothers into the same road.

The cost of crime in Great Britain, and its evil results, are enormous. The statistics which prove that since the introduction of those schools and reformatories, the convictions for illegal offences amongst the young have declined at the rate of from 25 to 30 per cent., ought to obtain for them increased aid. It has been shown that the teaching of these institutions is more useful than that of the prison, the hulks, or the langman.

Opposite Winckworth-buildings there is a tall and singular-looking building, of considerable size, of massive brickwork. Many of the windows are very small, and present the appearance of the port-holes of a man-of-war. This is now let in tenements; but was originally erected for a workhouse. In some parts around, the houses have a squalid appearance: none more so than Mount-pleasant, Northward, beyond Murray-street, houses of a better and larger description have sprung up, which gain by the contrast. The vast assemblage of streets and squares of houses of a good class which stretch quite to Kingsland, and almost to Dalston and Newington, have grown up like mushrooms. Little more than twenty years ago Murray-street abutted upon the fields. Since then London has stretched upwards of two miles in that direction. The increase of the population of Hoxton and the adjoining districts has been immense.

In the group of houses under notice it should be mentioned that although the streets are wide, and health better than in Agartown and some other places which might be pointed to, there seems to be plenty of employment for undertakers, some of whom display paintings of cemeteries and stately processions. One exhibits a large picture of his horses and stables. Great rivalry seems to exist in this solemn business, and advertisements are made so agreeable that one might be induced to look upon a funeral as a somewhat pleasant occurrence.

The sweeping of the streets here is for the most part badly attended to. Those whose duty it is to supervise this neighbourhood should not be content with looking at the front of premises. Near the Eagle Tavern there are some shops of a better description. Some of them are occupied by those who deal largely amongst the poor on the tally system. Not far off is a curious mart for dogs. Here, in kennels fashioned somewhat in the style of Jaques the First's reign, are dogs of many descriptions, and in front of the house is a large sign, on which are shown all the varieties of the species. Sheds for drying skins and some other matters near the back of the Eagle Tavern, with its accompanying theatre, the Grecian Saloon, are objectionable, and cannot add to the healthfulness of that place of resort. On the evening in question hundreds were flocking into it to witness "The Pirate's Love, or Ocean Birds of Prey," and other highly-spiced entertainments.

Already the hand of improvement is busy with the houses round about, and before long buildings of a better class will probably be raised in their place.

In a shop not far from Nile-street, which was literally filled with stalls and "Buy, buy, huyers," a number of poor women were waiting, probably to be paid. It is said that there are in the metropolis more than 30,000 women who earn a miserable income by the various departments of needlework. Their condition remains a sad one. Competition in trade, the large number who seek this kind of work, and other causes, make the value of it so small, that it will be a mercy when it is superseded, and this large body of women, instead of trusting to such an insufficient dependency as this is, are led to look in other directions for employment.

The large users of needlework, the makers of soldiers' and other rough clothing, in many instances carry out a system which is con-

stantly pressing upon the very poorest. They give out their work to a certain limited number of persons who are able to find security for the materials. These persons are every now and then underworking each other. Having undertaken a certain amount of work, to be completed in a given time, and at the lowest cost, these sub-contractors look around for assistance, and perhaps each distributes the materials to seven, eight, or more persons, who are in a less prosperous condition than themselves, but who are "good" for the value entrusted to them. These again often divide the work. Each process must, of course, be attended with profit, and so does this system work that the sum which comes to the actual sewer, the poorest of the whole, is not sufficient to procure the commonest necessaries of life.

In Whitechapel and other eastern districts women may be met with who have been well brought up and in comfortable circumstances, and who, by the incessant labour of from sixteen to seventeen hours a-day, can with difficulty earn in the week 3s. 6d. Even this miserable remuneration is declining, and there is a difficulty in getting regular work. This, in some measure, may be attributed to the use of the sewing machine, not only in the houses of the rich and middle classes, but also of the large manufacturing clothiers, and amongst the sub-contractors to whom we have referred. Sewing machines have been so much brought into use, that either the work of the poorer persons at home is reduced in value, or is altogether dispensed with.

We have from time to time noted the terrible sufferings, the temptations and troubles, which beset those who have no reliance but on this kind of work. Such is their hopeless condition, that we cannot help whispering a belief that, though the immediate distress would be much, it would be an advantage if the needle and thread were altogether superseded, and placed in the Brompton Museum with the flint-and-steel tinder-box, the old-fashioned spinning-wheel, and other curiosities.

During the past few years, most praiseworthy efforts have been made to better the condition of needlewomen; and we believe that, in large and important millinery establishments in the fashionable quarters, improved arrangements prevail. Homes to which we have directed attention have been opened for the use of young women engaged at those places; and lately an institution has been established in Lamb's Conduit-street, for the same class. One of its chief objects seems to be an endeavour to provide work without the loss of profits consequent on the middle people to whom we have alluded. It is mentioned that, in connection with most establishments, unless a woman can deposit sums of from 10s. to 1l. and upwards, they cannot be provided with work. It is proposed, in order to prevent the institution from being entirely of a charitable nature, that those who wish to avail themselves of the advantages of the institution in providing work without the loss of the grinding profits mentioned, should pay towards the support of the establishment a small percentage on the sums earned. It is a matter of both surprise and sorrow to notice how slowly such means as these are appreciated by the classes it is wished to serve. The proper development of women is one of the most urgent and important social problems of the time. The question needs to be looked at, not from a prejudiced or an old-world point of view, but with thoughts of the changed conditions of society, and the marvellous discoveries and improvements which have been made. The electric telegraph is weekly extending employment to educated and respectable females. The increase of the national schools, not only in this country, but in the colonies, opens out a source of income to those who are fitted to instruct. When we have met in dismal dens women of superior ability in great poverty, we have thought of the great need there is for intelligent nurses for the sick, and that they might thus usefully employ themselves. In houses of the middle classes it is particularly desirable that "Mrs. Gamp" should be superseded by women of a different stamp; and much good would be done if arrangements

could be made on an extensive scale, so that females might undergo an examination as to their fitness for nursing, not only the sick, but young children. Females with diplomas of ability in this respect and certificates of character would be much sought after and well paid. Removing the pressure from other kinds of employment would improve the condition of those remaining.

Poor woman! poor woman! And yet, as our greatest female poet says—

\* Be satisfied.  
Something thou hast to bear through womanhood—  
Fecund suffering answering to the sin,  
Some pang laid down for each new human life;  
Some weariness in guarding such a life,  
Some coldness from the guarded. But thy love  
Shall chant its own healings  
After its own life working. A child's kiss  
Set on thy sighing lips shall make thee glad;  
A poor man served by thee shall make thee rich;  
A sick man helped by thee shall make thee strong.\*

Our triangle of houses has more than three sides, and offers many points of view, but we may not now look farther.

#### HISTORY AND CONSTRUCTION OF THE PIANOFORTE.\*

At length the time had arrived, when, by a discovery of inestimable value, the dominant defect of the harpsichord and its precursors was to be removed, and a new era opened in the annals, not only of all musical instruments of that most prolific class, but of music itself, as connected in its development with one of the most mighty vehicles ever devised for its expression—the pianoforte.

The simultaneous advancement of art in general with mechanical science is so evident that we need scarcely insist upon it; but in the case of music the rule seems more than usually perceptible, and we see at once that though the genius of Beethoven, or Mozart, or Weher, or Mendelssohn, would have burst through the trammels of the most primitive specimen of the offspring of the key-board, yet many of the masterpieces they have bequeathed to us would never have been written, but for the means afforded us to execute them by the magnificent triumph of mechanism presented to us in the pianoforte.

The discovery of the great principle that distinguished the pianoforte from all instruments of the same class that had preceded it, was made almost simultaneously by three foreigners—Marius, a Frenchman; Schröter, a German; and Bartolommeo Cristofali, an Italian. The claims of a Frenchman would naturally be the first recognised by a Frenchman, in accordance with time-honoured custom, and accordingly, M. Féris, by the way, a Belgian, in his "Sketch of the History of the Pianoforte and of Pianists," before alluded to, gives the priority of claim to the Frenchman, and states that he submitted his invention to the *Académie des Sciences*, in 1716, whilst Schröter did not complete his till 1717, and Cristofali not till 1718. Again, in his treatise entitled "La Musique mise à la Porte de tout le Monde," he says:—"As early as 1816, a manufacturer at Paris, by the name of Marius, had presented to the Academy of Sciences, for their examination, two harpsichords, in which he had substituted little hammers for the strips of wood used to strike the strings. Two years afterwards Cristoforo, a Florentine, improved upon this invention, and made the first piano, which has served as a model for those which have since been made."

Dr. Burney, in "Rees's Cyclopedia," says, "There is a minute account of the invention, and a description of the pianoforte in the 'Giornale d'Italia,' printed at Florence, 1711. This instrument was invented at Florence, by Bartolommeo Cristofali, harpsichord maker, a native of Padua, in the service of the Grand Duke of Tuscany." To the same effect are statements in the "Oxford Encyclopædia," "Wilkes's Cyclopedia," and the "Encyclopædia Britannica," &c.

The claims of Cristofali might, nevertheless, have been superseded, and his very name forgotten, but for a curious account of his invention in the *Giornale de Letterati d'Italia*, Venice, 1811, written by the celebrated Scipione Maffei, under the significant title of "New Invention of a Harpsichord, with the piano and the forte; also some Remarks upon Musical Instruments." This interesting article, which is printed by Dr. Rimbault, in the original Italian, entire, accompanied with an English translation, gives so clear and detailed an account of the substitution of hammers for jacks, with the mechanism of working

them, and all the other novelties of this improved instrument, that the claims of Cristofali to priority of invention can scarcely again be called in question.

It is singular that the same idea should have struck both Marius and Schröter, a few years later, and without the slightest suspicion of collusion with Cristofali, or with each other; but so it was. Engraved plans and descriptions of Marius's "Clavecins à Mallets," were published in the *Recueil des Instrumens et Machines approuvées par l'Académie Royale des Sciences*, 1716. These inventions of Marius displayed great ability. They consisted of four instruments, one in the form of the common harpsichord; another with a mechanical contrivance above the strings; the third, vertical; and the fourth wherein both jacks and hammers were used. The first differed from the obichord only in this, that each tone of the instrument was furnished with three strings, and that the hammers, the weight of which restored the key to its position after the key had been struck, were faced with leather for the purpose of softening the tone. As for the rest, the hammer, which stood perpendicularly upon the key, was carried directly to the string by the key itself, without any intermediary aid, and without an escape movement. In the second instrument, he approached still nearer to the desired result, by arranging the hammers in such a manner that they swung in a kind of stirrup. By this means they were independent of the keys, which, meeting them in their course, impelled them against the string; and the hammer fell after striking the string, even though the performer kept his finger upon the key. By different combinations, Marius had rendered his mechanism fit to be placed either above or below the strings. His third *Clavecin à mallets* was a verticle one, in which the key impelled a rod, furnished with the hammer, directly upon the string. His last invention, as we have stated, united the two principles of the jack and the hammer.

The remaining claimant to the invention is Christopher Gottlieb Schröter, born at Hohenstein, in 1699. In a letter, dated 1738, printed in Mizler's "Musikalische Bibliothek," Leipsic, 1752, he thus alludes to his invention:—"Indeed, some of these artists, who for several years have understood one of my inventions, have given it out as their own. In 1717, I constructed at Dresden, after much consideration, the model of a new clavier with hammers, partly with, partly without springs, upon which one at pleasure might play loudly or softly."

In explanation of this invention Dr. Rimbault observes:—"According to Professor Fischoff, the mechanism was simple. The hammer consisted of a lever about 3½ inches in length, moving on a pivot with a leather head; the lever rested near the pivot on a pin with a leather head, screwed into the further end of the finger key; and the pin was of such a length that, when the key was slowly pressed down, the face of the hammer came within about a quarter of an inch of the string; but when the key was smartly struck, the hammer by the rapid motion communicated was thrown up to give the string a blow, and, instantly recoiling, fell on the leather head of the pin, and left the string free to vibrate."

Thus were these three ingenious men, in different parts of the world, engaged simultaneously in elaborating an idea individually conceived and independently worked out, as far as we know to the contrary.

Be that as it may, the object of centuries was accomplished, the grand discovery made, and a legacy of inestimable value bequeathed to the world in the instrument distinguished by the indelicate name of the Pianoforte.

Before adverting further to the historical and constructive details contained in the work of Dr. Rimbault, we may briefly glance at the influence this world-renowned instrument has exercised upon the musical art generally. When we include in the long list of writers for and performers upon the pianoforte, the names of those great composers who united in themselves the qualifications of the greatest pianists of their period with the highest genius for musical invention that the world has ever produced, such as Handel, Haydn, Mozart, Beethoven, Weber, and Mendelssohn;—men, who not only left behind them works for that instrument which will serve as models for all ages to their successors, but works of far higher aspiration in the masterpieces which have stamped them for ever as the giants of the orchestra and the chorus; we feel how illustrious are the names that have graced its annals.

These stars of the first magnitude, however, like the lesser lights of the musical system, owed in

\* See p. 560, ante.

great degree the growth and development of their talents to the improved condition of the instrument of their predilection, and their names form time-marks in its history that will not readily obliterate. The student in musical history looks back with self-gratulation at the period, when, sustained sounds not being capable of execution on the early variety of instruments of the class, it was found necessary to supply their place by simple and double trills, and numerous similar devices, with which the works of Diruta, Squarcialupi, Gabrieli, Schmidt, Merulo, and Frescobaldi abound. Their works, like those of their many imitators of the fifteenth century, consisted mostly of *ripiamenti* of the themes of madrigals or motets, variations to French or Italian songs, and dances, more or less ornamented,—music analogous to the means of playing it. With the increased perfection of the instrument the art of playing progressed, and Frescobaldi, born in 1591, may illustrate a fresh epoch in it. This great artist was the first who wrote exclusively for the harpsichord, and, as Fétis says, may be considered as the founder of the harpsichord school; for, before his time there was no difference between the music for the clavicord, spinet, and harpsichord, and that composed for the organ. His many pupils spread his method, and the residence at Paris of one of the most distinguished of them, Froberger, much influenced the progress of the harpsichord among the French about the middle of the seventeenth century. The style of Froberger was adopted by Chambonnières, whose harpsichord pieces attest his ability. These, like all of the period, consist of allmandes, sarahands, gígues, and other dances, well laden with shakes, heats, and the like. Of the school of the latter were the elder and younger Couperin, the latter of whom, called the great, also effected much among his countrymen. Still more was effected in Italy by Scarlatti, who totally eclipsed his predecessors, and whose "Harpsichord Lessons" are a study for pianists to this day. In Germany, J. S. Bach carried the art still farther, and by his preludes, fugues, and fantasias, enlarged the domain of the instrument. Later, Mûthel and Wagenseil introduced the *sonata*, a form of piece consisting of a regulated number of movements, which gradually supplanted the *loccata*, a piece in one movement only. In France, Rameau composed the first *concerto* for the harpsichord heard in Paris, and at the same period Bach did the same in Germany, and Handel in England.

Such were a few, very few, of the celebrities who prepared the way for that race of pianists whose name is legion. Of them, in an inverse ratio to their superior claims and numbers, we must name still fewer. Nor can we stop to mention even these with regard to date, but rather in respect of school. These schools may be divided into the classical, the romantic, and the bravura, and (we smile as we write it) the school of the future! In the classical school of pianoforte writers, besides the immortal names of Mozart, Beethoven, Weber, and Mendelssohn, we may include such writers as Clementi, Cramer, Dussek, Steibelt, Woelfl, Hummel, Kalkbrenner, Schubert, and Moscheles. The name of Clementi marks a period of peculiar interest, and many of the greatest of his successors (including Beethoven himself) have acknowledged with gratitude that they owed to the works of "the father of pianoforte music" what they missed from his instruction. The romantic school is best represented by Chopin, whose original genius has provoked endless imitators, but found no rivals. The bravura school includes such names as Herz, Czerny, Thalberg, Liszt, Döhler, De Meyer, Heller, Henselt, and a host of others, who consider the surmounting of enormous difficulties a legitimate object where talent is so plentiful, but genius so scarce. The "music of the future" of Schumann, Wagner, Liszt, David, Berlioz, &c., does not come strictly within the range of our subject; but we may draw a moral from its failure, and apply it to the pianoforte as a lesson to avoid. To name the writers for the pianoforte of the present century would be difficult, to name the players impossible. Like the fruits of the dragon's tooth sown by Cadmus, they seem to spring from the ground ready armed for the contest, and like those ready-made warriors, spare no efforts to annihilate their rivals. The result, however, is, that the short space of fifty years has produced a race of players of matchless skill, simultaneously with the rapid improvement of the instrument that forms the vehicle for its display.

To return from this digression: the progress of the pianoforte on the Continent was at first but slow. Of Cristofali and Marius we hear no more, but Schröter was better appreciated by his fellow-

countrymen, and Silbermann, of Freyberg, or of Strassburg, improving upon his discoveries, is generally considered as the inventor throughout Germany; it was upon one of his pianos that J. S. Bach performed before Frederick the Great. Stein, of Augsburg, a pupil of Silbermann, settled in Paris in 1758, and became celebrated as a maker, and his pianos are the subject of repeated mention by Mozart. Streicher, son-in-law to Stein, settled in Vienna, where he formed an extensive manufactory for pianos. He died so late as 1833. Dr. Burzey, in his tour in Germany, gives many anecdotes illustrative of the progress of the instrument in that country.

In France, the discovery of Marius brought him no success, though others profited by his labours; but down to 1779, France had remained dependant on Germany and England, until the brothers Erard removed the reproach. The history of Sebastian Erard, horn at Strassburg, 1752, affords another instance of the triumph of real genius over drawbacks of birth and fortune. In the house of the Duchesse de Villeroy, at Paris, he found a home and patronage, and there he constructed his first piano. Quitting the Hôtel Rue de Bourbon, Faubourg St. Germain; which the efforts of the two brothers finally rendered one of the finest in Europe. The Revolution drove Erard to London, and there, as in London, he filled his manufactory with instruments of his own invention. In 1796 he returned to Paris, and introduced his first "horizontal grands" of the harpsichord shape. About 1808, Erard returned to London, and crowned his reputation by the invention of the double-movement harp. Finally, he succeeded in inventing a grand piano, uniting every excellence of which the instrument is susceptible. He died, near Passy, in 1831, and his funeral was attended by some of the most distinguished artists of Paris.

We can only allude to one more foreign manufacturer of importance, Ignace Pleyel, born near Vienna, in 1757. As a composer, he ranked high in times long past, but as a competitor with Haydn, he stood no chance; therefore, whilst the one is ever welcome, the other is obsolete. Nevertheless, he occupies a respectable niche in the temple of fame, and illustrates a period in the art. In 1795, he turned music publisher and manufacturer of pianofortes, at Paris. Having realised a competency, he retired to the country to enjoy it, but the revolution of July produced a fatal effect upon him, and he died in 1831.

We have evidence that the pianoforte was known in England about 1767, as it was introduced that year on the stage of Covent-garden Theatre, as "a new instrument." An old play-bill, in the possession of Messrs. Broadwood, bearing date the 16th of May, 1767, setting forth the performance of "The Beggar's Opera," contains the following notification:—"End of Act 1. Miss Brickler will sing a favourite song from Judith, accompanied by Mr. Dibdin, on a new instrument, called Pianoforte."

Backers, a German, is supposed to have been the first who manufactured the pianoforte to any considerable extent in England, and the name-board of a piano, inscribed "Americus Backers, Factor et Inventor, Jermyn-street, London, 1776," is still in existence. The manufacture was early taken up by Tschudi, Stodart, Kirkman, Zumpf, and others, and such was the rapidity of its progress, that within the short space of ten or fifteen years, the harpsichord ceased entirely to be made. A suitable style of music and school of players were not long wanting. Muzio Clementi founded both.

We now arrive at the period of the foundation of the two firms of Broadwood and Stodart, and will simply condense Dr. Rimbault's narrative of their origin.

John Broadwood, born in Scotland in 1731, when about twenty years of age, reached London in search of employment; and, entering the firm of Tschudi, the eminent harpsichord makers, became his son-in-law, partner, and successor. The earliest notice of the square form on his books is dated 1771; the earliest of the grand, 1781. This ingenious artist died in 1812, aged 81, and was succeeded by his son, James Tschudi Broadwood.

Robert Stodart, fellow-workman of John Broadwood, succeeded Americus Backers, and founded the firm of Stodart. The Patent Office books, under the date Nov. 21, 1777, contain the entry of a grant to him, "for his new invented sort of instrument, or of grand forte piano, with an octave swell, and to produce various fine tones, together or separate, at the option of the performer."

Jacob Kirkman, founder of the firm of Joseph Kirkman & Son, was succeeded by his nephew

Abraham, who was among the early improvers of the pianoforte. Harpsichords, nevertheless, were made by this house as late as 1800.

The names of other makers, and their improvements, are to be found in Dr. Rimbault's work, but we must content ourselves with one more in addition to those already cited; but it is an illustrious one.

Muzio Clementi was born at Rome in 1752, and at twelve years of age had attained such proficiency in music that a gentleman of fortune, Mr. Beckford, brought him to England to complete his studies at his expense. His great talents, however, soon made him independent of patronage, and at an early age he was considered on a par with the greatest contemporaries. Visiting the Continent, he competed with Mozart at the court of Vienna, with equal credit to both. In 1784, Cramer, then about fourteen, became his pupil. After this he again visited Paris, but returned the following year, and continued in London till 1802, enjoying the highest reputation as composer, pianist, and instructor. On the failure of Longman & Broderip, by which he lost considerably, he was induced to engage in the music-publishing and pianoforte-making business. A new firm was formed, at the head of which was his name, and from that time he ceased teaching, and devoted himself to the improvement of the instrument he himself had rendered popular. He was associated in the manufacture with Mr. F. W. Collard. Thus arose the great firm of Collard & Collard.

The pianoforte appears generally in three forms—grand, square, and upright; in the two former the strings being horizontal; in the latter vertical. The form of the grand—that of the harpsichord—is naturally suggested by the graduated length of the strings. It has three strings to each note, admits of the best kind of mechanism for the "action," and is the most advantageous in many points of view. To save expense and economise space, many modifications have been adopted: thus the *bi-chord* and *semi-grand* have but two strings, and the *boudoir* or *collage-grands* have shorter strings, and take up still less room. The oblong rectangle, commonly called the square, being the form of the German clavicord, was probably the first shape the piano assumed. It remained, however, an inferior class of instrument till the adaptation to it of the improved action of the grand, which has now distinguished it by the name of *grand-square*; and, as thus improved, it is perhaps the best substitute for the grand. The form, however, is objectionable on mechanical grounds: it is difficult to strengthen in the framing, and the oblique position of the action, with respect both to strings and keyboard, is unfavorable on many accounts to its perfection.

The upright form, so desirable for small rooms, and so superior as regards symmetry, has had several mutations in its history. The upright grand was its first phase; being no less than a grand set on end, and raised on legs 2 or 3 feet above the ground, the strings being struck at the lower end.

The cabinet soon supplanted this unwieldy instrument: a compact form, wherein the frame was brought down to the ground, the blow being given in front and at the upper end of the strings, through the medium of levers and long vertical rods from the key to the hammer. It was introduced at the early part of this century, and its elegance occasioned it a great demand. Its principal objection, however, was its height, about 6 feet, and length of action, which much deteriorated its delicacy and touch. As a remedy to these defects, a shorter and still more elegant variety was invented, introduced, about 1812, as the *harmonic*, but now called the *collage*, varying from 4 to 5 feet in height; and, in 1827, the *piccolo*, standing only 3 feet 6 inches from the ground, which has served as a model for many others of the same size under different names.

In uprights the strings are struck against their rests, which is generally considered the most favourable direction for the blow, and much simplifies the framing. Attempts have been made to apply this method to grands and squares, but it is not yet generally used.

The compass of these instruments was originally but five octaves, from F below the lowest note of the violoncello to the fifth F above it; and when, in time, the compass was extended upwards to C, making five and a half octaves, these extra notes were known as "the additional keys." Another half octave upwards to F, was next added, and subsequently half an octave downwards to C. Another note was then added in the treble, and the compass thus arrived at, from CCC (called on the organ 16-foot C) to G, six and a half

octaves above, remained the extent for some period. Six and three-quarter octaves were next obtained; then six and seven-eighths, and finally, the best grands and uprights of the present day present the magnificent compass of seven octaves, from A to A, or from G to G, an extent sufficient for any amount of display that the most insatiable excitement can require.

For the technical details of construction of the instrument we cannot say more than refer our readers to Dr. Rimban's book. The operations requisite in the four great divisions of parts that form the structure of the instrument, be its description what it may, viz., the framing,—a portion of the utmost importance, as upon its strength depends its power of resistance to the strain, which, in a grand, will amount, perhaps, to eleven or twelve tons; the *stringing*, the material and thickness of the wire, and method of securing it; the *action*, by which is meant the machinery through which the impulse of the finger is given to the string; and the *case*, which belong to the cabinet-maker's or decorative art, are there given at some length. The manufacture of pianofortes in London is a most important branch of trade, and, if the estimates contained in Mr. Pole's "Review of the Musical Instruments in the Great Industrial Exhibition of 1851" (a clever little work to which we are indebted) be correct, the produce of the London manufacture alone amounts to near a million sterling; the number of workmen employed in it are between 3,000 and 4,000; and the extent of this trade in England is three times that of France. The principle of division of labour is adopted in it to a considerable extent, and, as an illustration, we may state that a grand pianoforte passes through the hands of upwards of forty different workmen, each, with his assistants, occupied with a special branch of the manufacture.

Some observations by Mr. Pole, upon the acoustical defects of the instrument, are of value. "Notwithstanding the great intelligence and care that are brought to bear on the manufacture of pianofortes, we doubt whether the aid of science has been called in to the extent that we should wish to guide their construction. Arrangements are often seen which appear unwarranted by the principles of mechanics; and, generally speaking, the engineering of the construction is not so well studied as it ought to be. But, in the application of acoustical science, pianoforte-making is yet more behind hand. The theory of the production of tone, at least as regards its quality, is at present wrapped in mystery. Few persons seem to have any definite idea what are the essential conditions under which 'a good tone' in general, or, still less, any particular quality of tone, can be insured. A series of tentative experiments leads to certain methods of construction which are considered good; and all possible care is then taken to avoid defects in the manufacture; but the result is, after all, frequently due to some fortuitous combination of circumstances which cannot be foreseen. Hence arises the variety in the qualities of tone, not only of instruments by different makers of equally good repute, but also in those turned out from the same house, and made apparently in precisely the same manner. Nay, even in the same pianoforte it frequently happens that the practised ear can detect considerable variations; sometimes a certain portion of the scale may be far superior to the rest; sometimes a few notes, here and there, may be deficient in resonance; sometimes one note only in the same instrument may be faulty; but the reason for these anomalies it is impossible to explain."

One more observation we may make before quitting the subject. Men of intellect are beginning to turn their attention to "cheap" pianos; new and more simple actions are being invented; and we are quite willing to believe with Dr. Rimban that "the dawn of that day is visible when the 'box of stretched strings,' giving forth sweet sounds, shall be in every man's house, his comfort, his solace, his companion, ay, his friend! Let us, then, look forward to that day. Shall we not be a happier, if not a better, people?"

#### ROBERT STICKELLES, ARCHITECT.

In Milizia's "Lives of Celebrated Architects," vol. ii., p. 159, of Mrs. Cresy's translation, mention is made of one "Stickles" who "was also an excellent architect of this time" (the Elizabethan period); "and, in 1596, he constructed a galley which would take to pieces." Walpole ("Anecdotes," Wornum's edit., 1819, i. p. 185), states that "Stowe mentions one Master Stickles, an excellent architect of that time, who, in 1596, built for a trial a pinnacle that might be taken to pieces;" *Chron.* p. 769." I have not been able

hitherto to find any other authority for this laudatory notice of this member of the profession: it was, therefore, with some satisfaction, whilst lately turning over a volume of the Lansdowne MSS. in the British Museum, when making an abstract of another paper for a friend, that I observed the signature "Robert Stickelles" to two papers. The first document is in a very plain hand; the second more cramped, with a few words almost unintelligible. I send a copy of both of them, thinking they may prove acceptable to some of your readers, as illustrative of thoughts upon art during that renowned period. We must regret that he did not add the answers to his own questions.

WYATT PAPWORTH.

#### NO. 1.

##### "PROPOSITIONS FOUNDED UPON THE LEARNED & SKILLFUL.

1. First, it would be known (whether the Workes Moddarn; or the Workes Antiques; is of most Efecte; & which of them Contain most Trueth; They both consist in all things Limge, and being seprated; the one is Sencible, the other insencible, no Sencles thing can be perfet, before by Lif it be maid perfet;

2. Seconde, ther is A pece of ground to Build A manner house, upon; which Containeth in length 107 foot, & in Breadth 84 foot, nows it wold be known, howe high I might Build upon that ground, that I Build not to high, nor too Loey;

3. Thurdly, the Romnes or offices for that house upon that ground (before Rehersed) being contrived by just p'portion; then By the Breadth of the Romne to gene the heath, that the heath be no mor, nor no Les then just p'portion doth Requir;

4. Fortly, havinge the just heath of the storis then to shewe howe Beige or howe thicke the storie post or wails shalbe that they beut too beige nor too Letell;

5. Lastly, A shipe is too be Builde, of 300 Tones in Burden sensuashl in all seas; now it wold be knowne howe Beige her kelle, Reibes, or Tembers, Beames, Wayles, or Bendes shalbe that no won part of them be to Beige nor to Letell;

I shewe thes p'p'otions to the ende I wolde have them exzamed, proned, & tryed, by the Learned & Skillfull; & for thes p'p'roctions Ill make perfet demonstration; fore that I see all Buildings groundwed upon the emperfet sence, the bookes of Architectur, Victrices & all thoes Authers have taken the wronge sence; ther inwards works ar dead when they shewe no Lif in ther outward Doveigens.

ROBERT STICKELLES."

This is endorsed "26 No. 1597.

Stickelles' p'p'roctions." Lansdowne MSS, 84, No. 10, p. 25.

#### NO. 2.

##### "BYDENINGS FOR THE SEAS, NOT USED.

Comanded by Hier Mat<sup>e</sup>, to take the vewe therof, Sr frances Drake

Delivered by plate to shewe to Mr. Backer & by the bearear concealed.

In vented by Roh. Stickeles; & put in practkes by Gowen smith.

Ther is but on trnethe to doe any thinge by whatsoever, to make a shipe beast wayed, or yarest in her goieque. Ezannun thes thynges in one [?] me], and you shall fynd it to be True.

Knowenge what the Burden or Tonnage of the shippe shuld be then to shewe by preporction, The biggnes of the kell, the biggnes of the Tembers, the beames, walles, or bondings, of the shippe, so that they shall not be to beigge, nor to lettell, if to beigge, not good for the shipes waye, if too Lettell, not ducrabte but of short continuance.

##### BYDENINGS FOR THE LAND, NOT USED.

For the byldinge of an howse of state, then to shewe by the quantite of the ground deleyvered, howe hie I may bylde that I byld not to hie, nor to loe.

And that by that quantite of ground before rehersed, the offices or Romnes beinge contrived by due preporction, then by the breadthe, the heathe may he geven that the lyght shalbe no more, nor no les then neade shall requiere.

Then havenge the heathe of the storries, to shewe howe greater or howe thicke the wales or postes shalbe, that the shall not be too begge, nor to lettell.

Thes thynges consistethe in man hime self, for

that man is the proporetinall & resonable creature, & therfor whatso is done withoute thes Rules of proporetion, is but unsearthen matter, the searayn have ther true quantities and measurers, & the unsearthen ar delivered therow Ignorance.

Ther ar too sortes of byldenges, the one in sence; the other withoute sence; The antikes in sence; the moddarn withoute sence; Because it is from Cirklle Demonstration, withoute sence; for that no cirklle Risethe in evennes of number; the antikes allwayes in evennes of number be cause the ar derived from an Ichnographical ground; it the uneven may he broght into proporetions, as well as the even.

Ther is no mor but Right & wronge in all thynges whatsoever, The squer Right the Cirklle wronge.

ROB. STICKELLES."

This is endorsed:—

"Robert Stickelles."

(The following has been erased:—

"Recommended by y<sup>e</sup> Erl of Derby for y<sup>e</sup> office of Surveyor of her ma<sup>t</sup> workes."

"Observations on y<sup>e</sup> proportions of Buildings by Robert Stickelles, recommended for y<sup>e</sup> Surveyorship of y<sup>e</sup> Queens Works. Sept. 1595."

Also further endorsed:—

"Pompe of Buyldeing

Stickelles."

Lansdowne MSS, 84, No. 10, p. 26.

#### BRUGES.

All tourists who have visited Bruges have remarked, in that ancient Flemish city of precious memory, a magnificent chimney-piece of wood, marble, and alabaster, of the Renaissance, in one of the halls of the court-house, or *palais de justice*. To admire this work, the Parisians need not stir beyond the precincts of the Louvre, where there exists an exact reproduction, made by the French Government in 1838.

This hall at Bruges is called *La Salle de Franc*, the name of a canton near the town, formerly governed by a magistrate of great influence, and which became, after a lapse of time, the fourth member of the Flemish States. As long as the jurisdiction of the "Frane de Bruges" lasted, viz., until the French Revolution, this piece of sculpture remained almost unknown; and was subsequently saved from pillage by being taken to pieces, and hid in a garret of the palace of Philip the Good. Calm being established, the Government determined to restore the monument to its original condition, and they moreover succeeded in discovering the names of the statues.

Tradition, according to local guides, gives those of *Enagier Holtzman* and his daughter; but it is possible that it may be *Haltmas*, the device of Maximilian of Austria. According to the researches of M. de Hondt, it was a trophy erected to the honour of Charles Quint, in memory of his victory of Padua, and the treaties of Madrid and Cambrai. In absence of the information as to the occasion of the monument being erected, owing to a painting lately found of Jacques Van Oost le Vieux, the authorities have been able to contemplate the representation of a solemn court assembly of the Frane magistrates, wherein are depicted the decorative *ensemble* of the hall. This painting has served as a guide to the artists who were, in 1814, appointed to restore the sculptured woods and marbles of the chimney-piece. One of the decorations of this saloon consisted in a tapestry which hung all round from the councillors' benches to the cornice where the paintings commenced. It was thought at first that these hangings were of gilt leather; but, according to the archives of Bruges, they were tapestry, "*de haute lisse*." So this necessary complement to the decoration of the Frane of Bruges has at last been determined; and, only a few days ago, the new tapestry has been placed. The ancient piece—whose designs have been skilfully put together from fragments found here and there, in cellars as well as in garrets—was made at Audenarde, celebrated at that time for this work. That which is to be seen at present comes from Ingelmünster, near Courtrai. To the Comte de Montblanc, haron of Ingelmünster, is due the happy idea of reviving this branch of art, so much cultivated formerly in Flanders, and of which the secret is now lost, in Audenarde. In carrying out this idea the noble Comte also comes out with a great and good work; for, instead of making it a speculative transaction, he acts only with a view to employ the inhabitants of a commune, where work is hard to be obtained for the suffering working classes. From the hands of poor children who have been thus

collected together, initiated into the elements of an art of which they were totally ignorant, and taught the art of design, &c., spring forth the above work of tapestry—the work of the *Flemish Gobelins*. No particular subject is represented: it contains only a pattern of flowers interspersed by different animals: a charming border, of wonderful effect, completes the piece, and represents rows of Cupids astride on dolphins.

Thus the assembly-room is now restored to the same decorative style as when the Franc council sat therein in the sixteenth century.

#### THE TWO BOYHOODS,\* GIORGIONE AND TURNER.

BOY—half-way between the mountains and the sea—that young George of Castelfranco—of the Brave Castle—Stout George they called him, George of Georges, so goodly a boy he was—Giorgione.

Have you ever thought what a world his eyes opened on—fair, searching eyes of youth? What a world of mighty life, from those mountain roots to the shore;—of loveliest life, when he went down, yet so young, to the marble city—and became himself as a fiery heart to it?

A city of marble, did I say?—nay, rather a golden city, paved with emerald. For truly, every pinnacle and turret gleamed or glowed, overlaid with gold, or bossed with jasper. Beneath, the unsullied sea drew in deep breathing, to and fro, its eddies of green wave. Deep-hearted, majestic, terrible as the sea,—the men of Venice moved in sway of power and war; pure as her pillars of alabaster, stood her mothers and matrons; from foot to brow, all noble, walked her knights; the low bronzed gleaming of sea-rusted armour shot angrily under their blood-red mantle-folds. Fearless, faithful, patient, impenetrable, implacable—every word a fate—sate her senate. In hope and honour, lulled by flowing of wave around their isles of sacred sand, each with his name written and the cross graven at his side, lay her dead. A wonderful piece of world. Rather, itself a world. It lay along the face of the waters, no larger, as its captains saw it from their masts at evening, than a bar of sunset that could not pass away; but for its power, it must have seemed to them as if they were sailing in the expanse of heaven, and this a great planet, whose orient edge widened through ether. A world from which all ignoble care and petty thoughts were banished, with all the common and poor elements of life. No foulness, nor tumult, in those tremulous streets, that filled, or fell, beneath the moon; but rippled music of majestic change, or thrilling silence. No weak walls could rise above them; no low-roofed cottage, nor straw-huilt shed. Only the strength of rock, and the finished setting of stones most precious. And around them, far as the eye could reach, still the soft moving of stainless waters, proudly pure; as not the flower, so neither the thorn nor the thistle, could grow in the glancing fields. Ethereal strength of Alps, dream-like, vanishing in high procession beyond the Torcellan shore; blue islands of Paduan hills, poised in the golden west. Above, free winds and fiery clouds ranging at their will;—brightness out of the north, and balm from the south, and the stars of the evening and morning clear in the limitless light of arched heaven and circling sea.

Such was Giorgione's school—such Titian's home.

Near the south-west corner of Covent Garden, a square brick pit or well is formed by a close set of lock of houses, to the back windows of which it admits a few rays of light. Access to the bottom of it is obtained out of Maiden-lane, through a low archway and an iron gate; and if you stand long enough under the archway to accustom your eyes to the darkness, you may see on the left hand a narrow door, which formerly gave quiet access to a respectable barber's shop, of which the front window, looking into Maiden-lane, is still extant, filled, in this year (1860), with a row of bottles, connected, in some definite manner, with a brewer's business. A more fashionable neighbourhood, it is said, eighty years ago than now—never, certainly, a cheerful one—wherein a boy being born on St. George's day, 1775, began soon after to take interest in the world of Covent Garden, and put to service such spectacles of life as it afforded.

No knights to be seen there, nor, I imagine, many beautiful ladies; their costume at least disadvantageous, depending much on inconspicuity of hat and feather, and short waists; the majesty

of men founded similarly on shoebuckles and wigs;—impressive enough when Reynolds will do his best for it; but not suggestive of much ideal delight to a boy.

"Bello ovile dov'io dormii agnello," of things beautiful, besides men and women, dusty sunbeams up or down the street on summer mornings; deep-furrowed eahage-leaves at the greengrocer's; magnificence of oranges in wheelbarrows round the corner; and Thames's shore within three minutes' race.

None of these things very glorious; the best, however, that England, it seems, was then able to provide for a boy of gift; who, such as they are, loves them—never, indeed, forgets them. The short waists modify to the last his visions of Greek ideal. His foregrounds had always a succulent cluster or two of greengrocery at the corners. Enchanted oranges gleam in Covent Gardens of the Hesperides; and great ships go to pieces in order to scatter chests of them on the waves. That mist of early sunbeams in the London dawn crosses, many and many a time, the clearness of Italian air; and by Thames's shore, with its stranded barges and glidings of red sail, dearer to us than Lucerne lake or Venetian lagoon,—by Thames's shore we will die.

With such circumstance round him in youth, let us note what necessary effects followed upon the boy. I assume him to have Giorgione's sensibility (and more than Giorgione's, if that be possible) to colour and form. I tell you farther, and this fact you may receive trustfully, that his sensibility to human affection and distress was no less keen than even his sense for natural beauty—heart-sight deep as eye-sight.

Consequently, he attaches himself with the faithful child-love to everything that bears an image of the place he was born in. No matter how ugly it is,—has it anything about it like Maiden-lane, or like Thames's shore? If so, it shall be painted for their sake. Hence, to the very close of life, Turner could endure ugliness which no one else, of the same sensibility, would have borne with for an instant. Dead brick walls, blank square windows, old clothes, market-womanly types of humanity—anything fishy and waddy like Billingsgate or Hungerford Market, had great attraction for him; black barges, patched sails, and every possible condition of fog.

You will find these tolerations and affections guiding or sustaining him to the last hour of his life; the notabest of all such endurances being that of dirt. No Venetian ever draws anything foul; but Turner devoted picture after picture to the illustration of effects of dinginess, smoke, soot, dust, and dusty texture; old sides of boots, weedy roadside vegetation, dung-bills, straw-yards, and all the soilings and stains of every common labour.

And more than this, he not only could endure, but enjoyed and looked for *litter*, like Covent Garden wreck after the market. His pictures are often full of it, from side to side: their foregrounds differ from all others in the natural way that things bave of lying about in them. Even his richest vegetation, in ideal work, is confused; and he delights in shingle, *debris*, and heaps of fallen stones. The last words he ever spoke to me about a picture were in gentle exultation about his St. Gothard: "that *litter* of stones which I endeavoured to represent."

The second great result of this Covent Garden training was, understanding of and regard for the poor, whom the Venetians, we saw, despised; whom, contrarily, Turner loved, and more than loved—understood. He got no romantic sight of them, but an infallible one, as he prowled about the end of his lane, watching night effects in the wintry streets; nor sight of the poor alone, but of the poor in direct relations with the rich. He knew, in good and evil, what both classes thought of, and how they dealt with, each other.

Reynolds and Gainsborough, bred in country villages, learned there the country hoy's reverential theory of "the squire," and kept it. They painted the squire and the squire's lady as centres of the movements of the universe, to the end of their lives. But Turner perceived the younger squire in other aspects about his lane, occurring prominently in its night scenery, as a dark figure, or one of two, against the moonlight. He saw also the working of city commerce, from endless warehouse, towering over Thames, to the back shop in the lane, with its stale herrings—highly interesting these last; one of his father's best friends, whom he often afterwards visited affectionately at Bristol, being a fishmonger and giubbonier; which gives us a friendly turn of mind towards herring-fishing, wbling, Calais poissardes, and many other of our choicest subjects in after

life; all this being connected with that mysterious forest below London Bridge on one side—and, on the other, with these masses of human power and national wealth which weigh upon us, at Covent Garden here, with strange compression, and crush us into narrow Hand-court.

"That mysterious forest below London Bridge"—better for the boy than wood of pine or grove of myrtle. How he must have lamented the watermen, beseeching them to let him crouch anywhere in the bows, quiet as a log, so only that he might get floated down there among the ships, and round and round the ships, and with the ships, and under the ships, staring, and clamouring;—these the only quite beautiful things he can see in all the world, except the sky; but these, when the sun is on their sails, filling or falling, endlessly disordered by sway of tide and stress of anchorage, beautiful unspcakably; which ships also are inhabited by glorious creatures—red-faced sailors, with pipes, appearing over the gunwales, true knights, over their castle parapets—the most angelic beings in the whole compass of London world. And Trafalgar happening long before we can draw ships, we, nevertheless, coax all current stories out of the wounded sailors, do our best at present to show Nelson's funeral streaming up the Thames, and vow that Trafalgar shall have its tribute of memory some day. Which, accordingly, is accomplished—once, with all our might, for its death; twice, with all our might, for its victory; thrice, in pensive farewell to the old Temeraire, and, with it, to that order of things.

Now, this fond companying with sailors must have divided his time, it appears to me, pretty equally between Covent Garden and Wapping (allowing for incidental excursions to Chelsea on one side, and Greenwich on the other), which time he would spend pleasantly, but not magnificently, being limited in pocket-money, and leading a kind of "Poor Jack" life on the river.

In some respects, no life could be better for a lad. But it was not calculated to make his ear fine to the niceties of language, nor form his moralities on an entirely regular standard. Picking up his first scraps of vigorous English chiefly at Deified and in the markets, and his first ideas of female tenderness and beauty among nymphs of the barge and the barrow, another boy might, perhaps, have become what people usually term "vulgar." But the original make and frame of Turner's mind being not vulgar, but as nearly as possible a combination of the minds of Keats and Dante, joining capricious waywardness, and intense openness to every fine pleasure of sense, and hot defiance of formal precedent, with a quite infinite tenderness, generosity, and desire of justice and truth—this kind of mind did not become vulgar, but very tolerant of vulgarity, even fond of it in some forms; and, on the outside, visibly infected by it, deeply enough; the curious result, in its combination of elements, being to most people wholly incomprehensible. It was as if a cable had been woven of blood-crimson silk, and then tarred on the outside. People handled it, and the tar came off on their hands; red gleams were seen through the black, underneath, at the places where it had been strained. Was it ochre?—said the world—or red lead?

Schooled thus in manners, literature, and general moral principles at Chelsea and Wapping, we have finally to inquire concerning the most important point of all. We have seen the principal differences between this boy and Giorgione, as respects sight of the beautiful, understanding of poverty, of commerce, and of order of battle; then follows another cause of difference in our training—not slight,—the aspect of religion, namely, in the neighbourhood of Covent Garden. I say the aspect; for that was all the lad could judge by. Disposed, for the most part, to learn chiefly by his eyes, in this special matter he finds there is really no other way of learning. His father taught him "to lay one penny upon another." Of mother's teaching, we hear of none; of parish pastoral teaching, the reader may guess how much.

I chose Giorgione rather than Veronese to help me in carrying out this parallel; because I do not find in Giorgione's work any of the early Venetian monachist element. He seems to me to have belonged more to an abstract contemplative school. I may be wrong in this; it is no matter;—suppose it were so, and that he came down to Venice somewhat resurgent, or insentient, concerning the usual priestly doctrines of his day,—how would the Venetian religion, from an outer intellectual standing-point, have looked to him? He would have seen it to be a religion indisput-

\* From Mr. Ruskin's 5th volume of "Modern Painters."

ably powerful in human affairs; often very harmfully so; sometimes devouring widows' houses, and consuming the strongest and fairest from among the young; freezing into merciless bigotry the policy of the old; also, on the other hand, animating national courage, and raising souls, otherwise sordid, into heroism: on the whole, always a real and great power; served with daily sacrifice of gold, time, and thought; putting forth its claims, if hypocritically, at least in bold hypocrisy, not waiving any atom of them in doubt or fear; and, assuredly, in large measure, sincere, believing in itself, and believed: a godly system, moreover, in aspect; gorgeous, harmonious, mysterious—a thing which had either to be obeyed or combated, but could not be scorned. A religion towering over all the city—many-butressed—luminous in marble stateliness, as the dome of our Lady of Safety shines over the sea; many-voiced also, giving, over all the eastern seas, to the sentinel his watchword, to the soldier his war-cry; and, on the lips of all who died for Venice, shaping the whisper of death.

I suppose the boy Turner to have regarded the religion of his city also from an external intellectual standing-point.

What did he see in Maiden-lane?

Let not the reader be offended with me; I am willing to let him describe, at his own pleasure, what Turner saw there; but to me, it seems to have been this. A religion maintained occasionally, even the whole length of the lane, at point of constable's staff; but, at other times, placed under the custody of the bundle, within certain black and unstately iron railings of St. Paul's, Covent Garden. Among the wheelbarrows and over the vegetables, no perceptible dominance of religion; in the narrow, disquieted streets, none; in the tongues, deeds, daily ways of Maiden-lane, little. Some honesty, indeed, and English industry, and kindness of heart, and general idea of justice; but faith, of any national kind, shut up from one Sunday to the next, not artistically beautiful, even in those Sabbatical exhibitions; its paraphernalia being chiefly of high pews, heavy elocution, and cold grimness of behaviour.

What chiaroscuro belongs to it—(dependent mostly on candle-light).—we will, however, draw, considerably; no goodness of escutcheon, nor other respectability being omitted, and the best of their results confessed, a meek old woman and a child being let into a pew, for whom the reading by candlelight will be beneficial.\*

For the rest, this religion seems to him discreditably—discredited—not believing in itself; putting forth its authority in a cowardly way, watching how far it might be tolerated, continually shrinking, disclaiming, fencing, fencing; divided against itself, not by stormy rents, but by thin fissures, and splittings of plaster from the walls. Not to be either obeyed, or combated, by an ignorant, yet clear-sighted youth; only to be scorned. And scorned not one whit the less, though also the dome dedicated to St. Louis high over distant winding of the Thames; as St. Mark's campanile rose, for goodly landmark, over mirage of lagoon. For St. Mark ruled over life; the saints of London over death; St. Mark over St. Mark's Place, but St. Paul over St. Paul's Churchyard.

Under these influences pass away the first reflective hours of life, with such conclusion as they can reach. In consequence of a fit of illness, he was taken—I cannot ascertain in what year—to live with an aunt at Brentford; and here, I believe, received some schooling, which he seems to have snatched vigorously; getting knowledge, at least by translation, of the more picturesque classical authors, which he turned presently to use, as we shall see. Hence also, walks about Putney and Twickenham in the summer time acquainted him with the look of English meadow-ground in its restricted states of paddock and park; and with some round-headed appearances of trees, and stately entrances to houses of mark: the avenue at Bushy, and the iron gates and carved pillars of Hampton, impressing him apparently with great awe and admiration; so that in after life his little country house is—of all places in the world—at Twickenham! Of swans and reedy shores he now learns the soft motion and the green mystery, in a way not to be forgotten.

And at last fortune wills that the lad's true life shall begin; and one summer's evening, after various wonderful stage-coach experiences on the north road, which gave him a love of stage-coaches ever after, he finds himself sitting alone among

\* Liber Studiorum. "Interior of a church." It is worthy of remark that Giorgione and Titian are always delighted to have an opportunity of drawing priests. The English Church may, perhaps, accept it as matter of congratulation that this is the only instance in which Turner drew a clergyman.

the Yorkshire hills.\* For the first time, the silence of Nature round him, her freedom sealed to him, her glory opened to him. Peace at last; no roll of cart-wheel, nor mutter of sullen voices in the back shop; but earlew-cry in space of heaven, and welling of bell-toned streamlet by its shadowy rock. Freedom at last. Dead wall, dark railing, fenced field, gated garden, all passed away like the dream of a prisoner; and behold, far as foot or eye can race or range, the moor, and cloud. Loveliness at last. It is here then, among these deserted vales! Not among men. Those pale, poverty-struck, or cruel faces;—that multitudinous, marred humanity—are not the only things that God has made. Here is something He has made which no one has marred. Pride of purple rocks, and river pools of blue, and tender wilderness of glittering trees, and misty lights of evening on immeasurable hills.

Beauty, and freedom, and peace; and yet another teacher graver than these. Sound preaching at last here, in Kirkstall crypt, concerning fate and life. Here, where the dark pool reflects the chancel pillars, and the cattle lie in unhardened rest, the soft sunshine on their dappled bodies, instead of priests' vestments; their white furry hair ruffled a little, fitfully, by the evening wind, deep-scented from the meadow thyme.

Consider deeply the import to him of this, his first sight of ruin, and compare it with the effect of the architecture that was around Giorgione. There were indeed aged buildings, at Venice, in his time, but none in decay. All ruin was removed, and its place filled as quickly as in our London; but filled always by architecture loftier and more wonderful than that whose place it took, the boy himself happy to work upon the walls of it; so that the idea of the passing away of the strength of men and beauty of their works never could occur to him sternly. Brighter and brighter the cities of Italy had been rising and broadening on hill and plain, for three hundred years. He saw only strength and immortality, could not but paint both; conceived the form of man as deathless, calm with power, and fiery with life.

Turner saw the exact reverse of this. In the present work of men, meanness, aimlessness, unrightfulness; thin-walled, lath-divided, narrow-garretted houses of clay; booths of a darksome Vanity Fair, busily base.

But on Whitby Hill, and by Boltou Brook, remained traces of other handiwork. Men who could build had been there; and who also had wrought, not merely for their own days. But to what purpose? Strong faith, and steady hands, and patient souls—can this, then, be all you have left! This the sum of your doing on the earth!—a nest whence the night-owl may whimper to the brook, and a ribbed skeleton of consumed arches, looming above the bleak banks of mist, from its cliff to the sea?

As the strength of men to Giorgione, to Turner their weakness and vileness, were alone visible. They themselves, unworthy or ephemeral; their work, despicable, or decayed. In the Venetian's eyes, all beauty depended on man's presence and pride; in Turner's, on the solitude he had left, and the humiliation he had suffered.

And thus the fate and issue of all his work were determined at once. He must be a painter of the strength of nature, there was no beauty elsewhere than in that; he must paint also the labour and sorrow and passing away of men; this was the great human truth visible to him.

Their labour, their sorrow, and their death. Mark the three. Labour; by sea and land, in field and city, at forge and furnace, helm and plough. No pastoral indolence nor classic pride shall stand between him and the troubling of the world; still less between him and the toil of his country,—blind, tormented, unwearied, marvellous England.

Also their Sorrow; Ruin of all their glorious work, passing away of their thoughts and their honour, mirage of pleasure, FALLACY OF HOPE; gathering of weed on temple step; gaining of wave on deserted strand; weeping of the mother for the children, desolate by her breathless first-born in the streets of the city,† desolate by her last sons slain, among the beasts of the field.‡

And their Death. That old Greek question again;—yet unanswered. The unmeasurable spectre still flitting among the forest trees at twilight; rising ribbed out of the sea-sand;—white, a strange Aphrodite,—out of the sea-foam;

\* I do not mean that this is his first acquaintance with the country, but the first impressive and touching one, after his mind was formed. The earliest sketches I found in the National Collection are at Clifton and Bristol; the next, at Oxford.

† The Tenth Plague of Egypt.

‡ Rizpah, the Daughter of Aiah.

stretching its grey, cloven wings among the clouds; turning the light of their sunsets into blood. This has to be looked upon, and in a more terrible shape than ever Salvator or Durero saw it. The wreck of one guilty country does not infer the ruin of all countries, and need not cause general terror respecting the laws of the universe. Neither did the orderly and narrow succession of domestic joy and sorrow in a small German community bring the question in its breadth, or in any unresolvable shape, before the mind of Durero. But the English death—the European death of the nineteenth century—was of another range and power; more terrible a thousand-fold in its merely physical grasp and grief; more terrible, incalculably, in its mystery and shame. What were the robber's casual pang, or the rage of the flying skirmish, compared to the work of the axe, and the sword, and the famine, which was done during this man's youth on all the hills and plains of the Christian earth, from Moscow to Gibraltar. He was eighteen years old when Napoleon came down on Areola. Look on the map of Europe, and count the blood-stains on it, between Areola and Waterloo.

Not alone those blood-stains on the Alpine snow, and the blue of the Lombard plain. The English death was before his eyes also. No decent, calculable, consoled dying; no passing to rest like that of the aged burghers of Nuremberg town. No gentle processions to churchyards among the fields, the bronze crests bosed deep on the memorial tablets, and the skylark singing above them from among the corn. But the life trampled out in the slime of the street, crushed to dust amidst the roaring of the wheel, tossed countless away into bowling winter wind along five hundred leagues of rock-fanged shore. Or, worst of all, rotted down to forgotten graves through years of ignorant patience, and vain seeking for help from man, for hope in God—infirm, imperfect yearning, as of motherless infants starving at the dawn; oppressed royalties of captive thought, vague age-fits of bleak, unavailed despair.

A goodly landscape this, for the lad to paint, and under a goodly light. Wide enough the light was, and clear; no more Salvator's lurid chasm on jagged horizon, nor Durero's spotted rest of sunny gleam on hedgerow and field; but light over all the world. Full shone now its awful glohe, one pallid barnel-house,—a ball strewn bright with human ashes, glaring in poised sway beneath the sun, all lilending-white with death from pole to pole,—death, not of myriads of poor bodies only, but of will, and mercy, and conscience; death, not once inflicted on the flesh, but daily fastening on the spirit; death, not silent or patient, waiting his appointed hour, but voiceful, venomous; death with the taunting word, and burning grasp, and indeed sting.

"Put ye in the sickle, for the harvest is ripe." The word is spoken in our ears continually to other reapers than the angels, to the busy skeletons that never tire for stooping. When the measure of iniquity is full, and it seems that another day might bring repentance and redemption,—*"Put ye in the sickle."* When the young life has been wasted all away, and the eyes are just opening upon the tracks of ruin, and faint resolution rising in the heart for nobler things,—*"Put ye in the sickle."* When the roughest blows of fortune have been borne long and bravely, and the hand is just stretched to grasp its goal,—*"Put ye in the sickle."* And when there are but a few in the midst of a nation, to save it, or to teach, or to eberish; and all its life is bound up in those few golden ears,—*"Put ye in the sickle, pale reapers, and pour hemlock for your feast of harvest home."*

This was the sight which opened on the young eyes, this the watchword sounding within the heart of Turner in his youth.

So taught, and prepared for his life's labour, sate the boy at last alone among his fair English hills; and began to paint, with cautious toil, the rocks, and fields, and trickling brooks, and soft white clouds of heaven.

NEW DISCOVERY IN DYING.—For a long time past the dying trade has been endeavouring to imitate the green dye used in China, and the French, according to the *Journal des Débats*, appear to have succeeded in obtaining it from one of their own indigenous vegetable substances, a chemist of Lyons having been put on the right track by an instructive note which the Chevalier de Montigny had sent from China, along with samples of the primary substance, to the Department of Commerce.

### THE PRINCE OF WALES AND CANADIAN WORKS.

THE New York journals, and the able correspondent of the *Times*, give graphic details of the progress of the Prince of Wales in Canada. The Prince landed at Montreal on Saturday morning, the 25th ult., and was received with the most enthusiastic demonstrations of welcome by about 60,000 people. The occasion was probably the most striking ever witnessed in Canada. The streets were decorated, and the procession which accompanied his Royal Highness from the wharf after the presentation of an address from the mayor, embodied all the civic societies, the clergy, the fire-brigade, the regular military, and the volunteers, not only of the city but of distant places. The procession proceeded immediately to the Crystal Palace, which was formally opened by the Prince.

The building which has been erected for this purpose stands in a commanding situation on the northern side of the city, just where the slopes of Mont Royal, from which the town takes its name, begin a slow rise. The building itself, in outer form and general internal arrangement, is described as very like one of the end transepts of our Crystal Palace, only, of course, on a much smaller scale, and built with brick walls, roofed in with an arched wooden ceiling. For the rest, the columns, girders, and tie-rods of the interior are much the same in principle as in the English building. The outside, however, is handsomely adorned with light ornamental woodwork and painting, which give it a clean and pleasing effect. The whole of the articles to be exhibited had not then arrived.

The Prince afterwards sped away to the Victoria Bridge, 2½ mls. being the fare demanded and obtained by carriage-drivers for taking a fare from the Exhibition to the bridge, a distance of some 2½ miles.

We have before now given particulars of the bridge, one of the most remarkable works in the world. The Prince laid the last stone and drove the last rivet, a silver one. "The ceremony was nothing to describe, though it would have made a fine picture. The two workmen wielding their tremendous hammers with a din that was awful, the rich uniforms of the Prince and suite, half hidden in the gloom, and softened down by the wreaths of thick wood-smoke which curled from the funnel of the engine in the background—the little glimpses through the opening into the bright sunlight, the St. Lawrence far beneath—the flaunting decorations and shining roofs of Montreal beyond the river—all made a striking subject for a picture."

A bronze medal, with appropriate devices and inscriptions, had been prepared by the workmen on the Grand Trunk Railway, for the Queen, and was given to the Prince for that purpose. In response to the address of the workmen, his Royal Highness said:—"Gentlemen,—I accept with peculiar pleasure an address of artisans and working men, who have, by the sweat of their brow and skilled labour of many a hard day's toil, contributed to erect this monument to the greatness of their country—a structure scarcely less honourable to the hands which constructed it, than to the minds which conceived it. I mourn with you the loss of Robert Stephenson. In your regrets you bring to mind that it was from your class that his eminent father sprang: let me further remind you that England opens to all her sons the same prospect of success to genius combined with honest industry. All cannot attain the prize, but all may strive for it; and in this race victory is not to the wealthy or the powerful, but to him whom God has given intellect, and has implanted in the heart the moral qualities which are required to constitute true greatness. I congratulate you upon the completion of your work, and earnestly hope it may prosper; and to you who have raised it to its present grandeur, and to your families, I heartily wish every happiness."

The Prince Consort said, at the Trinity House banquet, some time ago, "It will be a curious coincidence that, nearly at the same time, a few weeks hence, though almost at the opposite poles, the Prince of Wales will inaugurate, in the Queen's name, that stupendous work, the great bridge over the St. Lawrence, in Canada, while Prince Alfred will lay the foundation-stone of the breakwater for the harbour of Cape Town. What vast considerations as regards our country are brought to our minds in this simple fact! What present greatness! What past history! What future hopes; and how important and beneficent is the part given to the Royal family of England to act in the development of those distant and rising countries, who recognize in the British Crown, and their allegi-

ance to it, their supreme bond of union with the mother-country and with each other!"

The Prince of Wales, in this visit to the Colonies and to the United States, is doing a great work, and is doing it wonderfully well. Without reference to their position, he has reason to be grateful to his Mother and his Father.

### ARCHITECTURAL EXAMINATIONS. NORTHERN ARCHITECTURAL ASSOCIATION.

At a special meeting held at the Old Castle, Newcastle-upon-Tyne, on Tuesday last, the 11th instant, for the purpose of considering a communication from the Royal Institute of British Architects respecting the proposed architectural examinations and diploma, Mr. John Dobson, F.R.S.A., President, in the chair, it was unanimously resolved,—

"That it is the opinion of this Association that the establishment of an architectural examination, whether voluntary or compulsory, and a diploma, would be of great advantage to the profession.

That it is the opinion of this Association that, in carrying out the scheme for establishing an architectural diploma, the Royal Institute of British Architects should make provision for admitting architects of established practice as members of the Institute without undergoing examination, and for granting to such architects a diploma based upon the merits of their works.

That this Association suggests that all action in this matter by the Institute should be taken with a view to the ultimate adoption of a compulsory examination. And

That this Association leaves with confidence the details of this scheme in the hands of the Royal Institute of British Architects."

### STOCKPORT MARKET.

THE Town Council have accepted the designs and estimate of Mr. James Haywood, jun., Phoenix Foundry, Derby, for covering in their present open Market-place. The design consists of wrought-iron framed principals, about 25 feet span each, supported on cast-iron columns and gutter girders. The outer pillars are ornamented and panelled. The design shows a mode of enclosing the sides and ends of the Market at any future time if required. These plans have been selected from among those of nine competitors.

### PARK OBSERVATORY COMPETITION, STOCKDALE.

THE designs submitted for the intended observatory in Vernon Park have been exhibited to the public. Last week a limited number of the designs were chosen out by the committee, and from these the ultimate selection was made. The first premium (20*l.*) has been awarded to Mr. J. Stevens, of Manchester, and the second to Mr. Wilson, of Bath. It is not expected that the selected design can be carried out for the stipulated sum,—1,000*l.* 3*s.* 6*d.* of drawings were sent in.

### HOW BALTIMORE OBTAINED ITS PARK.

GREAT desire is manifested in the United States of America to provide public parks. At Baltimore a project with this end in view has been on foot for a year or two, which is somewhat peculiar. Mr. Howard Daniels enables us to give a brief account of it.

In an ordinance for giving a system of city railways, the company was required to provide more and better accommodations for the public at five cents, than the omnibuses had for six cents; and to pay also to the city one cent for each passenger carried, for the purpose of creating a fund for a public park. It is estimated that this "park-cent" (as it is called) will average, during the fifteen years of the grant, no less than 100,000 dollars per annum, making the city passenger railways just that much more valuable to the city of Baltimore than the similar grants of New York, Philadelphia, and Boston.

Thus the introduction of the city passenger railway system, which was considered an adjunct to a park, has not only served to enlarge the views of the Baltimoreans on that subject, but has furnished the means for its purchase and adornment, without resorting to direct taxation. For the purpose of carrying this project into effect, a commission, composed of five gentlemen, who were selected for their integrity and taste in rural affairs, was created, and clothed with power by the city authorities, to select and purchase a

suitable site, or sites, and lay out the same as a public park.

The result was the selection of Druid Hill, the property of Mr. Lloyd N. Rogers, embracing about 517 acres, at a cost of 497,300 dollars, and located within five minutes' walk of two of the city railway lines. The site is diversified by gentle hills of varied forms, connected by flattened ridges into groups, or irregular ranges, forming grand foregrounds, and broken and intricate middle-grounds and distances; one large eminence near the centre of the park, and at the rear of the mansion, being 366 feet above tide.

The valleys being broad and gentle in their undulations, furnish admirable sites for parade-grounds, play-grounds, &c., producing great breadth of effect in the landscape. As a whole, the grounds are characterized by greatness, distinctness, and strongly-marked divisions, conspiring to give grandeur, rather than easy transitions and delicate flowing lines.

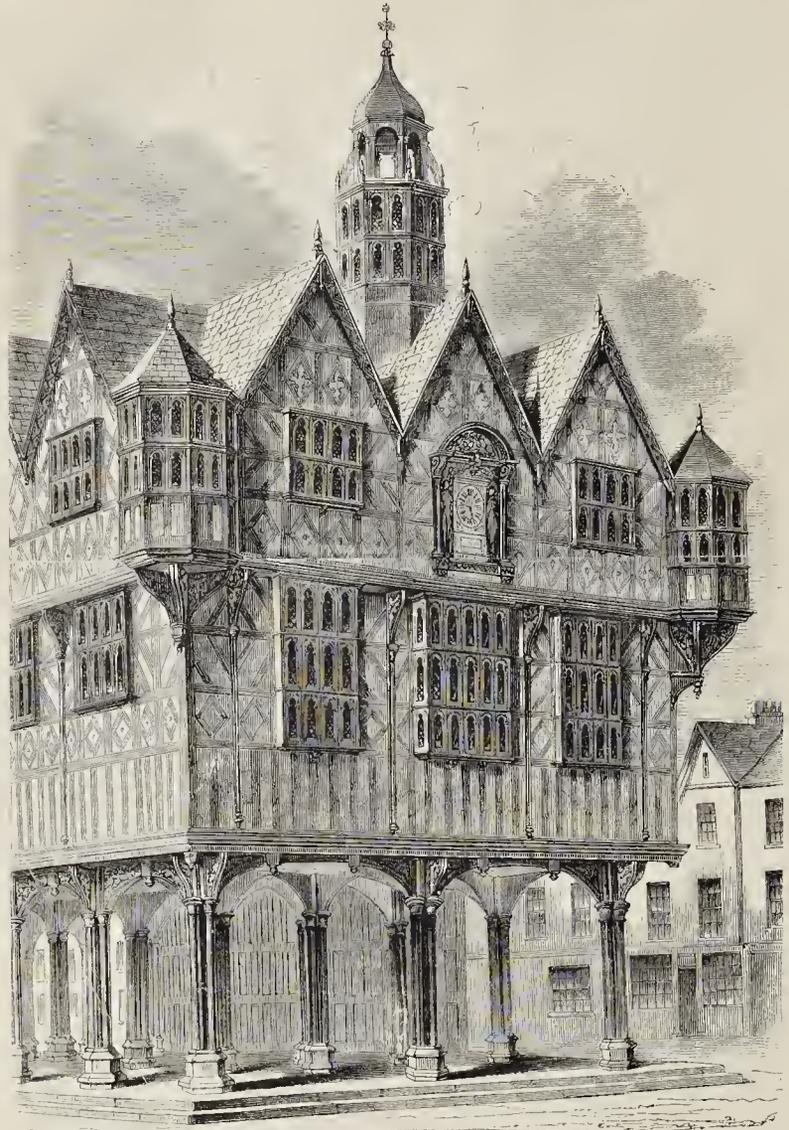
To the arboriculturist, these grounds are particularly interesting for the great number and variety of large, healthy, and park-like trees, among which are to be found scores of magnificent old oaks from 12 to 15 feet in circumference, that would do credit to Windsor Great Park or Fontainebleau; sometimes standing singly, at others having marshalled around them generations of descendants, forming groves of families; numbers of bickories from 8 to 11 feet in circumference, and from 60 to 90 feet in height; also gigantic tulip trees, of which no European park can boast, that loom up here and there 20 to 30 feet above their neighbours, giving variety to the sky-lines and spirit to the groups. These giants of the forest, when allowed room to spread and develop themselves, make admirable park trees, having a robust, masculine character peculiar to themselves.

There is reason to believe that if this project, so well commenced, is completed with improvements adapted to the wants and enjoyments of the public, conceived and executed in the spirit and genius of the place, the result will be a grand park, worthy of the Monumental City.

### THE LATE MR. JESSE HARTLEY, ENGINEER, OF LIVERPOOL.

READERS have doubtless learnt the death of Mr. Jesse Hartley, the engineer of the Liverpool Docks, which took place on the 24th of August, at his residence, Bootle Marsh. Mr. Hartley, who was upwards of eighty years of age, was a native of the North Riding of Yorkshire, in which district of that county his father held the position of bridge-master, and his son, the subject of the present remarks, after receiving an ordinary education, served his apprenticeship as a stonemason, and worked at the building of Borough-bridge. Subsequently, he succeeded his father as bridge-master in the district named, until his removal to Liverpool, on receiving the appointment of engineer to the Dock Committee. As a dock engineer, Mr. Jesse Hartley is admitted to have occupied a very high position; we have had occasion at different times to refer to his works. Possessing great natural sagacity and imbued with an innate perception of the leading features of constructive design, he speedily acquired a profound knowledge of the requirements of that branch of science to which he devoted himself, and in the design and construction of the numerous docks of Liverpool he has left monuments of his skill as an engineer. During the long period in which he held the responsible office of dock engineer in Liverpool, Mr. Hartley altered, or entirely constructed every dock belonging to the town. Besides this, he was employed as engineer for the Bolton and Manchester Railway and Canal, and he was also consulting engineer for the Dee Bridge at Chester, the centering for which was considered a triumph.

He was buried at Bootle Church. From the general esteem in which he was held, the funeral was attended by a large number of gentlemen, including inhabitants of the locality, many persons from Liverpool, a considerable number of the *employés* of the Dock Board and the Corporation, as well as many of the contractors who had executed work under Mr. Hartley. The following officiated as pall-bearers:—Mr. Wm. Brown, Mr. Thomas Cook, Mr. Charles Turner (chairman of the Dock Board), Mr. J. Bramley-Moore, Mr. James Bibby, and Mr. James Walker. There were also present Mr. Wm. Rathbone, Mr. Alderman Robinson, Mr. North (solicitor to the Dock Board), Mr. Weightman (corporation surveyor), Mr. Millar (surveyor of the docks), Mr. Newlands (borough engineer), Mr. John Bibby, Mr. Henry



HEREFORD TOWN-HALL, RESTORED.

Forsbaw, Mr. R. Newby, Mr. T. Haekott, Mr. D. Mason, Mr. Smith, and others.

#### THE OLD TOWN-HALL, HEREFORD.

To enable our readers to form a judgment on the statements which have been made in our pages as to the town-hall of Hereford, now threatened with destruction, we give a view of the end of it restored to its original condition.\* It stands in High Town or High Square, which is the centre and principal business part of the city. It is 84 feet long, and 34 broad, and consists of one large room supported upon three rows of oak pillars. The upper floor contained many rooms used by the different city companies. This has been removed, and the present aspect of all that remains above the bottom story is very miserable.

\* It is an old block and somewhat damaged, but it will serve the purpose.

#### FALL OF A HOUSE IN CLERKENWELL.

A FEW nights ago, considerable alarm was created in Clerkenwell by the falling in of a house, the Hat and Feathers Tavern, at the corner of Wilderness-row and Goswell-street. The house was in process of being rebuilt, and fortunately there was no one residing on the premises. The inhabitants of the house next door, eight in number, were, however, placed in some danger, owing to the falling of part of their party wall.

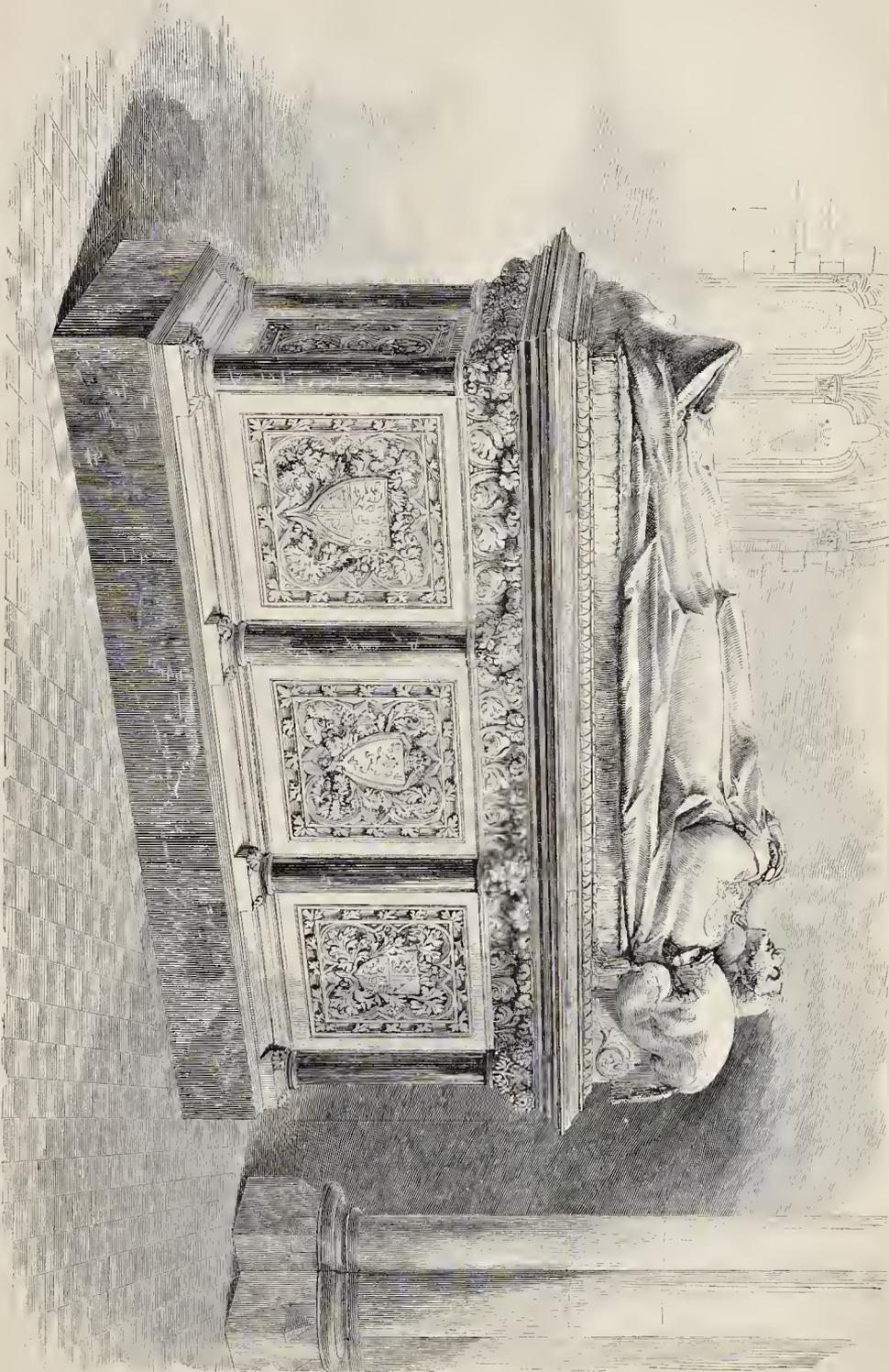
The work was under the direction of an architect, and the cause of the disaster is unknown. The walls are said to have been of ample thickness, the timbering good. The whole collapsed and fell internally, carrying with it the upper part of the party-wall, in which there was a corbelled chimney on the third story.

It has been suggested that the continued wet of the last two months had flooded the basement story, injured and weakened the foundations, and caused the walls to settle;—whence the failure.

#### MONUMENT TO THE LATE EARL OF ELLESMERE.

THIS elaborate and costly monument has been recently placed in Worsley Church, near Manchester, by direction of the present Earl of Ellesmere. The body of the tomb is of Caen stone, enriched with panels, foliated, and bordered and filled in with foliage, exceedingly well executed. Columns divide each side into three: these columns are of Devonshire marble, the capitals being of Caen stone. The plinth of the tomb is also of Devonshire marble. The slab upon the top is of the same material. An effigy of the deceased nobleman reposes on this. It is of statuary marble, and is a dignified personation of the late earl, in the robes of the order of the Garter. It is from the studio of Mr. Noble. The design of the monument is by Mr. G. G. Scott, and the carving on it was executed by Mr. Philip, of Vauxhall-bridge-road.

THE EARL OF ELLENBERG'S MONUMENT, IN WORSLEY CHURCH, NEAR MANCHESTER.





## RAMBLING: BOLEBROOK, SUSSEX.

ABOUT a mile and a half from the picturesque village of Hartfield, in Sussex, stands Bolebrook, an old brick mansion, said by Horsfield, in his "History of Sussex," to have been built about the middle of the fifteenth century. It is very striking in appearance, being of grand and lofty dimensions; and having a very interesting gateway still existing, besides great portion of the old manor-house. The gateway is formed by two large towers, with a connecting building between them, and contains three tiers of apartments. The towers are from 40 feet to 50 feet high, including the peculiar ogee-shaped cupola roofs (similar to one still remaining on Brambletye ruins), with which they are surmounted, and have been pierced all round in numerous places with narrow apertures for defence.

The entrance, which does not appear to have been at any time a gateway, but merely a doorway, has still the large hole in the wall, into which the huge oaken beam that barred the door used to slide. The ground-floor apartment of the centre building was evidently the porter's room: it has in each side-wall two large recesses for seats, with smaller niches to the left at a convenient height to hold the drinking-horns which contained the Medieval substitute for porter, with which the gossipers of those days refreshed themselves while waiting their masters' pleasure, or their own. To the left on entering, is the seat of honour—the "hall chair,"—furnished with elbows formed in the wall; and in one of the opposite recesses, an oaken seat is still firmly fixed in its place. All the apartments are provided with open fireplaces and chimneys.

A decaying winding-stair round a stout oak newel, in the left-hand tower, gives access to the upper rooms, the floor-boards of which are blackened as with fire, and the original doors are missing. This tower is seen from the outside to be slightly out of the upright, and a number of the bricks are loosened in their beds of mortar: a large crack, too, runs down the brickwork of the connecting building close to it; which, added to the fact, that the stairs are formed of two boards,—one for the footway, and one for the riser,—and are not cut out of a solid cube of wood as are those of the manor-house, strengthens the supposition that the tower has been subjected to a conflagration in which the original stairs perished.

The farther entrance to the porter's room, as seen from what is called the court-yard, is a spacious opening formed by a large Tudor arch; and at each angle of the outer wall, running up the entire height of the building, is a small turret, apparently only for ornament, or perhaps strength.

Back and front, the coping is built up in the centre into a sort of canopy, which overhangs a flat niche, in which is inserted a small stone tablet, but not even the assistance of a glass could detect any traces of an inscription; and Mr. Whitehead, the present tenant, who most obligingly left his own occupations to show the visitors over his house and grounds, said he had not discovered a date in any part of the building. It is to be hoped Mr. Whitehead will not deem this mention of his name too great a liberty, nor that an unworthy return is thus made for his kindness and urbanity. So good a specimen of a true English farmer it is seldom one's good fortune to meet: frank, open-spoken, intelligent, and kind in the extreme, it seems but just to name him when speaking of Bolebrook.

The house, even what remains of it, is exceedingly extensive; and the old cooking departments must have been designed to supply an enormous number of retainers. The ovens, especially, are very large and numerous. Of one of these the story is told, that a farmer's wife having heated it and raked out the ashes preparatory to putting in her hatch of bread to bake, was amazed—as well she might be—to perceive within the entrance the figure of a woman. To whom the unhappy spirit once belonged that haunted this very warm abode, the legend does not say; nor whether the oven has since been heated, to try if the apparition would reappear.

The apartment above this bakery is panelled with oak, still mostly very perfect and smooth, and capable of easy restoration. But over the fireplace the panelling has been stripped from the walls, it is supposed by Lord De la Warr, while building his new residence at Buckhurst. It probably was handsomely carved up to the ceiling, as is seen in many old houses of the same date. This room and the bakery below have a large recess, which forms here a fine lay window; and the appearance altogether of the apartment recalls

vividly to mind the stately library in which poor Lady Jane Grey is often represented sitting at her studies, with her tutor, the good Roger Ascham; while through the open lattice gay ladies and cavaliers are seen, with their hooded hawks on their wrists, entering away to enjoy the pleasures of the chase.

In a capitolium-stocked, refreshingly cool dairy, stands a curious old meat-safe, the panels of which are formed of large squares of tin, stamped into open-cut patterns with some sharp die; an ingenious and ornamental precursor of our modern perforated zinc.

The broad stairway—whose steps are made, as we have said, of solid cubes of oak,—protected by its strong heavy hand-rail and enormous newels, leads to the uppermost rooms or garrets. In one of them stands a lumbering old cheese-press, fast hastening to decay; and the white-washed lean-to ceilings of all are scrawled over by the blackened fingers of lazy serving-men or women, for whose "idle hands" Satan found some "mischief" to do, while after the lapse of nearly a century is rather interesting to look upon. There is one date "1788," but a certain "John Paris" in "1794," seems to have been the principal scribe. With more reason than rhyme, he has misquoted a well-known epitaph, and it stands thus:—

"The world is vanity,  
All things show it;  
I thought so once,  
And now I know it."

One very spacious apartment, with magnificently lofty stone-mullioned windows in it, was shown, but there was barely time to more than glance round, for preparations for the dinner of the kind *cicerone* were on the table, and his visitors were of course anxious to depart, notwithstanding his hearty assurance that they were not inconveniencing him in the least. A hasty examination was made of an old (no doubt Sussex) iron fire-back in the ample chimney-corner, very much defaced with time and use, but on which could just be distinguished the word "Honi" on the royal rafter encircling the central arms, and the board-headed "supporter" on one side.

An ancient and picturesque oak, which must have braved the summer sun and winter snow ever since the day that William the Norman first set foot on English soil—and that soil Sussex soil, by the way—stands near to the bay-windowed end of the old house: oh! if it could but speak, like Tennyson's "Talking Oak" of Summer Chase! Its pride of spreading branch has long since departed, but in girth it measures 32 feet 6 inches at 1 foot from the ground, and 16 feet 9 inches 5 feet higher up the trunk.

"The manor of Bolebrook," says Horsfield, "was the property of the family of Lynde, and carried, on the marriage of Joane de la Lynde to John Dalyngruge, of Bodiam, to that family, who continued owners till temp. Richard II., when Margaret, the heiress of that family, carried it, on her marriage to Sir Thomas Sackville, whose family has ever since held it." And again,— "Bolebrook was one of the earliest brick edifices in this country. . . . At what time it was first suffered to go to decay we are not informed, but it was probably on the transfer of the property to the Tufton family in the reign of James I. A park and demesne were formerly attached to the venerable mansion. This was originally the property of the Dalyngruges of Bodiam, and passed to the Sackvilles by marriage of Margaret, the daughter and heiress of Sir Edward Dalyngruge. By the Tuftons, Earls of Thanet, who succeeded to the possession by marriage, the estate was bequeathed to charitable purposes. In 1770 it was sold under a decree of the Court of Chancery, and purchased by Lord George Germain, who, when afterwards created a peer, took from this place his second title of Baron Bolebrook. At length it was again united to the large possessions of the house of Dorset, in 1790, when it was bought by John Frederic, fourth Duke of Dorset, of Viscount Sackville."

In a "Guide to Knole," by Bridgman, published in 1827, we find that Richard Sackville, third Earl of Dorset, born March 28, 1589, married Anne Clifford, daughter and heir of the Earl of Cumberland, and died on Easter Sunday, March 28, 1621. He had three sons, who died infants, and two daughters, one of whom, Margaret, born July 2, 1624, married ——— Tufton, ancestor to the present Lord Thanet.\* In a "Catalogue," quoted by the above-mentioned "Guide," of the "household and family of the Right Honourable Richard Earl of Dorset, in the year of our Lord 1613; and

so continued until the year 1624," mention is made of "Bolebrook House, Sussex," showing that it was not then dismantled.

Mr. Mark Anthony Lower, in his paper on "Bodiam and its Lords," given in the ninth volume of the "Sussex Archaeological Collections," says, speaking of the family of Dalyngruge, "their true origin is from the extinct manor of Dallingridge, on the confines of the parishes of East Grinstead and West Hoathly, where they appear to have been located as early as temp. Edward II. John Dalyngruge, the first recorded progenitor of the family, was married in that reign to Joane, a daughter and co-heiress of Sir Walter de la Lynde, lord of Bolebrook, in the parish of Hartfield, co. Sussex."

Returning to Hartfield, a beautiful view of the village, crowed by the church, is obtained, at a bend of the road about a mile from Bolebrook. On a nearer approach, the church is not so worthy of remark. The tower is thin and shapeless, and very tall in comparison with the crowning spire, and the larger portion of the church appears to have been rebuilt at some debased period of architecture, for the south aisle is much more elegant than the nave. The chancel is very long, being quite half the entire length of the church. On the north wall there is the old opening—now closed up,—to the roof-loft, and the mark of the stairway leading to it. The frightful fashion of high pews instead of seats, still maintains in Hartfield Church, and on the doors of some two or three of these small brass plate bears the name of Bolebrook. Horsfield tells us "the benefice is a rectory and vicarage united, in the archdeaconry of Lewes and deanery of Pevensey, and is valued in the king's books conjointly at 177. s. and in Pope Nicholas's taxation the church was rated at thirty-five marks, and the vicarage at twelve marks. The vicarage is in the patronage of the rector of Hartfield; the rectory is a sinecure, and the Earl de la Warr is patron."

Having several times mentioned the name of Dalyngruge, we may say that there is a very handsome—though shamefully damaged—brass in Fletching Church, in memory of a member of it, together with his wife; the date is about 1395, according to Mr. Bontell. Mr. Lower assigns "this monument to Sir Roger Dalyngruge, who had free warren in Sheffield (in the parish of Fletching), 48 Edward III.," which would be in 1375. It may be so, yet Bontell be correct, for Sir Roger may have lived eighteen or twenty years after the date of the aforesaid grant.

Fletching Church is also the last resting-place of Gibbon, the historian. He had returned to England from Lausanne, in June, 1783, on account of the Continental troubles, and had gone to visit his friend, Lord Sheffield, at Sheffield-place, Fletching. There he died on the 17th of February, 1794, and he was interred in the Sheffield Mausoleum in the north transept of Fletching Church.

It was during a visit to Lord Sheffield, in 1788, that the concluding volumes of Gibbon's great work, "The Decline and Fall of the Roman Empire," were presented to the public. Speaking of it himself, he says, "It was at Rome, on the 15th of October, 1764, as I sat amidst the ruins of the Capitol, while the barefooted friars were saying Vespers in the Temple of Jupiter, that the idea of writing the decline and fall of the city first started to my mind." He commenced his work in 1770, after the death of his father, from whom he inherited a large fortune, and completed it in 1787 at Lausanne. How little promise his boyhood and youth gave of his manhood's renown, may be gathered from his own words.—"To the University of Oxford I owe no obligation; and she will as cheerfully renounce me for a son, as I am willing to disclaim her for a mother." How far was his prophecy from fulfilment! And how bright a fact is it in the annals of John Lord Sheffield, that he could call the great historian, "friend!"

## CHURCH-BUILDING NEWS.

**Grantham.**—A steeple climber has been engaged in putting a new copper lightning conductor on the spire of Grantham church, in room of the old one of iron. He found the upper part of the spire out of repair, and sadly in want of pointing. The spire, according to the *Lincolnshire Chronicle*, literally shook. The subject has been considered whether it should be repaired. But to do the repairs a scaffolding would be required both inside and out; and the persons putting up the conductor suggested a scaffolding from the highest openings or windows in the spire to be erected by the climber with poles drawn up for the purpose, and passed through the windows.

\* The title is now extinct.

**Great Warley.**—The new cemetery in this recently-formed ecclesiastical parish has been consecrated by the Bishop of Rochester. Mr. T. E. Knightly, of Cannon-street, was the architect; and Mr. J. Hammond, of Warley, the contractor. The cemetery is situate on the western side of the road leading from the Brentwood station, and adjoins the grounds of the County Lunatic Asylum. There are but few dissenters in the parish, so that but one chapel has been built, the plan of which comprises nave, chancel, and vestry, the style being the Early Decorated. The chancel has a three-light window, with a trefoiled circle in the head: over the entrance is a low-pointed arch, surrounding a circle filled with trefoils and quatrefoils. The roofs are open, the floors paved with black and red tiles, and the benches are placed stall-wise. A bell gable surmounts the chancel arch. The entrance to the ground, which is flanked by a lodge for the cemetery-keeper, consists of a low screen, surmounted by ornamental iron-work, and has gate-piers, with tall pyramidal terminations: the gates are of oak, the upper panels being filled in with ornamental iron-work. The buildings and walls at the entrance are constructed of Kentish rag stone, with dressings of Ancaster stone.

**Bicknor.**—The very old church of this parish is now under restoration. The funds have been raised by subscription, but are still far from sufficient. The edifice was found to be in a much worse condition than was expected, and the long continuance of bad weather, and the unusual cost of all labour and materials, have largely increased the expense. The work is being carried out with preservation of the ancient features of the building.

**Bodelwyddan.**—The church recently erected here has been consecrated by the Bishop of St. Asaph. The foundation-stone was laid on the 24th July, 1856, and the church has been erected at the exclusive cost of the Lowager Lady Willoughby de Broke. The site selected is an eminence by the north gate of the avenue leading to the mansion of Bodelwyddan, the seat of Sir Hugh Williams, Bart., and commands a view of the picturesque vale of Clwyd. The whole cost of the erection is 22,000*l.*

**St. Fagans (near Cardiff).**—The parish church of St. Fagans has been reopened by the Bishop of Llandaff. The church which has now been restored is dedicated to St. Mary. The work of renovation commenced in 1859. The architect employed was Mr. G. E. Street, and the works were contracted for by Mr. Thomas Williams, of Canton, builder. So far had decay advanced, that little short of 2,000*l.* and a period of twelve months have been required to repair the damage which time had wrought on the fabric. The principal works have been an entire new roof, the picking off the plaster from the interior of the walls, and the repointing them both within and without, repewing the whole, and flooring the chancel and all the aisles with encaustic tiles, and restoring the ancient Decorated windows in the chancel and other parts. An entire new north aisle, the full length of the nave, and a vestry on the north side of the chancel, have been added; the former containing five windows in the Decorated style, and the latter, above the entrance from the churchyard, an ornamental trefoil window. A heating apparatus, by Rimington & Son, of Halifax, has been supplied. The bells have also been restored to the tower; the four old ones which had been broken having been recast at the expense of the Baroness Windsor. New gates have been placed in the porch, and a new screen at the base of the tower to divide it from the nave. The churchyard walls have been repaired, and in many parts rebuilt. The stained-glass window above the altar is a memorial one, erected at a cost of 150*l.* The window is emblematical of the atonement and the two sacraments, and illustrates the Crucifixion, Christ blessing little Children, and the Last Supper. At the bottom of the window is the inscription, in memory of the Honourable Robert Windsor Clive, M.P. The window in the south side of the nave is also a memorial. It is placed immediately above the seats set apart for the Clive family, and is to the memory of the Hon. Wm. Windsor Clive. This window is in the Perpendicular style, and is divided into three lights, each of which illustrates the subject of Christ's raising the widow's son.

**Shirley.**—The foundation-stone of a new tower to the parish church has been laid. The new tower is intended to replace the old one, which had fallen into a ruinous condition. The architect is Mr. H. I. Stevens, of Derby; and the builder, Mr. J. W. Thompson, also of Derby.

## STAINED GLASS.

**West Wickham.**—The parish church here has been recently embellished by the addition of two stained windows. The principal one, at the east end, represents in its three compartments the Transfiguration of our Lord between Moses and Elias; beneath are the sleeping Apostles, Peter, James, and John. The second window is on the south side of the chancel. This window is of two compartments: in the first is the figure of our Lord, and in the second the kneeling figure of St. Peter.

**Sidmouth.**—It is the intention of the Queen, it is said, to give a new west window to the church of Sidmouth, in memory of her Majesty's father, who died there.

**Liverpool.**—St. John the Baptist's Church, Toxteth-park, which has but little decoration in its interior, has recently been improved by the introduction of two stained-glass windows. One is a memorial to the late Andrew Browne, Esq., and is the gift of his grandson, the Rev. J. W. Hardman. It is in Early English work of a Geometric character, enclosing three groups, the subjects severally being—“Hannah bringing Sannael to the Temple,” “Jacob blessing Ephraim and Manasseh,” and “St. John the Baptist Preaching in the Wilderness.” In the east window the groups occupy the entire breadth of the window, and the figures are life-size. The first is filled with “St. John the Baptist Preaching in the Wilderness.” The centre compartment is filled with the “Baptism of our Lord in the River Jordan.” The third is occupied with “St. John pointing out to the Two Disciples Jesus as the Lamb of God.” The donor was Mrs. Elizabeth Wheeler. The whole has been executed by J. A. Forrest & Co., of Liverpool.

**Hulme.**—A fifth stained-glass window for St. Philip's Church, Hulme, has been completed by Messrs. Edmundson & Sons, of Manchester. The window is for the west end of the church: the four sections of which it is composed cover an area of 18 feet high by 10 feet wide. The subject is, “Christ Blessing little Children.” The picture contains 17 life-sized figures. The subject is surmounted by a canopy of foliated ornaments. More than a thousand pieces of glass have been combined to produce the window. Above the canopy the tracery completes the picture. The descending dove forms the central object, and on each side angels are introduced holding scrolls bearing inscriptions. St. Philip's Church will shortly be opened for public worship.

## SPONTANEOUS FIRES.

NUMEROUS and extensive fires continue to rage in the metropolis. Night after night the dome of St. Paul's and other important buildings have been lighted up by conflagrations which have caused loss to the extent of many thousands of pounds. Few persons remember such a continued succession of large fires which seem to have happened without the cause being clear. It has been said that certain conditions of the atmosphere, even when the heat is not great, contribute to spontaneous combustion. If this be so, great care should be taken of lucifer matches, which are liable to cause much mischief. We have heard persons remark lately that they have seen these matches explode without friction or other obvious cause. Many of the fires in dwellings and manufactories are caused by lucifer matches. They ought to be kept in close tin or iron boxes.

## TASTE AND DRINKING-FOUNTAINS.

GOOD taste is rare. Look where you may, unmistakable proofs are found that while money is lavished on works both public and private, in some points of view there is still great need of the artistic schoolmaster. This is remarkable in the street fountain movement: many of the designs, as we have already said, will be looked at with wonder by generations yet to come.

Without now again remarking on the design of these works, which should have afforded such a good opportunity for displaying art, we would observe that in nearly every instance, even where the general form of the fountains is not objectionable, the shape of the drinking-cups is unpleasant.

Attached to the fountains at the chief entrance to the British Museum there are cups of plated silver, of an elegant form which corresponds well with the architecture of the fountains. In most other instances no care has been taken in this respect. It is said to be necessary to use the commonest articles in order to prevent mischievous persons carrying away the cups; but it does not

follow that because an inexpensive material be used for this purpose the form must be ugly. Without being costly, these vessels might be made agreeable to the sight, and in correspondence with the general design.

**SIR.**—Should a design be required for a drinking-fountain, permit me to draw your attention to one of Stothard's chaste conceptions which you will find as a vignette in Rogers's “Poems” (London: T. Cadell, 1834), p. 128.

Nearly all the designs which I have hitherto seen seem to me so unnatural and often so disgusting that I am at a loss to conceive how easily they are accepted by the public. What, for instance, can be fouler or more filthy than to drink the vomit whether of a monster or a man? And yet this is the common design of our modern drinking-fountains! As well, nay, more naturally, might one adopt as a model the well-known mannikin of Brussels.

I know of no place where a fountain is more needed than Primrose-hill; yet, in that portion of the park, which is so much frequented, especially by children, there is an utter absence not only of this, but also of every other convenience.

M. A.

## THE PROFESSION OF CIVIL ENGINEER.

OF all the trades, callings, or professions by which men of the present day earn wealth and fame, there is not one requiring more education, experience, and natural talent than that of the civil engineer. To be properly fitted for discharging his various duties creditably he must understand the theory and practice of land-surveying, levelling, mapping, architecture, bridge-building, road-making, railway engineering, construction of harbours, canals, &c., &c., in addition to the mathematical and mechanical training required for the foundation of this superstructure of knowledge, to all which is to be superadded hydraulics, hydrostatics, pneumatics, geology, chemistry, mineralogy, and other sciences.

Stimulated by the success of Telford, Stephenson, Brunel, and a host of others whom we could name, who have acquired wealth and fame for themselves, and have conferred honour and dignity on their country as well as upon the profession of a civil engineer, pater-familias are induced to place their sons in the offices of civil engineers, and pay with them premiums proportionate to the status of the recipient, varying from one to five hundred pounds, or even more. By this means a considerable addition is made to income, as two or three pupils may be taken every year where the operations of the principal are extensive, as well as cheap labour obtained, out of which a considerable profit is also derived.

The usual course adopted with these aspirants is to place them under an assistant, who gives them drawings to copy and other work suited to their capacity as they advance in the knowledge of their profession. If the apprentice be an idle fellow, fonder of billiards and theatres than study and hard work, he may frequent his master's office, coming late, yawning, and listless, and idly whilst there, leaving at the earliest moment, during the three years of his apprenticeship, without making any great advance in the knowledge and practice of what he intends to be his future profession. One object of great importance he generally secures, however, by the payment of his fee, viz., the patronage of his master, who generally feels bound in honour to retain his apprentices for some years after their time is expired, if not otherwise provided for. If you apply to an eminent civil engineer for employment, he will in all probability tell you that several young men who served their time to him are down on his list for employment so soon as a vacancy occurs in his staff; and men well qualified, but who have not yet attained eminence, are obliged to walk about idle because they never had a patron or be no longer patronized. Of course clever men cut out work for themselves: that is to say, men who are clever in the ways of the world, or more probably their friends, originate railways and other engineering works, on which they obtain employment. It is not talent alone, in a professional point of view, which insures success: a combination of circumstances is needed to that end in all professions, but more so in that of the civil engineer than in any other. Doubtless, opportunity must be given, and previous training endured, to enable its improvement to be turned to account. But for the ambition of Buonaparte the military talent of Wellington might never have been fully known and appreciated.

Numbers who have been brought up to the

profession of a civil engineer find it often exceedingly difficult to obtain employment. In all probability they have passed the age in which they might have competed for an Indian appointment: and if they offer for a local surveyorship to some borough town, they will find the salary small, and local influence too great for them, and they may either remain idle, or accept some of the munificent offers which now and then appear in the public prints, such as the following:—"To Draughtsmen.—Wanted, a good draughtsman and colourist, for an engineer and architect's office, to reside in the country. Office hours, from ten till five o'clock. Salary, 17. per week." In the same paper in which this appears (the *Dublin Advertiser*) we are informed that a journeyman tailor's wages have been settled at 27s. per week; and we know masons, bricklayers, and carpenters are getting 33s. a-week in London. Surely this is a poor prospect for a young man to look forward to, after serving a time, for we conclude nothing short of that would qualify him to take the situation of a draughtsman and colourist in an engineer and architect's office. The profession of a civil engineer should never be entered on by any one unless he be in a pecuniary condition to bide his time, and labour for practice, and the information acquired thereby, without being obliged to think much about the remuneration, which we know to be frequently but of trifling amount to junior assistants, when employment can be obtained, which often happens not to be possible. Trades societies have endeavoured to regulate such matters by trying to impose laws on masters as to the number of apprentices they should employ; but it is better in all such cases to leave individuals un fettered in action, although some evils may thereby result, but they will be found of less magnitude, than would be created by a different mode of procedure. Fathers will not be desirous of apprenticing their sons to a profession in which numbers are already unable to find employment, and time will remedy the evil of which we now complain.

AN ENGINEER.

## THE PLANNING OF CITIES.

A READING article in a recent number of your publication induces us to trouble you with a few remarks. It is very rarely indeed, in this country, that we have to lay out an entire town *de novo*, although in the United States and other new lands, it is done almost every day. The subject, however, is of very great importance, involving the convenience, economy, and beauty of buildings, and sanitary considerations of the thousands living in the town. As far as we know, there are but three systems at present in use. First, the rectangular or gridiron system, where every street is in a straight line, and crossed at right angles by others; second, where there is no regular plan at all observed, but the streets run about in glorious uncertainty as chance may have led them; and, third, a mixture of the two previous systems, a part being laid out with regularity, and part confused;—this being the case with old towns that have been extended by new buildings.

Much has been said in recommendation of the rectangular plan, and it has no doubt many advantages; but, as respects convenience of traffic, we doubt if it is a great improvement on the pell-mell system. A passenger wishing to go from one part of a rectangular city diagonally to another part, must perforce pass along two sides of the square, or by the base and perpendicular, as there is no hypotenuse; or, which is equally prolonged, he must work a zigzag alternately to the right and left. Thus a man at Chelsea would have to go to Walworth, or tantamount thereto, in order to reach Hackney. Now, in the mighty maze of London, which we are so apt to censure, we can generally find a street which will lead tolerably direct from any one spot to another. Thus at Piccadilly we can travel with reasonable rectitude either to Kilburn, Islington, or White-chapel. What we may fairly complain of is the want of regularity of system, and of continuity in the thoroughfares, with their occasional contraction into painful defiles.

A mixture of the rectangular with the *Diagonal* system appears to us to combine the advantages of both plans, without any serious drawbacks. We suggest that straight streets should be laid out, radiating on all sides from the centre of the town, and crossed by other straight streets, inscribed polygonally within circles struck from the same centre. The streets crossing the radiating streets might indeed be perfect circles; but that, as in the case of crescents, &c., would be inconvenient

in the planning of the houses. In other words, an octagon, or other polygonal figure, would be formed with streets drawn from each corner to the centre, and with other polygonal streets inscribed within the outer, and parallel to it: of course, in practice, the centre must be an open square, market-place, or cathedral yard.

Some time after striking out this plan, we happened to observe a spider's web, and it proved in a moment that the identical plan we advocate has existed on a small scale in nature for ages. Any one who can find a distinct and complete web unbroken will see how beautifully regular it is, and how perfectly adapted for the quickest passage from any one point to another. The concentric rings are not circles, but polygons, the radiating lines exquisitely regular and straight.

Of course it may be objected that in an old country like this it is impracticable to alter our towns to such a form; but even here new towns occasionally spring up, and large additions are made to ancient ones; so that an approved plan, whether of this or of any other form, may yet prove of important use.

H. &amp; R. P.

## CONDENSATION OF MOISTURE ON GLASS.

SIR,—Could you allow me, through the medium of your widely-circulated journal, to inquire if any of your readers can suggest a good method, applicable to dining or drawing-room windows, of preventing the condensation of moisture from frost on the inside, which in many instances accumulates to such a degree as to be a source of great perplexity to domestics, as well as serious mischief to the painting and furniture? In best rooms it would be very desirable to avoid this, and if the matter has come under the notice of any of your numerous readers, I should feel obliged for any suggestions.

G. W.

\* \* \* Good ventilation would seem to be the best preventive.

## THE SMOKE NUISANCE.

Go where I will, I see houses being built in all directions in the neighbourhood of London; but I do not see any provision being made to abate or extinguish the smoke nuisance. Can nothing be done? Are Dr. Arnott's smoke-consuming stoves introduced? Might not a batch of houses be so built that the smoke should be conducted into a smoke chamber, and there precipitated by water? Landlords should consider that the easier they make living for their tenants, the more likely they are to obtain their rents. The consumption of smoke would save coal, diminish the expense of washing, and help to keep the doctor from the door. If something be not soon attempted, I fear the central part of London will be perpetually smoky. I wish you would be kind enough to call attention to this subject in the *Builder*, as it might lead some ingenious constructor to provide a remedy which would be applicable to both old and new houses.

A LOVER OF FRESH AIR.

\* \* \* All sorts of plans have been proposed in our pages. The opinion strongly expressed by us as to the advantage of a certain amount of carbon in the atmosphere has, perhaps, aided by the difficulty of the subject, tended to prevent changes in other respects most desirable.

## PROFESSED RESTORATION OF ST. PATRICK'S CATHEDRAL, DUBLIN.

I SHOULD feel much obliged by your calling public attention to the present doings in St. Patrick's. Public opinion on a subject of this kind is, I am afraid, at a very low ebb. Indeed, the worthy inhabitants of Dublin appear more concerned about such little matters as replacing the ball on the spire, than about the careful restoration of the cathedral to its pristine beauty; so that unless some pressure be brought to bear on those having the execution of the works, I fear we shall have to regret the loss of our noblest monument of church architecture.

The matter from beginning to end has been done in a corner. Mr. Guinness first privately announced his intention to restore the nave, no doubt a very laudable undertaking; but, as a *vis quæ non*, he required the greatest secrecy on the part of a few of those in office; so much so, that although, at the time, the work of restoration was actually in progress, those who had charge of the building, I believe, were not informed of it for a considerable time. I think we may well call in question the conduct of the Dean and Chapter in the matter. In fact they, and not Mr. Guinness, are the parties answerable for what has been done;

and, in my opinion, they have been guilty of a gross breach of trust.

The letter written by Mr. Guinness containing the terms of his agreement, to restore the nave at his own expense, is a curiosity in its way, and will afford to future ages a remarkable instance of the neglect of all that is ancient and beautiful at this side of the chancel, in the latter half of the nineteenth century. I am informed on good authority that Mr. Guinness merely says that he will restore the south wall of the nave, and give it up complete as it originally existed, but stipulates that his promise to do so shall become null and void, should the Dean and Chapter in the slightest degree interfere with him.

How has Mr. Guinness responded to this act of overweening confidence on the part of the Dean and Chapter? First he refuses to have anything to say to those who have been engaged for many years in the restoration of the cathedral. Next he shuts up the place, and will allow no one to enter to see the works. He even makes a boast that he can and will shut out the Dean and Chapter themselves from inspecting them. He entrusts them to a builder, very respectable indeed, but wholly inexperienced in such works. He may know something about Gothic architecture, but how much we may guess from his proposing to erect flying buttresses to an Early English wall, after the pattern of some debased works at the east end of the choir.

Drawings for the restoration of the church were made by the late Mr. Carpenter some years ago, which, on the whole, were excellent, although, in some points, especially the exterior, they were not in accordance with Irish traditions. Even these he has informed certain parties, he does not intend to carry out, as they do not agree with his preconceived theories. The south wall of the nave has been already taken down in such haste that no drawings whatever could have been prepared of it, or no measurements taken to guide its re-erection. This wall was peculiar in many respects, and of these peculiarities no proper notice could have been taken in time. Besides, it was in such a state that it would be only by the most careful examination and collection of fragments that a satisfactory restoration could be made. This, I fear, is now out of the question.

Mr. Guinness would he thought much more of in future ages if he left for a monument St. Patrick's restored,—not a building erected in pseudo-Gothic according to his own ideas, which, however talented he may be as an amateur, are not likely to produce an edifice to be proud of.

I have drawn this letter out to some length, but the matter is of imperial, and not merely of local, interest, and should not be allowed to proceed further without some attention being directed to it.

MEDLEVALIST.

## THE STRIKE IN BRISTOL.

SIR,—In the *Builder* of the 8th inst., under the head of "Trades' Movement" it is stated, "at Bristol the strike of the operative masons is virtually at an end. The men have agreed to resume work at an advance of 6s. per day, with a promise that, on March 18, 1861, the two hours' labour less per week will be conceded. Several of the masters have agreed to this compromise, and it is expected the others will shortly follow their example."

As this paragraph might tend to mislead the operatives, and induce them to prolong the strike, you will oblige by allowing me to state that there is not the slightest prospect of the masters acceding to the present demands of the operatives, nor am I aware that more than three or four "master builders" have resumed work on the terms stated.

ROBERT COMPTON,

Secretary Master Builders' Association.  
\* \* \* The statement came to us from a master builder of Bristol.

BRISTOL MASTER BUILDERS' ASSOCIATION.—THIS STRIKE.—On Monday last, the annual general meeting of the members of the Bristol Master Builders' Association was held at the offices of the Association, No. 50, Quay. A general invitation was held out to all master builders to attend, and there were about fifty present. Mr. Baker occupied the chair. The committee, in their report, pointed out the importance of the Association, stating that it had been forced upon the master builders in consequence of the operatives having combined, from time to time, to enforce demands that have been considered unjust and tyrannical, and to which the masters on many occasions, not being united, were obliged to submit. The association had been called into existence "to resist any unjustifiable demand on the part of the operatives, and to promote the general interests of the building trade;" and on this principle, the committee stated, they had acted. They had entered into correspondence with similar associations, and they had reason to believe that the present movement of the operative masons in Bristol, as well as in many towns in the north, would be the means of inducing the masters to see the absolute necessity of fol-

lowing the example of the builders of Bristol, by immediately forming similar associations. The committee then detailed the circumstances connected with the strike in Bristol, and regretted that they could not conclude the report with the gratifying intelligence that perfect harmony existed between the masters and the operatives. It is thought that the demands of the operatives were such as the masters could not accede to, and expressed regret that the operatives had refused to leave the masters in dispute to the arbitration of an equal number of masters and operatives, with a chairman independent of each. The chairman, in moving the adoption of the report, referred to the misrepresentations by which the operatives had, to some extent, gained the sympathy of the public. But what, he asked, was to dictate the rate of wages? Surely they should not elevate the wages in one individual town into a prominence largely above the surrounding towns. Within a radius of fifty miles of Bristol there was not to be found a single instance in which wages were so high as they were in Bristol. The general average was a guinea a week; but if the demands of the Bristol men were acceded to they would receive 29s. per week. Having pointed out the evils that would result from this high rate of wages in overslocking the labour-market in Bristol, the chairman said the association was purely one for defence—its rules forbade any aggressive policy. They must confine for such purpose only until men obtained more experience and more education, and he was quite sure that it was only by the strong arm of defence of that kind they would be able to hold their relative positions. Mr. Baker then alluded to the tyrannical measures adopted by the operatives' society to prevent men going to work, after which he continued by saying that the masters had considered the question relative to a re-arrangement of wages, or a re-adjustment of the system of paying men to set aside any question relative to lessening the hours of labour. It had been suggested that the men should be paid by the hour; that an increase of wages should be given under the new system, and half a day's holiday on Saturdays. That suggestion, however, did not meet the approval of the men, though it was hoped that the masters would yet be able to carry out such an arrangement. The carpenters, he believed, would be ready to fall in with such a scheme, and the masters hoped next year to remodel the whole system of paying wages.

Mr. Yalland seconded the motion, observing that the struggle which they had entered into was a painful one, but it was their duty to continue their resistance. He had experienced for the last year or two the inconvenience, trouble, and anxiety, caused by strikes; but he was now getting a little used to them. He thought the demands of the men were unjust and tyrannical, and that the masters would do right to adhere to their first resolution. The report having been adopted, a vote of thanks was tendered to the committee for their services during the past year.

Mr. Foster then proposed, "That this meeting highly approves the course adopted by the master masons in resisting the exorbitant demands put forward by the operative masons, and would urge them still to continue the same." He said they did not wish to take any advantage of the men. If the state of things in the country and the neighbourhood would justify any advance of wages for the men, the masters of Bristol, he thought, would be prepared to give it, and would have no disposition to resist it; but they had resisted the present demand because they did not think such an advance was called for. If the present demands were conceded, the masters would be masters no longer, and they might almost as well give up business altogether, and leave the public without any one to manage the business for them, so that they must go to the workmen themselves.

Mr. George seconded the motion, after which Mr. Bowden alluded to the report the men had published to the effect that thirty master masons had already given the advanced wages. He had looked in the "Bristol Directory," and could only find ten out of the thirty names there, and of these ten, he had told him that it was not true that they had given the advanced wages, while of the other five some were speculative builders, and only one or two general masons. Mr. Bowden never said the master builders were unanimous, and he believed there was not the slightest desire on the part of any one master to give way to the men.

A vote of thanks was then passed to the chairman, and the proceedings terminated.

We may add that owing to the strike, there is no public work in hand in Bristol at present.

### Miscellaneous.

**EVIDENCE AS TO THE ARCHITECTURAL MUSEUM.** We have in type some part of the evidence given to the parliamentary committee on the South Kensington Museum bearing on the Architectural Museum, but we are compelled to postpone it.

**LAMP-BLACK AND OIL AS A CAUSE OF FIRES.**—Some correspondents of the *Star* testify to the liability of lamp-black to take fire under certain circumstances. One of them, Mr. W. Estwick, of Southgate-road, says,—"A few years ago one of my workmen placed a ladle which had been recently used for the purpose of measuring linseed oil upon the top of a cask of lamp-black, and a few drops of the oil fell into the cask. One evening, just before closing the works, I discovered a very disagreeable smell; I therefore searched the factory to ascertain the cause, and to my great surprise found the whole of the black in the cask resemble a large ball of fire, and I have no doubt that before morning it would have burst into a flame, and caused not only the destruction of the stock, but the entire premises. My plan since the occurrence has been not to keep more black in stock than required for present use." Wood or canvas, painted with lamp-black and oil, ought to be carefully looked to; at least till well seasoned, if entirely safe even then.

**TREASURE TROVE.**—The finding of gold, silver, and copper coins, ornaments, and other relics, having led to considerable confusion and dissatisfaction among the persons finding and those claiming a right to them, the Government has issued, through the Home Secretary, instructions authorizing the payment to finders of relics of antiquity in England and Wales, of the actual value of the articles, on the same being delivered up for behoof of the Crown. Where persons refuse or neglect to deliver them up, measures may be taken for their recovery, and information forwarded to him.

**HIGH-ROAD RAILWAYS.**—The subject of a line of rails to be laid down on the present high road between Paisley and Glasgow, so as to admit of omnibuses, drawn by horses, for the cheap, safe, and speedy conveyance of passengers, has been mooted. It was on this line of road, we recollect, that Mr. Scott Russell started steam carriages many years ago; and they ran well till the road trustees, as stupidly as maliciously, laid on a very thick stratum of loose "metal," which compelled such high pressure on the engine that an explosion ensued, which "blew up" the whole scheme. Now, it is to be hoped, road trustees have more sense; for the broad wheels of such carriages would benefit a road rather than injure it; but a line of rail or tramway would obviate, of course, even this supposed difficulty.

**THE FIRST RAILWAY IN SOUTH AMERICA.**—The great event of the past month, says a June number of a *Natal* paper, has been the official opening of our little railway, which has now become a matter of history. True, it is only a single line, and no more than two miles in length, namely from the "Point" landing jetty, near the custom-house, on the margin of the bay, to the centre of the town of Durban, near St. Paul's Church. That event took place on Tuesday, the 26th of June, exactly eighteen years to-day after the relief of Captain Smith and his brave little band of Britons by the arrival of the Southampton, when Port Natal was wrested from the Dutch Boers and declared a British colony.

**DRINKING-FOUNTAIN MOVEMENT.**—The Bath City Act Committee, at the suggestion of their engineer, propose to erect drinking-fountains near urinals, so that the surplus water from the former may run in and purify the latter. The association of ideas is by no means a pleasant one, and the practice appears to be objectionable, and likely to bring the Bath drinking-fountains into bad odour. A design for one of the proposed fountains, to be erected inside the railings near the rinal at the Old Bridge, has been submitted to the Board and generally approved. It is of simple character, consisting of an iron pillar surmounted by a vase, from which the water will flow into a reservoir at the top of the pillar.

**THE LATE "RAINY SEASON."**—Sir John Herschell, while repudiating certain rumours that he had "predicted the weather," or become "a weather prophet,"—a reputation which he does not seem to covet,—nevertheless says,—"I do plead guilty to having formed an opinion, from some remarkable phenomena exhibited by the sun last year, and others which it has since continued, and still continues in a somewhat diminished degree, to exhibit, that this summer would prove, as it has done, a rainy one. . . . Scientifically speaking, and connecting these phenomena (which are *publii juris*) with the laws of solar periodicity, regard the meteorology of the last twelve months as more pregnant with instruction than may take some opportunity of time on record; and I that matter in a more definite and public form." An "eminent astronomer and meteorologist in Belgium" is said to have published a theory on the subject, according to which the continued monsoon winds from the south-west brought a settled continuance of rainclouds from the southern regions, where "a volcanic eruption in the latitudes has occasioned the melting of immense quantities of ice, and produced an enormous amount of vapours and clouds" deluging Australia, and resisting other causes tending to change, of course, till they had all passed over the north of Europe. With south-west winds such as we have had, however, passing north-eastwardly over the *Pacific* and *Atlantic*, there seems little occasion to look to "volcanic eruptions" as a continued source of moisture. And, after all, has not the singular diminution of the rainfall for a series of years (leading to fears of its permanent decrease, as we noted, it may be remembered, at the time), something to do with the recent excess as a restoration to the average quantity? As to what part the sun may have played in *both* cases, it is for Sir John Herschell to enlighten us.

**LOOK TO YOUR RAILWAY ARCHES.**—A government inspector is sent to examine a new line of railway: he "goes over" it, dines with the directors: the people flock up and down for a few years: a dreadful accident occurs, and an inspector is again sent down to find out how it happened. I think now it would be better for these gentlemen to inspect the lines every two or three years, so as to point out how accidents may be avoided; and I beg to suggest that they commence with the North London Railway, looking first of all to the arches which cross the King's-road and York-road (late Maiden-lane), for these two alone will show to what condition railway works can soon get if not attended to.—G. T.

**MONUMENTS AND MEMORIALS.**—The London correspondent of a Manchester contemporary says:—"The sub-committee for the erection of a monument to Mr. Hallam have induced three of our younger sculptors to enter into a competition for a full-length statue to be erected in St. Paul's. The authorities of Westminster Abbey would have given the space for a tablet or bust, but declined to entertain the project of a statue. The sculptors are Messrs. Theed, Noble, and Mauro."—A memorial tablet has just been placed in the north aisle of Exeter Cathedral, by the officers and privates of the 9th Lancers, in remembrance of officers and privates killed during the late campaign in India. The tablet is of white marble, with the figure of a lancer, fully accoutred and mounted, on each side, and the medals, stars, and crosses awarded for services in India, pending from a scroll.—A monument is in preparation, to be erected at St. Paul's Church, Penzance, to the memory of "old Dolly Pentraeth," who is said to be "the last person who spoke the Cornish language." This will bear a suitable inscription, and is being prepared, conjointly, by the vicar and Prince Lucien Bonaparte.—September 12th was definitively fixed as the day of the inauguration on the heights of the *Pay de Dôme* of a colossal statue of "the Virgin," cast from the cannon taken at Sebastopol. The bishop of the diocese, Mgr. Morlhon, in a pastoral letter, says—"This colossal statue will remind future centuries that on September 5th the Emperor promised to Mary the canons of Sebastopol, and that on September 8th Mary opened the gates of Sebastopol to the Emperor's soldiers. May this happy alliance between heaven and earth, between religion and authority, be drawn closer every day." The transaction, as thus stated, does not look altogether admirable!

**ELECTRO-TELEGRAPHIC PROGRESS.**—The Electric and International Telegraph Company having offered the French Government to establish a line between Dieppe and Newhaven, and to transmit messages from the coast of France to all parts of Great Britain and Ireland at a reduced tariff, the directors of the Submarine Company have, under the terms of their concession, given notice to the Government, that they will exercise their right of preference. The directors state that they have ever been advocates of low charges, and they believe that a reduction in the tariff may be met by an increased traffic.—The failure of the attempts hitherto made to connect America with Europe by a submarine telegraphic system has not discouraged the hope of the eventual realization of the project. In addition to the Shaffner and other schemes of deep sea telegraph cables, Mr. Perry Collins, formerly United States commercial agent at the Amoor River, is pushing his scheme for uniting St. Petersburg, Moscow, &c. direct with San Francisco. The Russian Government is also interested in it; and the Canadian parliament has freely granted permission so far as the line will pass through their territory. The Russian-American Telegraph Company is the title adopted. There are one thousand miles of telegraph line already constructed directly eastward from Moscow to Perim, while another part is being constructed further east across the Ural Mountains to Ekatarinburg, with the design of extending it to the Amoor river. The Russian Government has granted to Mr. Collins the initiatory surveys from the Amoor river eastwardly, so far as the Russian possessions are concerned. It is proposed to extend the line from the Amoor either by the western coast of the Sea of Okhotsk to Kamtschatka, and thence by Bebring's Straits into Russian America, stretching down along the coast of San Francisco, or else by and down the island of Saghalien across the Strait of La Perouse into the Japanese islands, with a branch line to Hongkong, and up north by the Kurile and Aleutian islands to Russian America. The distance from San Francisco to the Amoor river will be about 6,000 miles—half way to Moscow; and the total cost of the line needing to be done, independent of Russian, will be about 2,000,000 of dollars.

**NEW CHURCH AT HORNSEY.**—It is in contemplation to erect a new church at Crouch-end, Hornsey. The population is rapidly increasing, and the small chapel in which service is performed is no longer adequate to the wants of the locality. A site is promised by Mr. Charles Scrase Dickens, of Cooleshurst, Hornsey, and the church is to cost about 3,000*l.*, of which rather more than half is subscribed. Mr. E. H. Chapman and lady give 150 guineas, Mr. G. Warner and Mr. Hitchcock 100 guineas each, Mr. W. Block 100*l.*, Mr. Clay, 100*l.*, Mr. R. Hanbury, 50*l.*, Lord Shclrhurc and Mr. R. Hanbury, M.P., 20*l.* each.—*Guardian.*

**THE BUILDING TRADES MOVEMENT.**—At Bath a conference of the masters and masons has been held, at which the masters, it is stated, we know not with what truth, have offered to increase the rate of wages 6*d.* per day, and to allow the men to leave at four o'clock on Saturdays after 1st of March next. The proposal has been favourably received by the representatives of the operatives.—A petition of the working builders of Kettering is in course of circulation, praying for the masters to allow them to strike work on Saturdays at four o'clock; their weekly wages to be paid at that hour.

**Gas.**—The Warminster Gas and Coke Company have resolved, says the *Wills Mirror*, to reduce the price of their gas one-fourth, viz., from 6*s.* 8*d.* per 1,000 cubic feet to 5*s.*: this reduction, it adds, will no doubt lead to a much larger consumption.—At the annual meeting of the Truro Gas Company it was resolved to reduce further the price of their gas: the net charge will be 5*s.* to 5*s.* 4*d.* per 1,000 feet. "The company," says the *Cornish Telegraph*, "have in the past twelve months expended upwards of 2,000*l.* in rendering the works capable of supplying the increased requirements of the town; and this almost simultaneous reduction in the price of gas will no doubt be fully appreciated by the consumers, and lead to its being more extensively used, especially in private houses."—The Wolverhampton Gas Company have just announced their usual dividend of 5 per cent. for the half-year, and the addition of a remainder to their reserve fund. The chairman, in moving the adoption of the report, justified the expenditure incurred in laying larger mains, by the necessity for giving a larger supply of gas, and said the reduction recently effected in price would, it was presumed, increase the consumption.

**STEAM BAKERIES.**—Steam-baking companies have been formed in many of the large cities of the Union for the purpose of supplying pure bread at a moderate price. The freight on a barrel of flour from New York to London is 3*s.* 3*d.* per barrel; other charges, 9*d.*, making flour costing 2*s.* 9*d.* in New York worth 33*s.* in London. Now, if the bakers there sell an 18-ounce loaf at 3*c.*, being 6 ounces for a half-penny, the bakers in London should sell, allowing for the charges of transportation, a 4-lb. loaf at 6*d.*, instead of which many bakers are charging 7*d.* and 7*d.* for these loaves. Estimating the average price of the best bread at 7*d.* per loaf, it is 1*d.* more than we should expect to find it, judging from the American prices of flour and bread. There is this difference between steam bread-making and baking in America, and manual bread-making and fire-baking in England. Everything is in favour of a cheaper production of bread in this country than in America, when flour is sold at the same price, excepting that there the bakers have availed themselves in their business of steam and machinery, which cost less than the cheap hand-labour of this country. A penny a loaf may seem to some a small matter. It makes little difference to the wealthy, or even the middle class; but there are thousands in London to whom the extra penny a loaf is almost a matter of life and death. The population of London is estimated at 3,000,000. Allowing these inhabitants to consume on an average 5 ounces of bread a day, the annual loss to the consumers in this city, occasioned by the inferior manner in which the baking business is conducted, is fully 5,000,000*l.* sterling. Besides the pecuniary loss arising from the hand-and-foot process of making bread (for it is asserted, on good authority, that many bakers of London make use of the latter in preparing the dough for the ovens), the foul, unwholesome air of the underground bakeries of London kills hundreds, and perhaps thousands yearly, before they have lived half man's allotted years. The advantages afforded by the steam bakeries are cheapness of production, a superior quality of bread—not only more palatable, but more wholesome,—and the amelioration of the condition of the journey-men bakers. The certain deficiency of the wheat harvest of Europe invests this subject with peculiar interest.—*The London American.*

**TELEGRAPHY.**—The Queen's Speech, which contained 872 words, was sent by the Magnetic Telegraph Company, from their new Central London Station in Threadneedle-street to Manchester in 20 minutes, Liverpool 21 minutes, Glasgow 25 minutes; and other places, including Leeds, Hull, &c., in the same proportion; the whole transmission averaging about 40 words per minute. The quickest transmission was 43 words per minute.

**MACHINES FOR CUTTING STONES IN QUARRIES.** Mr. Le Blanc, Welbeck-street, has provisionally specified an invention which is intended to facilitate the cutting of stones in open quarries. The *Mining Journal* says,—The machine moves on iron rails, and cuts the stone by means of twelve pickaxes, about 30 inches in length: they are bolted to a cast-iron plate of 60 inches in diameter: these plates are five in number. The boiler is tubular, and is furnished with cylinders, the connecting rods of which act on the same shaft with a double crank. Two pulleys on the same communicate the movement to two other pulleys, the shaft of which is held by two supports on windlasses placed in front of the machine. The same shaft carries two pulleys, communicating movement to two others, each armed with twelve pickaxes, as above shown. The machine when placed on the rails runs from one extremity of the quarry to the other, cutting the stone in a straight line: on arriving at the end it is made to go back, the rails being placed obliquely, so that on arriving at the side it began at, it is in position to commence a second cutting. On the windlasses above mentioned two cords are rolled, and which pass on a pulley fixed at the opposite end of the quarry to that the machine starts from: the shaft, held by two supports on the windlasses, hears also two eccentrics, whose rods govern two iron half-boops furnished with a groove, by means of which the amplitude of their oscillations is increased according as the rods are placed more or less near the centres of oscillation. The half-boops have each at their lower part a catch which governs a ratchet-wheel, fixed on a shaft bearing two endless screws, one having the worm to the right, the other to the left: each of these screws gear with a wheel with helicoidal teeth fixed on the shaft of the wooden drums, forming the windlasses, forces each to turn, and the two ends of the cord winding up, the machine is obliged to advance, drawing as it does on a cord fixed at the other end of the quarry. On the machine having completed a run, cutting the stone a determined depth, the scythes or pickaxes are raised by means of a screw, and the machine is backed to where it was started from.

**WATCHMAKING.**—We gather a few notes from the *Clerkenwell News* respecting the progress of horology in America, which ought to teach the workers in Clerkenwell the absolute need that there exists of advancing with the improved intelligence of the times. On the southern banks of the river Charles, Waltham, Mass., so the report states, Mr. A. L. Dennison has erected a brick building, two stories in height, and enclosing a large quadrangular court. Surrounding this large building there are 100 acres of land, on which, here and there, are placed the cottages which form the rural homes of the watchmakers. Some years since, Mr. Dennison having paid a visit to the Springfield armory, and having been brought up to the watchmaking business, the thought occurred to him that it was possible to manufacture watches also by the aid of machinery. In this attempt he seems to have succeeded; and now, in a large building so constructed that the greatest amount of light is admitted, there is accommodation for something like 250 hands, more than half of whom are females. Driven by a steam shaft, the bands traverse the whole building, and move the various machines which are used in this manufacture. By means of machinery the first cutting of the stamps and dies is effected; also hardening and forming the barrels and gears, coiling and fastening the mainsprings, clamping, coiling, and fastening teeth, sharpening of pinions and axles, cutting escape-wheels, tripping and marking the porcelain dials, drilling and shaping the jewels, and adjusting and fitting together the various parts. The following figures will serve to give some idea of the extent of this trade:—In 1858 there were imported into Great Britain 846,894 watches. In the same year the number of watches half-marked were,—In London, 39,614 silver, and 26,870 gold cases. In Chester, 18,643 silver, and 8,200 gold cases. In Coventry, 16,000 silver cases. In all, 148,923. In 1857, 14,141 watches of British manufacture were exported to America.

**"WORK" HOUSES FOR PARIS.**—It appears that the Emperor Napoleon is determined to do away with mendicancy in his capital. A large building is now ready for the reception of beggars of both sexes, who, after an examination by a commissary of police, to ascertain that they are really unable to obtain work, or too infirm to perform it, are provided with food and clothing. Those who are capable of labour have work to do, according to his or her profession, and the surplus of earnings, after deducting expenditure, which is on a low scale, forms an accumulating fund for individual benefit. The daily food of each consists of a pound and a half of bread, soup and vegetables, and on Sundays there is the addition of meat with little indulgences, according to the state of health of the inmates. Napoleon thus appears to be not only inclined to introduce our workhouse system into France, but to improve upon its modern degeneracy, or rather to go back to the fountain-head, by adopting Queen Bess's original design.

**ANOTHER "NEW MOTIVE POWER," TO SUPERSEDE STEAM.**—The Paris correspondent of the *Star* thus announces the invention or discovery of another of the thousand and one forms of power that are ever threatening to "supercede steam":—"The whole of the scientific world is in a state of revolution at the bare prospect of the success obtainable by M. Lenoir's new motive power, for which we have been prepared for many months past. The trial has been made at last, and the result has excited the greatest interest throughout Paris. As usual in all great discoveries, that made by M. Lenoir is founded upon the simplest fact in science, being merely the application upon a large scale of one of the elementary experiments in chemistry,—that of the synthesis of water in the radiometer. He has simply utilised the principle of the expansion of air, when at a lofty temperature, by means of combustion through the spark of induction of hydrogen. The economy produced is calculated at not less than 40 per cent. by the suppression of the boiler, the chimney, and the other accessories hitherto used in the construction of steam engines, and the machine itself offers a saving of 30 per cent. Several engines, varying from five to ten horse power, constructed by Marinoni, have been despatched to England and Belgium."

**"UNITED HOMES."**—At Lord Dartmouth's house, at Sandwell, near Birmingham, there has been in operation for some time an establishment where unmarried ladies and widows with their children can live as ladies should live, "each lady being expected to select some branch of occupation connected with the objects of the institution, and to assist therein." The rules are rather sternly worded, but as no one is obliged to accept them, or to abide by them longer than she wishes, there may be no harm in that. It is not our present object to advocate the establishment of such institutions, for the difficulty of management must be overpowering; nor do we intend to speak of the sisterhoods now forming in so many places. They have our hearty sympathy; we venture to foresee great results from them; and it is well that we are beginning at last to unlearn the prejudices which not long ago were as marks of orthodoxy to us all, and to learn that so long as a thing may be made good, it matters but little whether sometimes it has been distorted from its proper nature, and been made bad. The nature of the establishments which we wish to submit to the consideration of our readers (calling them, for lack of a better name, "united homes") may be described as compounded of the nature of a boarding-house and of a club; for we would have some members to reside on the premises, but others to have homes, or half-homes, of their own. If we were asked how we would have such an institution set on foot and managed, we should say that it must be done by an individual, not a committee; not by the aid of subscriptions, but, to speak practically, as a commercial speculation. It should be in a town, or, at all events, near one: a large furnished house is required, or, which is better, two houses adjacent in a street, so that a door can serve for communication. The director should be a married man without young children; upon him personally the success of the design would depend; for indeed, in all institutions, and especially when people have to live together, the working of the whole depends upon the head, more than upon any written rules. He should reserve his own apartments in the building; and of course calculate the number of resident members by the accommodation that remains. As public rooms, there should be set apart a drawing-room, a dining-room, and a gentleman's library and a ladies' library; likewise, upstairs, a music-room; if more rooms can be spared, all the better.—*Friend of the People.*

ART IN NEW YORK.—A new Art Gallery, 200 feet by 35 feet, is being erected on Broadway, near St. Thomas's Church, New York. A collection of paintings from Dusseldorf and elsewhere will be placed in it.

RIFLE BUTTS.—According to a drawing and description forwarded to us by the architect, the rifle butt erected for the Leicester Rifle Corps is built of hard Leicester bricks, with close joints of Barrow lime mortar; and afterwards faced with Staffordshire vitrified blue bricks, laid in cement. This facing, though not impervious by rifle balls, is so hard that it will sustain a very heavy fire; and, as the onlay upon it is very small compared with iron facing, it may be refaced annually at about the sum of the 5 per cent. interest on the value of an iron facing. The curve of the plan renders a battering-face to resist the action of wind unnecessary. The cost of the erection was 150*l*. We are not disposed to recommend such a mode of construction. The height, 20 feet at the ends and 25 feet in the middle, seems hardly sufficient.

ANOTHER DEVIANCE TO ST. SWITHIN.—We have often wondered whether it were not possible to desiccate the hay and corn crops, by means similar or analogous to those used for desiccating timber, or to that for rapidly drying clothes at the wash-houses. It is satisfactory to observe that engineers appear to see little difficulty in doing so. Mr. Wakley, in a letter to the *Times*, refers to two machines manufactured by Mr. Lloyd, engineer, No. 70, Guildford-street, Southwark, and Mr. Davison, No. 8, London-street, Fenchurch-street, by which ripe corn, wet from the field, may speedily be dried. Mangel-wurzel and turnips, and possibly potatoes, might be saved by the same means in wet weather. We know not how these machines are constructed, but the mode in which certain desiccations are made is by rapid centrifugal motion; perhaps some modification of the farmers used in winnowing may have been adopted.

A PUBLIC PARK WHICH MUST NOT BE WALKED ON!—The regulations for the government of the West End Park, Glasgow, lately agreed to by the Town Council, have been confirmed by the sheriff, Sir A. Alison. One of these regulations, imposing a fine of 5*l*. on any one walking on the sward, created a good deal of excitement, through the opposition of a locally well-known "people's man," Councillor Moir. That gentleman appeared, by his agent, as an objector, urging that the proposed rule was inconsistent with the object for which the park was acquired, and without precedent in any similar case. The sheriff said that what he had to do was merely to see that the regulations were "not inconsistent with the law of Scotland," and, as such an objection could not be applied, he gave his confirmation.

BRISTOL TIMBER TRADE.—Messrs. Barnes & Co., in their monthly circular of the 1st instant, say the trade is in a more prosperous state than has been known for several years, and that prices are steadily advancing. The arrivals for the past month have been 24 vessels, 13,184 tons register (against 33 vessels, 15,606 tons, for the corresponding month last year), and consist of 5 from Quebec, 4,035 tons; 3 from New Brunswick, 1,787 tons; 1 from Memel, 424 tons; 3 from St. Petersburg, 2,347 tons; 4 from Norway and Sweden, 1,131 tons; 6 from Archangel and Omega, 1,921 tons; 2 from the United States, 1,439 tons; showing a decrease of 9 vessels, 2,422 tons register, compared with the corresponding month last year. For the season commencing February 1st, 1860, to the present time, there have been 71 vessels, 35,071 tons register arrived, against 96 vessels, 45,543 tons register, for the same period last year, showing a decrease of 25 vessels.

ACCIDENTS TO PERSON AND PROPERTY.—At Kildermister, a bricklayer, named Benjamin Bourne, has died from injuries received from falling off a wall at the back of a public-house in Blackwell-street on the previous night. Verdict, "Accidental death."—At Manchester, an excavator, named Emmanuel Cheney, in the employ of Messrs. W. & J. Worthington, contractors, was engaged in making the bottom of a main sewer, near the Queen's road, Cheetham-hill, when a quantity of clay fell upon the back of his neck. The sewer measured 3 feet by 3 feet, and 6 feet 6 inches in height: neither centres nor stays were used. Deceased was taken to the infirmary, where he died on Sunday. A verdict of accidental death has been returned.—A temporary building, in the course of erection at Toulon, for the purpose of a grand ball to be given to the Emperor, recently fell, killing three and wounding fifteen of the workmen, most of whom, fortunately, however, were absent at their dinners.

NEW IRON CHURCH AT KILBURN.—Sir: Oblige us by saying, as to your notice of the above church, that Mr. Browne is not a member of our firm: he superintends that portion of our business relating to the erection of iron churches, schools, and houses.—TUPPER & CO.

THE FIRE AT BLACKWALL: STEAM RAM WARRIOR.—The fire which occurred last week in the premises of the Thames Iron Works and Ship-building Company, at Blackwall, destroyed property of the value of about 10,000*l*. The enormous steam ram called the *Warrior* will be much delayed by this fire. The tonnage of this vessel is estimated at between 6,000 and 7,000, and her aggregate cost at about 380,000*l*. Her machinery will be about 1,250 horse-power, and will propel her at the rate of 13 or 14 knots an hour. She is, first of all, built wholly and strongly of iron, and upon this groundwork she is being covered over with oak 18 inches thick, and over this again encased from stem to stern in wrought-iron 5½ inches thick. All the woodwork for this gigantic specimen of naval architecture, including the sawing, planing, tenoning, mortising, and moulding, with all the machinery, has been burnt. The vessel has been on the stocks about twelve months, and was expected to be launched about Christmas.

THE AMERICAN SHIP BALLOON.—The preparations, it is said, are nearly completed in New York for the departure for Europe of Professor Lowe and his associates in their aerial ship. A trial trip has already been made with a successful result. Should this European voyage be successfully accomplished in the short space of 48 hours, as the professor anticipates, it will make a complete revolution in the manner of conveying intelligence between the two continents, as advantage can be taken of the eastward current in the return voyage, by passing round the world. The name of this novel ship is the *Great Western*. Its extreme length or height is 300 feet; its largest diameter, 135 feet: the basket in which the mail and passengers are to be conveyed is 30 feet in diameter, and constructed to carry twelve persons. Under this basket is an iron life-buoy, 40 feet long, which contains a calorific engine, designed to give direction to the ship by moving a fan, rather than to propel the ship itself.

TENDERS

For board-room, surveyor's residence, &c., at Ebury-bridge Wharf, Finsbury, for the parish of St. George, Hanover-square, Mr. R. W. Jencks, architect. Quantities supplied by Messrs. Pearson & Doughney, and Mr. Green:—

Williams, Brothers.....	£6,987 0 0
J. Harding.....	2,478 0 0
J. & C. Todd.....	6,958 0 0
G. Myers.....	6,990 0 6
Rowe.....	6,830 0 0
T. Jackson.....	5,756 0 0
Batterbury.....	6,559 0 0
Jackson & Shaw.....	6,475 0 0
Fish.....	6,250 0 0
Atkinson & Son.....	5,993 0 0
Watson.....	5,750 0 0
Evans, Brothers.....	5,672 0 0
Todd, Junr.....	5,509 0 0
John Grant.....	5,575 0 0
Ruddin.....	5,544 0 0
Woodruff.....	5,497 0 0

Received by Board of Works for the Hackney district, for granite. Mr. James Lovetogov, surveyor:—

Pennington (Guernsey granite).....	16s. 11d. per cubic yard.
Newton (Blue Elvia granite).....	12s. 4d. "
Ross (Bombay granite).....	12s. 2d. "
Ross (Port Phillip granite).....	9s. 2d. "

Note of the tenders were accepted. "

For sewer works at Stoke Newington:—

Wood & Sons.....	412 0 0
Bilton & Clarke.....	413 7 11½
Hartland & Bloomfield.....	350 17 0
Tottle.....	340 6 2
Abbot & Hopwood (accepted).....	320 0 0

For a public-house at Victoria-park-road, for Messrs. Holt. Mr. Charles Dunch, architect:—

Ennor.....	£1,760 0 0
Wood.....	1,735 0 0
Perry.....	1,753 0 0
Brown.....	1,740 0 0
Hedges.....	1,694 0 0
Chapman.....	1,664 0 0
Hack & Son.....	1,455 0 0
G. J. Watts.....	1,450 0 0
G. Blackburn.....	1,432 0 0

For building Jireh Chapel, in East-road, City-road, for Mr. J. A. Jones and Committee; and for pulling down the old chapel in Brick-lane, Old-street, Mr. Richard Howard, architect. Quantities not supplied:—

Sargeant.....	£749 0 0
Bugg.....	649 19 0
Raby.....	623 0 0
Riley.....	590 0 0

For setting out, forming paths, planing, and completing the pleasure-gardens in connection with the Link Hotel, for the Great Malvern Hotel Company. Mr. E. W. Elmist, architect:—

Bowker (accepted).....	£774 0 0
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For new mill, Blackfriars, for Mr. Neville. Messrs. John Young & Son, architects:—

Henshaw.....	£595 0 0
Larke & Son.....	589 0 0
Hollam.....	564 0 0
Chessum.....	470 0 0

For works to be done in pulling down and rebuilding warehouse, No. 52, Bow-lane, for Mr. William Vivian. Messrs. Tiltot & Chamberlain, architects:—

Lawrence & Son.....	£1,757 0 0
Brown & Robinson.....	1,767 0 0
Rider.....	1,754 0 0
Ashby & Sons.....	1,695 0 0
Fish.....	1,650 0 0
Piper & Son.....	1,667 0 0
Wills.....	1,663 0 0
Thamer & Son (accepted).....	1,650 0 0
.....	1,591 0 0

For residence for Mr. L. S. Watson, Wisbech. Mr. W. Adams, architect:—

Bateman.....	£3,920 10 0
Andrews.....	2,990 0 0
Stimpson (accepted).....	2,970 0 0

For a brewery at High Wycombe for Messrs. Lucas. Messrs. Pontifex, engineers. Quantities supplied by Mr. Arthur W. Q. Nicoll:—

Williams (accepted).....	£1,990 0 0
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For new residence for Mr. C. J. Gibb, M.D., Westgate-street, Newcastle-on-Tyne. Mr. T. E. Watson, architect:—

Masonry.

Reed.....	£1,735 0 0
Spoof.....	1,522 10 0
Scott & Reid.....	1,500 13 9
Dunlop.....	1,477 0 0
Ferguson.....	1,457 0 0
Gibson (accepted).....	1,448 0 0

Carpentry.

Spoof.....	£1,210 0 0
.....	1,120 0 0
W. & C. Burnop.....	1,117 0 0
J. & W. Lowrey.....	1,128 0 0
Waite & Howard.....	1,009 4 0
Curry.....	986 4 2
Dunlop (accepted).....	950 0 0
Gowland.....	945 0 0
Belderby.....	835 0 0

Slating.

Sanderson.....	£131 0 0
Beck (accepted).....	139 0 0

Plumbing.

Simpson.....	£262 2 2
Watson.....	219 10 0
Balby.....	219 8 0
Stewart & Young.....	200 0 0
Graham (accepted).....	198 0 0

Plastering.

Wilkinson.....	£246 5 0
Aitken (accepted).....	223 14 0

Painting, &c.

Hodgson.....	£157 4 0
Richardson.....	155 10 0
Gibson.....	148 0 0
Leighton.....	140 10 0
Gibson (accepted).....	138 14 0
Dunn.....	133 0 0

For addition to Curzon-street Schools, Mayfair. Mr. R. Heseth, architect:—

Welshman & Gale.....	£1,300 0 0
Watts.....	1,010 18 6
Hayward.....	990 0 0
Cook.....	983 0 0
Macey.....	975 0 0
Fish (accepted).....	973 0 0

For the construction of 4,971 feet of brick sewers, and 4,555 feet of pipe sewers, in the borough of Derby. Mr. T. C. Thornbury, C.E., borough surveyor:—

Thompson & Tycer.....	£2,283 10 0
Royas & Whittle.....	2,100 0 0
Hyslop (accepted).....	1,458 8 4
Surveyor's estimate.....	4,153 7 9

For the erection of a homestead at the Manor Farm, Barking, for Sir Edward Hulse, Bart. Quantities supplied by Mr. Robert Leabon Curtis:—

Hughbridge.....	£1,530 13 0
Wood & Sons.....	1,386 0 0
Hosworth.....	1,250 0 0
Ashmole.....	1,245 0 0
Martin.....	1,215 0 0
Hamaond (accepted).....	1,147 0 0

For works to be done at No. 12, King-street, Chapside, for Mr. Surr. Messrs. Tiltot & Chamberlain, architects:—

Canon.....	£630 0 0
Wills.....	583 0 0
.....	538 0 0
Sewell.....	526 0 0
Jennings.....	522 0 0
Papps (accepted).....	434 0 0

For works at the Armoury House, Finsbury, for the Hon. Artillery Company, under the superintendence of Mr. Henry W. Luss, architect. Quantities supplied by Mr. S. H. F. Cox:—

NAME.	Magazine.	Basement.	Drainage.	Clothing.	Armoury, &c.	Total.
B. Colls & Co.....	205	456	72	1565	2397	4795
James Bayly.....	179	346	50	1576	2179	4250
R. Batterbury.....	190	352	66	1457	2085	4045
J. Taper (too late).....	195	366	80	1480	2184	4025
H. Burton.....	178	335	295	1335	2053	4186
J. M. Macey.....	180	368	65	1337	1949	4009

# The Builder.

VOL. XVIII.—No. 920.



Cottage Garden Shows.

HE body and the spirits are alike improved by the cultivation of the garden. It offers an enjoyment for which no one is too high or too low. More grows in the cottager's plot than flowers: the cultivation of pansies may tend to his heart's ease: the bed of thyme may speed a dull hour; and kind thoughts spring up

while watering the clump of forget-me-nots. Every where the heart of man blesses flowers: the child seeks them in the hedges; the old man finds, in their culture and study, soothing recreation and delight: Pagan and Christian have used them in their rites: flowers deck the bride, and are strewn on the grave. In every country they smile around us; to every grade they offer enjoyment: they give additional beauty to the new palace; they lovingly shroud the decaying ruin. Babylon had its hanging gardens; Greece its roses and lilies,—

“*Lilia mista Rosis,*”

and Rome its box-trees cut into the figures of animals, ships, and letters; to say nothing of its violets and crocuses. Our first parents, indeed, came into the world in a garden, and Milton makes Eve say, as amongst her griffs,—

“O Flowers,

My early vilitation and my last  
At even, which I had bred up with tender hand,  
From the first opening bud, and gave ye names,  
Who now shall rear ye to the sun, or rank  
Your tribes, and water from the ambrosial fount?”

The ancients had a different idea of horticultural beauty from ours, if we may judge from a passage in Plutarch, quoted by Dr. William Smith, where he speaks of the practice of setting off the beauties of roses and violets by planting them side by side with leeks and onions, a passage which has been thought to give a proof, that flowers were cultivated more to be used for garlands than to beautify the garden.

Be this as it may, onions and leeks concern us just now as much as roses and violets,—greatly as we prefer the latter on all occasions,—for our purpose is to speak of a Cottage Garden association, the inauguration of which on Wednesday in last week, has led us to make the preceding observations. It was the East Grinstead and Lingfield Cottage Garden society, and the meeting was held to distribute prizes in Felbridge Park, the seat of Mr. Gatty, a short distance from the town. The place was well adapted to the purpose, an expansive sward, with water and noble trees. Here, too, is a monumental column, bearing an altar (very ugly, by the way, in outline), erected from the design of the late Sir John Soane, when young, in memory of the last of the Evelyns, a name well known to the arboriculturist, and inscribed, *inter alia*, with the motto, “Manners maketh man.” A large tent, with “Reward Lightens Labour,” in flowers, and (elsewhere) “Nothing without Labour,” also petalically set forth, contained the various specimens. The society owes its origin, we should say, to Mr. J. Henry Rogers, and it is not the first good work for East Grinstead and its neighbourhood in

which Mr. Rogers has mainly assisted. Similar societies have of late years been established in great numbers in Sussex, and, indeed, in most parts of England, and have been productive of much good. He had no experience of them himself, but thinking it rather a disgrace that a town of so much (relative) importance as East Grinstead should be without one, set to work in the early part of this year to collect information on the subject, and then proposed the promotion of a society for the district. Mr. Lennox, of the same place, cooperated with him as joint honorary secretary, and the result was most satisfactory. The premiums offered included:—For the gardens or allotments which up to the month of September shall have been kept the best stocked, in the neatest order, and the freest from weeds; first prize, 1*l.* 10*s.*; second prize, 1*l.*; third prize, 15*s.*; fourth prize, 10*s.*; fifth prize, 7*s.* 6*d.*; and it was set forth that, in awarding these prizes, the judges, who from time to time inspected the gardens, would take into consideration, not merely the crops, but the size and general state of the premises, including fences, walks, edgings, flower borders, seeds, tools, dung, and piggery. Other prizes were offered for potatoes (some capital specimens were shown), onions, carrots, turnips, apples, pears, and so on. In respect of flowers, no fine words were used; there was no demand for polio-postemonopetala, or the izactepotzaucochiticohuayo! The prizes offered were, “for the best rosegay, 5*s.*; for the second-best, 3*s.* 6*d.*; for the best plant grown in a pot, 4*s.*; for the second-best, 3*s.* 6*d.*,” and so forth. Many societies combine with a cottage show a general show, and award prizes to amateurs and professional gardeners; but this seems a mistake, diverting the attention, and, worse than all, the funds, from those who are especially intended to be benefited, and it was not pursued on this occasion. All the flowering plants shown at Felbridge Park were contributed by the gardeners of gentlemen in the neighbourhood, by far the greater portion being from the gardens of a wealthy Chinese, long resident there, and who preserves that love of flowers for which the Celestials are said to be distinguished.—Mr. Hochee. The gardens of the cottagers in this part of the country, although often admirable, are by no means equal to what they are in many other rural districts of England, though still immeasurably superior to those in most foreign countries or our own Highlands. All must be struck on returning home from a foreign trip with the neatness and freshness of our cottage gardens. After the prizes had been delivered, the specimens, still the property of the exhibitors, were sold by Dutch auction for their advantage.

Cottage garden societies might be made the means of spreading a knowledge of the best modes of cultivation to all parts of the land. This has not been sufficiently attended to yet. At East Grinstead they have endeavoured to make a beginning by presenting to each competitor a copy of Sir Joseph Paxton's capital little work on cottage gardening, and by inducing some of the gentlemen's gardeners to go round from time to time and give their poor neighbours a little practical instruction. Much good might be done if this were generally imitated. Some plan might be devised for supplying, at moderate price, seeds and plants of the most approved kinds. It requires no more labour to grow the best than the worst sorts; but, as a general rule, cottagers, and often those far above them in the social scale, go on perpetuating the kinds of apples, pears, gooseberries, or currants which their fathers cultivated before them, instead of the improved, and equally hardy, and often far more productive varieties which have since been introduced.

An endeavour was made to direct cottagers to the advantages to be derived from keeping bees, and a number of prizes were offered; but not one person competed,—a proof of the unfavourable season. There has been, we fancy, no honey-making this year in the south of England. In the whole, fifty-five persons sent objects for competition, varying in number from one to twenty-three kinds each, forming a total

of 316 lots. It is rather a curious illustration of the effect of trying for too much, that the man who sent twenty-three different articles did not get a single prize, and we have seen this occur elsewhere. The number of contributions by those who did obtain prizes was much less numerous.

Rather more than half the exhibitors obtained premiums, and a number of additional prizes were subsequently awarded.\* Mr. Rogers, writing on the subject, says,—“I am not a cricketer, and therefore, perhaps, somewhat prejudiced; but I have always found that the advocates for that amusement dwell a great deal on its alleged beneficial influence in bringing the high and the low together; but certainly much more might be said on that head in favour of cottage-garden societies, since the earth yields its produce without favour to the high or the low, the rich or the poor. Cricket may develop the muscles, but the spade is surely capable of producing this effect as well as the bat; and, whatever skill a man may have attained as a cricketer, he is incapable of applying it to any useful purpose. At best it is a manly amusement, and but too often the cricket-field not only takes men from their work, but leads to public-house visitings, which do not cease after the cricket season is over. I have often been struck with the dull, vacant gaze of the spectators at cricket matches, loitering about with pipes in their mouths, or seated in the booths drinking beer. The appearance of visitors at a cottage-garden show is very different.”

It is interesting to notice the extent to which gardening has grown. In 1403 the chief products of our gardens were cabbages, onions, and garlic. Apple, pear, cherry, and quince trees seem to have been the only fruit-trees in England at that time. The plum-tree was first introduced into this country in 1580, being brought from Asia. The cockspear hawthorn was first cultivated here in 1692. The maple-leaved hawthorn was introduced into England from America in the year 1738. A beautiful variety of the alder was first cultivated in England in the year 1780, being brought from Switzerland, Siberia, and other cold countries. The cedar was first cultivated here in 1664, and the common white larch, which now covers with such excellent effect so many wild parts of the kingdom, but is becoming diseased, was accidentally taken to Scotland in 1737. Mr. Menzies, of Culladro, having procured four of these plants from Siberia, gave two to the Duke of Atholl, which are still in full vigour at Dunkeld, and may be called the parents of all the larch trees in the kingdom.

The mulberry-tree was introduced in the reign of James I. The lime is said to have been brought into England by the Romans, but it does not appear to have been planted in Scotland before the reign of Charles II. The general cultivation of carrots, it is said, originated with certain Flemings who fled hither in the reign of Queen Elizabeth, and settled at Sandwich, in Kent. Peas were a rarity in that same reign. They were brought from Holland. Fuller speaks of them as “fit dainties for ladies: they came so far and cost so dear.” The opinions which prevail in respect of some flowers are curious. The snap-dragon, for example, is thought by the less advanced people in some countries to exercise super-natural influence—to have the power of destroying charms and baffling malignities. Bachelors' buttons were viewed as having a magical effect on the fortunes of lovers. How oddly, too, have some plants reached us. Saffron, which was at one time cultivated to such an extent in Essex as to give its name to a town, came to us from abroad at the risk of a life. Hakluyt was told at Saffron Walden that a pilgrim brought from the Levant to England, in the reign of Edward III., the first root of saffron, which he had found means to

\* For the gardens and allotments which up to the month of September shall have been kept the best stocked, in the neatest order, and freest from weeds—1*st.* 1*l.* 10*s.*, James Sargeant, Lingfield; 2*nd.* 1*l.*, Richard Blicke, Lingfield; 3*rd.* 15*s.*, George Brooker, East Grinstead; 4*th.* 10*s.*, William Penfold, Lingfield; 5*th.* 7*s.* 6*d.*, John Steer, East Grinstead; 6*th.* 7*s.* 6*d.*, James Borer, Lingfield; 7*th.* James Huggett, East Grinstead 8*th.*, Felix Borer, Lingfield.

conceal in his staff, made hollow for that purpose. "If he had been taken, by the law of the country from whence it came, he had died for the fact." Saffron-hill, Holborn, part of Ely Gardens, had its name from the crops it bore.

Fashion alone produces constant changes in our floriculture. The holly-hock was nearly banished by the dahlia, and is found, even now, more of the pity, often in the cottager's garden than in the dressed ground of the squire. It is to be hoped the cottar will not give it up, and that the squire will take it back; indeed there is evidence that he is doing so. What can be finer than a varied group of them, pillars of brilliant colours, against an old stone wall, or clump of dark shrubs? The most gorgeous bit of colour we can remember to have seen was a front garden thus fitted up, near Wilton, in Wiltshire. There are some capital single specimens round about the spot of which we have been speaking. The dahlia, we may mention, which comes from Mexico and is named after Dahl, a Swede, was brought into fashion by Lady Holland, at Holland House, Kensington, in 1804. The English are peculiarly favoured in being able to cultivate, thanks to climate and science, nearly every description of plant. The wonderful orchid from Mexico, the moss from Iceland, the creeper from Indian jungle, can alike be made to flourish in this country. However, what we have chiefly in view just now are the flowers—

"That dwell beside our paths and homes,"

the pleasures they afford, and the means of extending these enjoyments. In the vicinity of populous towns, advantages would arise from proprietors letting small portions of land to their less fortunate neighbours for garden purposes, in which the wives and children might assist. We can speak positively as to the benefits of such a system, and of how many kindly feelings it is the producer. We would have the enjoyments of the garden made as general as possible. We do not ask for an Isola Bella, where a barren rock, manured with gold, is made to bloom with bays and orange trees, or *Louis Quatorzime* expenses with fountains and statues, and delusive perspectives, the glories of Beulheim and Stowe, or even gardens after the "grand manner" of Batty Langley (much abused of men). We plead but for the simplest enclosure, and the homeliest flowers. How much is the family strengthened by the daisy necklace strung in infancy, and the after-life brightened with the recollection of chaplets of wild flowers woven for saucy faces in early life. It has been said too, and wisely, that "if you are poor, yet modestly aspiring, keep a vase of flowers on your table, and they will help to maintain your dignity and secure for you consideration and delicacy of behaviour." For the same reason, it is not surprising to learn what they who have been in the habit of awarding prizes in various parishes say, and it is this,—that in almost every instance where they have found a good garden, they have observed that the woman, the children, and the house, are also neat, orderly, and well kept. We need not seek a better piece of evidence with which to close our notice of the East Grinstead Cottage Garden Society, or a better reason for advocating the establishment of a similar association in every village where there is not one already.

#### EVIDENCE TOUCHING THE ARCHITECTURAL MUSEUM.

A COMMITTEE of the House of Commons, it will be remembered, were appointed during the last session to inquire and report concerning the "South Kensington Museum." The following is that part of the evidence given by Mr. Henry Cole, C.B., which refers to the Architectural Museum:—

**Chairman.**—Will you state the circumstances connected with the collection of architectural casts?—The collection of architectural casts was originated by the School of Design; the South Kensington Museum have added but very little to them for want of room, chiefly, and partly for want of funds; but a large collection of architectural casts is deposited in the South Kensington Museum which is the property of the Architectural Museum, and which was formerly deposited in hay-lofts in Cannon-row.

Will you state under what agreement they were depo-

sited at South Kensington?—They requested that space should be assigned them in the South Kensington Museum, and permission was given to them to have them there for three years, which will expire next year; and, owing to the state of the building and owing to the want of room, notice has been given to the committee that the space can no longer be available for them.

What was the state of the building which caused that notice to be given?—The space allotted to the Architectural Museum Committee was in the galleries of the iron building, and an engineer found that the floors began to swing, and we thought that the building was in some jeopardy, so that we were obliged to take all the heavy articles out of the gallery and put them down stairs.

That was one reason, was there any other?—Another reason for giving them notice was, that the casts which the country had purchased as examples for the Houses of Parliament had been handed over to the Department; they were in fact, originals of a great many of the casts of the Architectural Museum; so that it was hardly justifiable to find space at the public cost for the originals and for duplicates.

Are these casts taken for the Houses of Parliament valuable?—I believe that they cost about 7,000l. You are not able to find room for them at present?—At present we cannot receive them.

Can you state any advantage that has resulted from this architectural collection?—Partly owing to this architectural collection, and partly owing to the disposition of the country to build churches at the present time, and partly owing to our School of Design, Gothic architecture is very much better than it was thirty years ago.

**Mr. Hankey.**—What is the Architectural Museum?—It is a voluntary association of gentlemen and workmen, who subscribe from 1s. to 100s. a year, who elect a committee, the president of which is Mr. Alexander Bercsford Hope, and the treasurer Mr. Gilbert Scott. It is a sort of architectural society for the express purpose particularly of improving carvers in stone.

Is it not an institution intended as a private speculation?—No.

**Mr. Adairley.**—Is that Museum much attended by visitors?—As a popular collection, I think that it is the least popular part of the South Kensington Museum; as to its use to workmen, it is used by them and by the students.

**Mr. Hankey.**—Is this Museum in a completely separate building from the other buildings?—No; it is the same building, with a large portion of the ornamental art collection.

You spoke of it as being in a critical state?—I referred to the galleries.

Mr. G. G. Scott, A.R.A., gave the following evidence:—

**Chairman.**—When was the Architectural Museum established?—It was originated at the close of 1851, and it was actually established in March, 1852.

What were its objects?—It had two objects: the main object was to facilitate the studies of art-workmen in all the arts subsidiary to and connected with architecture; the other object was to supply a deficiency which up to that time existed in all our public collections, that they did not attend to Medieval art except in a trifling degree.

What were the circumstances which led to its formation?—It was mainly owing to the want which had been very long felt for our art-workmen: the arts subsidiary to architecture had much sunk of late years, and art-workmen, being usually men of rather the humble orders, had no means whatever of following up their studies. Supposing the objects they should study from to have existed in England, they had not the means of travelling to ancient buildings in England; and those objects were abroad still less had they the means of studying them: it was only therefore by bringing the subjects of study within their reach that we could in any degree hope to improve their taste; but the exact circumstances originating the Museum were these: Mr. Bruce Allen wrote several letters on that subject to the *Builder* in 1851, which had been suggested to him by the Great Exhibition; "Just about the same time, I happened to write a letter to the *Builder* on a different subject, which was this. The only great collection of Medieval art which had been made up to that time in England, consisted of architecture, was the late Mr. Cottingham's, and it was the very offer of the Government for sale. I wrote to the *Builder* suggesting the importance of the subject being pressed upon the Government. The Government, however, refused to entertain it. That brought me in contact with Mr. Bruce Allen, and we invited a number of architects to meet together with the view of doing for ourselves what the Government had partially refused and partially neglected to do for us, and from that originated the formation of the Museum. Those architects formed themselves into a committee and founded the Museum.

Is it limited to one style of architectural art?—No; one of our leading objects being Medieval, that naturally takes the precedence; but, our object being educational also, we have intended it to become a general museum, and it contains a very great number of specimens in the Classic and Renaissance styles.

**Sir John Shelley.**—You stated that "the Government partially refused, and partially neglected," will you explain that?—It was refused, and the Government proposition had been placed before them in a specific form, and it had been deliberately refused. They had not done that; it was rather that the subject had not been attended to as regards Cottingham's collection; however, they had declined what had been proposed to them.

**Chairman.**—What means have you taken to render your museum instructive to art-workmen?—Many different means; we have instituted lectures in connection with the museum: there is a series of lectures every year, perhaps half a dozen lectures, intended more or less to help the studies of workmen. In addition to that, we offer every year prizes for the best works of architectural art of different kinds; but the great thing of all is, that, as architects are really the employers of those men, each Museum, and we take pains to instruct them in it.

What were the circumstances which brought the Architectural Museum into contact with the Department of Science and Art?—There were two or three: a deputa-

\* For years before this we had urged continuously the desirability of establishing an Architectural Museum. The conductor of the *Builder*, in 1846, in conjunction with the British Museum, of Northampton, as one of the trustees of the British Museum, the body at that time looked to for assistance in it, had schemed out such a museum as has since been striven for and remains still to be formed.

tion from our committee called at an early period of our existence (I cannot remember the year: I think in 1844), Mr. Cole, Mr. Hankey, and I were kindly received by them, and they came and attended at a meeting of our committee, and gave us useful advice, and altogether we entered on friendly relations with them. In 1855 they opened a museum to us, and we took them to us, and it should be annual, for that year, in consideration of our Museum; the lectures, the use of our Museum, and other advantages.

How came you to occupy a portion of the space of the South Kensington Museum?—I should have mentioned that at that time our Museum was in a very rough place in Cannon-row; we had extensive premises in a sort of loft, in which was an extraordinary collection of casts, &c., procured either by gift, or loan, or purchase. We had raised funds by applying in all quarters, and in the course of a year or two we had formed a wonderful collection of casts and other objects, and had completely outgrown the room we had. When we applied to Mr. Cole and Mr. Redgrave after the close of that year for which they subscribed 500l., to ask whether they would continue that as an annual subscription, we received a reply to this effect,—that the circumstances under which they were placed were about to alter; that they were about to remove their museum and schools of art from Marlborough House to the South Kensington Museum, and therefore their students would be more removed from the neighbourhood of our museum, and would be less able to make their building good; to ask whether they would thought they should not continue that subscription; but they suggested to us, that, instead of applying for a subscription, we would shape our application in another way:—that we should apply to the Government for a museum, though they could not answer for the reply we might receive, probably it might be favourably entertained. We therefore thoroughly considered the subject at a meeting of our committee, and after some rather somewhat lengthy negotiations, ended in their agreeing to admit us as tenants of a certain portion of their galleries, we retaining our power over the collection as before.

How was it admitted, accordingly to a portion of the iron building?—Yes.

Has your occupation been of advantage to you?—In most respects it has: the situation is not quite so convenient as was in the workmen; but that is an inconvenience which things must necessarily occur, you cannot get space for these things in London; but in every respect it has very much served the object we had in view.

In what way?—It has reduced our expenses: we were very poor; and it has relieved us, perhaps, to the extent of 150l. a year; also we have the collection placed in a much better building than we had then; the specimens are seen better, and it is generally an object to have such collections in a public building.

Has your museum been successful in effecting your objects?—Most entirely successful in effecting our objects. In the first place, we have collected together an extraordinary number of specimens: I do not say that they are all good, because we have purchased, and had the means of procuring, what we have had good and bad together; but, putting aside the indifferent ones, and viewing it only in reference to the thoroughly good specimens, it is a most wonderful collection, such as has never been made in this or any other country before, nor anything approaching to it.

Have the arts connected with architecture been benefited by it?—In a most important degree: the taste of carvers has improved wonderfully; I have letters from several master carvers which state in the strongest terms that the skill of the workmen has improved in the most remarkable degree, and I have found myself, in all my own works, there is no comparison between the work executed before and after the formation of this museum.

You think that you can trace that distinctly to this museum?—Distinctly; because the men who have executed them have all been in the Museum, and they have seen them, and they have improved their taste by it.

It is an attractive collection to the public?—Only partially so; our object has never been to make an attractive collection to the public: our intention was to satisfy a want which we were every day feeling, the want of proper education of the workmen who have to carry out the ornaments of our work; and therefore it was not practical that the public at large, after going through the picture galleries, and the other more attractive objects of art, when they came to our Museum feel particularly gratified; but that part of the public who have given any attention to architecture, or who feel any interest in it, are delighted with it.

Have you and the Department got into any difficulties as to co-operation?—We have not, until lately, got into any difficulty of a serious kind: we have gone on in the main very smoothly till the last few months.

What has happened now?—The iron building has been found to be giving way. We found that we had unwittingly become tenants of a building incapable of bearing the weight which we had brought into it, and at the beginning of this year we received a letter from the Department of Science and Art, saying that Captain Fowke had examined the floors of the building, and had found them to be very insufficient for their weight, and requesting us to allow all the heavy part of our collection to be removed into the lower part of the building. We, of course, objected to that within certain limits: at the same time we objected to its being carried to such an extent as to ruin the arrangement of our museum altogether, and mix up objects of different styles; but within such limits as that we thoroughly acceded to their request. We followed up that consent by a suggestion, which was the result of a careful examination of the building by a large number of our committee consisting of architects: the suggestion was, that it might very easily be temporarily strengthened and supported, so as to be quite capable of bearing the weight which part of our museum might wish to be put upon it; that a permanent measure for security should be taken, or some new building should be erected; and we begged that such measures should be taken rather than that our collection should be disturbed.

What happened then?—They declined to take any temporary measures whatever, and gave us notice to quit.

**Sir John Shelley.**—Would those alterations have entailed any considerable expense?—Perhaps several hundred pounds.

**Chairman.**—Do you complain of the non-observance of any of the conditions on which you occupy your space?—No; we were a little interfered with at one time, a



doubtless of eight lights, with appropriate decorations. A richly-moulded arch would lead to the chancel, the details of which can be supplied only by probable analogy. This, at least, there can be no reason to doubt, that it was both externally and internally a structure of very considerable elegance, and one which would excite the admiration, as well as the interest, of all who looked on it as a legacy from the deceased Crusader to those who had not been privileged to see its prototype in the Holy City.

It did not, however, satisfy more than two or three generations in the state in which Simon de St. Liz left it; and probably it was then, as it was often again, and is now, perhaps for the last time, want of space for those who would worship in it that led to essential changes in the fabric. It was probably about 1180, during the time of the gradual introduction of the Pointed arch, but while the old Norman details were generally retained (thus forming a transition era), that the northern wall of the chancel was cut through, to form an arcade, for the addition of a northern aisle. The work does not seem to have been judiciously or even carefully conducted, for the changes about this time originated a series of failures in the fabric, which led first to the necessary erection of certain unsightly buttresses, and ultimately, perhaps, to the failure of the round, and the sacrifice of the old triforium and clerestory. The twelfth century, however, probably closed upon a church scarcely differing from that which St. Liz had finished before 1155, except that a northern aisle had been added to the chancel.

Thus so far as at present appears, the church remained for upwards of a century, for it is not till early in the fourteenth century that there are any indications of a south chancel aisle. And it was before the close of the same century that the present tower and spire were erected. This was not without a purpose; for the round had probably suffered so much by former changes as to require great repairs. The aisle vaults and the triforium were probably sacrificed at this time, and the clerestory rebuilt on a much more meagre scale, though certainly not so wretchedly as at present. A tower and spire were therefore required to give character to the church. I need hardly tell you that this last feature is of great beauty; and long may it remain an ornament, not to this church only, but to the town of Northampton.

Whatever has happened to St. Sepulchre's since the erection of the spire has been by way of destruction and deterioration. The only comfort we can derive from an inspection of it is this, that the very fact that matters have been getting worse and worse for two hundred years necessitates so entire a reconstruction, that we destroy, without compunction and regret, what the exigencies of restoration and enlargement require to be swept away; and that we are certain, under the direction of our very able architect, to hand over the remodelled edifice to the parish, and to the people generally, as greatly increased in beauty as in usefulness, and not diminished in interest.

Sir Henry Dryden, bart., in proposing "That the historical interest of St. Sepulchre's Church recommends its preservation," said nothing was truer than a remark made by Mr. James, that restoration not unfrequently meant destruction. More mischief had been done in the last twenty-five years than in any previous half-century, and the time would come when loud and grievous would be the lamentations. They could not do more mischief than to set about knocking down right and left, and then to commence the work of restoration according to their own fancy. Take, for instance, the Elgin marbles. Suppose a committee was formed for the purpose of putting noses and ears, and heads and tails, on those celebrated fragments, what would be the comparative value of them? It would be little more than that of old lime. Those old churches were left them as memorials of the past, and they could not commit a greater architectural sin than by spoiling them as models. The resolution said the historical interest of the church recommended its preservation, but nothing was more abused than the word restoration. Restoration meant to put back to its original state, and the interest of St. Sepulchre's Church would not consist in what Mr. Scott would give them at the east end, but in what other people had left them.

The Mayor was afraid, from the remarks of Sir Henry Dryden, that some persons might go away with a wrong impression. That the work of restoration would be conducted in a proper manner, there was a sufficient guarantee in the name of the architect to whom it was entrusted. It must not be forgotten, however, that, while it

was intended that the round part of the church should be preserved in all its integrity, the spiritual wants of the parish must be provided for; and how could they be provided for unless the church was enlarged? He trusted they would all go away determined that that noble structure should not only be preserved as a memorial of the past, but as a place affording adequate provision for the future.

Mr. Scott, in afterwards proposing a resolution of thanks to the mayor, said it gave him peculiar pleasure to see so well-qualified a member of his own profession preside at that meeting as chief magistrate; but it gave him far greater pleasure to hear one of his own profession not only speak in such hearty terms of the dignity of their craft, but, in union with that, advocating in such a heart-stirring manner the claims of their holy religion. In the abstract he agreed with several of the remarks made by Sir Henry Dryden, as all engaged in the study of ancient architecture must do. It was better that ancient monuments should be preserved, where that was possible, than altered. In the case of the Elgin marbles, that was absolutely the case, and the desirability of it would be greater or less with all objects of art, just in proportion as the uses of them were obsolete, or were required to be adapted to the wants of the present day. When first called on he felt very unwilling, and expressed a hope that the present size would suffice, but as such was not the case, was it to be restored as a mere piece of antiquity, or was it to be restored in such a manner that antiquity and utilitarianism should be united? The claims of the present day required that that should be done: at the same time he agreed that as far as was practicable that which was ancient should be preserved, and exposed to view. There were other portions, however, the age of which was doubtful, and it would be ridiculous to preserve a semi-barbarous part on the principle that nothing was to be meddled with. He was glad to say those views were advocated by Professor Willis, for few people had said more against restorations than he had done; and yet, with reference to the restoration of the upper part of Becket's Chapel, at Canterbury, on which he (Mr. Scott) was engaged, Professor Willis not only did not oppose, but urged the destruction of the barbarous additions that had been made to the original building. That was the opinion of the man who stood in the van of the anti-restoration party. He (Mr. Scott) admitted the principle advocated by Sir Henry Dryden, but it must be applied according to the dictates of common sense.

At the evening meeting, Lord Alwyne Compton in the chair, a paper was read by the Rev. T. James, on "Round Churches," to which we shall return.

#### ARRANGEMENT OF KITCHENS.

WHILE I agree with your correspondent, "J. D. A.," that the "kitchen often has not sufficient of the architect's care in its details,"—that it is apt to be "ill ventilated" and "inefficient," and with some of his views of what a complete apparatus should be, I differ with others. I do not, however, propose to discuss these, but rather to speak of the plan and arrangement of the kitchen itself, to which, if architects would devote more thoughtful attention, great advantage would result to their clients and increased reputation to themselves.

A chief and very frequent annoyance in connection with this department is that of the smell of cooking, which is so readily diffused throughout a house. That this evil is the result of defective ventilation, and ought to be avoided in all new erections, and may be remedied in old buildings, is unquestionable. The main difficulty is that of convincing either employer or architect, and too frequently both, of the necessity for very special arrangements for the purpose.

To provide, as "J. D. A." recommends, spring doors to close, which servants invariably take special trouble to "wedge" open, and a slything opening above the cook's head for the development of rheumatism, are but sorry ventilating arrangements; and, I would say, should only be submitted to when proved to be unavoidable.

A good kitchen should, of course, be roomy and lofty. It should be lighted by windows in the side walls, of full size, reaching within a foot of the ceiling, and from 3 to 5 feet from the ground, according to the height and size of the kitchen. These windows should open readily, both at top and bottom, for summer ventilation, and should be situated relatively to the cooling apparatus, so that the air admitted through them should tend to direct the heated air of the kitchen towards

the smoke and ventilating flues, and away from the doors communicating with the main building.

The cooking apparatus, in recesses, should occupy one entire side of the kitchen. These recesses should have "hoods," or canopies, commencing 6 feet from the floor-line, and reaching to the ceiling, enclosing the whole space above the stoves, hot-plates, &c. Each recess should be provided with a smoke-flue, and also with a ventilating flue within the "hood," and near the ceiling, to carry off the heat and smell of cooking. Above the roasting range, in the centre of the chimney-breast, and near the ceiling, a ventilating flue should be constructed, of full size, to obtain ample ventilation in cold weather, when the windows cannot be kept open. The ventilating flues, if constructed under Boyd's patent, with cast-iron plates dividing them from the smoke flues, derive so much heat from the latter as to maintain in all weathers a powerful upward current, without risk of return smoke, dirt, or annoyance of any kind.

Provision must be made for the free supply of fresh air to the kitchen in cold weather, or the ventilating arrangements will manifestly fail. The position of the windows having been indicated with the view of favourably influencing ventilation, it follows that the best position for the admission of fresh air in cold weather will be in their vicinity, and probably through gratings on the wall face, immediately beneath them. The air thus supplied should first be made to circulate in a chamber closely adjoining the heated apparatus, whereby it would be sufficiently raised in temperature to avoid risk of giving cold.

The door between the kitchen and scullery should be conveniently near the stove or hot-plate where the chief hoiding operations are carried on, so as to avoid unnecessary traffic in the kitchen. The ventilation of the scullery should be duly cared for, upon the same principles as indicated for the kitchen.

Much may be effected by a good plan towards the complete isolation of the kitchen department. Too frequently the kitchen-door affords a ready channel of escape for heated air from the kitchen to the main building. Instead of this a passage, well ventilated at both ends, should intervene, to which the doors of communication with the kitchen and house respectively should lead at distant points.

Should you deem these observations of sufficient interest to claim a space in your widely-circulated journal, I shall be glad on a future occasion to trouble you with a few remarks, in the hope of inducing the satisfactory ventilation of dwellings in general. The vital importance of ventilation you have yourself ably insisted upon on many occasions, and the conviction of its necessity is extending; but it is deeply to be regretted that the builders of houses systematically disregard its obligation.

D. O. BOYD.

THE article by "J. D. A." in the *Builder*, p. 574, on the subject of kitchen arrangements, is one which deserves to be followed up. His instructions on a large scale, if acted on, would go far to bring about some ameliorations in that greatly-neglected department of the English mansion. To one whose travels have brought him in the way of becoming acquainted with the economy of foreign culinary arrangements, the kitchen of the British islands can hardly fail to appear as if planned for some totally other object than that of cooking. The room is generally commodious enough, and the display of chairs and fireside conveniences more than sufficient. As a contrivance for the accommodation of the servants, the place is a decided success; but, as a culinary workshop, it is as complete a failure.

A large sum may very probably have been paid to some ironmonger,—whose ideas of dining hardly go beyond the inevitable potatoes, and who cannot believe in the possibility of breakfast without tea or coffee,—for an imposing mass of metal called a *range*. It might be supposed that a convenient and prominent place would be found for this wonderful piece of hardware. Nothing of the sort. The builder of the premises, looking upon the kitchen merely as a room, and never having seen the grate or stove of a room placed anywhere but in a recess or chimney, has instinctively constructed a wide hollow in the wall for the accommodation of the range, over which, of course, runs the legitimate mantel-shelf, which every orthodox chimney must have, and for which we have the model already to our hand in the first room we choose to go into. Of course, there is a proper height for a chimney: everybody knows that: 4 feet is just about the thing. It is true that within these last twenty years mantel-shelves

have been gradually diminishing in height; but this change not having reached the cellars, there can be little doubt as to the height of the fireplace. A mantel-shelf, therefore, must run in front of our range at a height of 4 feet from the ground, quite irrespective of the relative position the shelf and the cook's head are to occupy, when the latter is at work. Place your cook in front of the range, and let him or her have a dish or two which require careful watching going on. The under-edge of the mantel-shelf comes, we will say, on a level with the cook's chin; so that, in standing up straight, she cannot see her pans even in the distance: she must stoop, and, passing her head underneath the shelf, poke it into an ill-lighted recess, and retain it in this constrained position so long as the article cooking requires close attention. Apparently with no other very obvious object in view than that of rendering more meritorious the art of cooking under difficulties, it is not unusual to place in front of the range a broad fender with a flat top, designed evidently for a row of pans, which most admirably answers the purpose of placing at a disadvantage the centre of gravity of the operator, who is supposed to be stooping over her work, her shins rubbing on the edge of this fender, the back of her head making acquaintance with the under-surface of the mantel-shelf, her face exposed to the heat and smoke of a grate full of live coal, and her dress demanding a portion of her attention to prevent it catching fire! And we wonder why cooking as an art has ceased to be. Foreigners, who see no lack of eggs in this country, and plenty of butter, wonder how it is they can rarely or ever get an omelet worthy of the name, while travelled Englishmen, without knowing the reason why, find themselves obliged to bid good-bye to many a savoury dish as soon as they set foot on the English packet in the Channel.

Now, not only in France and other European countries, but among Turks, Arabs, and other Asiatics, common sense has suggested and brought about the raising of the front of the chimney to such a height as will allow the head of the cook easily to pass under it, and this has led to the greater projection of the chimney, and the bringing forward of the range out of the recess in the wall, so that the cook can scrutinize any of her pans at her ease, standing under a sort of wide canopy, which collects the whole steam and fumes, and directs them into the chimney. It is in the British Islands alone that the kitchen-chimney is modelled after the fireplace of an ordinary chamber, and yet this is the so-called *chamber, par excellence*, of practical good sense and comfort, where there are professional builders, who can count the houses they have erected by thousands. What would be the fate of any manufacturer, chemist, or tradesman, who should conduct his business after such a fashion, who should persevere in constructing his furnaces in such a way as to give his workmen the greatest possible amount of inconvenience; and rather than alter his arrangements would forego the advantages to be derived from the proper carrying on of all the more delicate processes of his business? Yet this is what is being actually done in almost every kitchen in this country, whether in Belgravia or Islington, and with very few exceptions, in the mansions of the upper ten thousand as in the houses of the more humble millions. A little more attention to such obvious common-sense and inexpensive suggestions would do more to reform the British kitchen than the complicated arrangements so much in vogue, which seem chiefly contrived to benefit the pockets of patentees and ironmongers.

J. B. M.

#### NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

The fourth annual meeting of this Association will be held at Glasgow, on Monday, 24th of September, and the five following days. The order of proceedings will include:—

**Monday.**—Special service and sermon to members and associates in the cathedral. Sermon to be preached by the Rev. John Robertson, D.D., minister of the High Church. General meeting in the City Hall. The opening address will be delivered by the Right Hon. Lord Brougham.

**Tuesday.**—The Lord-Advocate of Scotland, the president of the First Department, will deliver an address in the Common Hall of the University. Immediately thereafter the business of the several Departments will commence in the class-rooms of the University appropriated to their use, when papers will be read, and discussions taken on the subjects embraced under each. In the evening

there will be a *conversazione*, on the invitation of the Lord Provost and members of the Corporation, in the Corporation Galleries, Sauchiehall-street.

**Wednesday.**—Sir James Kay Shuttleworth, President of the Second Department, will deliver an address. The business of the departments will then proceed. In the evening a working men's meeting will be held in the City Hall, when Lord Brougham and other leading members of the Association will be present. The Corporation Galleries will be open, also, for promenade to members and associates.

**Thursday.**—The Hon. Arthur Kincaid, M.P., President of the Third Department, will deliver an address. The business of the departments after. *Conversazione* in the evening, in the Queen's Rooms, Kelvin-grove Park.

**Friday.**—Sir James Emerson Tennent, President of the Fifth Department, will deliver an address. Immediately thereafter the business of the departments will proceed as before. Members and associates will afterwards dine together in the City Hall, Lord Brougham in the chair.

On **Saturday** the concluding meeting of members and associates will be held in the Trades' Hall.

#### METROPOLITAN UNDERGROUND RAILWAY.

THE works for this line are now making progress. Reports have reached us of costly errors in re-forming the sewers on wrong level, but we have no certain information on the subject. The railway, it is expected, will absorb a million and a half of money at the least before it is opened for traffic. It will commence at the Paddington station of the Great Western Railway, into which it will run on a low level, and then descend till it begins to burrow under the ground. Passing under, and in a line with, the New-road, it will pick up the traffic of the London and North-Western Railway at Euston-square, which will be carried to it by an underground branch. At King's-cross it will pick up the passengers from the Midland Railway and the north of England, and proceed to Farringdon-street. Here it will throw out a branch into, or rather under, Smithfield, and wait until the London, Chatham, and Dover shall meet it from the other side of the Thames.

The contracts for the works have been taken by two firms: Mr. Jay has the section from Farringdon-street to Euston-square, and beyond that to Paddington has been taken by Messrs. Smith & Knight.

The heaviest part of the line is at King's-cross. Straightforward tunnelling, or even going round a corner at a sharp curve, with nothing, to all outward appearance, to guide you as to the spot at which you may come out, is simple and easy to those who understand the business; but such a complication as that at King's-cross seems thoroughly bewildering.

At King's-cross there are two branch lines running up to the station, one on the east, the other on the west side. The two lines run in on a curve, the one from the west running in an easterly, the other from the east in a westerly direction, and they therefore cross each other something in the form of a letter X. At the point of intersection the arch of the tunnel has in consequence to be groined. As the main tunnel is 23 feet 6 inches in width, and the branch lines about 14 feet, the necessity presents itself to combine in one arch at the point of junction two arches of a different radius.

The *Engineer*, in a recent account of the works, says,—"The tunnelling has to be carried out in forms which may be represented by a monogram formed of the letter X and two Y's placed thus:  each leg of the letter X forming the upper limbs of the Y's, and all the arching and building up has to be made to fit accurately together. An ant's nest, a rabbit warren, a colony of heavers, or mole's burrow, would not be more intricate. We fancy that we have explored the whole region, and traversed the whole maze, when we come upon the flicker of candles through an interminable tangle of timber, and are informed that the work there is the pointsman's house, with retiring rooms. The immense hauls of timber supports become more and more numerous, and we feel something of nervousness when we are told that this was and is the most critical part of the business. The walls and arches of the small and large tunnels of the great hell-mouth press with such immense force on this pointsman's dwelling, which is at the centre of the complicated junction, that it has been necessary to use the greatest possible precautions to prevent the whole from coming to

one grand collapse. There are timbers upright, horizontal, diagonal, straight, curved, interlaced, and crossing and recrossing each other, till it becomes a marvel how it was possible to have got such masses under the earth and into any useful position. The ground plan has now grown more complicated: the monogram of the two Y's and the X has received the addition of one large and two small O's, and these letters are placed in the forks of the two horizontally placed Y's. The 'round house,' which is a sort of key of the position, is completely covered in by a circular dome, and here will be stationed the switchmen and signalmen, who will attend to the points necessary for running the branch traffic on to the main line: for the through trains—that is, from Paddington to the City—there will be no points to attend to at the junction, as the switches will, of course, be open."

The brickwork of the tunnel is 2 feet 3 inches in thickness, and some idea of the extent of the work may be judged from the fact that 10,000 bricks are swallowed up for each yard formed as the tunnel advances.

#### MUSEUM FOR BUILDING MATERIALS, MELBOURNE.

UNDER this title the Department of Public Works at Melbourne, Victoria, has recently created an experimental edifice of a novel kind. In the external portions are introduced every procurable variety of stone, brick, cement, lime, timber, slate, &c., both colonial and imported, for the purpose of practically testing the qualities of the various materials, and also for exhibiting samples of workmanship to be regarded as standards of reference in future contracts. The interior of the building, which contains a hall 66 feet by 33 feet, is to be devoted to the exhibition of such specimens of art and mechanism as are applicable to the requirements of decoration or construction.

The Museum has been carried out at the suggestion and under the honorary direction of Messrs. Knight & Kerr, the architects to the Victoria Houses of Parliament; and an advertisement in our present number invites contributions from England of a similar kind to those displayed at the Architectural Exhibition, such contributions to be accompanied with full particulars and prices, for the guidance of intending purchasers.

#### THE FIRST SUBWAY FOR WATER AND GAS-PIPES IN LONDON.

OUR readers are aware that the Metropolitan Board of Works, with a view to obviating the expense and inconvenience attending the breaking up of the pavement for the repair of mains and pipes, sewers, and other underground works, determined, in making the new Covent-garden approach, to form a subway under the street for the reception of gas and water mains, electric telegraph conductors, and other matters. The construction of this subway in the street commencing at the corner of Long-acre, opposite the end of Cranbourn-street, and 318 feet in length, is proceeding rapidly. The arch of the subway is 12 feet in span and 1½ brick thick: the headway in centre is 6 feet 6 inches. There are side passages to admit of connection with houses. The sewer 3 feet 9 inches by 2 feet 6 inches is below the road level of the subway. On either side of the subway at a short distance from it the vaults for intended houses are being formed. We must applaud the Board and their architect, Mr. Murrill, for the improvement thus inaugurated. Mr. E. Thirst is the contractor employed. Mr. W. Fisk is the clerk of the works.

#### THE BURIAL OF THE POOR.

THE other day a poor care-worn looking woman applied to one of the police magistrates for advice respecting the interment of a child who had died. It appears that the dead child was in the same room with the living family, and was remaining there after having perished through small-pox. The parents being without the means of defraying the cost of the funeral, the mother had made application to the parish authorities, who refused assistance, saying that they must wait until the man got his wages on the following Saturday. It was pointed out that this was dangerous to the family and those living in the adjoining tenements, and that supposing the wages to be sufficient for the purpose of defraying the expense of the funeral, the family must starve during the ensuing week. The funerals of the struggling classes in large towns are a difficulty: the parish authorities say

that, if strict rules are not observed, the expense thrown upon the ratepayers in poor parishes would be very great. It should, however, be borne in mind that the danger is imminent in keeping the dead in rooms surrounded by other rooms thickly crowded with people; and measures should be taken to prevent the keeping of dead bodies in such situations for a week, fortnight, or (as we have known it), three weeks. The position of persons situated as the woman above referred to should be very carefully and kindly considered. Those who are really unable to pay for the burying of their dead should be assisted; but, in case of imposition, punishment should be resorted to.

It is remarkable that, amongst the poor Irish, some preparation is generally made for their burial. They often, in secret, manage to hoard some valuable for this purpose, or else their neighbours raise a subscription. Even in those localities which are inhabited by thieves and other notorious persons, by the disposal of some article of small value by raffle amongst a number of subscribers, for a sum which each can conveniently spare, the necessity of applications to the parish is obviated. There are also the trade and other societies. Numbers, however, who fall into the "Town Swamps," being unaccustomed to the ways of those used to such circumstances, are comparatively helpless.

#### THE CRAIGENTINNY MAUSOLEUM.

The mausoleum erected to the late Mr. Miller, of Craigentenny, on a portion of his estate near Edinburgh, on the Portobello-road, was, on Thursday, the 13th, consecrated by Bishop Heriot, according to the forms of the Episcopal Church. The mausoleum, which is from a design of Mr. Rhind, is a massive structure, something after the fashion of the ancient Roman tombs, and nearly 50 feet high. It is oblong in form, and is capped by an enriched circular roof, in the gables of which are sculptured figures in full relief, modelled by Mr. Thomas, of London. There is also a rich frieze, with carved festoons of flowers and fruit. But a still more important decorative feature remains to be added, namely, four immense bas-reliefs for the panels, which are now being sculptured in marble by Mr. Gattley at Rome. The subjects are classical. The mausoleum, within which the remains of the deceased are interred, will, we believe, cost about 8,000*l.* when completed.

#### FALL OF A HOUSE IN CLERKENWELL.

SOME of our readers are calling out for further information as to the cause of the fall of the public-house in Goswell-street,—“The Hat and Feathers,” mentioned last week. Some investigation has, doubtless, been made to settle on whom the loss is to fall, but no clear opinion appears to have been arrived at. Some have attributed the disaster to the fall of a heavy stone core, prepared for the cornice, which, striking on the scaffolding, might have caused one of the uprigths to kick in a pier, and thus, as there was little external brickwork, the house having a circular corner, open, and being carried mainly on narrow piers or columns and girders, have led to the disaster. An old party-wall on one side, not in a very good state, had been made use of and was raised to some extent: the mischief has been imputed to this by some. On this point the district surveyor, Mr. Sibley, writes to us as follows:—

“Sir,—Having seen some statements to the effect that the disaster may be ascribed to the raising on the old party wall, I beg to say that I conceive them to be perfectly erroneous.

The wall in question was a 14-inch wall, plumbed and found to be fair and level by the surveyor of the adjoining owner, who also declined any interference. I need scarcely inform you that this wall could not be deemed to be in any way ruinous.

The wall itself stood unroofed without a fracture, with the exception of a small part, about a third of the upper story only having been drawn in by the building collapsing; in itself a conclusive reply to this statement.

The building was well timbered, and the brickwork also of good character. It is a matter of great gratification that the disaster was unaccompanied with loss of life or injury to persons.”

The proprietor is Mr. Leake. Messrs. Finch Hill & Parnie are the architects. Mr. Dent acts for the lessee of the adjoining house, and Mr. Hardwick for the Charterhouse, to whose estate the land belongs. Mr. Hill is the builder.

THE “NINEVEH” REMAINS.—It is stated that a French *savant* and traveller of reputation denies altogether that the remains discovered by Mr. Layard, and now in the British Museum, have anything to do with Nineveh. His proofs will be looked for.

#### THE ANNUAL DINNER OF THE BUILDERS' BENEVOLENT INSTITUTION.

THURSDAY, the 25th of October next, at the London Tavern, should be noted down by all interested, as the time and place of the thirteenth annual dinner of the Builders' Benevolent Society. The time is long gone by, when much urging or canvassing were requisite to get up a respectable show of diners at the annual convivial, and yet charitable, meeting of this now prosperous and well-established Institution. What we have at present to do, by way of aiding in this good cause, is merely to jog the memories—not the wills—of the troops of friends who can ensure its continued and increasing prosperity. Let all and sundry remember Thursday, the 25th of October, then; and, in good time, cause all other arrangements to steer clear of that settled pre-engagement.

#### PLAN PROPOSED FOR THE HOSPITAL OF A REGIMENT.\*

“*Le bien le plus précieux est le sang du soldat.*”

I SUPPOSE that it is not possible for any one, at the particular point which the demonstration has now reached, to tell us any new principles of hospital construction. The rules required for bringing modes of structure and arrangement into accordance with the absolute laws of health have been laid down, and there is no appeal from them, and there is no conceivable ground on which they can be called in question.† Besides, there are two or three existing structures which, owing to certain happy circumstances, it has been possible to erect in the manner prescribed by these laws, and where these structures fall short, as they do fall short in some points, one can hardly regret the defects, considering that a valuable lesson is thereby more impressively conveyed.

This sketch seeks to address itself, among other points, to a practical difficulty, not of principle, but of detail. In most large buildings, notably in all government buildings, perfection is very apt to be missed owing to the limitation imposed by

“—that eternal woe of pence  
Which vexes public men.”

I propose to endeavour to see how far it is possible to bring the absolute laws of healthy construction into harmony with a state of public affairs which is indicated by the existence of a temporary income-tax. When such is the idea from which one starts, it may seem likely that there must be a good deal of giving and taking on both sides, but I humbly conceive it to be practicable to obey all the most important and imperative laws of health, and, at the same time, to build a cheap hospital. Hitherto, military hospitals have been costly as well as bad, because money has been spent in carrying out the worst principles. It is worth while to try if we can project one in which sound principles can be given effect to without great expense.

The grand principles which it is necessary to bear in mind are three—absolute cleanliness, absolute purity of atmosphere, and the largest practicable allowance of sunlight. In so far as these three points are reached or fallen short of, so far is the building a success or a failure. What one has to attempt is to make the fulfilment of these principles as much as possible consistent with individual comfort, and to make it as much as possible subservient to the most effective discipline, and the simplest and easiest administration. Happily it is found in practice to be the case that structural arrangements which provide the greatest cleanliness and the purest air are also those which most conduce to personal comfort, and effective discipline, and render administration easy. Further, the points on which money has hitherto been lavished, are those which are rather opposed to than promotive of health. The stately buildings and great masses of brick and stone have been found, ere this, to promote anything but the health of their inmates. Health has been known, ere this, to visit the victims of famine and impurity, rather than in such places as these, in tattered hovels, and even under the hedges on the public road. The objects in view, then, being economy and efficiency, I propose to plan a hospital for a regiment. That is the only sort of army hospital which the present generation is ever likely to see built. There are but three general

\* By Dr. Combe, Royal Artillery.

† The latest, and, as far as I know, the best and most complete detail of these principles is to be found in the various papers by Mr. Robertson of Manchester, which have appeared in the *Builder*, especially three in August and September of 1856, and in the papers by Miss Nightingale which were read to the Social Science Association at Liverpool.

of the Royal Victoria Hospital for the British army. One is small and of little note. One was not built as a hospital, and has been long condemned. The third, at Netley, was condemned (by the *Builder*) before a stone had been laid down. It is hardly possible that such an opportunity for building a perfect general hospital can ever occur again as was afforded when it was determined to build one for 1000 beds, in 1855. The lessons to be found

“Among the myriad-room'd  
And many-corridor'd complexities”

of the Royal Victoria Hospital will not, whatever they may be, be lessons in sound hospital construction. Strangely enough, we have been lately told by an authority which all men respect, that, for reasons which those who know the subject best must be permitted to think very visionary, we ought to huddle together the sick of several regiments—that, on considerations other than sanitary, we ought to *congregate* sick. I give my vote, with Sir John Pringle and Sir William Blizard, for segregation.

For many reasons, the best form that could be adopted would be a straight line, with the offices in the centre, the wards extending on either side of the offices, and the ward conveniences at the furthest ends of the wards; but, to accommodate ninety-two beds in this way, on one floor, would require a line so extended as to become inconvenient. On the whole, I venture to submit that the form shown in the plan is the best for the requirements in view, that a smaller number of objections can be raised to it than to any other. Every brick and every pane of glass would have its own share of the sunlight, and each part of the whole would have as much chance of being blown upon by the direct current of the wind as is possible where any form but that of the straight line is adopted. The choice seems to be between this form and that of the Melville Hospital at Chatham, where three parallel blocks are simply connected by an open colonnade, and in which the different offices are distributed among the blocks, and placed at that end which touches the colonnade. Now in all pavilionated buildings where the pavilions are placed side by side but little of the direct current of the wind, from whatever quarter it may blow, can ever reach any part of the whole building, excepting on one side of one pavilion, or through the windows at the free ends of the pavilions. This is a consideration which does not seem to have been much thought of. It is one, however, which must very forcibly present itself to the mind of any one who may have had occasion to treat sick in a hospital where there is marked “stagnancy” of air from elevation of the neighbouring ground, or from the neighbourhood of dead walls.

Again, in parallel pavilions there seems always to be a difficulty about the place for the small wards, which must be provided somewhere. At Lariboisière, they are at the furthest end of the long wards, so that you must pass through the latter to reach them. Still further, what sort of a view is there out of the windows? At Lariboisière, if one may hint a fault and hesitate dislike about what seems to be almost a perfect plan, an extended view can only become attainable by placing yourself between the filthy latrines, which are so much condemned, and the foul-lined store. At the new Marine Hospital at Woolwich a patient who looks out of any ward window proper will see nothing but another sick marine in the opposite pavilion, like himself vainly trying to obtain a distant view. If our sick marine in search of the picturesque perseveres, he will be rewarded by a very glorious landscape, but to enjoy that he must go to the end window, and perch himself on the washbasin-basins, with the water-closets on one side and a sink on the other, surroundings which can be by no means exhilarating. If the form of the Vincennes Hospital is adopted (not the details, which seem to be objectionable on two grounds—the separation of offices and the intercommunication of wards without intervening passages), and if the transverse block is used for offices and attached directly to the two perpendicular ones, then you have simply an enclosed square with one side wanting. The form of the letter H, and the form adopted at Dundee, which is the letter J, with one-half of the perpendicular sides struck off, are open to the objection that there are closed angles. On all these considerations, setting one thing against another, I submit that this form, for accommodating ninety-two beds on one flat,\* is the most advisable. It provides a glazed square in the

\* The regulations require accommodation to be provided in the ratio of one bed for every ten effective men, and the average strength of a battalion may be taken at something between 900 and 1,000.

centre, cut off from the offices by glass, and if deemed necessary, the three other limbs of the cross could be easily isolated in the same way.

The building must be sufficiently raised from the ground on a solid, impervious foundation, and the walls need not, as far as health considerations go, be much more than a screen of brick, sufficiently strong to support themselves and a light, high-pitched roof. Great thickness of walls is no sanitary advantage, but the reverse, while it must add materially to cost. Does any one object that a building so constructed would not be sufficiently permanent? Surely we need not provide military establishments for a remote posterity. A gradually progressive increase of armaments all over Europe is what Mr. Carlyle would call a "self-cancelling business," and it seems evident that before the least enduring structure, now erected, can become dilapidated, a climax in the world's affairs must occur to render it, one way or another, useless.\*

"Large wards" and "small wards" are comparative terms. In Paris, what we call a large ward is looked on as a small one, and what we call a small one they would hardly consider to be a ward at all. With this question is closely connected that of discipline, and that demands a word or two of explanation. The non-military reader must not suppose that military discipline and military hospital discipline mean the same thing. In this application method, management, or arrangement would, perhaps, be more correct terms than discipline. Between the sort of discipline required in a civil hospital and that required in a regimental one there is a very broad distinction. It arises from this. In the former your arrangements must be made on the supposition that the great majority of your patients will need much extraneous assistance, and that all will need a certain amount of it. In the latter it is safe to suppose that but rarely, only now and then, will cases occur which are quite unable to help themselves, and that the great majority will be almost as capable of hospital work as the hospital servants. From this it results that a great part of the ward work can be done by the patients themselves; and if some theories lately broached by Mr. Neison have any truth in them, the more work they have to do the better. As to the minute details which go to make up the meaning of the word discipline in a military hospital, that officer is the best who can discover the exact point at which interference should cease, and spontaneity of individual action be allowed full scope. Perhaps the best plan is to put out of reach the means of interfering with sanitary arrangements. In naval general hospitals, and in most civil hospitals, it appears that one attendant is provided for every seven patients. If that is a good rule, I think we may say that for a regimental hospital one trained sick orderly to every fourteen would not have too much to do. The number in each ward should therefore be a multiple of seven; and thoroughly convinced as I am of the total impossibility of maintaining proper discipline in a small ward, and believing that it is better not to go much beyond thirty, I propose to place twenty-eight beds in each ward.

The wards are 100 feet long and 22 feet broad. A height of 15 feet will give 1,175 cubic feet per bed.† This "cubic space" is an arbitrary, and apt to be a misleading guide; very useful when we lay down laws for buildings of small space, which is liable to be encroached on, but of little use on such an occasion as the present. The consideration that ought to be attended to is not the number of inches of space, more or less, but the facility for the renewal of air. Proceeding on an estimate of the rate and quantity of excretion of carbon from the lungs, it has been laid down that 2,000 cubic feet per person are required when windows are opened once a day for the restoration of the air. Of course, a very much larger space would be required if the windows were opened less frequently, or if walls did not happily allow of a constant transference of air.‡ A less space is required when the means of changing the air are ample, and constantly in operation. The high-pitch of the roof, which I propose to leave open interiorly, would add very much to the air-space. Besides that, I propose to have ridge windows, or proper dormer windows, leaving it possible to

open them at discretion. In addition to all this, there would be a window and a door at the end, by opening which a flood of air could be, at any time, poured through the entire building. There are seven windows on each side. Where so many are provided, the fashion of the windows is a matter of indifference. I confess to a prejudice in favour of the old-fashioned sashes. Perhaps, the best form would be two sashes of the ordinary sort, and above them, and so far independent of them, a large single pane opening by means of a pivot, as is done with all the parts of the tripartite windows at the Middlesex Hospital. The windows should be low enough to permit the great luxury of looking out of them; high enough to be decidedly above the level of the patients' head in bed; and they should reach to within 1 ft. or 2 ft. of the top of the wall. They are 4 ft. broad.\*

Is there in this arrangement the promise of a sufficiently frequent renewal of air? The whole art and mystery of ventilation is this,—to provide a constant renewal of clean air with the least degree of discomfort from "drafts." It is customary to say that the best ventilation is by windows and fireplaces. That is partly true and partly not true. In the first place, the fireplace and chimney are not, *in intention*, any part of the system, and we are bound to give our assent to a principle laid down by the Commissioners on Warming and Ventilation (Messrs. Fairbairn, Glaisher, and Wheatstone), that the firegrate should "not be studied as a contrivance for the ventilation of rooms; that so long as it is studied with a view to a twofold application (warming and ventilating), it will not succeed well in the performance of either." In the second place, windows can only be useful for ventilation when they are open, and in making our plan we must allow for the prejudices of foolish people who think it dangerous to admit "night air" through an open window, and prefer to breathe over and over again air tainted with the excretions of their own skin and lungs. Accordingly, I think that something more is required than the fourteen lateral windows, the end window, and the roof-windows. That I propose to give by placing a Moore's ventilating pane in the upper part of each window, the means of regulating which would be under lock and key, the latter in the hands of the surgeon; and also, by introducing one or two of Mr. Jennings's very beautiful ventilating bricks towards the top of the wall, between each window-space.†

If two indispensable requirements—purity of air and ample window space—are fulfilled, how far does this plan meet the other—the greatest possible cleanliness? In plans and in recent buildings one most often sees all the domestic offices placed together, but it would be difficult to say why such should be the case. Any one who knows how stupid soldier orders sometimes are will see a very good reason why there should be no chance of their mistaking one of these places for another, and that it may be of some consequence that they should have to enter a separate door to reach each of them. The proposed distribution seems to provide for convenience, distinct ventilation, and efficient drainage. In the ward given in outline only there is suggested a different position from that shown in the other two. No instance can be shown in which a ward or room is tainted by the sewer air of a neighbouring projecting water-closet, *through the window*. The impurity is always due to the want or imperfect ventilation of the necessary connecting lobby. Passage through the external air always dissipates the effluvia. This of course does not apply to such a case as where the arrangement is a series of open tanks, so close to the window as to obstruct the light, an arrangement which is to be seen in a very recently erected barrack. It must be confessed that the offensiveness of these places in military hospitals is most frequently caused by the patients putting improper things into them. This is a matter which must be regulated by individual discretion. My own humble opinion is, that the things so misused are such as need but seldom or never be found in any hospital; that tow, poultices, sawdust, quacklime, and chloride of lime are much better away; and that

\* In the Report of the Commission on Warming and Ventilation, there is related a number of experiments which reduce to demonstration the fact of the importance of the panes being large sheets of plate-glass, and of making the sashes double, with an interval of from 6 inches to 12 inches between each.  
† It may be doubted whether or even all this will be enough. I can state, from long continued and frequent observation of some six-bed wards with one window opposite the door and a large opening over the door, that when the window is open at the top to the extent of two inches, it is impossible to discover, at any time, an appreciable current in the middle of the room.

the best disinfectants and "deodorizing agents," are pure air and pure water, and plenty of both. In the watercloset chamber there should be a trapped, air-tight basin, with flushing power for emptying and rinsing out close-stools and bed-pans. The water-closets, scullery, and kitchen, should be lined throughout with white glazed tiles. The sink in the scullery should be of enamelled metal. People say that the Yorkshire stone troughs are the best, and that they do not stink, but, in point of fact, they do stink. The ward-wall plaster should be Keene's, or the Parian cement or some other smooth, non-absorbent substance.

At convenient spots in the centre of the floor there would be two fire-grates, with a downward chimney-flue, and removable in summer. One of them would have two fire-faces. The fire space should be made entirely of fire-brick, so as to prevent unpleasant contamination of the air. Perhaps none are better than those made by Mr. Pierce, of Jermyn-street. The fireplace, standing in the middle of the ward, could be fitted with a means of keeping poiltices hot, as is done in French hospitals. At present the "hot poiltice" is apt to be just so much cold dirt, and a late distinguished surgeon, when he found one in his wards, used to do with it as Dr. Slop did when he had his celebrated controversy with the maid Susannah over the cataplasm for little Tristram's wound.

For the sake of cheapness of material, I shall be content with a flooring of fir. Most people say that frequent washing of wood floors is a cause of erysipelas, but it would not be easy to demonstrate a connection between the two except on the *post hoc ergo propter hoc* principle. When you find erysipelas in a hospital you are likely to find present much more probable causes than soap and water and the wholesome practice of scrubbing on the hands and knees. It is quite true that in old hospitals where there has been a long course of dry scrubbing of soft wooden flooring, and especially where sawdust is allowed to lie about, you will find between the joists a quantity of woody *detritus*, and that when water reaches this, there is just the condition which may give rise to noxious effluvia; but I suspect that when erysipelas or pyæmia occur, the cause must be sought in something much more palpable and potent. Remember, too, that soldiers are, more than other men, but children of a larger growth; that the two principles which ought always to be set before them are, first, obedience, and then cleanliness, and you will admit that, just as children in a nursery should be surrounded with objects of beauty and symmetry for their education, so should these full-grown children be taught the great lesson which is conveyed by a plentiful and frequent use of soap and water.

There are two small wards of four beds each. If you have an eye-case with much intolerance of light, you must either place it in a small ward in which the light can be regulated for the exclusive use of one, or you must allow the patient to wear a shade, which leaves the inflamed eye hot and unventilated. Anything is better than putting up screens in a large ward. Other cases may also occur which the surgeon may wish, for special reasons, to seclude. If these two wards were to be looked on as a permanent part of the accommodation, they would be the greatest blots in the plan, but they should only be required under occasional and exceptional circumstances.

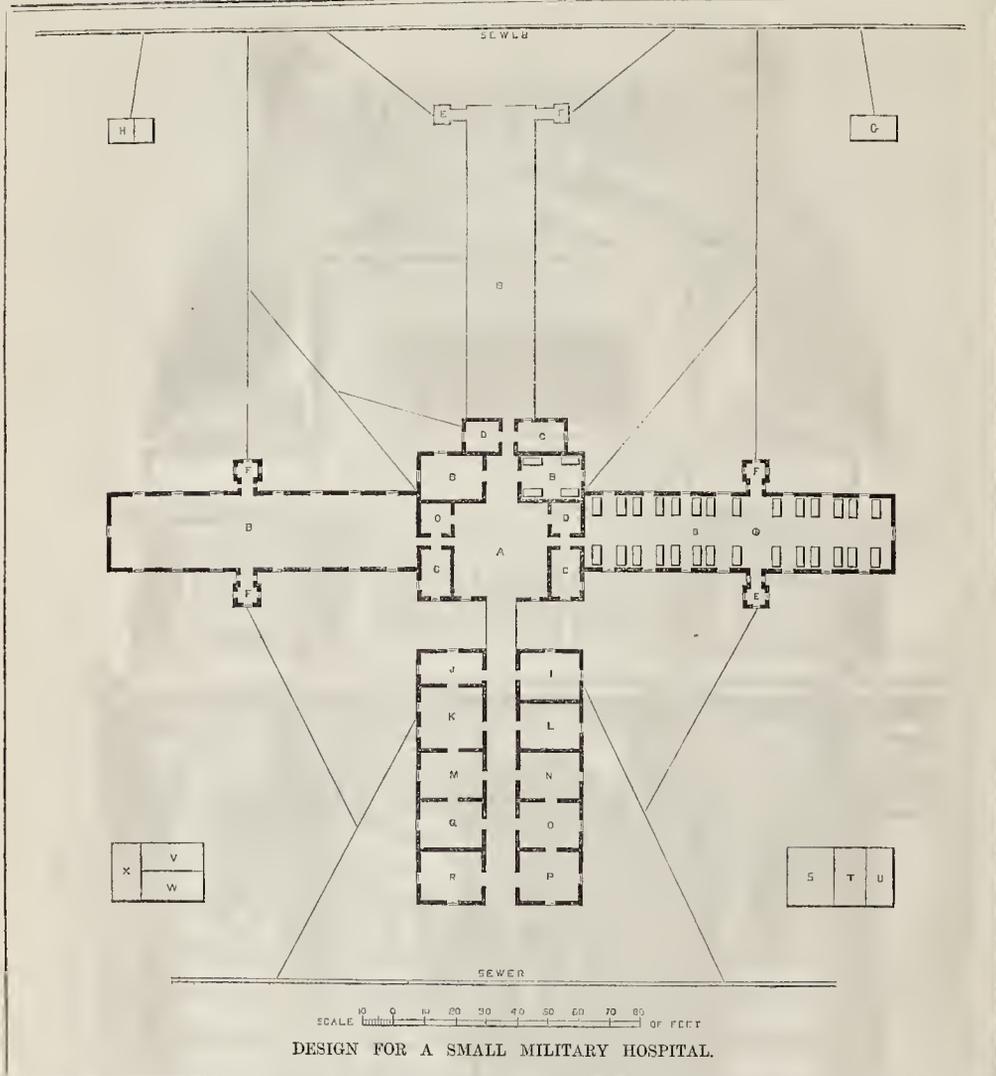
There is one particular convenience wanting, because even in the best regulated establishments it is always a cause of offence. All that is required in place of it, is the arrangement which was mentioned in a late *Builder* as having been put in force at a recently built club-house, after trial and failure of the more common plan. This arrangement has now been in use at that club-house for some months and answers well. There is no "itch ward," as none is required. There is no "foul linen store," because foul linen should be sent away at once and, in contradiction to Napoleon's maxim, should not be washed at home. A small quantity requiring temporary storage may be provided for by a cupboard in the purveyor's store-room. Of course there is no "ward for contagious diseases." Should the surgeon wish to isolate a case, he has only to leave one or more beds on either side of his patient empty. If that does not satisfy him, all he has to do is to open the end doors and windows which would enable him to pour in such a flood of air as must surely blow away every particle of contagium!

The offices are cut off from the rest of the building by a passage, 15 feet long and 10 feet broad. It should be altogether of glass. Two or three of the offices might be dispensed with, and

\* "It is often bad economy to build in too temporary a manner, but the converse is also true. The best materials should be provided where they are required, but it is quite proper to use inferior materials when they will answer the purpose as well."—*War Office Circular*, April, 1860.

† The latest War-office regulations prescribe 1,200 cubic feet.

‡ Some very interesting experiments on this subject are reported by the Commission on Warming and Ventilation.



some of them might be curtailed without great disadvantage.

The central hall would be lighted and ventilated by a glass roof, and also by two large side windows. It would be available for use as a chapel, and also, if desired, as a dining-room for convalescents. It may seem desirable to make this central glass hall somewhat larger, and also to place a short interval of glass between the two small wards and the large ward which is beyond them.

One skilled sick orderly being sufficient for the service of fourteen patients in a regimental hospital, each orderlies' room need not accommodate more than two. The unskilled orderlies, the hewers of wood and drawers of water, would live in barracks, and march to and from their hospital duty just as they would to or from any other duty. At the same time it is very desirable to have eight or nine skilled orderlies in a regimental hospital of such a construction as this, because a pressure of cases may, at times, require that two of them should be night-watchers, and two out of eight would give three "nights in bed" for all. At ordinary times, one night-watcher would be sufficient, which would give five nights in bed to a total number of six, and seven to a total number of eight.

It may be thought advisable that the hospital serjeant should live under the hospital roof; but there is no reason why his wife and large family should be there—and hospital serjeants always

have a large family. Accordingly his quarters are external, and I think that that and the other arrangements of the external buildings will be generally approved.

It may be objected that the position of the respective ward conveniences, with their necessary ventilated lobby, is such as would spoil the general look of the building, and that these places are made too prominent. But in planning for the accommodation of soldiers, it is a good rule to put well in front those places which require most constant attention and supervision. Miss Nightingale very pertinently remarks,—“As an invariable hospital rule, rather more in military hospitals than elsewhere, publicity may be considered as the best police and the best protection.”

A competent person has been so good as to make a rough calculation of the probable cost of such a building as this, and he estimates that it should be possible to build it for something decidedly less than 100*l.* per bed, exclusive of cost of site. It appears, by the army estimates for the current year, that the projected hospital for Woolwich, which will be a series of regimental hospitals conglomerated on the principle of *congregating* sick—a plan which should have the advantage of comparative cheapness, if none other—is to cost 120,000*l.* for 650 beds, or 181*l.* per bed, inclusive of cost of site. As the ground purchased for the site is a piece of waste land, with a wet clay soil, on which no one would ever dream of

building a private dwelling-house, though it is in “a desirable villa neighbourhood,” it may be assumed that the sum paid for it has made no great inroad on the 120,000*l.*

In deprecation of criticism of minor details, let me remind the professional reader that this is a project by an amateur. As to all other points, what it asks for is criticism, and the more searching and trenchant the criticism is, the better will the author be pleased, and the more fully will his purpose have been realized.

#### REFERENCES.

- A.—Hall with glass roof.
- B B.—Wards (one in outline).
- C C.—Orderlies' rooms.
- D D.—Bath-rooms.
- E E.—Sculleries and Pantry.
- F F.—Water-closets.
- G.—External Water-closets.
- H.—Mortuary.
- I.—Ablution-room for Admissions.
- J.—Issuing Lobby for Diets.
- K.—Kitchen.
- L.—Orderlies' Day room.
- M.—Steward's Store.
- N.—Dispensary.
- O.—Surgery.
- P.—Waiting-room.
- Q.—Parveyer's Store.
- R.—Pack store.
- S.—Guard-room.
- T.—Guard-ward.
- U.—For Temporary Custody of Maniacs.
- V.—Hospital Serjeant.
- W.—Dispenser.
- X.—Observation-room.



THE "FONTAINE SAINT MICHEL," PARIS.—M. DAVIoud, ARCHITECT.



## THE FOUNTAIN OF ST. MICHAEL, PARIS.

MIGHTY changes are taking place in Paris: miles of streets have been cleared away; other streets formed: fountains are erected, palaces finished, and statues everywhere set up. Money is not thought of: it is applied with stintless hand. The result is a beautiful city and a dear one. The proceeding has its admirable side—most admirable: but it has also its fear-exciting side, as the owners of house property, who, as we stated many months ago, are rising rents inordinately, may one day find out to their cost.

The Fountain of St. Michael, of which we give an engraving in our present number, is placed at the fork of the new Boulevard Sebastopol, facing the bridge of St. Michael. Its height is not less than 26 metres, and its width 15 metres. It was commenced in the month of June, 1858, and was inaugurated on the 15th of August last. It is raised upon vaulted cellars, constructed of rubble work and Portland cement. The basement, 6m. 40c. high to the base of the columns, is formed of Saint Yllie stone (Jura): the rest of the monument is of the *de Méry* stone. The four stages for the water-fall and the basin are executed in Saint Yllie stone: the border of the lower basin is raised only 30 centimetres above the level of the footpaths. At each extremity of the lowest stage are two pedestals, supporting apocalyptic animals vanquished by angels. In the basement, two pedestals on each side serve to support columns. The panel between each pair is ornamented with a tablet of grey Breccia marble, cut in facets. In the niche, and above the topmost stage, is a group of St. Michael subduing Satan. This group is 5m. 50c. high: it is supported by a rock of stone from Soignies (Belgium). This rock, from which the water flows, covers a cast-iron reservoir, that serves for support to the group, and supplies the fountain at the rate of 23 litres a second. The spandrils of the niche are ornamented with chimæra: the arms of the town of Paris, with the legend, "*Fluctuat nec mergitur*," are sculptured upon the key-stone. On each side of the niche are two columns, of the red marble of Languedoc, having their bases and capitals of white veined marble. The entire height of the columns is 6m. 20c. In the intervening panel is a sort of buckler in bronze, bearing upon a field of bees an N, surmounted by an imperial crown, and surrounded with sceptres and branches of oak and laurel. The cartouche below is ornamented with the head of an angel and a plaque of lapis lazuli.

The frieze of the entablature is decorated with small angels, bearing garlands of flowers: an escutcheon, with a lion's head upon it, is placed above each column. Over the columns, and in the following order, commencing on the left-hand side, are placed four statues, representing the cardinal virtues, Prudence, Strength, Justice, and Temperance: their height is three metres, including the plinth.

The centre of the attic is ornamented with designs in different coloured marbles: the two lateral portions bear a cartouche, enclosing the cypher of Saint Michael, surrounded by the collar of the order of that name created by Louis XI. in 1469. The square frame outside the cartouche is of coloured marble.

The pediment is decorated with a tablet of sea-green marble, bearing the following inscription:—

"Fountain of Saint Michael. Under the reign of Napoleon the Third, Emperor of the French, this monument has been raised by the City of Paris, in the year 1858."

On each side of this tablet is placed a pilaster, bearing the medallion of Saint Michael and the cordon recalling the military order instituted by Louis XI.

Two large volutes, ornamented with horns of plenty, terminate the sides of the attic, and do not demand our admiration. The whole is surrounded by an escutcheon, bearing the arms of the empire, supported by two allegorical figures—Power and Moderation. The covering is of slate: the cresting, the ridges, and the eagles, which are at the angles, are formed in hammered lead. The situation of the fountain is unique: it can be seen at a distance of 400 metres, the eye traversing the entire breadth of the city. Unfortunately its north-east aspect will scarcely ever admit of its details being lighted up by the sun's rays. This situation explains the necessity under which the architect felt himself of making use of various coloured materials in the construction of the monument so as to supply, as it were, artificial light and shade.

The works of St. Michael's fountain have been executed by the Municipal Service of Promenades and Plantations of the city of Paris in charge of

the Bois de Boulogne, and of the squares and the decoration of public places, under the direction of M. Alphand, engineer-in-chief. To the same service we owe the restoration and removal of the fountains of the Châtelet and of the Innocents.

The monument with which we are now more particularly occupied has been executed from the designs of M. Davioud, architect-in-chief to this service, who has already contributed to the embellishment of the capital. Messrs. Flamant & Simonet, inspectors of works, have seconded M. Davioud.

The group of St. Michael subduing Satan is due to the talent of M. Duret, member of the Institute. This figure was cast in bronze by M. Victor Thiébaud, in the space of three months, and with complete success. The bronze, contrary to the usual custom, is of a light colour, to harmonize with the surrounding stone. A darker colour is given to the demon. M. Auguste Debay executed the figures of the pediment.

The statues of Prudence, Strength, Justice, and Temperance, proceed from Messrs. Barre, Guillaume, Elias Robert, and Gumery. They were cast in bronze by Messrs. Eck & Durand, in whose studios the groups for the lower basin, by M. Jacquemart, are in course of execution. The sculptured ornaments have been executed by Messrs. Biés & Liénard. The general execution of the works was entrusted to Messrs. Montjoie & Ducros; and M. Séguin superintended the marble works. The interior mechanism of the fountain was executed by M. Lalo, inspector of waters, under the direction of M. Bellegrand, engineer-in-chief.

The Paris journal, *L'Illustration*, has some just observations on the fountain and its accessories, which may be usefully condensed; and with these we will close our account.—

The St. Yllie stone (Jura), whose yellowish grey colour contributes variety to this grand façade, is seen in conjunction with the white stone of which the rest of it is composed. The red colour of the Languedoc marble shafts of the columns forms at present a somewhat harsh contrast with this stone; but time will, doubtless, harmonize that effect. Perhaps, also, when the back part has blackened a little, it will restore to the white marble of the capitals of the columns their due pre-eminence, which at present they do not possess. The bronze of the statues is of an harmonious tone.

The talent displayed by the architect of the fountain of St. Michael, and by the artists who have aided him in its execution, will receive well-deserved praise; nevertheless there are some details to which criticism may justly take exception: it is upon the general effect, and upon the conditions themselves of the programme, that we think it useful to make some observations; because in our opinion there is therein a grave error arising out of the vexatious necessity, imposed upon the artist, of elevating his monumental façade against a simple domestic abode. Again, if this house had been rectangular, there would have been a point from which the façade of the fountain alone could have been seen without the return lines of the house thrusting themselves into view. But, unfortunately, this is not the case. The house to which the fountain is attached is built with an oblique front; so that it is impossible to escape from the odious perspective of shop-windows and the casements of the various stories, which stretch themselves out behind this richly inlaid face, with the most impertinent agreement in height, that establishes, in spite of every effort at disguise, a melancholy solidarity between the work of the artist and the construction of the builder. Notwithstanding the talent which the elevation exhibits, one feels that the architect was not free to choose his proportions according to his own inclination. The elegance of style and the richness of ornamentation do not prevent the spectator from seeing the evident effort made to give the design sufficient elevation, in order to mask some portion of the roof of the house. It is in vain that the ornamental cresting and the leaden eagles placed at the angles form a magnificent crown to the façade: this lacework ends on each side where the roof begins; and, behind it, the eye encounters the vulgar details of dormer-windows and chimneys. The system of placing fountains against private houses, of which there are numerous examples in Paris, is admissible for monuments of small proportions; but it seems to us essentially wrong, in every respect, when the monument to be erected is of large development and grand style.

We must also insist upon another point, too much neglected in the greater number of monuments of our day. We speak of unity and

fitness. It seems to us these are qualities of which the age is too little careful. The fault, it must be admitted, is not always due to the artists, who are compelled to carry out their instructions. We are ignorant if such were the case in the present instance with regard to the choice of subject; but, standing before the fountain of St. Michael, one naturally asks oneself by what peculiar train of thought any relation could have been found between a group of the Archangel, the figures of Prudence, Strength, Justice, and Temperance, vanquished chimæra, the enwrathed Cupids of the frieze, the crowning eagles, escutcheons bearing the saint's cypher, bucklers with the imperial cypher, the arms of France in the pediment, and those of Paris on the key of the lower arch? What idea can we gather from this biblical, mythologic, allegoric, symbolic, municipal mixture? The answer is difficult and dubious. Some persons may see therein a distinct allusion to contemporary politics; but it appears there is nothing of the sort intended; and, according to the description which has been issued, the idea sought to be expressed is the Christian one of 'The triumph of good over evil.' So be it!

Although we may be running the risk of exposing ourselves to ridicule, by avowing a remnant of tender affection for the superannated fabulous deities which our sceptical era has banished by force of contempt, we still think that for ornamentation of a monumental fountain (when no one of course dreams of consecrating it to the image of any one of the great men who have rendered France illustrious), naiads, tritons, dolphins, nay even the old classic urns, are still the most graceful, as well as the most natural subjects, notwithstanding their insignificance. These poetic creations adjust themselves the most readily to the necessities of the case; and, if they have the fault of being mythological, they possess at least the great advantage of logically belonging to a subject wherein, after all, it is the water alone which is the pretext for the arrangement.

## CHURCH-BUILDING NEWS.

**Hanworth.**—The parish church was re-opened on the 31st ult., after having undergone a restoration of the interior. The seats are all open and uniform, and are plainly finished in English oak. The contractor was Mr. William Chapman, of Hanworth. Wood-carver, Mr. Daynes, of Norwich. The entire cost of the alterations has been about 300l.

**Thurston.**—The foundation stone of the new church of Thurston has been laid. The new structure will exactly follow the dimensions of the old one which recently fell, except that the tower will be 2 feet wider each way. It will consist, as before, of a nave and two aisles with five arches, measuring inside 50 feet by 42 (exclusive of the chancel, which remains); height of nave, 34 feet; of the aisles, 24 feet; tower, 12 feet square, height, 70 feet. A bed of concrete, 6 feet deep, is laid under the whole area of the tower, and 5 feet under the walls of the church. The tower has two square buttresses at each angle, instead of the former angle buttress: above the plinth will be a course of quatrefoils, and the whole of the openings and decorations of the tower, which in the old structure were very inferior, will be in keeping with the body of the new church. The windows of the porch will show four recesses of compartments within but only two without, in agreement with the original form. The materials of the walls will be flint and rubble, with Ancaster and Barnack stone dressings, such of the old Barnack stone as remains sound being used again, including the three pillars of the north aisle, which are left standing for the present, but will be rebuilt on proper foundations, all the church being rejected. The woodwork fittings, including doors, pulpit, seats, &c., will be of oak. There will be a row of free benches on each side, as well as at the west end of the church. All the sittings will be open benches, those in the nave having poppy-head ends. The work has been carried above the height of the plinth nearly all round, by Mr. Farrow, under Mr. Bonner's supervision.

**Ditton.**—The parish church has been under restoration. The work has chiefly been confined to the interior of the edifice, but it is hoped that before long the repair of the exterior may also be accomplished. On the north side a vestry has been added, and two new windows on the south side. A new chancel arch has also been erected, and the church entirely re-seated, the old pews being substituted by open benches, and the accommodation proportionally increased. All the walls have been re-plastered, and the timbers of the roof, which had been hidden with plaster and

whitewash, have been laid bare. New pulpit and reading-desk have likewise been provided, and other alterations and improvements made. Mr. Scott was the architect, and the work has been executed by Mr. Ephraim Wallis, of Maidstone, and Mr. Church, of Larkfield. During the progress of the work the remains of an old mural painting, consisting of a portion of the figure of a man, was discovered, and has been left exposed.

**Maidstone.**—It having been found that the Baptist chapel in King-street was in an unsafe condition, and in many respects inconvenient, it was determined to erect a more commodious building on the same site. The foundation stone of the intended new church has been laid. The church will be a large structure. The architects are Messrs. Peck & Stephens, and the builders, Messrs. Sutton, Walter, & Goodwin.

**Heathfield (Sussex).**—On the 8th inst., the spire of the parish church was brought to the upright position, which it is supposed, by some architects and others, never to have occupied since it was erected, some 500 years ago. This critical operation was an important step to the restoration of the church, which is now in progress. Ten years ago the north aisle was entirely rebuilt, and the roof of the nave repaired, the piers and arches renovated, and the north side of the church re-seated, at an expense of about 800*l*. Four years afterwards the chancel was restored, at a cost of about 600*l*. The tower and spire, and the entire south side of the church, still remained to be repaired, the spire and the chapel, especially, being in a dangerous condition. These repairs were estimated to cost about 900*l*. Funds were collected by private subscription to half the amount required, and the two most important portions of the work were undertaken, viz., the rebuilding of the chapel and the repair of the spire and tower, and these are now progressing, while the committee are endeavouring to raise the remainder of the funds required to complete the entire restoration. The bringing of the spire to the perpendicular, effected under the superintendence of Mr. John Billing, of Westminster, the architect, was an operation which excited a lively interest in the parish, mingled with some anxiety as to the possible danger of a downfall. The divergence from the perpendicular of the apex of the spire (which is about 50 feet in height) was 2 feet 3 inches. To rectify this it was found necessary to raise the eaves of the south side 5 inches, and to depress those of the north side to the same extent. The spire was supported on four powerful screw-jacks, and the masonry was then carefully removed from beneath the five resting points on the north side of the timbering when they should be lowered. The two jacks on the south side were screwed upwards, and the two on the north side were lowered simultaneously, the spire turning upon the axis of a single horizontal beam. No sound of creaking was heard among the network of timber. The moment the timbers came to their new leanings, and the spire was upright, two flags were run out from the top story of the framework, and a volley of musketry was fired from the tower walls. The tower and spire rise 120 feet from the ground, and show for many miles.

**Burbage (near Buxton).**—The foundation stone of a new church has been laid at Burbage, which is about one mile from Buxton. The Duke of Devonshire gave a site, on the Macclesfield-road, and 350*l*. Other subscriptions now amount to upwards of 2,600*l*. The estimated cost of the new church is 2,600*l*, including a peal of bells; but the contractor's estimate is 2,080*l*. The church is expected to be finished in June next. Its style of architecture will be Norman, and it will have a tower 52 feet high. It will have a nave, two aisles, and a chancel, and will be erected of freestone dressing, from a stone quarry at Reve-edge, in the neighbourhood. There will be 400 sittings, the seats being open stalls. The roof will be open, in grained oak.

**Congleton.**—The new church of St. Stephen, erected on a plot of ground in Moore-lane, Congleton, has been consecrated. The building stands about midway between Congleton and Baglinton, occupying, with the burial-ground surrounding it, 1a. 15p., an area of half an acre being reserved as a site for a parsonage-house. The church consists of an apsidal chancel, with nave and north and south aisles, having the vestry open to the church, with the heating chamber under on the north side of the chancel, and a chapel or organ-chamber on the south side of same. There is a southern porch and a western entrance. The total length of the church exceeds 100 feet: it is about 49 feet wide, and bolds 600

persons. A tower is contemplated at a future time; but at present the single bell is carried in a turret over the chancel arch. The style is Early Third Pointed, of the latter part of thirteenth century. The expenditure on the edifice has been about 3,000*l*. The chancel is decorated with painted glass, the floor laid with tiles. The seats and fittings are of oak. The chancel is parted off with wrought-iron screens. The whole of the seats in the nave are open, of pitch pine. The passages beyond the chancel are laid with plain tiles, made by Messrs. Garrett, of Burslem, who have also supplied the roof tiles and patent ventilating tiles for the ridges. The roofs are paneled, with the main timbers exposed, and a series of ornamentation is carried throughout the church by the introduction of floral and geometric drawing. All the woodwork, other than oak, is stained and varnished, and the oak is bees'-wax polished. A Caen stone font stands at the entrance. All the windows on the south side and in the clerestory are filled in with patterns in different shades of Hartley's patent glass. The interior ashlar work of the church is in Bath stone, with Alton and Forst red sandstone introduced alternately into the arches of the nave. Derbyshire marbles are used in the piers of the chancel arch. The walling stone is from the locality, and the exterior ashlar of Staffordshire stone. The church is heated by hot water. The works have been carried out from the plans, and under the direction, of Mr. Joseph Clarke, of London, by Mr. Samuel Faram, of Odd Road, builder. The chancel has three windows filled with stained glass by Messrs. Edmundson & Son, of Manchester. The subjects are designed with reference to the memorial, those in the centre window being taken from the New Testament, and those in the side windows from the Old. In the middle window are:—The aged Simeon with the infant Jesus in his arms, and the stoning of St. Stephen. In the north window are Jacob blessing the children of Joseph, and Joshua before his death addressing the tribes. In the south window are Job and Daniel.

**Stockport.**—St. Thomas's Church is being painted and decorated by artists from the establishment of Mr. Crace. The work is now approaching towards completion. Mr. Winship is the superintendent of the work. The ceiling is coloured an aerial blue, with maroon line; the margin two tints of vellum colour, with maroon and drab lines. The pendants on the ceiling are in imitation of bronze and gold, and the cornice in vellum colour, relieved with deep maroon, blue, bronze, and gilding. The gallery ceiling is coloured two tints of buff, with drab and maroon lines; and the walls are a subdued green, ornamented with maroon lines and corners, the columns being of stone colour, and the caps a soft white. The gallery fronts are of vellum tint, relieved with drab and maroon lines and ornaments, and a portion is gilt. The pilasters supporting the galleries are ornamented and embellished to correspond. The pews are a cinnamon colour, painted and varnished. At the communion end the finished portion is embellished with blue, green, and maroon lines.

#### SCHOOL-BUILDING NEWS.

**Chatham.**—Another new National School has been opened in the Military-road, making the fourth new school for the children of the poorer classes built and opened at Chatham within a comparatively short period. The building in question has been erected at a cost of 1,647*l*, of which sum 250*l* were given by the Lords of the Admiralty, and 740*l* by the Committee of Council on Education, and other Government departments, the remaining 657*l* having been obtained by private subscriptions, raised chiefly through the exertions of the Rev. St. Arnott, vicar of the adjoining church of St. Mary. The school has been erected by Mr. Wilkins, and is of Kentish rag with brick and freestone dressings: it will accommodate infants as well as boys and girls of more advanced age.

**Husbands Bosworth.**—In February, 1858, a new parochial school was opened in this village. At the end farthest from the master's residence, another building, some 30 feet by 20 feet, has just been erected, in the same style as the first, which it crosses at right angles. The rooms communicate with each other by means of large double sliding partition-doors, which have been lined with felt. The school is warmed by the Hyde stove. The cost of school and master's house was about 800*l*, and the newly-erected infant-school about 350*l*. Both were erected from the designs and under the superintendence of Mr. E. F. Law, of Northampton, architect. The buildings are of red brick,

with white brick quoins, and black and white brick arches, black brick pilinths and chimney-caps, and black brick dispersed work between the windows and in the gables. The walls on the inside are finished and coloured on the bricks. The roofs are open, with Gothic ribs resting on corbels, and the whole stained and varnished. The building is situated on the village green.

**Salisbury.**—St. Edmund's new schools, erected on the east side of St. Edmund's churchyard, for the education of the children of the poor in this large parish, have been formally opened by the bishop of the diocese. The buildings, which are in the Decorated style of architecture, were designed by Mr. H. Goodyer, and the works have been carried out by Mr. Entebor, of Fisherton, builder. The total cost of the erection is about 4,500*l*. The accommodation afforded is for 500 children, namely, 150 girls, 150 boys, and 200 infants, besides a residence for the master. The central portion of the edifice is occupied by the girls and infants' schools, the boys' department being on the left, and the master's house on the right. The infants' room, which is on the ground-floor and underneath the girls', is 50 feet long by 20 feet wide, with a gallery, 18 feet by 14 feet, capable of holding 100 children. The dimensions of the girls' department are 50 feet by 20 feet, with two class-rooms, one 14 feet by 20 feet, and the other 18 feet by 14 feet. The boys' room is in the shape of the letter L, the portion at the end being 20 feet long, having a class-room 14 feet by 18 feet, whilst the room itself is 50 feet by 18 feet. The roof of this apartment formerly belonged to an old edifice that stood on the site of the new Salisbury Market-house, and is supposed to be of the fourteenth century. It was presented to the building committee by the directors of the Market-house, and has been restored at the expense of Mr. Charles Radcliffe. Each room is lighted with numerous windows.

**Birmingham.**—Tenders are invited from a limited number of contractors for the building of St. Jude's National Schools, class-rooms, teacher's residence, &c. The schools will accommodate upwards of 200 children. The Council on Education have granted 554*l* towards the erection of these buildings, so long wanted in this densely-inhabited locality. The architect is Mr. J. L. Pedley, of Southampton.

#### MODERN ILLUMINATION.

The art of illumination is being revived, and is more practised and appreciated than might be expected. It is urged that "it is at once disciplinary and delightful, and tends, even as an accomplishment, to strengthen those qualities of patience, thoughtfulness, and delicacy, which shed so salutary an influence upon our daily life."

We have before us the outlines of the Beatitudes, for illuminating, for which prizes were awarded by a society termed itself the Illuminating Art-Union of London,\*—a great mistake, this title, by the way, as it looks like pilfering the good name of another. The outlines are designed by Madame Citerio, Mr. Edward Ofor, and the Hon. Louisa Tension, and may be had partially coloured, so that they may be finished after the pattern by the learner, a very good arrangement. The prizes were awarded by Messrs. Owen Jones and Noel Humphreys. The arrangement of the colours, probably, in No. 1, overcame the objection that might be taken to the style of the outline.

A second edition has been issued of the "Manual of Illumination on Paper and Vellum," by J. W. Bradley, B.A., and T. Goodwin, B.A.,† which conveys a considerable amount of information, evidently the result of some experience. It contains, too, twelve lithographic illustrations.

#### MORTAR IN MARYLEBONE.

The monthly report on the health and climate of St. Marylebone during August, 1860, by Dr. R. D. Thomson, F.R.S., the medical officer of health for the parish, shows a very satisfactory state of matters as regards health and sickness, but in a certain measure attributable to the moderation of the heat of summer during the late rainy season. The mortality for the month of August was 258, or sixteen under the mean of four years. There were 4,462 cases of sickness compared with 5,091 and 6,306 cases in the two previous years respectively. These statistics, however, only show the more clearly how much life and health depend on the absence

\* Gambart, Rowney & Co.; D. Laurent de Lara, Torrington-square.

† Wansor & Newton, Rathbone-place, 1860.

of those noxious effluvia which the heats of summer so generally raise up into a state of injurious activity, wherever the source of them exists. In course of his report the medical officer says—"My attention has frequently been called to, I trust, an almost obsolete practice indulged in by some builders, of mixing up putrid slop from the streets with their mortar, instead of using sand, which has a chemical relation to the lime. A case of this kind having been reported to me by the inspectors at Hamilton-terrace, I found the slop used, to consist of putrid organic matter, 873; water, 366; and inorganic matter, 5468. Being of opinion that the use of such a mixture in plastering the interior of a house is not likely to be promotive of health, while it undoubtedly produces an inferior binding material, I requested the builder and the architect to discontinue its use; but not in time to prevent the fall of an arch, and the injury of three men engaged in the construction of the building. The inspectors, who were present soon after the occurrence, are of opinion that the accident was partly due to the mortar, while the district surveyor reports to me that 'the falling of the arch was from improperly striking the centre, and not from the use of bad material.'"

SOCIAL SCIENCE AND THE STEAM ENGINE.

It may not appear at first sight that there is any very intimate relation existing between social and mechanical sciences, for the former is treated at the present time in a manner very similar to that of education some thirty years since, and considered to be entirely a question of the brain. It was then thought that the only requisite to bring youth to the most perfect state of maturity was a head full of wisdom and theoretical knowledge; the great fact being overlooked, that the efficiency of the functions of the brain is the basis of vigour and power, and that that efficiency is dependent on physical development and physical health. Experience demonstrated, in course of time, that the first stone of mental and moral culture is laid in physical culture, and that whatever superstructure of wisdom, experience, or knowledge, is erected on any other but this its natural basis, it is liable at any moment to tumble into a premature grave, with a decrepit and half-developed physical organization. What physical health is to the body, industry is to the social existence. It is the foundation stone of social peace and progress, national security, and international friendship; and no country has ever yet enjoyed constitutional freedom, or manifested any of the evidences and accompaniments of social health except by its aid. As industry, therefore, is greatly developed by the agency of the steam-engine, it follows that mechanical science is a great contributor to social progress, and has an important bearing on social science. One of your correspondents, in a recent number, called attention to the desirability of a more general diffusion of knowledge on this subject, and a closer investigation of those laws which govern the health of communities. This is very true; but it is equally true that, if any good result is to flow from discussion and investigation, it must be open to perfect freedom of speech. Social science is treated, at the present time, both by the public and the press generally, as a wealthy sensualist treats his doctor. The twinges and pains of his frame warn him of decaying health: he knows the reason and the remedy if he likes, but he dares not look it in the face; so he consults the doctor, and woe be to the doctor that stabs the truth. He is willing to be physicked, or to be subjected to any discipline that does not attack the real cause of his malady; he expects, by some *presto-change!* system, to be able to keep in active operation all the agents of disease, and to enjoy all the fruits of health and ease. In investigating this subject, it should be borne in mind that nothing which is natural and legitimate fears to be looked at, and that any man who is imprudent enough to attack that which is sound and healthy, only brings injury on himself; therefore, if any good is to flow from discussion, the whole subject may be safely laid open; for that which will not bear the test of light is an element of disease, and that which will is one of health. It will be found, in this question, as in every other, that the natural operation of the element of social life leads to health, and that disease is but the evidence of some impediment to that operation; and that the remedy must be effected by removing the impediments, rather than by efforts to counteract their effects. Society is not honest in this matter. It wishes to maintain existing social conditions intact, and to dis-

cover some specific by which social health may be wrought on from the elements of social disease. Social life is subject to two phases of development; and to one, and to one only, of these is every member and every class of the community contributing. The most insignificant event of the every-day life of every individual yields something either to the consolidation or to the decay of the social fabric: the result is only perceptible when viewed in the aggregate, when matured, for (as in the individual) every inspiration of the breath affects the health of the body. That effect is not perceptible except in like general results, and I am induced to thus trespass on your consideration solely from the conviction that this is a question of the utmost importance at the present time to the commercial interests of the country, and to all whose interests are identified with legitimate and constitutional progress; for the law of social development is absolute, and will accomplish its ends either with the concurrence of society by a yielding to its conditions, or else in defiance of society, by bringing into action the elements of disorder and rebellion. The following forcible warnings are not to be despised—*an increasing population, increasing taxation, decreasing trade* (both home and export), and a gradual rising in price of the staples of life and of industry; and these have been the precedents to every previous period of industrial, commercial, social, and political disorder.

Society in its development is neither theoretical nor experimental, but is absolutely subject to simple and definite law; and the characteristics of health and of disease are in all ages and in all cases the same. The former are constitutional or responsible power, commercial freedom, and industrial independence, and prosperity; the latter are fictitious or irresponsible power, commercial dependence, and industrial poverty. No political disorder ever arises in any country where industry has a free and legitimate field for employment; and no tendency to foreign aggression or war is ever manifested when capital enterprise has a legitimate field for action and expansion in the pursuit of commerce. When, however, the industry of a country is fettered, its energy becomes the parent of rebellion; and when the sphere for the legitimate employment of capital is choked up, it finds an artificial outlet in foreign aggression.

I will now just call your attention to the two most prominent events in the social history of the country,—the Reform Bill, and the birth of Free Trade; and to the direct connection which exists between them and the two mechanical eras which were marked by the steam-engine becoming an agent of "manufacture" and "transportation." The passage of the Reform Bill was the consummation of social and political changes that had long since been effected in the condition of the community. Previous to the manufacturing era, the soil, its minerals, and its agricultural produce were the great elements of national wealth; and, as a natural consequence, political power was entirely in the hands of its possessors: when, however, steam came as an agent of manufacture, a rival element of national wealth was produced, and from it grew up a wealthy and powerful commercial interest; and, in spite of all the efforts of its opponents, by legislation, by war, and by national extravagance, nothing could check the growth of this interest, fed by the expansive power of the steam-engine. It grew, attained independence, and set the seal to that independence in the Reform Bill. At that time finality was accepted by both aggressors and defendants: time, however, which matures all things, brought forth another period of maturity for commercial and mechanical science (represented by the locomotive). This gave another stimulus to commerce: markets became more accessible, more numerous, and more absorbing: the advantages which resulted from cheap and efficient locomotion suggested to the commercial mind the desirability of Free Trade; and, as soon as the policy of protection was felt to press sorely on the interests of trade, the whole commercial community united these cases (and in every other), on the one side, was found irresponsible power lacking up commercial restriction; on the other, constitutional effort, the fruit of unity of commercial interest, struggling to give birth to its first-born—Free Trade. The steam-engine then, first, gave birth to a commercial community; secondly, gave it wealth and power; and thirdly, gave it a political recognition. In the second era of its progress it gave cheap and efficient locomotion, showed the advantages of freedom in commerce, and gave both unity and power for its accomplishment. As both

these great events in the progress of our country towards its present state of maturity were preceded by a mechanical agent, so will be the next. I will on some future occasion draw your attention to the third (and coming) era in commercial progress, the evidences of its approach, its character, and prospective results. JOHN GILES.

LETTERS ON MARBLE: PAINT ON LEAD.

ONE of your correspondents asked lately for a good mode of colouring letters in mural marble tables: allow me to say I have tried black and red sealing-wax, dissolved in spirits of wine, with much success.

Can any of your readers inform me whether it is impracticable to paint lead? A country painter—I apprehend on the principle "sweets to the sweet"—tells me white lead to white lead ruins the lead, and that painting lead ruins it in three years. Is such the case? EBORACUM.

DRYING WET CROPS.

SIR,—Allow me a few lines with reference to the paragraph, that the different wet crops can be well housed in defiance of wet weather.

My object is to say that the idea is not new, as I can fully prove. I was managing a large brewery at Burton-on-Trent. There I had an occasion to superintend some haymaking. It was very wet weather, and the idea then occurred to me. Accordingly, I went with a man into the field, and procured half a truss of green wet grass direct from the swathe: we then placed it in a vessel which contained air, heated by steam, and I can assure you, sir, that that wet grass was rendered into hay in one hour, with an excellent colour and beautiful flavour. I could have done ten trusses at a time in the vessel, but I thought the half truss was sufficient to convey the idea. I have a specimen of the experiment now by me, which is four years old, and it is exceedingly good.

I think I may say, that I am the first person who made hay by drying grass artificially. W. W. WYNNIE.

THE STAGE.

*The Adelphi Theatre.*—It is a long time since a more legitimate success was achieved than that which has attended "The Colleen Bawn, or the Brides of Garryowen," a piece founded on Gerald Griffin's Irish novel, "The Collegians," by Mr. Dion Boucicault, and in which he plays very cleverly an Irish ne'er-do-weel Myles-na-Coppaleen. Miss Agnes Robertson as *Ely O'Connor* (the Colleen Bawn), and Miss Woolgar, as *Ann Chute* (the Colleen Road), are both excellent; and Mrs. Billington, Mr. Edmund Falconer, and Mr. C. H. Stephenson, demand special mention. Indeed, the piece is altogether well played, and if we are not mistaken will serve to fill the Adelphi for many weeks to come. The scenery by Mr. Pitt and Mr. Thompson, although not yet even quite equal to the capabilities of the new stage, is very good and effective, especially the first scene, "The Lake of Killarney by Moonlight."

The management of the scene, "The Water Cave," wherein *Danny Nyan* attempts to drown the Colleen Bawn, and *Myler* rescues her, is remarkably good, and produces all the effect of reality.

*The Olympic.*—The "New Farce" here, as it is called, entitled, "Savage as a Bear," is a literal translation of the French vaudeville, "Un Tierce de Bengale," with omissions. Not a single incident, not a stray idea, is there in it which is not in the French original, if we except an absurd alteration at the end, which destroys the point of the French piece for the sake of strict propriety. So long as the public will permit managers to do this sort of thing,—so long as English writers have the hardihood to put their names to pieces which they have had nothing to do,—which they have no more right to call their than Mary Smith has to call herself the author of "Telemachus," when she has done a few pages of it into halting English,—so long will our modern drama, in a literary point of view, remain the scoff of Europe. Unlike most pieces at the Olympic, the farce is very badly played, too, at least by the gentlemen. Those who saw the original acted by the Zouaves at the Princess's Theatre (half-amateur as they were) could scarcely sit to listen to the unnatural ravings of Mr. F. Robinson in the part of the jealous peevish husband. This gentleman, useful in Shakespearean plays at Sadler's Wells, is entirely out of his element in the parts he is now acting at the Olympic.

## CUPS FOR PUBLIC DRINKING-FOUNTAINS.

As one of your constant readers, I beg to offer my individual thanks for your remarks from time to time upon drinking-fountains, in which I feel great interest. I am sensible of the prudence and justice of your observations in regard to the miserable taste generally displayed, and very often the only embellishment, "so to speak," is the donor's name, or some Scriptural quotation, both of which would be far more honoured in the breach than in the observance. Those at the entrance to the British Museum are admirable as regards fountain and cups; but it should be remembered that they are carefully guarded by day, and inaccessible at night, which other public drinking-fountains are not.\* The same silvered cups in an exposed situation would be mutilated or stolen within twenty-four hours, and are, therefore, not applicable to such service generally.

I am sure you feel a deep interest for the public benefit on such matters; and, having taken minute pains to find the best kind of drinking-cup, I hope you will kindly receive the result of my experience, and as kindly publish it. Common tin cups soon inherit a rusty look and a greasy feeling; tinmed iron soon become rusty, and are withal heavy; enamelled iron chip become rusty, and in wear soon assume a dirty appearance, from people's thumbs and fingers, which is not easily removed. Cups of that description should be renewed once a week, or at furthest, once a fortnight, which is the extreme extent of their decent durability and wholesome appearance. Such cups, with chains, were tried at Kensington-gore very fairly for above two months last year, and the result was a very large amount of trouble, no perfect satisfaction, and considerable expense to replace what were stolen or damaged. The average expense for the whole period named rather exceeded 2s. 2d. a week. These various evils led to the adoption of earthenware cups, marked "Kensington Drinking-Fountain," for identity, which have been in use ever since: not one has been stolen. They always look clean and wholesome, create no trouble, and the breakage does not amount to 6d. a week. I take leave to send you one, that you may be able more confidently to refer the public to the consideration of the question if you approve, because I believe them to be the best possible for the service in all its bearings. Through the kindness of Sir Richard Mayne, the police take charge of a small store; and, when one is broken, another is substituted without difficulty. They are perfectly plain, because any rims, handles, or projection, would tend to breakage. They have no pretension, but utility, cleanliness, and economy, and the cost is 4s. per dozen. I feel sure you would confer a public benefit by making these facts known. You kindly inserted a letter of mine in your journal of the 17th September, 1859, when these cups were first put into use, and the subsequent experience respecting them may be interesting and useful. KENSINGTONIAN.

## ILLUMINATING AND ELECTRIC CLOCKS

SIR,—A plan for illuminating clock hands without the entire dial being lit up was arranged in detail in 1857, with a view to its being applied to one or more of the Westminster clock dials; and it is one amongst several improvements to introduce which I have endeavoured to obtain the necessary control over the clock for some time past.

The experiments which I made with the plan in October, 1857, showed that an ordinary gas-light, at a moderate elevation, could be seen from a greater distance than the angular space on the dial permitted the time to be read off by the hands, and that an ordinary-sized gas-light on each hand would be sufficient for dials as large as the Westminster.

Your correspondent in the *Builder* of the 8th instant suggests the use of the electric light; but, as the experiments of 1857 showed that the distance at which the time could be read was limited by the amount of space on the dial, and not by the want of a more powerful light than gas, there would probably be no advantage in employing the electric light, sufficient to compensate for its uncertainty and extra cost.

As I may give a detailed account of the plan and experiments in a future number of the *Builder*, I need only add that three gas-lights were used,—one near the point of each hand, and

\* The marble rim should have been made to slope inwardly in order to prevent drops from the cup, inwards from wetting the person, while obliged to stand close to it. Nor can we approve of the lion's head as a spout.—Ed.

one in the centre of the dial; and that different coloured glasses were placed before them, in order to distinguish the hands and centre from each other. E. T. LOSEBY.

SIR,—My plan for illuminating clocks, introduced to the public years ago through the *Builder*, is again taken up; and the old, old story is exemplified, that the public mind requires a great deal of hammering before any impression can be made upon it. The chief idea of my plan is, that no hands are required. When a person looks at a clock or watch, he simply examines the position of the ends of the hands. Instead of the enormous leverage required to turn long hands, such as are required in public clocks, which are also interfered with by the wind, my plan embraced two thin copper disks, with a circular hole in one portion of them. These disks are placed in front of a red band of glass for the hours, and a white band for the minutes, and the time would be shown by the relative position of the red and white circle, as seen at any part of the disks. The light being directed on the two disks instead of the whole face, as at present, the contour of the clock is shown by a band of white light, with projections for the quarters.

For watches, merely feeling the position of the two holes at night would answer the purposes of a repeater. W. H. BETTERFIELD.

\* \* I explained my plan to one of the first clock-makers in London, who candidly stated that three patents which he now holds would be rendered valueless if my plan were adopted. I am not a clock-maker, but I know enough of mechanics to be certain that much less power would be required to turn the disks than the lightest hands that could be made.

The suggestion of Mr. C. Deut, relative to the illumination of clock-dials, contained in the *Builder* of the 8th inst., may be seen carried out in a very beautiful and ingenious manner in the clock of the Musée de la town of Havre. There the great body of the dial remains dark, the hours and the hands only being illuminated. I have often wondered why the method so successfully carried out in Havre was not followed in other places. I regret that I am not able distinctly to describe the arrangements of this remarkable specimen of illuminated dial, but I believe every facility would be given by the guardians of the Museum, for examining it in detail. I hope that this hint may not be lost sight of by those interested in this branch of horology. NIGHT.

\* \* This clock was also referred to in our pages some years ago.

*Time by Electricity.*—The telegraph has already worked strange innovations; but electricity is as yet an infant, and has to be applied to purposes that science has not yet taken up. For instance, our public clocks—those silent purrers,—cannot we do without them? They are ever misleading the Queen's lieges,—to-day slow, to-morrow fast, the next day stationary. What is there to prevent our having a central electrical, or rather galvanic, time-keeper, that should beat the pulses of the hours, and send the true arterial time along the railway lines through the city and over the country, with dials and honest fingers (but no clocks!), moving almost simultaneously from Land's End to John O'Grat's, "from Lynn to Melford Bay?"—GO-A-HEAD.

\* \* The electric clock is now an old invention, but has not come into use.

## DRINKING FOUNTAINS.

SIR,—On the 11th inst., at twelve o'clock noon, we had presented to this parish (Spitalfields) a granite drinking-fountain, the gift of T. F. B., a gentleman well known for his liberality, &c. It has been erected by the Association formed for that purpose. Of course, as you are the well-known supporter of the cause, a much more detailed account will be sent you. What I wish to call attention to is the shocking mess that the paving is in through the water being spilt after the fountain had been opened only twenty-four hours. There is a little grate, about 2½ inches by 2½ inches, let into the base, to carry off the water that is (at present) continually running over, for the outlets are stopped up in the basin. What can the parties know of such matters to finish it in such a way? It looks very much to be leaning towards Shoreditch—not quite upright. It seems a very great pity that good money should be spent on such bad work.

The fountain in Fleet-street, the *Duke's* one, is very bad from the same defect, causing a sloop and

puddle over the paving, in spite of all the staring description that is given of the liberal donor. What I would suggest is, that a proper grate be let into the stone paving, strong enough to bear rough usage. If the water should continue running through the winter, serious accidents must happen. This is not written to disparage the movement, but only the way in which the fountains are fixed. If the mode of construction is not altered, few will run the risk of wet feet for a cold draught of water.

A PARISHIONER.

A drinking-fountain of cast iron, comprising a female figure pouring water from a vase, with a white marble slab behind the figure, has been erected at Gravesend. It was executed by Mr. Hood, of Thames-street. The figure standing in the basin into which the water falls, an impression of feet-washing is conveyed, which can scarcely be intended.

## ARCHITECTURAL EXAMINATIONS.

SIR,—The question of a voluntary or compulsory architectural examination is a subject which should be duly considered in all its applications; for, whilst the want of an examination has been felt generally, the means proposed for its introduction are calculated to offend practising architects generally, and sever their practical connection with the Institute. The report of the Northern Architectural Association expresses not only their own opinions, but the opinions also of a large section of the members of the Royal Institute. Our profession is simply in a similar position to that of the medical and legal professions, before examinations in these professions were compulsory, and their precedent must be followed by us. If any in the architectural profession is to be maintained by granting diplomas to all establishments, a compulsory examination for the profession generally in place of opposition to the Institute, and a compulsory examination for all future architects; by these means support will be given by the profession generally in place of opposition to the Institute, and a compulsory diploma will be given to the architect of established practice. I would not consent to pass an examination, nor would I belong to the Institute, if it contained diploma non-diploma men. Such a general severance would not only injure the welfare and position of the Institute, if not form the nucleus for a rival and more liberal society. A MEMBER OF THE INSTITUTE.

## ARBITRATION LABOUR COUNCILS.

SIR,—It is by no means consistent with the vaunted supremacy of civilization in England, that the relations between the employers and the employed are in their present unsatisfactory condition, and that, between these two all-important interests, a state of petty civil war is from time to time raging. The Rev. Mr. Widdington, who has endeavoured most benevolently to mediate between the weavers and their employers, at Coventry, proposes to create a board of arbitration,\* composed of the employers and the employed. There would seem to be no better way of meeting the question than this, excepting that it would be incomparably better that the members of such a board, while holding the relative position of masters and servants, should be drawn from other trades or occupations, than that in which is the dispute as to the price of labour, the duration of work hours, &c. An equal number to be chosen as arbitrators to represent either class; the number to be a dozen on each side. Personal attendance to be urged upon them as very desirable; but, as their avocations will often render this inconvenient, in such cases voting by proxy might be allowed, but no question should be decided, unless a certain number [say half] were present of each class of representatives. To give a prestige to the character of the proposed councils or boards, and invest their decisions with an air of respectability, they should receive, in the commercial world, the representatives of either class should enjoy a minimum amount of income. Those on the employers' side to have say [as a rough approximation] at least 400l. per annum, while those representing the employed should be receiving [either in the form of wages or otherwise], a sum of at least 100l. per annum. By thus fixing the incomes of the arbitrators, and selecting men to a considerable extent removed from the possibility of collusion and bribery, who under less fortunate circumstances it is not improbable might be tempted to declare in favour of one or the other side, and yield to a pressure and without due influence. The proposed boards being so novel a feature in our social organization, it will be necessary that their formation should be maturely considered, and the suggestions now offered may be regarded as an instalment towards their foundation.

The great point of difference between the masters and men in the recent Coventry strike was, that the masters proposed that the wages should be fixed at a certain price, but that every master should be at liberty to make the best terms he can with his workers. The men protest against this, and have suffered much privation rather than submit. They do not object so much to a reduction of wages, but wish to know the extent of it, and where it is to end. The only equitable and just principle in trade, and the prevention of that ruinous over-competition which now exists, is that the price of every commodity or article [inclusive of labour as one of them] should be fixed from time to time by the consent of each trade as represented by their boards or councils of arbitration. Labourers should be designated according to their skill and proficiency as first, second, third class, &c., and a minimum rate of wages affixed to each one, with penalties or fines recoverable for any infraction of so wholesome a law. Till these things be done, injustice, misery, degradation, and discontent must continue to prey at that important branch of our social economy—the relations of the employer and the employed. VERITAS PRÆVALEBIT.

FALL OF A ROOF.—The roof of a foundry, belonging to Messrs. Hamilton & Co., at Liverpool, fell recently, causing the death of one man, and seriously injuring several others.

Books Received.

*Sussex Archaeological Collections, relating to the History and Antiquities of the County.* Published by the Sussex Archaeological Society. Russell Smith, Soho-square, London. 1860.

This is a goodly volume of archaeologically interesting and well-printed matter, illustrated, as usual, with engravings. There are papers on Uckfield, the Leper Hospital at Seaford, Hastings, and various other places in Sussex, and on its religious houses, its churches and chapels, monumental inscriptions, &c.

In the paper on Uckfield, by the Rev. Edward Turner, an account is given of the rocks at Buxted, in which there are curious chambers, with fire-places, apparently of considerable age. Some additional specimens of Medieval pottery, from Hastings, are figured in the volume, which is altogether a good one.

Miscellaneous.

**THE EXPLORATIONS AT MEMPHIS.**—A communication from M. Maretti, at Cairo, says:—"I write a few lines just to say that the explorations made at Memphis have come on the establishment of a founder in metals. The labourers have found the tools of the artisan, about forty pounds weight of silver in the rough, gold earrings, a score of silver coins hitherto unknown, and other objects, all destined for the crucible."

**IMPROVEMENTS AT CLAPHAM.**—On Friday, 14th inst., a large side of houses was completed at Clapham, by Messrs. Pallen & Son (by order of the trustees under the will of the late Rev. J. Jeffreys), on whose estate they were. There were as many as forty houses disposed of, nearly all of a superior character, and which are to be taken down to clear the site for the intended new road from Clapham-rise to Larkhall-lane, through the Stockwell estate.

**DESTRUCTIVE FIRE AT THE SAVOY CHAPEL ROYAL.**—On Sunday morning last, between six and seven o'clock, a disastrous fire happened in the Savoy Chapel Royal, in Savoy-street, between the houses in the Strand, near Waterloo-bridge. Smoke was first seen issuing from the roof, and also through the windows, which had been left open. The fires had been lighted in the stove for warming the chapel, and overheating is said to have been the cause of the conflagration. The plate and wine having been removed to a place of safety, the fire continued to spread, and at length the organ, bellows, pipes, and appointments became involved in flame. From that valuable gift of George IV. the flames extended to the roof—one of very elaborate character, only recently restored. The damage done, before the fire was extinguished, by fire and water, was very considerable; and, judging from the external and internal appearance of the roof, there must be something like 20 square feet of the ceiling totally destroyed; to say nothing of the damage done by heat and smoke to the other parts, not only of the ceiling, but also the pews. The font is also much scorched and blistered, and one or two of the ancient carved wooden monuments have been completely burned off the wall at the eastern side of the organ.

**AN ODD CARPENTER'S BILL.**—The following "little bill" was lately delivered, which completely put the arithmetic of the debtor at fault:—

	To Mr. Jones	Dr.	
	To Mr. Oldoak	s. d.	
2	Rosewood Boxes at 5s.	10	0
1	Wood do	5	0
1	Wooden do	5	0
		5	0

According to this there appeared to be charged four boxes, each differently described, the total of which was less than the price of one. As only one box had been received, the bill, of course was disputed. The learned creditor, however, explained, by the rule of thumb, as follows:—

Two rosewood boxes, sent for approval,	s. d.
at 5s. each	10 0
One was accepted (or, in the language of the bill, would do.)	
One was returned (or, wouldn't do),	
the price of which deducted	5 0
Left a balance due of	5 0

SET SQUARE.

\* Our correspondent is wrong in saying lately delivered." The bill is one of some standing; but it may, nevertheless, serve to give a laugh some of the rising generation.

**BISHOPSGATE INFANT SCHOOLS.**—On Friday the foundation stone of a building for infant and Sunday schools at the back of the church in Bishopsgate-street, in the neighbourhood of the churchyard, was laid. Mr. Hoppock, the treasurer of the funds collected for the erection of the schools, laid the foundation stone with the usual ceremonies. The length of the building, it is stated, will be 55 feet, and its width 25 feet, and it is calculated to cost about 900l.

**UTILIZATION OF SEWAGE.**—Mr. Richard Dover, of Baker-street, of whose system we have before now spoken, is again calling the attention of the parochial authorities of the metropolis to the expediency of utilizing and decorating all the sewage and waste water of the various districts throughout London. He proposes to establish in each of the parishes large filtering tanks, or reservoirs, in which the sewage will be received, and then and therein to treat it with an infusion of morriatic acid and sundry chemical salts, which have the effect, in little more than five minutes, of disengaging the solid sewage from the liquid, which latter comes out "in a purified and transparent stream, useful for flushing sewers, watering roads, and other purposes; while the residuum or solid matter precipitated furnishes, according to the attestation of eminent chemists, a guano or manure full of the most fertilizing ammoniacal matters, and valued at from 2l. to 2l. 12s. per ton." Mr. Dover estimates that the sewage of the entire metropolis may be decolorized and utilized in this way for a 3d. rate, instead of a 6d. rate as now proposed by the main drainage system, besides entirely preventing the pollution of the Thames. The vestry of St. Martin-in-the-fields have, we understand, examined Mr. Dover's system, and "consider it to be of such great national sanitary importance, that the public welfare demands its immediate and more ample test."

**ROAD AS WELL AS STREET TRAMWAYS.**—Since our paragraph on highroad railways appeared on the 15th instant, a correspondent of the *Morning Post* has addressed that paper on the subject; recalling attention to the absurd manner in which Portland-places was covered with a thick coating of macadamised stones, and the folly and cruelty to animals having to drag a carriage through it; reurging, at the same time, the cheapest, easiest, safest remedy in laying down the long granite kerb-stones of the streets in a double line for the wheels of all carriages to run on, so long and successfully done in Friday-street, Cheapside; the Commercial-road; in Regiate-hill, &c.; not raised above the common level, or laid down through the metropolis alone, but from one end of the kingdom to the other, by which dust, dirt, noise, and almost draft, would be all abolished together. This work any unskilled labourer, disbanded militia-men, or discharged prisoner, could perform, while it afforded him bread and employment without end. Again, much of the lost traffic and pleasure of the public roads would return. Half the number of horses would suffice, and the produce of the land they consume (according to the late Sir J. Macadam "four acres per horse per annum,—enough for eight men") would be available for human food, and its enormous price would be diminished.

**THE MULTIPLICATION OF PHOTOGRAPHS BY MACHINERY.**—A highly interesting and singular paper was read before the American Photographic Society on 13th August, 1860, and is reported in the *Architects' Journal* of New York. By this paper it appears that twelve thousand photographs or stereographs an hour can now be produced from a single negative by means of condensed or focalized light and simple machinery worked by a crank! A sheet of ordinary paper, sensitized, was exhibited, containing 300 of these photographs. Mr. Charles Fontayne, of Cincinnati, Ohio, is the inventor of the process. The prepared or sensitized paper is simply passed, in a continuous sheet, before a negative, in a box, where condensed light is made to penetrate through the negative and impress its image upon the paper, which it does in '03 of a second for each impression. The condensing lens is 7 inches in diameter. Thus, as it is said, "the illustrations for a book, having all the exquisite beauty and perfection of the photograph, may be turned out by the use of this machine with a rapidity wholly undreamed of either in plate-printing or in lithography." The cost of engraving, also, will of course be dispensed with. All sorts of drawings, too, may be thus multiplied, as well as actual objects photographed or stereographed, in cheap and endless profusion. The *Architects' Journal* publishes a print thus produced from a rough sketch by the ordinary ammonio-nitrate process.

**COMPETITION FOR A NEW CHURCH, TORQUAY.**—In a select competition for the above, nine designs were submitted to the committee, out of which that by Mr. A. W. Blomfield was unanimously selected.

**BALLOON OR BIRD'S-EYE VIEW PHOTOGRAPHY.**—At Providence, United States, a photographic sketch has been taken from a balloon. A Mr. Black ascended to the height of 1,200 feet, his balloon being held by a rope, while several negatives were taken. Mr. Black regards it as fully demonstrated that bird's-eye views may be taken in this way.

**TRAMWAYS IN LONDON.**—It is stated that the first street railway in the metropolis, of a similar kind to that successfully completed at Birkenhead, will be laid down in the course of a week or ten days, by way of experiment, along Victoria-street, Westminster, extending from the Broad Sanctuary, near the new Westminster Hotel, to the Vauxhall Bridge-road.

**NETLEY ABBEY.**—Local papers say the restoration of Netley Abbey, on the banks of Southampton Water, is progressing. During the past week the workmen engaged in restoring the abbey discovered the grave and tombstone of one of the monks. According to the inscription on the stone the name was John Wade, and he died in 1431. An inscription has also been discovered at the base of one of the columns in the chapel, from which it appears that the abbey was built in the reign of Henry III. What is really about to be done, and what aspect the place will take, we do not know; but at present we are told appearances are not very promising. The trees are being cut down, and the place is being trimmed with a vengeance.

**DEATH OF MR. JOSEPH LOCKE, M.P.**—We regret to hear of the death of Mr. Joseph Locke, the member for Honiton, which took place on Tuesday last at Moffat, Dumfriesshire. The deceased was born at Atercliffe, near Sheffield, in 1805, and was educated at Barstley Grammar School, Yorkshire. Mr. Locke had represented the borough of Honiton in Parliament since 1847, and in politics was a Liberal, having voted in favour of the Ballot in 1853, against Church-reforms in 1855, and in favour of Lord Derby's Reform Bill in 1859. His profession was that of a civil engineer, and he was extensively connected with railways, being a director of the Glasgow, Paisley, and Greenock Railway. He was a Fellow of the Royal Society, and President of the Institution of Civil Engineers. In 1815 he received the ribbon of the Legion of Honour from the late king, Louis Philippe. The deceased gentleman was in his 55th year. The death of one who was so well worthy to tread in the footsteps of Brunel and Stephenson, occurring as it has so soon after their own, is suggestive of painful reflection on the frail tenure on which the greatest genius holds its well-earned honours, though it is rarely we have to record the decease of three such men within the brief period of twelve months.

**THE CHARGE AGAINST ARCHITECTS OF ADDING TO TENDERS.**—In the case of Pooley, the bankrupt contractor, who stated that 100l. had been added to a contract at the instance of the architects, some further explanation has taken place on an adjourned certificate meeting, before Mr. Commissioner Perry, at Liverpool. Mr. Evans, for the bankrupt, apologized for having so expressed himself as to leave it to be understood that he alluded to the customs and habits of architects generally. "God forbid that he should say so," Mr. Martin, on the part of the assignees, said, from investigations which he had made it appeared that there was a dispute between the trustees of the church and the architects with regard to some former plans, but the latter gentlemen had been advised very properly by Mr. Dodge, that, although they might have a claim upon their constituents in respect to plans, it was not what they ought to have done to add to the estimate for the purpose of getting payment for their claims. Therefore, under the circumstances, they had paid over to the estate the 100l. which was received from the bankrupt, and also paid to their constituents the 100l. added to the contract. The judge, in allusion to the same transaction, said,—"the bankrupt," through his brother, had given in a contract for the building of a Presbyterian church at Birkenhead, the amount of which was 2,260l. The architects are said to have wished to be remunerated for previous plans made, and therefore requested that 100l. should be added to the estimate, which was accordingly done, and the tender was accepted. This arrangement was communicated to the bankrupt, who paid back part of the 100l. himself to the architects, and directed the other part to be paid.

**THE LATE MR. HARTLEY'S SALARY.**—The amount of the salary of the late Mr. Jesse Hartley, surveyor of the Liverpool Docks, was 3,500*l.* a year.

**ST. PAUL'S CATHEDRAL.**—A handsome stained glass window, according to the daily papers, has been presented to the Dean and Chapter of St. Paul's, who have resolved upon placing it in the nave of the Cathedral. It is to be hoped the authorities will admit nothing but what is excellent. Very little of the painted glass that is just now being manufactured is worth anything.

**THE MEDITERRANEAN ELECTRIC CABLES.**—A new line between Corfu and Otranto, in the heel of the Italian Peninsula, is about to be laid down. The landing-place in the heel of Italy will be as near Otranto as possible. The submarine cable will be of the same size and description as that existing between Malta and Sicily, which it is said continues to work satisfactorily. The new cable is now being manufactured by Messrs. Glass, Elliot, & Co., the contractors for laying it down. The screw steamer *Bernick*, with the cable on board, may be expected in the Mediterranean early in October. Mr. Andrews, the company's engineer and superintendent, has made a proposal to the directors to construct a land line, for the purpose of connecting their two cables—that is to say, the Malta and Sicily cable and the Corfu and Otranto one—through the island of Sicily and Southern Italy, and to complete the communication by laying a short submarine cable across the Straits of Messina. This would render the telegraphic communication between Malta and Corfu instantaneous, and would greatly facilitate the transmission of intelligence between both islands and the United Kingdom. In conjunction with these lines, the French Government are making preparations for laying a new submarine cable between Toulon, Corsica, and Gaeta. Another plan proposed by Mr. Andrews, and approved by the directors, is to connect Corfu with Turkey, Greece, and the Levant, by means of a new submarine line between Corfu and Albania. If time and weather admit, attempts will be made this season to repair both the Cagliari and Corfu lines, which have been so long interrupted; and, in the event of these operations failing, as much cable as possible will be recovered.

**THE GAOL OF NEWGATE.**—Newgate was rebuilt after the Great Fire by Wren; and, when burnt in the Gordon Riots, by George Dance, R.A., who designed the building in 1720, his plan being objected to by Howard. While the work was progressing it was arrested by the rioters, who, breaking into the completed portion, liberated 300 prisoners, and left it in flames, so that the prison was not finished until 1782. The external architecture was thought suitable, from its gloomy grandeur and severity, to the proposed object; but the interior was so insufficient for classification or moral discipline, that within the last few years the whole plan has been changed, nothing of Dance's work remaining but the walls, which are remarkable for their thickness and solidity. Old Surgeons' Hall was close to Newgate, and convicts sentenced to be anatomized had this part of their doom performed there. While executions took place at Tyburn, corpses of murderers or traitors were placed under the operator's knife, as we see in Hogarth's ghastly picture of "The Idle Apprentice's Fate," and as really occurred in the case of Earl Ferrers, and a thousand other criminals. Our old chancellors, and especially Maitland, speak with horror of the prison discipline. The unfortunate wretches in confinement were placed in dark dungeons, where the foul air engendered "the gaol distemper," which often led to a fearful mortality, for a dozen or more deaths not unfrequently happened in one day. In 1750, while the assize was going on, the pestilential effluvia infected the whole court—judges, barristers, witnesses, and spectators—and not less than sixty persons died in consequence. This led to the erection of a ventilating shaft, and ever after the court was strewn with sweet herbs, and bouquets were laid before the presiding judges, though at present an abundant supply of fresh air is a far better preventive. Lord George Gordon died here of gaol distemper, while in confinement for a libel on the Queen of France. After the riots, if not before, his reason became impaired. He affected to be a convert to Judaism, and was remarkable for his monstrous hard, which would have gained no notice in our modern streets, for heads are again fashionable, and our hirsute ancestors are more than rivalled. Formerly, debtors and criminals were huddled together in Newgate. Even while contagious fever raged, 800 human beings were packed in spaces which made healthy respiration impossible.—*City Press.*

**MR. SCOTT RUSSELL AND THE "GREAT EASTERN."**—The disputes between Mr. Scott Russell and the Great Ship Company, relating to the *Great Eastern*, have at length been decided by the arbitrators, Messrs. Hawshaw, McLean, & Fowler, awarding him the sum of 16,000*l.*

**PECKHAM CHURCH STRUCK BY LIGHTNING.**—During a recent storm the tower of East Peckham church was struck by lightning. The vane on the top of the low spire was first struck. The lightning descended the south-west side of the spire, tearing off the shingle and wooden framework, with the quartering. It then crossed, internally, over all the bells, to the south-east corner of the tower, where it displaced some of the stonework and entered the wall itself, down which it passed in an irregular direction till it reached the level of the nave roof, a distance of about 15 feet, making in its passage several fissures in the internal face of the wall. At the point just above the junction of the ridge of the nave roof and the tower wall, a stone, measuring 14 inches square and 4½ thick, was forced out of the wall externally; and through this opening the lightning escaped. The stone must have been carried over the roof, as not a single slate was broken. It appears to have fallen first upon the iron shoot on the north side of the nave, which was shattered to pieces, and thence it descended to the ground.

**SMOKE FROM GAS LIGHTS.**—It is pretty generally imagined that the smoking of ceilings is occasioned by impurity in the gas, whereas, in this case, there is no connection between the deposition of soot and the quality of the gas. The evil arises either from the flame being raised so high that some of its forked points give out smoke, or more frequently from a careless mode of lighting. If, when lighting the lamps, the stop-cock be opened suddenly, and a burst of gas be permitted to escape before the match be applied to light it, then a strong puff follows the lighting of each burner, and a cloud of black smoke rises to the ceiling. This, in many houses and shops, is repeated daily, and the inevitable consequence is a blackened ceiling. In some well-regulated houses, the glasses are taken off and wiped every day, and before they are put on again the match is applied to the lip of the burner, and the stop-cock cautiously opened, so that no more gas escapes than is sufficient to make a ring of blue flame; the glasses being then put on quite straight, the stop-cocks are gently turned, until the flames stand at 3 inches high. When this is done, few chimney-glasses will be broken, and the ceilings will not be blackened for years.—*Sir John Robinson.*

**STATUES AND MONUMENTS.**—It is intended to erect a statue of St. Thomas Aelend. The model is now completed. Mr. Stephens is the sculptor. —A movement is set on foot to repair the stone of the Wallace Monument at Wallacestone, says the *Falkirk Herald*, and make such improvements as shall make it worthy of the hero to whose memory it was erected some fifty years ago. Upon the elevated spot where the stone already stands, it is supposed that the brave patriot took up his position and surveyed the two armies entrenched, previous to the first battle of Falkirk. The words "Hic stetit, 22nd July, 1295" are inscribed on the tablet. —The Swedish monument in honour of Charles XII., at the spot where he fell, close to Fredrikshald, in Norway, is now completed, in the shape of a Gothic tower, with four gables, surmounted by an eight-cornered spire ending in a cross. The whole rests on three steps of stone, and is 34 feet high. This monument was uncovered by the King of Sweden and Norway on August 29.

**RAILWAY PROGRESS IN SOUTH AUSTRALIA.**—The Gawler and Kapunda Railway was nearly completed in June last. It is laid with the patent sleepers of an inverted iron-peg form, much used by Mr. Stephenson where the ballast is light, and chiefly in India and Egypt. The cost is above the average, but the sleeper is considered to be well adapted to light ballast, and durable. There are two intermediate stations between Gawler and Kapunda, namely, Roseworthy, 5½ miles; and Freeling, 12 miles from Gawler. The two more important bridges on the new line are, one over the Gawler, which is already completed at a cost of about 7,000*l.*; and the other over the Light, which is yet in course of construction, and the estimated expense of which is about 6,000*l.* The entire cost of the Kapunda extension will be about 9,000*l.* per mile, including bridges and stations, but not including rolling stock. The Bill for the completion of the last 2½ miles was passed on the 1st of September, 1859, and the entire line, including the bridge over the Light, would, in all probability, be opened within twelve months of that date.

**SHORT SEA PASSAGE BETWEEN ENGLAND AND IRELAND.**—The directors of the Luttre and Carrickfergus Railway made an excursion on the 11th inst. in the *Giraffe* steamer, which the owners, the Messrs. Buras, of Glasgow, placed at their disposal free of expense, for the purpose of testing the merits of the two modes of crossing the channel, viz., *via* Donaghadee to Portpatrick and Larne Lough, to Lough Ryan. In the published account of the trip it is stated that the time occupied by the *Giraffe* in crossing from Donaghadee to Portpatrick was 1 hour 34 minutes; and from Lough Ryan to Larne Lough, 2 hours 1 minute, to which some minutes should be added, making the difference of time in favour of the route by Donaghadee and Portpatrick about half-an-hour; but, to counterbalance this, the harbours at these places offer neither the same security, depth of water, nor facility of access and departure at all times, which are to be found at the natural harbours of Larne and Lough Ryan (though this is denied by the Government engineer), notwithstanding the immense sums which have been spent by Government in the attempt to form artificial harbours at Donaghadee and Portpatrick. It is proposed to connect Antrim and the junction of the Banbridge and Ulster railways, by a railway through Crumlin along the banks of Lough Neagh, shortening the distance from Dublin to Antrim eighteen miles, and affording railway communication to a fertile and densely populated district. Mr. Bower is the Engineer.

## TENDERS

For first portion of works, Cambridge Townhall. Messrs. Peck, Stieghens, Madstone, architects. Quantities supplied:—

Myers .....	£7,750 0 0
Bullock .....	7,343 0 0
Thornley & Clayton .....	6,970 0 0
Young .....	6,300 0 0
Bell & Sons .....	6,157 0 0
Ayres .....	5,990 0 0
Architects' Estimate, £6,000	

For farm buildings at Woddingham, in Surrey, for Mr. Joseph Kitchen. Mr. W. Hey, architect:—

Ward .....	£1,693
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For alterations at the King John's Head Tavern, Abbe

maire-street. Mr. W. E. Williams, architect:—

Grass & Co. ....	£270 0 0
Green .....	377 0 0
Scott .....	305 10 0
Tolley .....	290 0 0

For alterations to Coach and Horses, Blackheath-hill, Mr. William Nunn, architect:—

Wills .....	£222 0 0
Miller .....	220 0 0
Dry (accepted) .....	215 0 0

For building warehouse at Birmingham, for Messrs. Copestake, Moore, Crampton, & Co. Mr. J. G. Bland, architect:—

Harris .....	£2,368 10 0
Hardwick & Son .....	2,273 0 0
Jones .....	2,260 0 0
Matthews .....	2,188 0 0
Bugs .....	2,180 0 0
Parsons & Sons .....	2,150 0 0
Robinson .....	2,113 0 0
Anley .....	1,994 0 0

For re-building the Two Brewers public-house, Brick-lane, Spitalfields. Mr. William Reddall, architect:—

Croder .....	£2,939 0 0
Blackburn .....	967 0 0
Asby & Sons .....	945 0 0
Scott .....	930 0 0
Cass .....	907 0 0

For the Kingsfield Congregational Church, Southampton. Quantities supplied by Messrs. Hlavcs & Bellborough, architects:—

Richardson .....	£2,360 0 0
Gaulson .....	2,122 10 0
Nickols .....	2,100 0 0
Stevens .....	2,060 0 0
Balley .....	1,967 0 0
Hardiman .....	1,790 0 0
Watts (accepted) .....	1,740 0 0

For the foundation of Tower or Observatory, Vernon Park, Stockport. Mr. J. Stephens, architect, Manchester.

Quantities supplied by the architect:—

Goehard & Ormerod .....	£247 5 0
Forrest .....	370 0 0
Thackrah & Peirce (accepted) .....	349 0 0

For the villa residences at Forest-gate, West Ham, Essex.

Messrs. Francis, architects:—	
Myers .....	£2,677 0 0
Calls & Co. ....	2,475 0 0
Mansfield .....	2,307 0 0
Holland .....	2,355 0 0
Keys & Head .....	2,119 0 0
Rivet (accepted) .....	2,042 0 0

For kirking and paving Morgan-road, Charlton, for Plumstead Board of Works:—

Duvers .....	£200 0 0
Hobbs .....	206 10 0
Gleavers .....	194 10 0
Harnes (accepted) .....	176 10 0

# The Builder.

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The Social Science Association  
in Glasgow.



HE meeting of the National Association in Glasgow, which was opened on Monday last, and will close on the 29th, has been in many respects very successful. The number of tickets sold, 2,600, if not more, is larger than on any previous occasion: there has been a good supply of papers, and some of the discussions, especially on mercantile and international questions, will probably produce fruit. The receipt of a letter from Professor Katchenowsky, of Charkow, in the heart of Russia, suggesting a wide extension of the operations of the Society, so as to give its proceedings an additional interest in the eyes of all countries, was a subject for much congratulation, as showing how far the Association had already spread its

feelers. At the meeting of the Council on Monday, with which the business of the week commenced, a liberal and wise offer was made anonymously, by one who, himself "a poor boy fifty years ago," was anxious that other poor boys, on leaving reformatories and similar institutions, should receive a handbook of advice and information for assistance through life. To obtain this handbook he thought a wide appeal should be made; and he proposed, therefore, to offer, through the Association, if they would undertake the management of the competition, 2000, 1000, and 500, for the first, second, and third best composition for the purpose. Further, he would print, at his own expense, 10,000 copies for distribution. The offer will doubtless be accepted. After the meeting of the Council, the Cathedral, now in a good sound state of repair, opened its venerable doors to receive the members and associates, and the Rev. Dr. Robertson delivered an excellent discourse, lucid, sensible, and appropriate, showing the connection between his text, "Thy Kingdom come," and the objects of the Association. He said:—

"Touching some of these objects, any minister who has had charge of either a town or a country parish could easily say a great deal. It has fallen to my lot to have some short experience of both positions; and, in both, one soon sees enough to make him pray heartily for social amelioration. It is not long till one who attains to the somewhat intimate knowledge of rural life a country minister can hardly fail to acquire, discovers with pain that, though there is much in the character of our peasantry he cannot but admire and love, he must modify, to a great extent, the poetical ideas of his youth about the cottage in its nook among the trees, and with its blue smoke curling up to heaven, being quite so sacred, as he had once imagined, to innocence and peace. And in the towns—I will not speak of the lower orders in terms of disparagement: there is among you very much good feeling, very much one cannot but respect greatly; yet, how often are there sights that come before him at which one's heart bleeds? I could tell of such a thing, in this very parish, as 48 families—that is to say, probably about 240 human beings—living in one single tenement. How

can there be health or religion there? I could tell that, to my certain knowledge, you might have seen there, within the last ten days, children literally without a rag or clothing of any kind, and the mother with so little as scarcely to be fit, for decency's sake, to appear in the presence of my valued assistant, by whom she was visited. These things are saddening; and yet there is something almost more saddening still than such abject misery—in the perfect self-satisfaction with which hundreds flout in gaudy dresses who can hardly read their Bibles, and cannot at all sign their own names; and with which many parents, who are making tolerable wages, consider themselves good, worthy people, who are doing their duty to society, and are quite entitled to all sorts of trusts, politically and otherwise, while they are yet neglecting altogether, or discharging in the most perfidious way, one of the first and most sacred trusts of nature, by either permitting their children to grow up without education, or by withdrawing them from school whenever their poor young hands are able to contribute in the least degree to the earnings of the family. But why do I speak of these things? Fortunately the public mind is become thoroughly awakened to them, and we are begun to be determined that, God keeping us, they shall not continue. Preachers, poets, novelists, statisticians; the pulpit, the platform, and the press, have all been occupied about them, and not without result. It has not all been talk or sentiment. Witness the ragged and industrial schools, the reformatories, the model lodging-houses, which are the growth of the last few years: witness the extension of the ordinary means of education: witness our city missions, and, what seem to me the best of all kinds of missions, the territorial missions of churches: witness many other agencies that might be named. May I not be permitted to add, witness the present meetings of we of this city so unfeignedly rejoice to see convened among us."

In the evening, Lord Brougham, as president, delivered his address in the City Hall, reading for two hours. The address was too long, and at times his voice was so low that they who sat at the farther end of the hall could hear nothing. Nevertheless they remained, giving testimony of respect and admiration; and at the close hearty shouts showed the general appreciation of a remarkable effort by a man of 82. On commencing, he said,—

It is impossible to open the congress without expressing the satisfaction felt by all, that this, our fourth meeting, should be held in the great capital of the west of Scotland, the centre of her manufactures, and the emporium of her trade. But we also are highly gratified at finding ourselves in a place not more renowned in the history of commerce than in that of philosophy, and of those branches of philosophy which have exercised the most important influence in the promotion of Social Science. It was here that Black made those discoveries which have changed the face of natural science more than any since the days of Newton; that Watt gave the great invention to the world which has made such an alteration in its aspect, and such a revolution in its fortunes; that Stewart learnt and Simson taught the ancient geometry which he restored; that Reid placed the philosophy of mind upon its firm foundations, and freed it from sceptical evils; that Millar traced the history of the constitution on principle,—freed it from vulgar errors of empirics as well as of absolutists; that Smith established those sound doctrines, now happily become the faith of practical statesmen, as they had long been of the learned, connecting the commercial gains of all nations with the improvement of each, and making their mutual intercourse a mutual and equal benefit, and the bond of peace. Nor let it be forgotten that here the first step was made by Birkbeck (on which, five-and-thirty years ago, I congratulated you) of throwing open to all classes the temple of science, and showing that the highest intellectual cultivation is perfectly compatible with the daily cares and toils of working men. These are proud recollections for Glasgow; and this pride is shared, not envied, by her sister, Edinburgh, whose own glories are far too bright to dread being outshone.

Of the various topics treated of in his address we must confine ourselves to what he said of one, namely,—

## Co-operative Societies.

Nothing can be more gratifying, in this and in every other view, than the success of the great measure which the working classes themselves have lately adopted to provide for their comfort, to husband their resources, and to protect them from imposition, by the formation of Co-operative Societies; and happily these have greatly multiplied, especially in the manufacturing districts of Lancashire and Yorkshire. Such societies are of two kinds. The one has for its immediate object to expend the income of each member to the best advantage for himself; the other to enable him to obtain the largest return for his capital and industry. Sixteen years ago, forty Rochdale artisans, desiring to establish a society of the first kind, amassed, by a weekly subscription of 3d. from each member, the sum of 28s., hired a room for a store, laid in a stock of necessaries, and began to trade; selling not only to members, but to all who would buy. The enterprise provoked laughter. A neighbouring shopkeeper boasted that he could carry away the whole stock in a wheelbarrow. Now, however, the single room is multiplied into many distinct shops, spread over the town, and the weekly vend of the society exceeds 2,700l. per week. Every member must be the owner of five shares of twenty shillings each, the permitted maximum being a hundred such shares. The capital is paid in by small weekly or quarterly instalments. All the transactions of the society, whether purchases or sales, are for ready money, the entire absence of credit being the corner-stone of the institution. The customer, whether member or stranger, is charged at the same price as at the ordinary shop of the town; but at the end of each quarter a division of net profits is made, and he receives his quota according to the amount of his purchases. To arrive at the net profit, the following deductions are made from the gross returns—the cost price of the goods, the current expenses of the stores, including the wages of the manager and his assistants, rent, repairs, a proper allowance to a depreciation fund, and 5 per cent. for interest upon capital. The residue is the net profit, for which, however, before it is divided among the customers, 20 per cent. is deducted for the maintenance of a library and a news-room. The society is governed by a committee elected from the members, which meets weekly, when it gives patient attention to all complaints. If real cause of dissatisfaction exists it is removed. If the complainant is in error he is reasoned with; and so successful has been the course taken by the committee that, although arbitrators have been appointed from the first, pursuant to the Acts under which the association is registered, yet it has never been necessary, even in a single instance, to engage their services! The benefits derived by the individual in the expenditure of his income upon this plan are manifold. It is enough to enumerate a few. First, antagonism of interest between buyer and seller is annihilated. All motive, therefore, to adulteration, or in any way to lower quality for the sake of diminishing price, is absent. No extra price is put on the goods to pay the rent of shops in expensive situations, nor for the plate-glass or other costly fittings, nor for the loss occasioned by the expense of articles in the windows to attract customers, nor for advertisements. Indeed, show is altogether discarded; and, while no cost is spared to insure high quality in the articles themselves, no money is wasted on the means of attraction. The exact price of the article, too, is not very material. If the price is high, the customer's returning profit is also high, and vice versa. But not only economy is consulted: the improvement of the character and habits is incalculably promoted. The workman is stimulated to the exercise of self-control, beyond his reach in ordinary circumstances. He must refrain from anticipating his income by running in debt in order that he may be able to pay ready money, and also to acquire capital; and to the self-denial essential to compassing these objects he is urged when he has their advantages clearly and forcibly set forth by his brother members, and more than all, by the example of the body of which he forms one. Finding, then, strict economy a necessary condition to his maintaining the rank to which he has aspired, he casts about that he may so exercise his thrift, and abridge his expenditure, only in what is not essential to health and comfort; and soon discovers that abstinence from drink and tobacco not only subtracts nothing from his well-being, but greatly adds to it. But a working man out of debt, acquiring capital, however slowly, and abstaining from stimulants, is on the road to happiness, and with a prospect of attaining

it as bright as is vouchsafed to any citizen of the State, even the highest in the land.

The second class of these institutions, namely, those which have for their object to enable each member to augment his income, are at present but few in number, and their experience has been short. At Rochdale, a society was founded four or five years ago for spinning cotton-yarn and weaving it into calico. The principal distinction as regards financial arrangements between the two classes is, that the net profits are divided among the artisans instead of the customers, each in proportion to his or her wages, the wages being fixed according to the rate of payment in the mills of the district. The disastrous years of 1857 and 1858 sorely tried this infant establishment, but it weathered the storm successfully; and although during a period of fifteen weeks no sales were effected, or sales only to a trifling amount, yet the hands were never put upon short hours, although the other mills of the town yielded in this respect to the pressure of the times. It is, however, far too early to predict success for co-operative societies of this class with any degree of confidence, or to speak of them otherwise than as hopeful. It appears manifest, and the observation is important, that co-operation is not only distinct from communism or socialism, but repugnant to it, far more so than to the ordinary course of trade, with which, indeed, it agrees in giving to every man the benefit of his own industry, skill, and economy. Co-operation leaves its votary in freedom, whereas communism, which makes him receive according to his wants, instead of according to his merits, extinguishes the ordinary motives to exertion; and failing, as it always has failed, to induce men to work from higher motives, must, if it continue in action, fall back upon coercion. Communism is in truth slavery in disguise; but, as the slaves are also their own masters, they quickly emancipate themselves; and that being done, the communities of socialists come to an end. Such is the appointed lot and fate of the kindred associations arising from strikes, even where these are carried on without breach of the law—that is, without in any manner exercising compulsion, directly or indirectly, to obtain the increase of members. This most interesting subject will certainly occupy both our general and judicial departments.

Sir John Pakington, Lord Ardmillan, Sir Archibald Alison, and Sir John Lawrence, afterwards spoke. On the following morning the Lord Advocate delivered his address as president of the jurisprudence department, and then the various departments went to work in earnest, reading papers and discussing them—some fully, but many otherwise.

In the fourth department, "Public Health," Mr. Edwin Chadwick presided, in the absence, through illness, of Lord Ebrington.

Dr. James Wallace read a long and elaborate paper "On some of the Causes of the high Rate of Mortality in Greenock, with an Account of their Origin, as well as the Measures which have been taken, and are still required, for their Abatement and Removal." After a consideration of the nature of the soil, the position and extent of the town, its mode of construction, particularly its over-crowded condition, the causewaying of the streets, the nature of the houses, the mode and nature of the water supply, the drainage, as well as enumerating certain nuisances of a very deleterious character, such as the West Burn and the contiguous mill dam, he went on to show that from a very early period continued fevers had exercised a most malignant influence, and almost always in the crowded and filthy parts of the town. The Infirmary report and other documents were quoted to show that since the commencement of that institution, half a century ago, no fewer than 12,360 cases of fever had been treated, the average cost of each of which had been exactly 2*l.* 2*s.* 6*d.*; thus showing that, for the treatment of those afflicted with this disease alone, the subscribers to the infirmary had paid in fifty years no less a sum than 30,000*l.* And if to this were added the expense entailed on the community by the three epidemical visitations of cholera in 1832, 1849, and 1854, in which years there were affected 897, 964, and 141 respectively, the annual interest of which, if properly and regularly invested, would, long ere this,—not to speak of the desolation of many happy homes,—have

saved the ratepayers much of the difficulty which they would soon have to encounter. But this sum, large as it appeared, must be far below the reality, as there was excluded from the calculation the number of fever patients who did not come under the eye of the hospital authorities, as well as the widows and orphans whose maintenance from this cause lay from time to time upon the parochial authorities. To show how this condition of the town had been brought about, he gave a short history of its rise and formation, according to which the overcrowding was shown to be the result more of the cupidity of the feuars than of the proprietors of the land; although, at the same time, he urged that the latter were not altogether blameless, because they had failed, in certain parts of the town, to lay out their land according to a plan in conformity with the ideas of modern sanitary legislation. The errors on the part of the constituted authorities were then taken up, when it was shown that nothing in the way of provision against the evils complained of was attempted till within the last fifteen years.

#### Condition of Glasgow.

Dr. McGill read a paper on the "Sanitary Condition of the Lower Districts of the City of Glasgow, chiefly as regards Overcrowding, with some of the Causes leading thereto, and several proposed Remedies for the Removal or Mitigation of existing Evils." In the course of it, Dr. McGill said,—

"As illustrative and typical of a state of things common in the centre of the city, I will take a square or area covered with buildings and occupied as dwelling-houses. The square or area contains, after allowing for two large public works situated in one of its angles, nearly two acres and a half, every foot of which is built on, with only a few narrow spaces for passages, and having a population of the lower labouring class of about 2,800. This gives about 1,100 human beings to every acre, or 1 to four square yards.

One house or building in this area, 28 by 14 yards, having a common stair, contains a population of 120; and, as every foot of ground is built on, it gives only 3*1*/<sub>2</sub> square yards to each inmate.

Again, as respects the interior of the apartments, assuming as correct that every adult requires about 700 cubic feet for respiratory purposes, the greater number of the apartments in the square are so small and ill-ventilated, that in scarcely any is there anything approaching an adequate supply of vital air. In some instances, so small is the space, that, even were the apartment well ventilated, which it seldom is, there is not a sufficient supply of air for one, while there may be four or more, living and sleeping in the apartment. One or two examples will suffice:—

One apartment, containing 450 cubic feet, with very imperfect ventilation, and having four inmates.

One apartment on the ground flat, with a damp earthen floor, little bed accommodation, little furniture, and both in a filthy, unhealthy, and unwholesome condition, contains only 800 cubic feet, and little ventilation, for nine individuals.

These are merely typical of a large class of houses which, in addition to the smallness of the apartment, and deficiency or absence of ventilation, have what furniture there is, in the shape of chests, &c., piled up in the apartment, so as still more to contract its size, with large quantities of dry and wet clothing hanging through the apartment, in the beds, and in front of the beds large fires and filthy personal clothing.

Innumerable instances of these apartments, although they may have windows, yet these cannot be opened, in consequence of opening into filthy dungheaps, the smell from which is intolerable, and occasionally the fluid filth passes through the walls, and causes a damp, unwholesome apartment.

There are many lodging-houses in this district, licensed and otherwise, and while the former have generally three or four beds in an ordinary sized apartment, with narrow passages between them, and breathing space to the extent of about 150 feet for each inmate, the latter, being under no control, are frequently much worse. Assuming the boundaries of Glasgow proper as four miles in length, by three in breadth, thereby giving an area of twelve square miles, with a population of 400,000, we have about 92 square yards to each inhabitant.

While this gives a very large average space as compared with what exists in the districts to which I have referred, yet it is small as compared

with Leeds, which is stated to have an area of forty square miles, with a population of 220,000, or 563 square yards to each individual. If this is correct as regards Leeds, it illustrates what I have already alluded to, of the different class of houses in the two places, and shows that Glasgow ought not to be judged by the same standard as respects its sanitary condition.

The construction of the houses in the square or block which I have taken for illustration, and which prevails in other parts of the city, is of a faulty description, viz., the buildings fronting the street are frequently of the height of four or five stories, while those in the centre of the square or area, being much lower, not above two or three stories in height, are deprived of that ventilation so necessary for the due preservation of the health of the inmates. The air in the centre compartment would almost be in a stagnant state were it not for the passages, some of which are occasionally yet rarely thorough, thereby permitting a somewhat imperfect degree of ventilation. Again, in consequence of the great height to which the buildings have been carried, and the fact that every foot of ground has been built on, there is not only the congregating of a large mass of human beings, but also the absence of an open space behind the buildings, for the purpose of ventilation, so that of necessity the air in these places is of a very impure and unwholesome description.

Apart altogether from the buildings, there is an insufficient supply of dungheaps, or ashpits, and other conveniences for the wants of such a great number of inhabitants as are collected in the houses on either side of these long narrow passages.

There is also, frequently, an insufficient supply of water.

The closes and stairs leading to the houses, the houses themselves, and the external walls of the buildings, present, in numerous instances, either from the inability or cupidity of the owners or occupiers, such a ruinous, smoky, and filthy appearance, that they are unfit for human occupation.

Want of personal cleanliness, want of necessary clothing and furniture, and what little there may be of a mean, filthy, and unhealthy description.

Irregularity of meals, the use of injurious articles of diet, want of cleanliness, of clothing, and of pure air; absence of mother for the whole day, and consequently the want of the natural aliment, the system of drugging with laudanum, alcohol, and other poisonous agents, have a most baneful influence on infantile life.

One of the chief causes, I am convinced, is due to the prevalent custom of the abuse of intoxicating drinks. I will, instead of enlarging on this evil, which confessedly exists, give the result of my observation in the police office.

According to the calculation of Dr. Strang, the annual increase of the city is at the rate of 3*1*/<sub>5</sub>, which, applied to 95,000—as I believe the 55,000 have been stationary—would give a population at the present time of about 175,000. For the population of 175,000 the parochial board has appointed twelve medical officers, the labours of eight of whom are chiefly confined to the small space of a quarter of a mile, and to the population of 55,000.

In speaking of various methods of improvement, the reader said, amongst other suggestions,—

1st. In rural districts a highly-to-be-commended system prevails of giving small rewards, in money or otherwise, to peasants, for the best and most cleanly kept cottages. Were such a system greatly extended, and not confined to rural districts alone, but introduced into our cities and towns, it might ultimately, at a very small cost, have such an encouraging and stimulating influence on the character and habits of the people that the appearance of dwellings in low localities would be reversed; and, instead of, as now, finding nine-tenths of them in a filthy and unwholesome condition, that proportion would be distinguished for a clean, wholesome, and healthy character.

2nd. To invest the authorities with increased powers to enter dwellings in low districts, and, at the cost of the proprietor or the public, to have them put and maintained in such a state that they shall not continue, or again become, the centres from which emanate disease and death. A very small tax would suffice to do so; and, if it is considered advisable to attend to the sanitary state of the city externally, much more is there a necessity for a strict supervision over the interior of houses.

Mr. J. Watson read a striking paper on "The Measures required for Improving the Low Parts of the City, and the Value of Model Lodging-houses." He said there was perhaps no city in the kingdom where the abodes of splendour and refinement contrasted more strikingly with those of squalid poverty and wretchedness than the city of Glasgow. It was not to be concealed that there were certain portions of it in a most frightful condition, and which, like so many plague-spots, demanded investigation and called for legislative reform. There were narrow lanes or closes, running, like so many rents or fissures, backwards to the extent of sometimes 200 and 300 feet, in which houses of three and four stories stood behind each other, generally built so close on each side that the women could either shake hands or scold each other (as they often did) from the opposite windows. In many of these lanes and closes there were residing in each not fewer than 500, 600, and even 700 souls, and in one case he observed thirty-eight families, or nearly 300 persons, occupying one common stair.

Mr. Watson stated, that what must be considered very encouraging, that some model lodging-houses erected in Glasgow were paying 10 per cent. on the outlay.

Mr. David Smith J.P., Glasgow, read a paper on "The Necessity of a Building Act for Large Towns." After dwelling at some length on the mortality of large towns, he suggested the following remedies to be embodied in a Building Act:—

1. That every street or lane shall be at least one and a half times the wideness of the height of the house.

2. That every building shall retire at least once its own height from the front.

3. That there shall be no inhabited dwellings underground.

4. That a limit shall be put to the number of inhabitants that may enter by one close, and that a certain number of cubic feet, to be fixed by some competent authority, shall be allowed for each inmate in each apartment. These appear to be the principal arrangements necessary to be enforced. Others in reference to ash-pits, dust-bins, water-closets, drainage, and other matters may also, with propriety, be introduced. In an admirable report, made to the Architectural Society of Glasgow in 1852, several additional suggestions are made, such as:—That there be no back-houses; that the hack wall of any tenement, for houses in flats, be a space equal to the height of front wall from the lane; that the lane shall be 16 feet in width; that, in houses for working men, no roof shall be less than 9 feet high, nor any apartment contain less than 1,512 cubic feet, with 21 square feet of light. A space of 60 feet to be left from wall to wall, with a lane of 10 feet in centre, for workmen's dwellings. No dwellings in sunk flats. No concealed beds; all fixed beds to be of iron. The number of dwellings on each landing not to exceed three, making two houses of not less than a room and kitchen, and one house of a single apartment. Stairs to be scale stairs, and not less than 3 feet 0 inches in breadth. To be compulsory on landlords to light all public stairs with gas. He referred, in conclusion, to the sanitary moral and political objects which would be served by the enforcement of such rules.

The Chairman having invited discussion on the papers which had been read,—

Mr. Henry Roberts, F.S.A., took strong exception to a recommendation which had been given, that unfit houses occupied by the poorer classes should at once be pulled down without waiting for the provision of others, and stated the result of his experience on the subject in France.

Mr. G. Godwin confirmed what Mr. Roberts had stated, and said enormous mischief had been done by attempting to dispossess the poorer classes of their dwellings before finding them other houses. He had seen in London many such clearances, and the result had been that parts before greatly crowded had become much more so, and rooms let to one family had, in consequence, been made to receive two and even three. So that, where railway companies, improvement and other societies, were about

to take down houses fully occupied, it had been felt necessary to erect others for the labouring classes elsewhere. With regard to the papers, there were really so many subjects presented by them, that it was difficult to say anything in the short space of time at their disposal. What could be more frightful than the picture given to day about Greenock? They need not be surprised at the excessive mortality there: the wonder was that any person lived there at all. But for some extraordinary counteracting influence the evil agencies were sufficient in themselves to carry off the whole of the population. It was perfectly frightful. With respect to Glasgow, it might seem rude for a stranger coming freshly into a place to say anything disagreeable on the subject, but he could not resist making one observation. He had that morning been over some of the wynds and closes at the back of the Trogate and Saltmarket, and he felt bound to say, most impressively, that it was a disgrace to any civilized community—a positive disgrace, and the evidence of enormous ignorance and short-sightedness on the part of the citizens. He maintained that the inhabitants who permitted such a state of things to exist, simply because of the expenditure which the improvement would entail, were not merely damaging morality and sacrificing life, but injuring their own pockets, and perhaps bringing distress and sorrow into their own homes.

Mr. Mossman, Edinburgh, said, with regard to Mr. Smith's paper, that it occurred to him that it would be very beneficial, and tend greatly to further this movement, if the question of the 40s. freehold franchise was brought to hear upon it. It was a social question, and those gentlemen present from England would hear him out in saying that that measure had been a most beneficial one for the working classes. In Manchester, Birmingham, and Sheffield, the working classes had houses of their own, cottages with every convenience, situate in the most healthy localities, all brought about by this 40s. freehold system, which enabled a man, by small periodical payments, to buy up the property he possessed.

Mr. Salmon (of the Glasgow Architectural Society) thought that they must all sympathise and agree as to the necessity of erecting houses for the accommodation of the working classes, previous to taking down the old ones. He would just like to observe that houses had been erected of late years which were as bad as some of the houses built many years ago; and, until some measures were introduced to prevent the extension of the evil, he feared that there would be little abatement in the overcrowding of houses. He had just been making an examination of some of the houses erected during the last year, and he found that in one block, containing forty two separate houses, the square area allowed to each person was three square yards. In another block of houses built within the last seven or eight years, which accommodated thirty-eight families, all going up one stair, the square area allowed to each individual was two square yards. Now, in the very worst portions of the old town which had been referred to, the square area allowed to each person was  $1\frac{1}{2}$  square yard: that was the least allowed to each in the old town; and, generally speaking, it ranged from  $1\frac{1}{2}$  to 5 square yards; and yet here they were going on erecting houses with an allowance of two square yards to each inhabitant. With reference to the taking down of houses in the olden parts of Glasgow, he affirmed that the ground would be a great deal more valuable; and that, in a pecuniary point of view, the building of new houses on the sites of the old ones would prove a remunerative speculation to any capitalist who attempted it on a large scale.

After some further discussion, the Chairman said he might state that under the supervision of the police, in lodging-houses containing as many as 80,000 of a population, epidemic typhus had really been banished. Again, in a number of their cities they had reduced the death-rate one-third, chiefly by the abolition of the midden-steads. By introducing both of these improvements, the defects of the old buildings might be remedied in part, although

great evils still remained from over-crowding and other things. He thought too little was done in the way of visiting these places. He commenced his sanitary education twenty years ago in Edinburgh and Glasgow. He visited the wynds of Glasgow, and amongst other things found that they were utterly uninhabited at that time, although it was pretended they were. He was told by the people that he was the first clergyman seen there for some years. He recollected mentioning this fact to his friend the Bishop of London. "Well," said he, "it is very plain that if they took you for a clergyman, they had never seen one." In visiting the wynds of Edinburgh he gathered very much information with regard to the spread of intemperance among the lower classes.

Some papers were read on "Co-operative Societies" in another department to which we must refer hereafter.

On Wednesday, after Sir J. Kay Shuttleworth's address, a number of very interesting papers were read and discussed in the Health Department, but we must defer our notice.

It is to be hoped that what has been said will have the effect of directing the attention of the authorities to the necessity for immediate action.

#### SANITARY CONDITION OF ENGLAND IN EARLIER TIMES.

A SPIRIT which has been shown, in more than one quarter, to prevent, as we think without sufficient general inquiry, useful efforts which have been made to advance the social position of the people, may have some effect in retarding the progress of sanitary science, on which yearly depends the lives of thousands. The subject is a matter of life and death, and one on which the national strength and advancement greatly depend: it is therefore necessary to reiterate a few facts which will, we trust, be encouraging to those who are engaged in making more pure and healthy the atmosphere of large towns; and it should be borne in mind that, with marvellous rapidity, the country population is decreasing and that of the towns is largely on the increase. Towns not long since of small population are growing into large ones, and in the villages are being collected the cottage population, which was, less than a century ago, extensively distributed throughout England. This change of condition does now, and will, for a long time, require the greatest care and unremitting attention.

In glancing at the accounts of the various kinds of pestilence which have passed over this land, it is difficult, had as the present loss is, to form an idea of the old conditions. Not to refer to more ancient times, London was visited by pestilence in the year 679, and also in 764, 798; and in 801 fever carried off nearly the whole of the people of London. Some idea of its sanitary state may be formed by reading the condition of the London of that day. Slaughtering and burnings took place: the wholesome practice which had for long time been adopted by the Romans began to fall out of use among the Anglo-Saxons: the dead were left imperfectly buried close to the living; the wells became polluted; and, according to such accounts as have been left, the arrangement and condition of the streets, the enclosure of the town by walls, the necessity with those who had any wealth or possessions of adapting their houses to the purposes of warlike defence, and other causes, led to evil. Passing over some time without notice, we will remark that, in 1348, the first dread of the plague alarmed Cornwall. At this time it was reported that the disorder began at Carthage, in Asia, and then passed into Syria, Palestine, Africa, and Europe,—devastating Germany, Italy, Spain, France, and England. In the latter country so great was the destruction of human life throughout the whole land that grass grew in the streets of the once populous cities, the price of provisions and animals of labour decreased, in consequence of the want of buyers, to a remarkable extent; and, in some places, the living were not sufficient to bury the dead.

From all the accounts which can now be gathered, this visitation was general throughout the whole population. There were then few towns much better situated as regards sanitary arrangements than that which has become so great a metropolis. Worse drained and even worse supplied with pure water than in the days of the Roman occupation, the impurities of the soil increased, the houses were closely built together within the walls of cities, the odour of the slaugh-

ter-houses and other refuse was carelessly allowed to accumulate, the dead filling the grave-yards, and personal cleanliness was not so carefully attended to as it was even by the Saxon. Who can be surprised that Old England did not escape a visit from the plague? It is worth while to note how very similar the course which the plague is reported in the above year to have taken agrees with the route of the cholera in modern times. At this visitation of the plague 7,000 persons died at Yarmouth, in Norfolk; and, without referring to other places, it is stated by Stowe, that 50,000 were buried on the site of the present Charter House in London, which had been bought by Ralph Stratford, Mayor of London. If we put the population of the metropolis, at the date 1349, at 200,000, and there seems no clear proof for stating it at a greater amount, the number of persons buried here formed *one-fourth* of the entire population—carried away in a single year.

If we estimate the present population of London at three millions—it cannot be much less—a plague of the same malignity would have killed seven hundred and fifty thousand persons in London alone in less than one year, besides those who might fall from other diseases! Three quarters of a million of human souls perishing in this metropolis at the present day, in the time mentioned, would be a matter which would create wonder and terror throughout the civilized world.

In the Rev. Mr. Popwell's work, vols. 4 to 7, which may be found in the reading-room, British Museum, press 2,066, C—a work published about 1816—he urges, having had the advice of some of the most eminent authorities of that time, certain opinions as regards the health of the district of Cornwall, of which he is the historian.

He seems, as is natural with most historians of districts, anxious to place his subject in the best possible light. He writes of the salubrity of the air; of the place being bounded on each side by the sea, with elevated lands which cause the rapidly-running streams to carry away the offensive matter; also by that kind of land circulation of fluids, improving and purifying the air. Notwithstanding the plague raged in most of the towns of this county, the historian is anxious to clothe the neighbourhood which he is describing in the garb of health, but the notes which are frequently to be found, quoted from the books of various writers, show that no one should feel surprised, in spite of the wholesome, natural condition of the air, at the visits of epidemics. See the following quotation from an author of about two centuries ago—

"The great town of Bodmyn [Bodmin] is situated in a valley equally distant between two seas. It is of great length—nearly a mile—but of one main street and some ragged lanes; a small brook running through it, and through the churchyard, where dead bodies are interred, by reason whereof the water cannot be salubrious; and that no doubt maketh the town often subject to long and grievous infectious: unhealthful it is by nature, and more by the unclean keeping of houses. It hath been larger in receipts than it is now, as appears by the ruins of certain ancient buildings in decay."

This is an old note, but here are all the evil conditions which even in the most naturally healthy localities invite pestilence.

Again, Mr. Popwell, in 1816, states, on his own authority, that most of the dwellings in Cornwall, as in St. Keven's Church-town, have, to this day, pits at their doors: their beds are in general rotten and filthy, and they lie three and four together: in this state disease must spread, and too often has pervaded a whole family. At the same time benevolent neighbours are liberal of their wine, their brandy, and their beef; but attention is to the far more essential points has been neglected from ignorance. A few matters of clean straw, old sheets, and a bottle or two of vinegar, should be in readiness in every parish, and the parish authorities should be directed to have stagnant pools of filth immediately removed. The want of this sort of attention to the houses and bedding is not confined to the lower classes of the community: many of the farmers who can afford a better provision are shamefully mean in the furniture of their upper apartments, which, not to say the least of them, are filthy; and the paucity of inhabited houses seems to be the only means of exemption from many fevers and scourges.

Bad in a sanitary point of view as was this place in 1816, others must have been even worse in, say, 1487—a time when the graveyards were still being packed, and when no particular attention was paid to either the drainage, proper building, space, &c., of the dwellings. In this

year the "sweating sickness" broke out in England.

Although, in even more ignorant days than this, it was believed that the plague was regularly imported, by human means, in ships,—the sailors dying and then the pestilence raging—sometimes the dropping of a handkerchief has been believed to have spread the plague in towns,—nevertheless, it is not said that the "sweating sickness" was imported in this year, when,—

"Ere yet the fell Plantagenets had spent  
Their ancient rage at Bosworth's purple field,  
—A monster never known before,  
Rear'd from Locusts its portentous head.  
This rapid fury, not like other pests,  
Preserved a gradual course. He in a day  
Rush'd as a storm on the astonished Isle,  
And strew'd with sudden carcasses the ground."

To go, however, to Exeter. At the assizes, held at the Castle in 1585, when the prisoners were tried, "there suddenly arose such a noisome stench from the bar," that a great number of those present were instantly affected: of these died the judge himself, Sir John Chesterton, Sir Arthur Bessil, and Sir Bernard Drake, knight; one Robert Cary and Thomas Hison, esq., justices of the peace; three of the bench and eleven of the jury, who were empanelled to try the prisoners.

The cause of these deaths was attributed at the time to the imprudence of Sir Bennet Drake, of Ash, having taken a Portuguese ship, and sent his prisoners, who were ill of a contagious disease, to the high goal of Exeter. Undoubtedly in the condition the goals of this country were at that time, we cannot wonder at fevers being created, and spreading: overcrowded, filthy in the extreme, where were scenes of the most abominable vice and dissipation; who can wonder that "king fever," once having breathed into the place, would feed the particles of poisoned atmosphere on which miasma delights to loiter and prepare for the work, and that the grim and terrible monarch should have been triumphant. Can we wonder that disease spread, and the effects were made visible in the densely crowded and unwholesome courts of justice, close by the goals? Some of these are bad enough now, but neither the goals nor the courts are to be considered with those of the above old date. Notwithstanding, in years after the time above mentioned, the goal fever in the Old Bailey courts spread its pestilence in the close air suitable for its reception, and killed, in the same manner as at Exeter, judges, council, and jury.

We have no evidence that the goal fever was spread from goal to goal, although it is asserted that those afflicted with this disease who had, in consequence of these outbreaks, been discharged, and passed to their unwholesome homes, had there died, and that others had been attacked with a similar disease: the question for consideration is, were those cottages or dwellings referred to much better than the goals?

In rooms and places without sufficient space and ventilation, when crowded with the sick, it is impossible but that the health of others must suffer. Those who have watched even the best arrangements of the dwellings of this day cannot have failed to note, even in the case of little children, and those of older years who might be near death from consumption or other complaints, the peculiar effluvia which those accustomed to nursing recognize as the sure prognostic of death.

In the case of virulent fever, and in plague, when the body seems even before death to become partly putrid, when the air is filled with malarious influence,—without the best sanitary condition, without space and ventilation, without the most perfect attention to cleanliness, it is unlikely that the germs of disease will spread to those in such condition, and who may be naturally predisposed to it by bodily condition?

In these modern times the attacks of cholera have carried away numbers (fortunately small in proportion to the old plague). In this disease there seems to be no evidence of infection. We have seen hundreds of cases in the hospitals of the metropolis where the nurses were not affected. Here there were better space, ventilation, and other good arrangements. But a small proportion of the medical attendants who so bravely and with so much assiduity did duty both in the hospitals and in the miserable homes of many of the poor, were attacked; nor are those straggling cases to be wondered at when they were for hours, of both day and night, oppressed and fatigued, and kept in the very atmosphere which had been the means of producing this modern plague. Persons removed from ill-drained and unwholesome houses not only in the London district, but also in the provinces,

were not attacked, nor was the infection carried into well-drained houses and wholesome places by the surgeons or other persons.

At the last visit of cholera, a vast number of houses were suddenly attacked in the same night. Those who occupied these places were persons of different conditions,—some very poor, but others well off. We made most careful inquiry, and feel certain that the disease could not have been propagated by persons passing from place to place. Even the poisoned well, often referred to, could not apply to St. Ann's-court, for in this neighbourhood we had clear evidence that those affected had used for all purposes no other water than that supplied by the Company. Here, however, were open cesspools; others simply disguised with pans without traps; cesspools, in some cases three and more, in a small back garden, only covered over, but not emptied. Let those who have doubts upon the matter pay a visit to the cholera-stricken part of Deptford, with its total want of drainage, stagnant ditches and pools of water, creeks, &c., filled with poisonous mud, small rooms in which are families,—and where missionaries when they call are obliged to open the windows in consequence of the poisonous air. Here cholera, domestic fevers of various types, and small-pox, are far more fatal than in other places.

If we take a map of Newcastle-upon-Tyne, and shade the undrained part of the town, where, besides cesspools and other abominations, the pavements were rotten and unpaved, it will be found that there the cholera prevailed, and in some instances whole households perished: there fevers, &c., also raged. Those who visited the churches of Newcastle, and saw the large crowds of persons in respectable circumstances who were in mourning, and who knew the families attacked, must admit that it was not the poorness of living to which might be attributed the numerous deaths. No one will deny that poor and insufficient food predisposes to disease; nor can it be doubted that drunkenness and dissipation will have a similar effect; but it must be admitted, that the poor and dissolute are driven into the worst conditions, and that those more affluent, who have been exposed to live in undrained situations, have not escaped. In these attacks it is to be noted that the wealthy fly. In the case just mentioned, many families went to Newcastle, which, with North Shields, is connected with Newcastle by railway. Gentlemen passed daily from where the cholera was raging, but no cases are known to have been conveyed from one town to another. Tyne-mouth and North Shields had, at former times, been visited with this disease in a fearful manner. They have, however, been well drained; and as we have already said, the medical officers removed every fragment of filth that was possible before the downright alarm came.

The same was done at the barracks about a mile from Newcastle. Several hundred soldiers and their families communicated freely with the townspeople, but no case of actual cholera occurred. The malaria was evidently visible at both these places, for diarrhoea prevailed to a great extent: it did not, however, assume a malignant form, and yielded to mild treatment.

In looking at the accounts of the treatment of various kinds of illness in former times, the ignorance of many of those who practised medicine, who shut up fever and small-pox patients in close rooms, forbidding a breath of air to enter, who held for every disorder, all must see that the improvement of the general health is to be attributed, to a certain extent, to increased skill and intelligence of the medical practitioner, and to vaccination: this is not, however, sufficient to account for the great benefit derived from sanitary operations. It is not from this cause that the goal fever has disappeared, that other fevers have almost vanished from the model buildings and low lodging-houses, and that, in places where drainage has been made good, and ventilation has been carried out, virulent fevers cease even amongst the very poor.

#### EVIDENCE TOUCHING THE ARCHITECTURAL MUSEUM.

We continue our report of Mr. Scott's evidence:—

Chairman.—Do you think that the advancement of architectural art would be much endangered by the breaking up of your museum?—I think very seriously: it would be worse in some sense than if we had never formed it; because, where an object has never been attempted, people feel that, if they could possibly carry it out, a great public benefit would be effected, and they make efforts to start the thing; but where a thing has been tried and then stopped, you cannot get any one to help you again.

\* See page 602, ante.



those in that list are annual subscribers. Our annual subscriptions last year were 3161. We have spent altogether 4,000*l.*; besides having had extensive and valuable donations of casts and other specimens, we have now an enormous mass of most interesting specimens from India, which have been presented to us by Sir Bartle Frere, which are at present in the docks, because we have no room in which to keep them. They are the remains of a city, which, 500 years ago, was destroyed by an earthquake.

DESCRIPTION OF A NEW PRINCIPLE IN THE APPLICATION OF MALLEABLE IRON TO THE CONSTRUCTION OF BRIDGES.

HAVING, a short time since, had my attention directed to the construction of a bridge which should combine great strength and durability with economy of cost, the result of my consideration of the subject being to recommend a principle of construction, in the application of malleable iron to the purpose, which appears to me to be new, a description of such construction may not be without interest to some of the readers of your valuable serial; and I hand you the conclusions I have come to in the case referred to for insertion, should the same be deemed worthy a place in your columns.

After some consideration of the subject, I came to the conclusion that the use of malleable iron, and a principle of construction which I believe to be new in the application of that material—although the application of cast iron on a somewhat similar principle is not uncommon—would answer all the conditions required.

When I state that my design is a new application of malleable iron to the purpose referred to, I wish such assertion to be understood in the qualified sense of my not being aware of the same principle having hitherto been acted upon, and of my not having met with any suggestion of the application of malleable iron on the same principle to the construction of bridges. Mr. Dempsey, in his book on "Tubular, and other Iron Girder Bridges," p. 1 (Wentle's Rudimentary Treatise), alludes to a bridge, said to have been chiefly of wrought iron, as having been invented by Thomas Paine, the political writer, as early as 1787; but not having seen any description of its construction, I am unable to say whether it was, or was not, on the same principle as that which I am about to describe.

The principle of construction adverted to consists of a parabolic arch, in the spandrels of which are struts proceeding from the back of the arch to support a horizontal and longitudinal beam. The bottoms of the struts are connected with the head of the next succeeding one towards the crown by diagonal braces; and from the head of each strut from the springing of the arch is a vertical strut meeting a horizontal piece. These form one of the ribs or trusses of which an arch of a bridge is composed; and any number of which that may be necessary to support any required breadth of roadway are connected by transverse beams or joists notched into the horizontal and longitudinal beam of each rib; the notches being in both the longitudinal and transverse pieces.

The whole of the above-mentioned parts of the arch it is proposed should be of plate-iron.

Besides the transverse beams already spoken of, the ribs are further connected by tie-rods, of malleable iron, through the arched piece, below the junctions of the struts and braces. And, in order to maintain parallelism, these tie-rods should be shouldered at such distances as the ribs are intended to be apart, and secured by nut-screws or taper keys at their ends at the outer sides of two ribs in succession, which each tie-rod connects. It must be understood that, the several sets of tie-rods forming each transverse connection of the whole of the ribs of an arch, one tie-rod connects the first and second, another the second and third, and so on.

The direction of the struts is that of the diameter of curvature at the points in the arch from which the struts, at their mid-breadths, proceed. This direction, it may be remarked, is that of a perpendicular to a tangent to the curve at the point in the arch just mentioned; and the joints in the plates forming the arch should also be in the like direction, whilst those in the struts, braces, and crown-beam may be square or perpendicular to their directions.

The distances of the struts apart from each other should not exceed 9 feet; but any distance within that limit may be adopted that may accord with an equal division of the length of the arch.

The rise of the arch should never be less than one-tenth of its semi-span, which in general will be found to be sufficient; but, under particular

circumstances, a greater rise in proportion to the span may be required.

The proper direction of the joints has already been spoken of. The ends of the plates should butt to each other at their joints; and joints may be at any part of any member of a rib, provided a lower portion of a strut and of a brace be in one plate with a portion of the arch piece, and that an upper portion of a strut and of a brace be in the same plate as part of the crown beam. Over every joint there must be a covering plate, extending to a distance on each side of the joint at least equal to the breadth of the plates joined. These covering-plates are to be riveted on one side of the joint, and fastened with screw-bolts and nuts on the other; and wherever two or more plates, arranged parallel to each other, form any part or member of a rib, then between such plates pieces of plate, of a length equal to the breadth of the plates to be joined, and of a sufficient breadth to admit of two rows of rivets, are to be riveted immediately at the extremity of the covering-plates on the side of the joint fastened by bolts.

The transverse beams should be formed of two parallel plates, 6 inches in breadth, and half an inch thick, having wood 2 inches thick, and of the breadth of the beam between them, secured by bolts 18 inches apart, to which to spike deals to form the floor or roadway of the bridge. These transverse beams should be so notched into the crown beams of the ribs, that the backs of the crown beams and those of the transverse beams may be flush.

In bridges for ordinary traffic, the ribs should be 6 feet apart, centre to centre; but for carrying railways, the ribs should be so arranged, that the rails may be immediately above, and in the direction of the ribs. The transverse beams should be 6 feet apart, centre to centre, from each other; and when the bridge is only intended for light traffic, such as foot-passengers, a bridle-road, and roads in pleasure-grounds and farms, these members of the structure may be entirely of timber.

The abutments at the extremities of a bridge on the construction described will be properly of mason work, having the horizontal portion of the rib beyond the springing of the arch resting on cast-iron plates, or in spans of great length, on rollers mounted in strong frames; and the mason-work built up in the intervals between the ribs, leaving spaces for them to fit in loosely.

Should several arches be required to span a river or stream, the piers between the arches may consist of cast-iron columns and plates, on cast-iron screw piles, whenever the bed of the river or stream may be of a nature to admit of their application. If the bed of the river or stream be rock, or of such a nature as not to admit of the use of screw piles, recourse must then be had to stone foundations for the piers.

There should be as many piles in the transverse direction of the piers as there are ribs in the arch, and the piles should not be less than 4 feet in clear distance from each other in the longitudinal direction; so that, on each end of a rib may rest above a pile. When the piles have been arranged as just spoken of, their heads must be adjusted to a level, not only with each other in the same pier, but also to the level of the other pier. When the heads of all the piles have been adjusted to an exact level at a height of several feet above which the water in the river or stream may be expected, under any circumstances, to rise, there are shouldered cylinders, having one end fitting into the heads of the piles, and the other end passed through cast-iron plates 1½ inch thick, and about 3 feet 6 inches in breadth, to connect them transversely; and plates above the last-mentioned, of similar breadth and thickness, to connect them in the contrary direction; and the remaining length of the cylinder, after having passed through the two plates, to fit into the bores of the cast-iron columns forming the upper part of the piers. The two plates and the base flanges of the columns are then to be firmly bolted together, by means of not less than four screw bolts to each column.

Upon the heads of the columns there should be cast-iron plates similar to those already described as being between the heads of the piles and the feet of the columns; but the connection from the heads of columns through the plates will be unnecessary. The head flanges of the columns, the horizontal plates, and the base of the vertical plate about to be described, should all be firmly bolted together by screw-bolts and nuts. The vertical plates just adverted to should be of the same height as the end of the rib, which must rest on the transverse horizontal plate, and fit loosely into the groove on the vertical side of such upright plate. In order to protect the cast-iron

piles from injury, by floating ice and wreck, it will be necessary to have starlings in front of the piers, formed of timber piles, with sheet piling between them. The sides of the piers should also be protected by fenders formed of a timber pile driven between each two cast-iron piles, and strong transverse beams of timber notched into and bolted to such timber piles at 3 feet apart from the bed of the river or stream, upwards. The starlings and side fenders should be of the same height as the cast-iron piles: the starlings should form parabolic curves in their plan: the side fenders should be tangents to the vertices of the parabolas; and the whole should be covered with sheet iron, to prevent abrasion of the timber by floating bodies striking against such defences of the piers during floods.

The sides of the bridge may be fenced at the sides by plain palisades, or by an open parapet, ornamented to the taste of the designer. In either case there should be pilings over the piers, surmounted by lamp-posts. The material of the fences will properly be of cast iron, and their height should be 4 feet 6 inches above the level of the roadway.

The floor or roadway of the bridge may be formed of creosoted Baltic deals, 3 inches in thickness, spiked to the transverse beams, covered with a mixture of asphalt and chalk, and lastly with broken stone or gravel, with a small quantity of Portland cement or hot lime washed into such surface with water.

The principle being simple, a bridge may be constructed and erected at a comparatively small cost; and, being composed of pieces of a portable size, it may be constructed and fitted in this country, and then taken to pieces and transported to the colonies and foreign countries, where it may be erected with a trifling amount of labour, and may, therefore, become an important manufacture for export.

The following are suggestions for the dimensions of iron to be used in the construction of bridges for different purposes.

Foot Bridges.

Span of Arch.	Breadth of Plates.	Thickness of Plates.	Number of Plates.	Number of Covering-Plates at Joints.
Feet.	Inches.	Inches.		
Under 40	4	4	} two.. one.	
Above 40 .. 60	5	4		
— 60 .. 80	5½	4		
— 80 .. 100	6	4		
— 100 .. 150	6	4		
— 150 .. 200	6	4		

To bridges for light carriage traffic, such as on private roads in pleasure grounds and farm roads, the above scale may be applied; but having three plates, and two covering plates at the joints, instead of two and one respectively.

Bridges for Heavy Carriage Traffic, such as on Public Roads.

Span of Arch.	Breadth of Plates.	Thickness of Plates.	Number of Plates.	Number of Covering-Plates at Joints.
Feet.	Inches.	Inches.		
Under 20	6	6	} two.. one.	
Above 20 .. 30	6	6		
— 30 .. 50	6	6	} three two.	
— 50 .. 100	8	8		
— 100 .. 150	10	10		
— 150 .. 200	12	12		

To bridges for railway traffic the above table may be applied, but with the breadths of the plates and number of covering plates in the arch and crown-beam increased in the proportion of three to two.

The diameters of the rivets and bolts should be two-fifths of their lengths when such proportion exceeds three-eighths of an inch; and their distances apart, centre to centre, may be properly three times their diameter.

The diameter of the tie-rods may vary from one to two inches, according to the strength of the arches they are to connect.

The columns should have parallel sides: their length should not exceed twenty times their external diameter; and their thickness should not be less than 1 inch when the external diameter does not exceed 12 inches, and 1½ inch when above 12 inches.

SOCIETY OF ARTS EXAMINATIONS.

Prizes awarded to Candidates, 1860.

Arithmetic	1st Prize	£5	William Vaughan, aged 19, Sussex-hall Evening Classes. Clerk.
	2nd Prize	3	Michael Skilite, aged 17, Leeds Young Men's Christian Institute. Mechanic.
Bookkeeping	1st Prize	5	Francis Joseph Thomas Moore, aged 25, London Mechanics' Institution. Bookkeeper.
	2nd Prize	3	Robert Pearce, aged 20, Ipswich Mechanics' Institution. Accountant's Clerk.
Algebra	1st Prize	5	Thomas Hick, aged 19, Leeds Young Men's Christian Institute. Teacher.
	2nd Prize	3	Joseph William Mills, aged 17, Watt Institute, Portsea.
Geometry	1st Prize	5	Walter Robinson, aged 23, Leeds Young Men's Christian Institute. Mechanic.
	2nd Prize	3	Charles Herbert Ellerby, aged 18, Manchester Mechanics' Institute. Mechanical Draughtsman.
Mensuration	.....	..	No Prizes awarded.*
Trigonometry	.....	..	No Prizes awarded.*
Conic Sections	.....	5	Hugh Battle, aged 39, Leicester Church of England Institute. Missionary. No Second Prize awarded.†
Navigation and Nautical Astronomy	.....	..	No Prizes awarded.*
Principles of Mechanics	.....	..	No Prizes awarded.*
Practical Mechanics	.....	..	No Prizes awarded.*
Magnetism, Electricity, and Heat	1st Prize	5	Archibald Simon Lang Macdonald, aged 20, Glasgow Mechanics' Institution. Mercantile Clerk.
	2nd Prize	3	William Scott, aged 26, London Mechanics' Institution. Inland Revenue Officer.
Astronomy	.....	..	No Prizes awarded.*
Chemistry	1st Prize	5	William Scott, aged 26, London Mechanics' Institute. Inland Revenue Officer.
	2nd Prize	3	William Croudson Barnish, aged 20, Wigan Mechanics' Institution. Clerk.
Animal Physiology	.....	..	No Prizes awarded.*
Botany	1st Prize	5	Alexander McKinlay, aged 19, Glasgow Mechanics' Institution. Solicitor's Clerk.
	2nd Prize	3	John Gibbs, aged 37, Chelmsford Library and Mechanics' Institution. Wool-sorter.
Political and Social Economy	.....	..	No Prizes awarded.*
Geography	1st Prize	5	John Dix Suggett, aged 17, Lynn Athenæum. Banker's Clerk.
	2nd Prize	3	Charles Walker, aged 19, York Institute. Telegraph Clerk.
English History	1st Prize	5	Robert Clark, aged 22, Glasgow Athenæum. Clerk.
	2nd Prize	3	Charles Seed Roberts, aged 19, Bradford Mechanics' Institution. Cabinet-maker.
English Literature	1st Prize	5	Henry Simpson, aged 19, Birmingham and Midland Institute. Clerk.
	2nd Prize	3	Howard Shakespeare Pearson, aged 21, Birmingham and Midland Institute. Stationer.
Logic	1st Prize	5	Frederic Reeves, aged 19, Messrs. Chance's Library. Glass-cutter.
	2nd Prize	3	David Dalley, aged 23, Bilston Institution. Schoolmaster.
Latin and Roman History	1st Prize	5	John Naismith Russell, aged 24, Glasgow Institution. Assistant Teacher.
	2nd Prize	3	Charles Steer, aged 29, Croydon Literary Institute. Printer.
French	1st Prize	5	Abraham Shkelton, aged 30, Glasgow Mechanics' Institution. Book-keeper.
	2nd Prize	3	Andrew Farm, aged 39, Glasgow Mechanics' Institution. Pattern-drawer.
German	1st Prize	5	Walter Robert Clark, aged 20, Sussex-hall Evening Classes. Clerk.
	2nd Prize	3	No Second Prize awarded.†
Music	1st Prize	5	William Hugh Smith, aged 24, Glasgow Institution. Clerk.
	2nd Prize	3	John Walter Asquith, aged 31, Wakefield Mechanics' Institution. Teacher.

Prizes to Institutions.

One prize of £1. to the Sussex Hall Evening Classes, in respect of candidate William Vaughan, who obtained the first prize in arithmetic.  
 One prize of £1. to the Leeds Young Men's Christian Institute, in respect of candidate Thomas Hick, who obtained the first prize in algebra.  
 One prize of £1. to the Leeds Young Men's Christian Institute, in respect of candidate Walter Robinson, who obtained the first prize in geometry.  
 One prize of £1. to the Glasgow Mechanics' Institution, in respect of candidate Archibald Simon Lang Macdonald, who obtained the first prize in magnetism, electricity, and heat.  
 One prize of £1. to the London Mechanics' Institution, in respect of candidate William Scott, who obtained the first prize in chemistry.  
 One prize of £1. to the Glasgow Mechanics' Institution, in respect of candidate Alexander McKinlay, who obtained the first prize in botany.  
 One prize of £1. to the Glasgow Athenæum, in respect of candidate Robert Clark, who obtained the first prize in English history.

One prize of £1. to the Birmingham and Midland Institute in respect of candidate Henry Simpson, who obtained the first prize in English literature.  
 One prize of £1. to the Glasgow Institution, in respect of candidate John Naismith Russell, who obtained the first prize in Latin and Roman history.  
 One prize of £1. to the Glasgow Mechanics' Institution, in respect of candidate Abraham Shkelton, who obtained the first prize in French.  
 One prize of £1. to the Sussex Hall Evening Classes, in respect of candidate Walter Robert Clark, who obtained the first prize in German.  
 One prize of £1. to the Glasgow Institution, in respect of candidate William Hugh Smith, who obtained the first prize in music.

Prizes to Local Boards.

The prize of 10l. to the Local Board at the Glasgow Mechanics' Institution.  
 The prize of 5l. to the Local Board at Bradford.  
 The prize of 6l. to the Local Board at the Glasgow Institution.  
 The prize of 4l. to the Local Board at the London Mechanics' Institution.

\* No candidate obtained a first-class certificate in this subject.  
 † The candidate standing second in this subject did not obtain a first-class certificate.

APPOINTMENT OF ENGINEER TO THE LIVERPOOL DOCK BOARD.

MR. JOHN B. HARTLEY, son of the late Mr. Jesse Hartley, the former engineer to the Board, has been unanimously appointed to the same office, which indeed he has, *de facto*, filled for some time previous to and since the death of his father, whose assistant he was. The salary has been fixed at 3,600l. per annum, with efficient assistance. Mr. Hartley, it appears, has already suffered in health from the arduous nature of his duties.

ON ROUND CHURCHES.

THE following is the paper read by the Rev. T. James, at the meeting of the Northampton Architectural Society, reported in our last—

I fancy that there is no one who has arrived at the first stage of his architectural ecstasies who would not be able to answer how many round churches there are in England. The four round churches are almost as familiar to us as the seven wise men, or the nine wonders of the world, or any other conventional number of world-wide notoriety, which will always bear a little addition to their sum when critically tested, but

which, for a popular lecture, such as this is intended to be, will be found amply sufficient for working purposes.

A round church! People will at once go to see that who would pass by a hundred rectangular ones, partly, no doubt, because the form is rare, partly because it is connected with that little bit of archeology which the most modern student has picked up, of the relation of that plan to the Holy Sepulchre, and partly, I think, also, from the circular form in itself commending itself to our love of beauty and completeness, so that from the "round O" that children delight in above all the letters of the alphabet, to the globe which is our world, and to the mightier spheres which circle above us in the vaulted sky, all round things have a peculiar charm for us, symbolising, as they do, that eternity which the heart of man yearns to as his home.

It may be, I think, because the age of imagination has passed away, and that we are become, as most certainly we are, more prosaic, flat, commonplace, square-headed, and unideal, that the round form has evaporated from our architecture, and that we can now seldom catch its vanishing image, except in a Windmill or a Folly.

Men are said by civilization to become less an-

gular, and to have their individual points and peculiarities rounded off by rubbing against their neighbours; and if the architecture of the day is to symbolize the existing state of society (as is a favourite and not very false theory), we might expect to find all our buildings with all their angularities smoothed off, and all projecting points rubbed down to the fashion of most polished circles.

But I believe that it would be truer, both in fact and figure, to say that our polish and smoothness are all surface-work, little more than a glaze of varnish and a thin veneering, and that all the individual crochets and ugly corners still exist in the inner man as strongly marked as they do in the ground plans of our houses,—the angles, perhaps, a little *canted* off, but no well-rounded, complete character either in our men or in their buildings.

Indeed, it is remarkable that, whereas the old Roman described a perfect character as a smooth and perfect sphere—

"Totus teres, atque rotundus,"

round and tight as a cricket-ball—we moderns should take the most angular block in common use for our image of perfection, and call a good fellow "a regular brick."

That phrase would of itself imply that the day of round buildings has passed away, and yet with them, I think, the most beautiful of all forms, and the most perfect; if, also, the most ambitious.

For who can fancy the daring tower rising on the plain of Shinar other than a round building, tier above tier, reaching unto heaven? What are those round towers of Ireland, and those far more ancient towers and láts of India, the works of the early Buddhists, but emblems of the same spirit of aspiration, striving to express its craving after the Eternal and the Infinite by a form at once most lasting and limitless?

The earliest buildings of all nations are their tombs, and these, also, from the same feeling that erected them, are the best preserved. Love of father or mother, love of ancestry, love of child early snatched away, love of the departed, which is even stronger because they are departed, the wish to perpetuate the memory of fleeting spirit by enduring matter,—these motives have made our sepulchres the most enduring of our monuments, and those on which the earliest and highest art was bestowed. Leaving out the strange and isolated art of Egypt, the earliest existing tombs of old Greece and Etruria, and of the further North and East, are, for the most part, round; or, at least, domed and vaulted, and so partially in curved lines. I must omit references which I had made to them, and also to that much larger group of later Roman buildings, such as the Pantheon, the Temple of Tivoli, the Tombs of Cecilia Metella, of Augustus, Diocletian's Palace at Spalatro, the Church of San Vito (a tomb of one of the Tossia family), at Rome, and many other buildings in which the round form is distantly developed.

But to come to those circular buildings of which Time has spared both their forms and records, and which are immediately connected with the round Christian tombs, baptisteries, and churches, from which the Holy Sepulchre at Jerusalem and its kindred churches sprung.

I have drawn out a series of circular buildings all to one scale, the ground plans being chiefly taken from Mr. Fergusson's admirable "Hand-Book of Architecture," a book enough of itself to fascinate a reader into a student. This series will enable you to trace the growth of the round tomb, through a variety of phases, into the normal form of round church, such as our English architects adopted.

Passing from the classical period, and taking up the buildings of the Christian era of Constantine, we have the tomb of his mother, Helena, who died in 328; and that of his daughter, Constantia, now known as the Baptistery of St. Agnese. They are both nearly on the same plan. I have drawn that of the tomb of Constantia. You will observe an inner circle of double pillars supporting the central dome, a vaulted circular aisle and a further outer row of pillars, which is broken by the entrance or forum, which extended on both sides in front much further than I have shown it.

Of the fifth or sixth century is the much larger building (its diameter being 210 feet), now called the Church of S. Stefano Rotundo, at Bologna. The pillars are all taken from older buildings. This was probably a tomb or a baptistry.

In San Giovanni, at Perugia, we have almost the identical form, though of much smaller diameter (115 feet), and we here see the first additions to the simple round in the forms of the square porches. Up to this point there is nothing to in-

dicate any place set apart for the holy communion. The tomb of the saint, or the font, would occupy the central point, and though, from the tradition of the catacombs, the tomb might also form the altar, yet we find no divergence from the concluding circular wall for eucharistic purposes till we come to the budding chance of the Baptistery at Nocera dei Pagani (on the road between Rome and Naples), where a small intersecting circle forms a recess, at the entrance of which, or possibly on the chord of the smaller circle, the altar stood. The ground plan of this church, in which the type of our future round churches first comes distinctly out, is singularly like (and it may help you to remember it) that of one of those venerable watches which our fathers delighted to carry in their fobs.

The integral round being once broken, the expansion rapidly increased in various directions, the chance became yet more developed, and the octagon form, the intervening link between the square and the circle, which had already appeared in the central font, comes out into prominence, sometimes affecting the outer, sometimes the inner arrangement of the building, as is seen in the main ground-plan of St. Vitale at Ravenna, where I have omitted, for the sake of clearness, the accessory chapels, towers, and porches.

I have done the same in the plan of S. Lorenzo, at Milan, where I have retained only the central part of the original plan, which strongly marks the combination of the square with the circle, and the germ of those foliated geometrical forms which in after-times characterized the window tracery and wall panelling of the best epoch in Gothic architecture, but which were for many centuries confined to the ground plans of a series of the smaller class of churches and chapels, closely united, in motive and expression, to the earlier round churches. I give ground plans of the chapels of Planes, in France; Montmajour, near Arles, also in France; and of Ani, in Armenia.

It would be tiresome to give you a mere catalogue (and time would allow no more) of the many existing circular and octagonal baptisteries and churches still existing in Italy, and at rarer intervals in Northern Europe. Ferguson's Handbook, to which I have already referred, and the much larger French work, by Isahelle, on "Édifices Circulaires," though referring chiefly to classic instances, will supply ample examples to those who are inclined to exhaust the subject. The baptisteries of Florence, the Duomo Vecchio di Brescia, Pisa, and Parma, the campanile di Pisa, known as the "Leaning Tower," are familiar to us all, either by the engravings or still more faithful photographs which every traveller brings home with him. All combine, more or less, the rectangular with the circular form, and none of them very much exceed or fall short of the diameter of 100 feet, which may be taken as the average measure of this class of buildings.

It will illustrate better the history of our own churches to direct your attention to the ground-plan of S. Tomaso in Limine, near Bergamo, where the arrangement is almost identical with the original plan of the English examples. Travelling farther north, we arrive at the curious and important church of Aix la Chapelle, in which "more emperors have been crowned, and more important events happened within its walls, than have been witnessed within the walls of any existing church in Christendom." This was built by Charlemagne, and, though overpowered by the accretions of ages, still retains its main features complete. The nave is really a polygon of sixteen sides, but the shortness of each line brings it in effect to the character of a circle. Originally a circular niche, as in the baptistery of Nocera dei Pagani, formed the east end; the present chancel, terminating with a projecting polygonal or many-sided apse, which also has all the general effect of a round, was not erected till the fourteenth century. This church was, no doubt, a sepulchral one, and the parent of many similar buildings in Germany. The churches of Neimegum and Magdeburg seconded (in Germany) keeps to the true circle, both in choir and apse, and terminates westward with a large square tower. The baptistery at Bonn, which was of the eleventh century, has the rectangular part as a large western porch, instead of being inserted as a choir between the round nave and apse. I notice the hexagonal Chapel of Coborn on the Moselle on account of its rare form, and because, by the kindness of Professor Donaldson, I am able to exhibit very complete scaling drawings, which, in the elevation of vaulting, triforium, and clerestory, give you a good idea of the appearance which your own church of St. Sepulchre must have exhibited in its pristine integrity, though the plan of St. Tomaso, near Bergamo, furnished also by Professor Donaldson, shows this much more clearly. For many of the other ground-plans I have to thank Mr. Irvine, the intelligent clerk of the works at St. Sepulchre's, who carefully notes and preserves every relic of old times that is brought to light by the present alterations.

But it is time that I should say something of the Church of the Holy Sepulchre at Jerusalem, which, though by no means the first of round churches, as I have already shown, was yet the great progenitor of nearly all the round churches of the Middle Ages, and certainly of all our English ones. Mr. Poole's paper has already forestalled me in much which I might say, and into all the controversies on the authenticity of the site I am glad that I am spared from entering. It is enough, for an architectural view, that the pilgrims of the Holy Land, from the fourth century downwards, found a round church, or at least a circular enclosure, built over the reputed tomb of our Lord, and that the Crusaders of the Middle Ages, after that earlier church had been destroyed, still saw a church of the same form, though with many anomalous additions, raised over the same holy spot. It was in fond remembrance of that form, so strange to our insular precedents, that individual knights or religious societies built those memorial round churches, four only of which are left us to the present day.

The Holy Sepulchre itself, in its present state, is a small chapel, of about 26 feet long by 18 feet broad, in the centre of the rotunda, which is itself about 67 feet in diameter, and at the west end of the building. Beyond, to the east (not to complicate a very intricate plan with minor details) is the choir, presbytery, and apse. These are of much later plan than the original design; and of the walls and architectural details very little indeed remains of the older work. A fire, which occurred in 1808, destroyed the greater part of the old landmarks, and what has since been built is in the very worst taste (and one could not go lower) of Russian ecclesiastical architecture. The number of piers in the rotunda is eighteen (probably twelve existed in the original rotunda of Constantine), and the walls are divided in the usual manner, as your own church once was, into three stories, ground floor, triforium, and clerestory. Quaresimus, who wrote, I think, in the seventeenth century, describes the wall of the triforium panelled with sacred subjects in mosaic on a gilt ground, consisting of the prophets Ezekiel, Daniel, and Hosea—the Emperor Constantine, and on the north side the twelve apostles. I mention this as indicating the character of decoration which might be added if our rotunda were ever thoroughly restored. The roof was conical, formed of cedar beams, and the top of the cone was truncated by a circular aperture, open to the sky, which, as in the example of the Pantheon, appears to have been its only opening for the admission of light. Being placed upon a hill of most irregular surface, so great a difference of level existed between the outer soil and the floor of the rotunda, that the entrance door from the street on the western side opened into the triforium of the interior. The piers of the rotunda are in part circular (as ours are), in part square: the arches in this part were round; though traces of a pointed arcade, the work of the Crusaders, still remain in the choir and eastern apse, and a pointed arch doorway at one of the entrances. How this church grew up from the simple tomb hewn in the native rock to the present unsmooth conglomeration through ages of persecution and superstition, of good faith and of bad faith—how infidels desolated and defiled it—how emperors and patriarchs restored and sophisticated it—how Malomedians and Christians fought over it—and Christians, one with another—how legends and traditions obscured its genuine history—and rival churches and sects overlaid its primitive form—till the great fire in 1808 left little but fragments of the old walls remaining—would form a singular and instructive history, but one far too long to be even sketched in here. To us, its interest becomes greatest when, towards the close of the eleventh century, Europe was roused, by the preaching of Peter the Hermit, into that military and religious frenzy which resulted in the Crusades.

It was from this crusading spirit of mingled faith and glory, which took the cross-formed sword-hilt as the symbol of its creed, that the great military monastic orders sprang up which are so intimately connected with our round churches. The earliest was that of the "Brethren of the Holy Trinity," but far conspicuous above this and several smaller societies, were the two

great orders, often confounded, but strictly distinct and often antagonistic—1. "The Knights of St. John of Jerusalem;" and 2. "The Knights Templars." \*

#### THE GREAT PRIZE IN ARCHITECTURE, AT PARIS.

THE "Concours des Grands Prix d'Architecture" was on Saturday decided. The subject of the competition for this year is an imperial residence at Nice. It differs from a general style of grand-prix programmes, in being rather more practical. It happens that the member of the Academy who this year proposed the subject is M. Lefebvre, the private architect of his Majesty the Emperor; and there was some idea of his having to design this residence for him, and this may have influenced his choice. The difficulty this time was not to compose a design of enormous extensions, but to fill up a space of 80 metres square with all requirements of an imperial residence. An irregular piece of ground was given, surrounded on two sides by the sea, and in the south-eastern parts of the town. It was to be filled up with gardens, sea-baths, lodges, barracks, stables, staircases leading down the cliffs, and port for the imperial yachts. The drawings demanded were—1. A block plan, at a scale of 2 millimètres per mètre; 2. A plan of the palace, at 123 millimètres per mètre; 3. An elevation, at 2½ centimètres per mètre; 4. A section, to the same scale; and 5, 6, and 7. Two general elevations and section, to a scale of 23 millimètres per mètre.

The following is the award:—  
Premier Grand Prix.—M. Achille Toyan, of Nantes, atelier Quastel.  
Seconds Grands Prix.—1. M. Bédard, atelier Lebas; 2. M. Guadet, atelier André.

#### COMPETITIONS.

Stretford, near Manchester.—The designs for the new congregational chapel and schools by Messrs. Poulton & Woodman have been accepted.  
Preston Congregational Church and Schools.—Twenty-three designs were submitted: that by Messrs. Poulton & Woodman, of Reading, was unanimously adopted.

#### COCKBURN STREET, EDINBURGH.

THIS new street, projected by the "Edinburgh High-street and Railway Station Access Company," for the purpose mainly of providing a more direct route between the southern part of the town and the railway terminus than is at present afforded by the North Bridge and the Mound, is now in active progress.

The entire line of the street has been for some time cleared of the old houses which occupied it, and the roadway has been formed and opened for foot-passenger traffic. One block of new buildings at the north end of the street, facing Princess-street, and forming the right-hand portion of the view, is now almost completed externally; and the greater portion of the other blocks are commenced, and will be completed in the course of next summer.

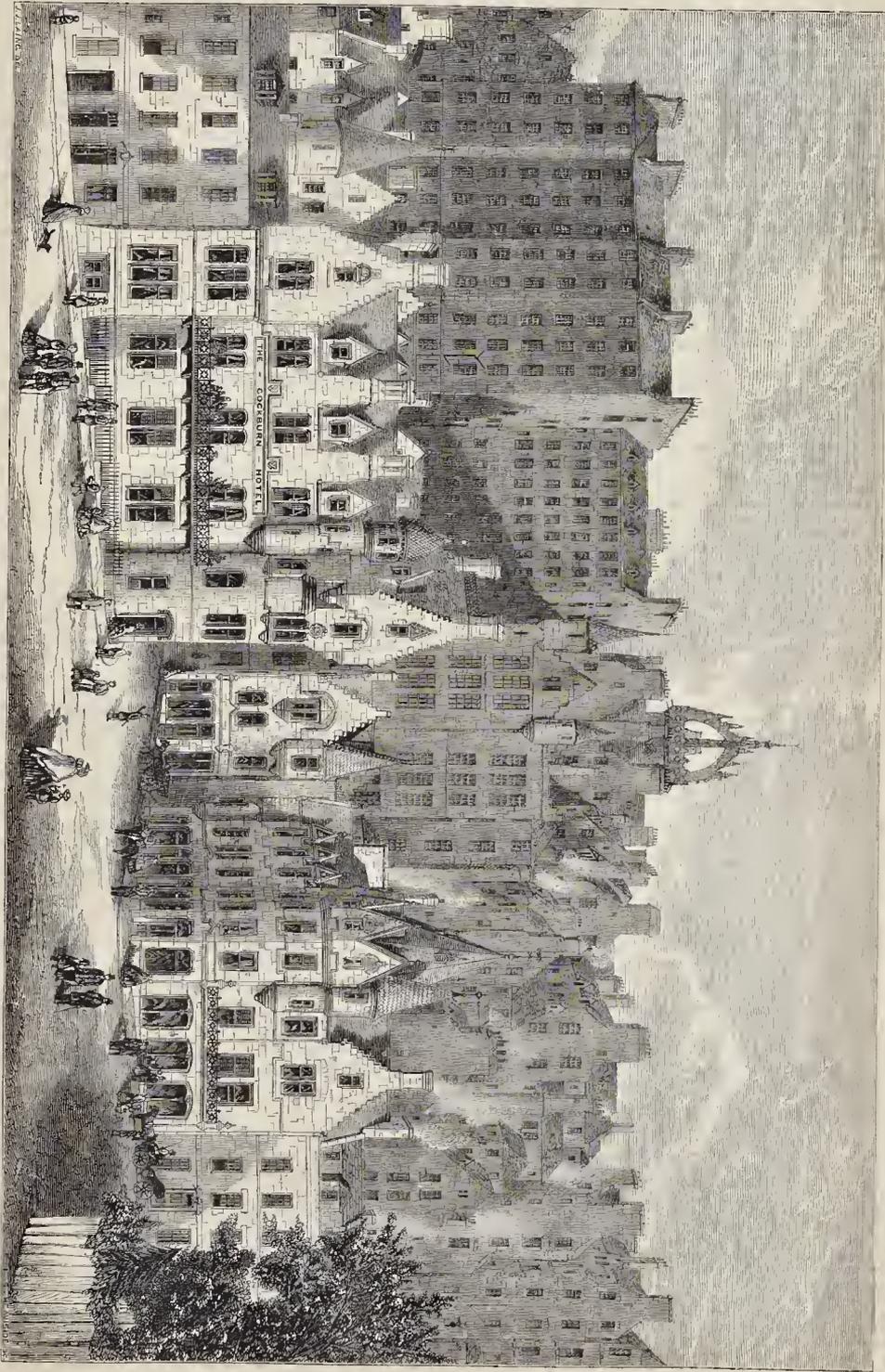
The street opens from the south end of the Waverley bridge, and, curving in the form of the letter S, winds up to the High-street, which it enters almost opposite Hunter-square. By taking this curved route, the gradient of the street is reduced to one in fourteen, being considerably less than any of the other streets from the railway terminus to the old town.

The buildings to be erected on each side of the street are in the style of those shown in the view,—the old Scottish domestic style, as it prevailed in the sixteenth and seventeenth centuries. The street-floor of the whole of the buildings (except that shown on the left-hand side of the view, which has been designed for an hotel), is devoted to shops, which will be provided with all the modern fittings, many having also large saloons behind, or on the floor above. The proprietors of the Scotsman newspaper have purchased from the company a site on the street for large new printing and publishing offices, which are now being erected.

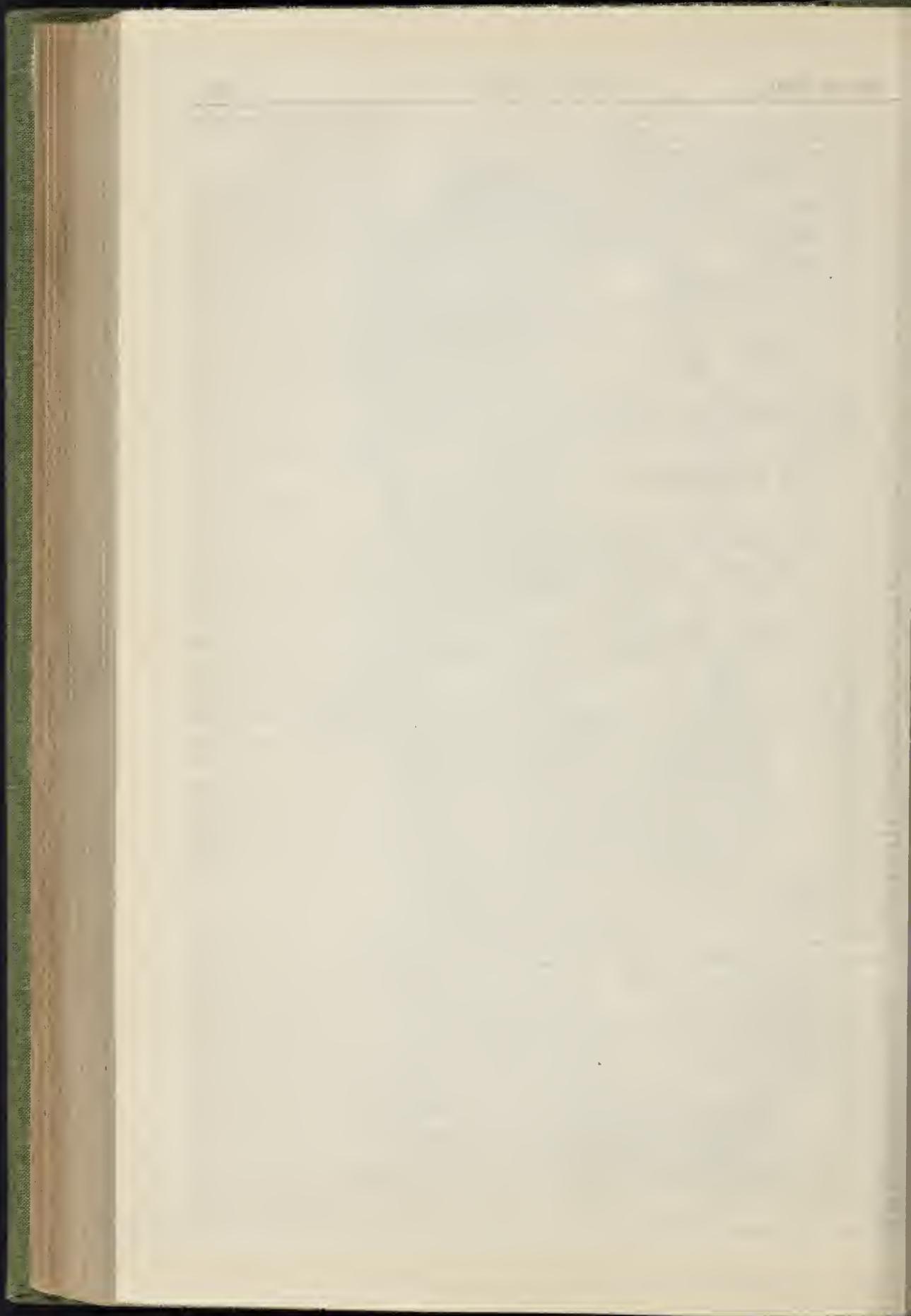
The whole of the buildings in the street are to be erected from the designs of Messrs. Peddie & Kinneir, the Company's architects.

In the background are seen the dark and ancient piles of the High-street, with the spire of the cathedral of St. Giles in the centre. The mass on the left is the Royal Exchange and City Chambers.

\* To be continued.



COOKBURN STREET, EDINBURGH.—MESSRS. PEDDIE & KINNAR, ARCHITECTS.



## THE CHARING-CROSS RAILWAY.

The company formed for the extension of the railway from London-bridge to Charing-cross had to sustain one of the many fierce parliamentary struggles which have occurred in the history of railways, the principal aid and most determined opponents being the governors of St. Thomas's Hospital, whose demands for compensation, as it was termed, although no portion of their buildings was to be touched, involved little short of a quarter of a million, and required the entire removal and rebuilding of the hospital at a considerable distance from its present site.

Passengers for the City will be set down at London-bridge, while those going westward will be carried on direct to Charing-cross. The extension will form a junction with the South-Western Railway, and thus complete the link of communication with all the southern lines; and by means of the South-Western and the bridge at Battersea, access may also be had to the whole of the North-Western and Great Western systems. The line is intended to be constructed on arches throughout its entire length, and they will be so built as to be readily adapted for dwellings, warehouses, or shops. Stations will be provided at each of the roads leading to the Southwark, Blackfriars, and Waterloo Bridges. The amount of local traffic upon these short distances which is expected has been calculated at not less than six millions.

The works, which have been commenced, have been, up to the present time, confined to the bridge across the Thames. A commencement has been made upon the Surrey side of the river by sinking cylinders for the construction of the foundations of the supporting columns. Progress has been made in the construction of the ironwork of the bridge. As at present designed, it will have a roadway for four lines of rails: the two existing piers of Hungerford-bridge will be retained, and six others will be required to carry the structure. The present suspension-bridge has been sold to parties who are about to re-erect it at Clifton; but the new railway bridge will still continue to give accommodation to foot-passengers, by means of projecting footpaths on each side of the railway road. The bridge will be 70 feet in width, and the footpaths on each side 7 feet wide. It will have eight spans of 154 feet each of water-way, and the height of the under side of the bridge, above Trinity high-water mark, will not be less than 25 feet. The width of the river at the point where the bridge crosses is 1,350 feet, and the depth of water at high-tide 30 feet. The bridge will be supported on cast-iron columns, sunk deep into the bed of the Thames. The contractor for the bridge and railway is Mr. George Wythes; but the ironwork of the bridge will be prepared by the Messrs. Cochrane, of Woodside, near Dudley, the same firm who are supplying the ironwork of the Westminster-bridge.

The cost of the line between the London-bridge and Waterloo stations, including land and compensation, and the cost of iron girder bridges over the streets to be crossed, are set down at 464,000*l.*, between Waterloo-road and the south bank of the Thames, 126,000*l.*; the bridge across the Thames, 160,000*l.*: this sum will be exceeded, as there will be four, instead of two, lines of rails, as originally intended; and for the Charing-cross station, including land, compensation, trade, and other matters, 320,000*l.*; making, together, an outlay of 1,070,000*l.*

## THE GOVERNMENT AND RELICS OF ANTIQUITY.

At the last monthly meeting of the York City Council the Town Clerk read a letter from the Secretary of State, notifying, as we have already stated, "that the Lords Commissioners of the Treasury have been pleased to authorize the payment, to finders of ancient coins, gold or silver ornaments, or other relics of antiquity, in England and Wales, of the actual value of the articles, on the same being delivered up for behoof of the Crown; and I am to request that you will instruct the police officers of your borough to give notice of the intentions of her Majesty's Government, and to inform all persons who shall hereafter make discoveries of any such articles that, on their delivering them to the sheriff, they will receive from the Treasury rewards equal in amount to the full intrinsic value of the articles. In all cases where it shall come to the knowledge of the police that such articles have been found, and that the persons having found them refuse or neglect to deliver them up, Sir George Lewis desires that measures may be taken for their recovery, and that information may be forwarded to him."

Mr. Wilkinson said he thought this was a very unjustifiable proceeding, and one that would tend to injure local collections. He moved that a copy of the letter be forwarded to the council of the Yorkshire Philosophical Society. Mr. Weatherley seconded the motion. Mr. Hargrave said that when this letter was read before the Watch Committee, it was thought that it would be very unwise to adopt the suggestion, and that it would be better for old coins, &c., found in this neighbourhood to be deposited in the Museum, rather than that they should be sent to London. The motion was carried.

## LILLE, FRANCE.

THE intended cathedral has made but small progress: a portion of the crypt, as we mentioned recently, has been completed, and an altar placed in one of the recesses, where Divine service is performed. The piers to support the superstructure are of brick, with stone quoins. Above a few of the clustered columns have been carried to the height of 10 feet.

The large church of St. Maurice is undergoing a complete repair, executed with care of the original decorative portion.

The Museum is being improved: a new gallery is being constructed for the modern pictures. The Wear Museum of ancient drawings is well arranged, and consists of 1,435 numbers, all framed. The drawings from the sketch-book of Michelangelo are the great feature of the collection. They are in number 198, and being on both sides of the leaves, are framed between sheets of glass. There is an autograph letter of Francis I., addressed to Michelangelo, expressing his desire to possess some of his sculptures. As his Royal Highness the Prince Consort has sent Mr. Bingham to photograph these drawings, of such high interest to architects, it may be hoped it will be for the object of their being circulated among the profession. The Museum also possesses sixty-seven drawings by the divine Raffaele, some of the highest beauty.

The Chevalier Wear, who formed the collection, and bequeathed it to his native city, was the agent appointed by the French Directory to collect the *chefs d'œuvre* of art for the Museum of the Louvre.

## BELGIUM.

Brussels.—The tower of the Hôtel de Ville has been restored to the base, and all the vacant niches filled with statues. A scaffolding now encloses a portion of the eastern wing for a similar purpose. In consequence of the abolition of the *petites*, all the gates have been taken away, and the ditch with the dwarf wall removed entirely where the ground is level to permit its being done. Excepting private houses there is nothing being done of any architectural character, and these are mostly here of anything decorative.

The triennial exhibition of the fine arts is now being held in the Palace, erected for the Prince of Orange before the revolution of 1830. The central saloon on the upper floor is the place of honour, and here is Sir E. Landseer's picture "Inundation," which was in the Exhibition of the Royal Academy. The other English pictures are "Past and Present," A. Egg, R.A.; "Titan making his first Attempts in Colour," W. Dyce, R.A.; "Marie Antoinette bearing the Sentence of Death read to her by Fouquier Tinville," E. M. Ward, R.A. These and some few pictures bearing obscener names, constitute the whole contribution of our school, and have not received very flattering encomiums from the Belgian press.

The total number of pictures, sculptures, drawings, and engravings exhibited are 1,114. All architectural drawings of actual buildings were ineligible, and although a gold medal is to be awarded to architecture, there appears but one candidate for the honour.—M. Joseph Schadde, of Antwerp, being the solitary exhibitor of six designs for Village Churches,—four of Byzantine and two of Gothic, all remarkable for plainness even to poverty, probably to meet the limited funds allowed for their erection.

The pictures of the Belgian school are of pleasing character, without much idealism, when of moderate dimensions; while the larger canvasses, on which some artists portray sacred or historical subjects, are of very mediocre quality. The best of the Belgian school fail to exhibit, and there are no pictures by Wappers, Galabé, De Keyser, Leys, and others. The German school is well represented, and the French school also tolerably.

Courtrai.—The town-hall, which contains the

two chimneypieces so familiar to us by L. Haghe's lithographs, has been completely repaired, and the original design throughout restored.

## NEWS FROM AMERICA.

THE State Lunatic Asylum recently erected in New Jersey, on a commanding site near the banks of the Delaware, is an important structure, with a façade of 750 feet in length. A hexastyle Tuscan portico, surmounted by a dome, occupies a central position, and the wings are finished with *campanile* open on all sides. The internal arrangements are very comprehensive, the main building being chiefly occupied by reception-rooms, chapel, apartments for the officers, with culinary offices in the basement; the right wing arranged for male patients, and the left for females. Accommodation is also provided for the quieter and more convalescent patients, distinctly separate from the refractory; and each ward has its own dining and bath-rooms, &c., those for the better classes having a spacious entrance, half-carpeted, and a parlour handsomely furnished. A lift apparatus conveys the provisions from the basement to the several departments; and the building throughout is heated by steam and lighted with gas. Each apartment has its air-fues communicating with upright foul-air shafts. Heated air is forced into air-chambers by means of a large fan, situated at the end of a tunnel some 350 feet in length. The washing is done by steam, and so is much of the ironing and the cooking.

A new hall is proposed to be built at Tammany. The hotel built by the Tammany Society, and the first opened on the European plan, has received two additions since first erected, and occupies an area of 83 feet by 57.

The total increase in the valuation of Boston this year is 12,910,900 dollars beyond the preceding year; and the rate of taxation on each thousand, 9-30 dollars. Last year it was 9-70 dollars.

The monument at Burlington commemorative of Ethan Alan has been erected. It consists of a round shaft of Vermont granite, 60 feet high, resting on a square pedestal, and with a suitable inscription.

The recently-furnished returns of the Treasury Department, New York, show that the value of hardware imported from England to this country during the year ending June 30th amounted to 1,048,896 dollars, of which 2,274,032 were for railroad iron; 2,150,625 for various iron manufactures; 1,185,441 for bar iron, and 1,049,200 for pig iron. Scotch pig iron is in fair request, and English bar inactive.

As a sign of returning prosperity, it is remarked, that most of the locomotive building establishments which survived the storm of 1857 are now in full and profitable operation.

The improvements now in progress at Canal-street, New Orleans, will, it is said, cause it to be the most magnificent street in the world, the length being eight miles, extending from Mississippi river to Lake Poulhartrain, and nearly 200 feet wide, with a parterre promenade in the centre, of 40 feet in width. At all the crossings are to be monuments or fountains. Clay's monument has been erected, and that to Fulton is being proceeded with.

## GOVERNMENT OFFICES, OTTAWA, CANADA WEST.

THE building for Government offices, at Ottawa, of which the corner stone was laid by H.R.H. the Prince of Wales, on September 1st, is similar in character to the buildings in the same city of which we gave an engraving on a former occasion, presenting towers, metal crests, parti-coloured arches, and high roofs. There are two blocks of equal size, though differing in design. They contain all the offices of the various departments of the Government service, together with rooms for the governor-general and his staff and the executive council. There are upwards of 300 rooms with corridors, safes, record-rooms, &c., and the buildings are grouped together, forming three sides of a quadrangle, 800 feet square; the area to be laid out with walks, shrubberies, and fountains. The architects are Messrs. Stent & Laver, to whom was awarded the first prize in October last.

THE GREAT EASTERN AND MR. SCOTT RUSSELL.—It is stated that the directors of the Great Ship Company intend to appeal against the award of 17,000*l.* or 18,000*l.* made by the arbitrators in favour of Mr. J. Scott Russell, who is said to have previously received some 14,000*l.* in excess of the contract price.

## ELECTRIC TELEGRAPH IN INDIA.

The telegraph which crosses the Kistna river, at Bezwarrah, in the Madras Presidency, is a galvanized iron-wire rope, 1½ inch circumference, and weighing, per foot lineal, 6½ ounces. It consists of three ropes twisted together: each rope has seven strands or wires, 1-16th of an inch in diameter. It is carried from rock to rock, and fastened to large posts of teak wood, built into the rock at about 400 feet above the surface of the water. The distance between the two points of support is six thousand feet, without any intermediate connection or support. It forms a beautiful curve, and at its lowest point is about 60 feet above the river. It has now been up more than twelve months, and the communication is very perfect.

The ordinary telegraph wire is 3-16ths of an inch in diameter, and weighs per foot run, 3½ oz. It is all galvanized.

EDWIN E. MERRILL, C.E.

## IRELAND.

The War Department require tenders for the erection of latrines at Birr barracks, in the Curragh district.

The Port of Dublin Corporation are seeking contractors for the erection of a beacon on the Alderman Rocks, Crookhaven, co. Cork, and a lighthouse tower on the Calf Rock, westward of Dursey Sound, co. Cork: time extended to 31st October.

A branch bank and manager's residence are to be erected at Ennis, for the Provincial Banking Company, according to plans by Mr. W. Murray, architect.

A new hotel is to be built at Bray, co. Wicklow, by the Dublin and Wicklow Railway Company. Mr. Wilkinson is, we believe, the architect. We desire to note the rapid improvement of this new favourite suburban locality. Building ground, not long since disregarded for its undesirability, brings large prices: a new town is rapidly springing up; important projects under Mr. Dargan's auspices are being matured: the Turkish baths recently erected are in working order: a new harbour is in contemplation; and dwelling-houses of various classes and designs are numerically increasing, in a proportion not exceeded in the metropolis.

St. Andrew's Church, Dublin, has been recently partly restored,—the mural monuments that had been covered with plaster are brought to view; the old Norman font (A.D. 1184) is placed within the church; the recumbent effigies of the Earl of Forster and his wife, and of a bishop of Kildare, previously exposed to the weather, are now under cover; the chancel window is filled in with stained glass; the tettering and unsightly vestry removed. It is further proposed (when funds permit) to re-roof the portions of the old buildings still uncovered, to save from utter ruin the clustered shaft pillars in the graveyard, and to effect various other desirable objects. In an appeal for pecuniary assistance, the committee remind the public that "this ancient church dates from Anglo-Norman times, and, if restored, would exhibit one of the choicest specimens of the architecture of the period, as attested by the monumental brasses, mouldering statues, and time-worn inscriptions, &c., &c., therein."

The report of the County Surveyors of Ireland states that, "though another year has elapsed, and the objects of the body still remain unattained, a powerful expression of opinion has been evoked, and a bill brought into Parliament, with a view of improving the position of the office." Further, that "the Committee entertain sanguine hopes that the subject will come before Parliament early in the next session, and an Act be obtained by the Government in redress of claims."

The new church of the Assumption at Wexford has been consecrated. It is almost identical with that of "the Immaculate Conception," at the north end of the town. The style is Decorated Gothic, and the plan comprises nave, chancel, and side aisles, with tower at western end, surmounted by a spire, attaining an altitude of 220 feet. Dimensions of church—150 feet in length, by 80 in width, including the aisles, which are separated from nave by an arcade of pointed arches, springing from cut stone piers with moulded capitals. The roof is of open timber-work, chamfered, stained, and varnished. Great millioned windows in the flanks, and great windows at the east and west end, light the church; several being filled in with stained glass, representing various subjects. The altar in the chapel of the Blessed Virgin is the gift of Mr. J. T. Devereux. A richly-carved

oak organ-gallery is placed at the western extremity of the church. The material for walling is red conglomerate, with granite dressings. We believe this church was originally designed by Mr. Pugin, but has been carried out under the superintendence of Mr. J. J. McCarthy, architect.

A new line of railway from Bird-hill to Nenagh, in connection with the Limerick and Castleconnell line, is projected, and will be about 12 English miles in length, at a probable expense of 5,000*l.* per mile.

## CHURCH-BUILDING NEWS.

*Milton-next-Sittingbourne.*—The new Congregational chapel recently erected here has been opened. The estimated cost of the chapel, which was built by Mr. Naylor, of Rochester, will be nearly 1,200*l.*, besides the materials of the old chapel.

*Hastings and St. Leonards.*—The foundation stone of the church of St. Matthew has been laid. The building is situated in the parish of St. Leonard, and about midway between Dobernia and Tivoli. The design is by Mr. Voysey, architect, St. Leonards. The contract is taken by Mr. George Edwards, of Luton, Bedfordshire. The building is to be of brick, with stucco facings, and will be 55 feet long by 27 feet wide, and accommodate 300 persons. The ground was given by the Rev. J. T. Cumberlege, and the building will be erected at his own private expense.

*Ilton.*—The church of Ilton, near Ilminster, has been re-opened. The interior has been restored, except the transept, which belongs to Mr. Hill, of Ilminster, who has promised to divest it, during the next spring, of the coats of whitewash which now "adorn" it. The window in this part is filled with stained glass. The nave and north aisle have been re-peved with seats of deal, stained. There has also been a new ceiling to the nave, divided into panels by moulded ribs, and the oak moulded ribs of the aisle roof, which were concealed with plaster, have been exposed to view, repaired, and cleaned. The Ham stone piers and arches have also been repaired and cleaned, and the walls re-stuccoed. The old oak pulpit has been cleansed from its numerous coats of paint, altered somewhat in shape and height, and fixed on a Ham stone base. The approach to it is through a small octagonal vestry, which has been thrown out on the south side, in the corner formed by the chancel and transept. The chancel has been rebuilt, and is separated from the nave by a low screen of Bath stone, with a pair of gates, made of iron and brass. The chancel, also, has a new ceiling of the same character as that of the nave, and with carved flowers at the intersections. The east wall, as high as the level of the sill of the window, is covered with Minton's tiles. The part over the communion-table is covered with glazed and enamelled tiling of various colours, and with the Canterbury tile on each side. In the centre is painted a vesica with a cross bearing the sacred monogram in colours and gold, and immediately above this is painted, in Medieval letters, the text, "Whoso eateth my flesh and drinketh my blood hath eternal life, and I will raise him up at the last day." The chancel is filled with two rows of oak seats, placed stall-wise on each side, the front ones having moveable book-stands. The whole are finished with carved poppy-heads, some carved foliage, and trefoil panelling immediately under the book-board, and cut and moulded bench ends. The floor is laid with Maw's encaustic tiles, that portion inside the communion rails being of geometric mosaic work, from which it is separated by two arches of Ham stone, filled in with a light open oak screen, having some wrought-iron work in each compartment, and finished by a light iron cresting, the whole being relieved by having the leaves, &c., gilt. This was made by Messrs. Wightman & Denning, of Clard. The two-light window on the north side has been filled with stained glass by O'Connor, of London. The subjects are Samuel and Eli, and Jesus Christ as the Good Shepherd. This window has been put in by the vicar. It is intended at a future time to fill the east and south windows with stained glass. The whole of the work has been carried out from the designs and under the superintendence of Mr. J. M. Allen, of Crewkerne, architect. Mr. Munden, of Ilminster, was the builder. The Ham-hill stonework was from the quarries of Mr. Joseph Staple, of Stoke, who presented the Bath-stone screen. The Caen stone monument, erected to the memory of the vicar's sister-in-law, was executed by Mr. H. Davis, of Taunton. The sum expended amounts to upwards of 750*l.*

*Yeovil.*—The new cemetery at Yeovil has been consecrated. The site is on the Preston road, immediately facing Ram Park, and about a mile from the borough. The grounds are entered by a pair of gates of oak and iron. There is an entrance-lodge on the left side, built in a style appropriate to the architecture of the chapels, which are approached from the lodge by a gravelled walk about 12 feet wide. These are built in the Italian Gothic style, of Yeovil stone, with Hamhill stone dressings, and each chapel will accommodate about fifty persons. There are two entrances to each chapel, one by an open porch which was intended to be the approach from a central tower, included in the design of the architect. This tower has not been built, from want of funds, but the foundations are laid. There is a stone central turret on each chapel. These turrets are about 30 feet high, and are carried up on four ribs springing from four columns, which rise from the interior of the chapels. The chapels are paved with tiles, inlaid with a mixture of Hamhill stone and stone from the Pisbury quarries, near Langport. The windows are filled with ornamental glass. A little more than eight acres and a quarter of ground were purchased for the cemetery for 1,050*l.* About four acres only, however, have at present been set apart—in equal portions between the Church and the Dissenters—for the purposes of burial. The cost of the chapels was about 3,000*l.* The sums thus expended were borrowed by the town council of the West of England Insurance Company, on the security of the rates for the next twenty years. The architect was Mr. R. H. Shout, of London. The building was entrusted to Mr. Wellspring, of Dorchester, and he has completed his contract. The clerk of the works was Mr. Sansom.

*Ottery (South Devon).*—Talatou Church, near Ottery, was reopened on the 5th. The edifice, having become ruinous, has been rebuilt, with the exception of the tower, which is a curious example of the Perpendicular style, there being seven or eight niches with saints and evangelists on the upper stage and stair turret. The old woodwork, as far as practicable, has been reconstructed in seating and roofs, and a small new aisle added, to compensate for the west galleries removed. Not the least interesting feature of the restoration is the re-erection of a third-pointed roof-screen, repaired with much labour by Mr. Ship, carver, Bristol, at the expense of the present rector, the Rev. C. A. Hoggan. There are five painted windows, by Mr. Hughes, memorialists to the late rector and Mr. J. P. Mathew. There is a rich oak pulpit, also by Ship. The chureh is covered with lead. The outlay is about 1,500*l.* Mr. Ashworth, of Exeter, is the architect, and the contractor Mr. Digby, of Ottery St. Mary.

*Llandaff.*—The *Bristol Times* states that Mr. D. G. Rosetti is executing for Llandaff Cathedral an altar-piece, a triptych. In the centre compartment is the Virgin, with her new-born infant in the manger. A kneeling angel presents a kneeling king and a kneeling shepherd, a ring of angels looking on the manger from the outside. On the left side is the youthful David preparing to fight Goliath; on the right, David in manhood, and a king, in the costume of a Medieval knight, playing his harp. The whole triptych measures about five feet high by nine feet long. The restoration of the edifice is progressing, and the dean and chapter have resolved to purchase a powerful organ, and have agreed with Messrs. Gray & Davison, of London, for one at a cost of 900*l.* Sir Frederick Gore Onley, regius professor of music, at Oxford, has been consulted as to its construction. The organ-fund, however, is considerably short of the required amount.

*Northallerton.*—West Rownton Church, near Northallerton, which possesses a fine Norman chancel arch and Norman doorway, has been restored under the superintendence of Mr. Pritchett, architect, and was re-opened by the Dean of York.

## STAINED GLASS.

*Romsey.*—Another stained glass window has been put up in the Abbey Church. It is the east window of the south-east side chapel. The subject, the Epiphany, was chosen for it, because the birthday of the person in whose memory it is put up fell on that festival, January 6. It was executed by Mr. O'Connor, the artist who made the three other windows already in the Abbey. At the bottom of the window, in the glass, is this inscription:—"To the glory of God, and the beloved memory of Elizabeth Painter, who was for 55 years a friend and servant in the family of the Hon. and Rev. Gerard Noel. She died December

15, 1859." The window is given by Mrs. Noel and Miss Caroline Noel, with other members and friends of the family.

**Harpurhey.**—Messrs. Edmondson and Son, of Manchester, have inserted a stained glass window in Christ Church, Harpurhey. The window is canopied, and consists of geometrical tracery. It appears to be placed to the memory of Jane Cheeseright. The window has been presented to the church by a near relative of the rector, in memory of his deceased wife.

**Shipley.**—The painted window in the chancel of Shipley church has just been completed by filling up the seven vacant lower compartments. There are now placed under fretted Gothic canopies full-length figures of our Saviour, St. John, St. Peter, St. James, St. Thomas, St. Andrew, St. James the Less, and (those now added) St. Matthias, St. Simon, St. Philip, St. Paul, St. Bartholomew, St. Jude, and St. Barnabas, the whole surrounded with the figures of the four Evangelists.

Besides, nine smaller spaces are filled with scenes from our Lord's history, namely, the Annunciation, Nativity, Presentation in the Temple, Disputing with the Doctors, the Crucifixion, Entombment, Resurrection, and Ascension. There are in the smaller lights in the upper portion of the window various devices represented. The work was done by Mr. Francis Barnett, of Leith. The total cost of the window exceeds 300*l.*, 100*s.* of which has been expended in the last executed portion of it. This 100*l.*, as well as the expense (300*l.*) of purchasing and laying out a new cemetery, was raised by means of aazaar lately held in Shipley.

**Worcester.**—It may be remembered, by some who took an interest in the subject (says the *Worcester Chronicle*), that, on occasion of the commission for filling a portion of the great east window of the Cathedral with stained glass being entrusted to Mr. Hardman of Birmingham, a Roman Catholic, without affording any chance of competition to Protestant talent, local or general, a correspondent of this paper stigmatised the procedure as something "like a job." When tenders were invited for the memorial window to the late Queen Adelaide by a committee, headed by the lord-lieutenant of the county, Roman Catholics were, as we thought very illiberally, excluded from the competition. To compensate we suppose for this piece of paltry narrow-mindedness, the committee, deputed to manage or assuming the management of the citizens' memorial window, jumped to the opposite extreme and assigned its erection off-hand to a Roman Catholic, without inviting competition to see whether Mr. Hardman might not be surpassed in excellence and cheapness. The window is now filled in, as far as the means of doing so at present extend. It is (continues the *Chronicle*), in every sense of the word, a great disappointment. The window is Early English, with five lights, and is divided across the middle into two distinct portions by the masonry. The coloured glass fills the five lights in the upper division, and the centre light in the lower, leaving four of the lower lights yet to be filled. In providing a design for this east window the artist ought to have taken into account the principal locality from which it is to be seen. The choir, in which divine service is daily performed, is the place where the visitors to the building are gathered together, and the design ought to have been such that its principal features should be distinctly observable from that part of the edifice. We would defy the keenest-sighted person to stand at the extreme east of the choir and discover what is meant by the window. Its leading characteristics are blueness in colour and haziness of outline. With a view of modifying this sensation somewhat, we obtained access to the Lady Chapel. Here we found it necessary to go pretty close to make out the subjects attempted to be illustrated. Judging by those in the lowest medallions, the scenes represented were the chief events in the life of Christ, but it was impossible to discover with readiness what was intended by the artist. The limbs of the various figures are covered with ridges of muscle running in nearly parallel lines from end to end, and the faces are so deeply furrowed as to resemble the tattooed visages of New Zealanders. Two men walking in front of the Saviour are so drawn that one appears to have four legs, and to wave the other's head growing out of his side in a most impossible manner. A female figure, with a bush of the most endearing hue, follows the Saviour. Whoever has had the good fortune to be in the Portland Gallery Miss Florence Caxton's (Choice of Paris, an Idyll) wherein the prophetic beauties are so smartly satirized, with the ridges and furrows of muscle, the strained or impossible attitudes, the distorted visages, and

general air of caricature there displayed, has seen nothing more *bizarre* or extravagant than appears in this medallion. The picture, by the ridiculous attitudes of the figures, might have been intended to throw mockery upon one of the most solemn and touching events in the history of our Lord, and we protest earnestly against the introduction of such grotesque Medieval foolery into a representation of that scene which the Christian Church for eighteen hundred years has regarded with sorrow, veneration, and awe.

**Rugby.**—The large wheel window in the new church at Rugby has lately been filled with stained glass by Mr. Holland, of Warwick, with subjects showing parables of our Saviour, viz, the Good Samaritan, Good Shepherd, Prodigal Son, Labourers in the Vineyard, Lost Sheep, Marriage Feast, Dives and Lazarus; as also angels hearing scrolls.

**Leamington Priors.**—Three windows have just been fixed in Upton church by Mr. Holland, of Warwick, with the following subjects:—one three-light window, Christ Blessing Little Children, and the Acts of Charity in four subjects; one two-light window, Raising the Widow's Son, Healing the Sick; and one single-light, of the Ascension.

#### FULLER'S EARTH.

NUTFIELD, a village to the west of Tillburston-hill, on the road to Reigate, has long been celebrated for the fuller's earth which has been for centuries dug up in the neighbourhood. The beds of the fuller's earth are dug from the top of the lowermost division of the Shanklin Sand, and occupy a line on the north side of a ridge that extends from the east of Nutfield nearly to Redstone-hill, on the west of Copyhold-farm: about two miles west of Nutfield, the earth was extracted from a stratum 6 or 7 feet thick.

In some of the pits there are two kinds of fuller's earth, one of an ochereous yellow colour, and another of a slaty grey.

The kinds of fuller's earth above mentioned are used for distinct purposes. The blue or slate-coloured is chiefly sent to Leeds and other parts of Yorkshire, where the finest cloth is made. The yellow earth has a much wider distribution, and is employed in the manufacture of every description of coarse woollen goods. It is not only in request over the West Riding of Yorkshire, but also in Lancashire, Cumberland, and Westmoreland. Some is sent into Scotland and North Wales. Norwich also receives a supply for its stuff manufacture. In some coarse goods a portion of the earth is left in the fabric, to give it substance. The whole of the earth exported from this neighbourhood is sent from London by sea, except a small quantity retained by the dyers and scourers. The district yielding the fuller's earth, which had been explored in 1811, was about two miles in length from east to west, and a quarter of a mile in breadth. The quantity of earth raised from the pits is about 6,000 tons annually, of which 4,000 are of the yellow colour.

#### "THE BUILDER'S" LAW NOTES.

**Portsmouth Barracks.**—By a recent Act of Parliament, the public right of way through Colworth Barracks, in Portsmouth, has been extinguished, as it was found to be injurious to military discipline.

**Manchester Cathedral.**—By a recent Act, the Ecclesiastical Commissioners are empowered to expend (or to authorize the Dean and Canon of Manchester to expend), in the necessary restoration or repair of the Manchester Cathedral or Collegiate Church, as much of the money paid to such Commissioners before the 1st January, 1860, under the Manchester Parish Division Act of 1850, as they shall deem fit; but the maintenance and future repair of the Cathedral are to be as by the said Act of 1850 is prescribed.

#### CURIOUS SMOKE-VENTS IN MILLOM CASTLE, CUMBERLAND.

A WRITER in *Notes and Queries* says,—On my last visit to the ruins of Millom Castle, about half a mile from the estuary of the Duddon, I observed (what had on several previous visits escaped my notice), a curious smoke-vent in the room, which had evidently been the great hall, and which is entered from the small court by a doorway, surmounted by a beautiful flamboyant arch. This vent is a hole of a shape nearly elliptical, the vertical axis measuring perhaps a foot, and the horizontal one about 8 inches (I speak from guess), cut through the wall, which is there some 5 feet thick, at an inclination of about 30 degrees to the horizon. This hole was so very much like

what I have sometimes seen in a village church, made to carry outside an iron tube passing from a stove, and then forming a chimney, that I at first fancied this might have been an early instance of this more useful than ornamental contrivance. On examining the outside, however, I found sufficient proof that this was not the case. The hole itself has evidently been the whole and sole chimney, as is proved by its being there bordered by a frame of cut stone surrounded by an ornamental finish (I fear my architectural nomenclature is very imperfect), all evidently of the same date with the building itself. Do any of your numerous readers know of any similar instance? Perhaps some of them may wish to examine for themselves this ancient smoke-vent, which I have attempted to describe. If so, I think they will thank me for pointing out the best way to get to the spot. If the intending visitor will take a tourist ticket to Coniston, such as are issued at the principal stations of the London and North-Western, the Great Northern, and the Midland Railways, available for a calendar month, at very moderate fares, he will find that he is at liberty to stop on the way at any of the stations between Caraforth and Coniston, and afterwards resume his journey at his pleasure. Let him then stop at Foxfield station, and ask for a ticket for Green-road. Then he will be directed to the Green, where he will find an unpretending but very clean and comfortable village inn. From this he can proceed by a very good road, affording views of most picturesque and varied scenery, the lake mountains, Scawfell, the Old Man, High-street, Hill Bell, &c., behind; the open sea in front; the Duddon estuary on the left, and Black Comb on the right. The distance is between two and three miles. Having examined the ruins of the castle, he will proceed to the church close by, which has been lately restored in very creditable style, considering the small amount of funds. He will notice a handsome Norman doorway now re-opened, a piscina window, a drawing of which appeared a year or two ago in the *Illustrated London News*, and in the interior some monuments of former Lords of Millom, among which are two wooden effigies, such as I have seen mentioned in the pages of *Notes and Queries*. There is a Druidical circle, nearly perfect, about two miles and a half from the Green in a different direction; and the foot of Black Comb (the view from which on a clear day is said to be the most extensive in England, embracing parts of Wales and Scotland and the Isle of Man, and occasionally, though rarely, of Ireland), is about three miles from the Green.

#### THE DONKEY-TRAP CRUELTLY.

In the *Builder* of March 10, p. 159, an appeal was made on behalf of the poor donkeys whose feet are so frequently trapped by the street water-plugs. All that was then stated has been repeatedly confirmed; but the unmentioned case has been brought to the notice of the magistrate of Lambeth, and deserves the utmost publicity. It seems that the suggestion in the paragraph to cover these holes has been adopted by the Lambeth Vestry, but the Water Company has neglected to comply with the order. Only a donkey, shareholders, tortured and killed by your negligence, whose distressed owner your officials laughed at! Your petted pony may not meet a better fate. At the police court, according to the published report,—

The applicant said that, while he was driving his donkey along the street, one of its hind legs dropped into a water-plug, and snapped in two, so that he was obliged to have the animal killed on the spot. On inquiry he found that the Lambeth Vestry had given orders for these plug-holes to be covered; but the Company had neglected to do so, and he wished to know how to proceed against them.

He had made application to the Water Company, but they only laughed at him, and said the donkey wasn't properly shod; but he went to the slaughter-house and obtained the hoof of the donkey to show that it was. The hole is 3½ inches across, and quite big enough to admit the leg of a good-sized pony.

Mr. Elliott advised the applicant to make another application to the secretary of the Company, and in the mean time he would look over the Act of Parliament to see how he could assist him.

Independently of the suffering of the poor donkey, the loss of such an animal to a costermonger may be more than he would recover for a year; and who shall estimate the distress to his family that may result from it? Costermongers are a most industrious, hardworking class; and, while you are building *social bridges* to enable them to cross the sloughs through which they have to struggle, care should be taken that their efforts are not thwarted by the negligence of parish authorities or the penuriousness of joint-stock companies.

J. B.

## CONDENSATION OF MOISTURE ON GLASS.

The inquiries of "G. W." on the "Condensation of Moisture on Glass" have been answered by yourself in principle, in recommending a "good system of ventilation;" but, if you deem it worth your notice, I would beg to bring before you a plan I have tried, and found to succeed to a considerable extent, and which I think will realize my expectations when the building is well dried out; for, when it is occupied for some time, the amount of evaporation usual in drawing-rooms will not be so great as that which takes place from new walls.

An air-flue, built parallel to the fire-flue, having an opening between the ceiling and floor of each story, takes up the vitiated and humid atmosphere through apertures dexterously concealed by the centre enrichments. I intend to extend this treatment in another case to the cornices, by forming them so as to admit of it, particularly at the inner angles.

I need scarcely mention, the above flue is carried from the ground joists as well, and by drawing air from the ventilation in the base keeps the same in a perfect state. X. Y.

A correspondent of yours wishes to know how to get rid of the condensed water from window sashes, so I will let him know of a plan which I have lately adopted with success. I have the top edge of the bottom sash head sloped off towards the sash. The water, which always runs over this head, and down the paint and paper, now runs between the head and the sash, and so outside the window. But when the sash fits close to the head, then I have a small piece cut out of the former, so as to let the water escape from the channel which has been formed. This plan of mine also answers for casements which open outwards. G. T.

## PATENTS IN CONNECTION WITH BUILDING.\*

**ARTIFICIAL MARBLES.**—*R. C. Videgrain*, Rue Lafayette, Paris. Dated January 6, 1860.—1. Iron rendered inoxidizable in bars, or in strips. 2. Sulphate of lime. 3. Lime. 4. Ochres of all kinds. 5. Wood and coal ashes, mixed (these substances must be employed more particularly in marbles intended to bear great heat, such as chimney-pieces). 6. Alum powdered at the time of mixing, being put in a furnace and reduced to powder with alabaster or plaster. The liquids used to mix with the powder to render them into a paste are:—1. Aluminous ferruginous water. 2. Gum water. 3. Silicate of potash water. 4. A small quantity of rectified sulphuric acid (about 1 pint to 150 pints of water). The proportion of the various liquids must vary according to the object to be obtained. The principal point to be observed is, that the paste be thoroughly kneaded, and of a complete homogeneity.

**LOCKS FOR DOORS.**—*J. Fowler*, Waterford, Ireland. A communication. Dated January 6, 1860.—For the purpose of this invention the locks are formed to admit of the key at opposite sides, though at different parts of the key at opposite sides, though at different parts of the key, so that the opening for the key on the one side is not opposite that on the other, and when locked by the key being introduced on the one side, the key must act from the same side to unlock it, and the key when in the lock on one side is not accessible on the other side. According to one arrangement the key acts on the tumbler or tumblers and bolt on the one side (say the outside) as in ordinary locks, but when locked from the opposite side (say the inside) the key cannot be removed from the lock without the bolt being withdrawn or unlocked. According to another arrangement the key may be withdrawn from either side, though the bolt must be brought back, that is to say, unlocked by the key being put in at the same side by which locking was effected.

**"CUTTING DOVETAILS."**—*W. E. Newton*, Chancery-lane, London. A communication. Dated January 31, 1860.—The object of this invention is to obtain a machine for cutting dovetails of the ordinary form, which extend entirely through the work, and are used for securing together the sides of boxes and similar other articles. The invention consists in the employment or use of rotary cutters, arranged with movable beds, on which the work is placed, whereby the dovetails may be rapidly and perfectly formed, thus rendering them applicable to cheap work, such as common boxes, to which they could not hitherto be applied by reason of the expense of forming the dovetails.

**SUN-BLINDS.**—*J. Jeffreys*, Richmond, Surrey. Dated Jan. 28, 1860.—The patentee employes asiers

\* Selected and condensed from the *Engineer's Lists*.

of frames of galvanized iron or tinned wire soldered together; these are suspended by cords from a blind-case fixed at the upper part of and outside the window to which the blind is fitted. The suspending cords are so arranged, that the frames may hang horizontally, or nearly so; their inclination may, however, be varied. Pieces of canvas or other fabric of suitable form are attached to the outer edge and two sides of each of the frames, and the piece of canvas or fabric so attached to either of the frames is also secured to the inner edge of the frame next above it, except in the case of the highest frame, and in this case it is attached to a wire carried by the suspending cords at a suitable distance above the upper frame; the pieces of canvas or fabric are thus stretched diagonally from frame to frame. In order to raise the blind, two cords are employed: they are each attached at one end to the blind case, and they then pass downwards in front of the inner edge of each of the frames, and afterwards they return upwards to a roller fixed in the blind-case. By winding up these cords, the frames will be in succession lifted by their inner edges, and will thus be thrown into a vertical position, and when they are fully raised, they enter a blind-case by which, when out of use, they will be sheltered from weather.

## Books Received.

**Construction of the Great Victoria Bridge in Canada.** By JAMES HODGES, Engineer to Messrs. Peto, Brassey, and Betts, contractors. John Waele, Holborn, London, 1860.

We confine ourselves, on the present occasion, to announce the publication, by Mr. Waele, of Mr. Hodges' elaborate and elegant book on the Victoria Bridge, constructed for the passage of the trains of the Grand Trunk Railway across the river St. Lawrence. In the dedication to the Prince of Wales, Mr. Hodges describes the book as an "attempt to explain and illustrate some of the difficulties and labours encountered by Her Majesty's subjects in the accomplishment of this important work," the Victoria Bridge. It includes 21 illustrative plates, and 40 engineering plates, giving all the details of construction. It is beautifully got up, and is altogether a worthy record of the extraordinary undertaking it describes. The lithographs and chromolithographs are by Messrs. Kell, Brothers.

We shall take an opportunity to go fully into the subject.

**A History of Wimborne Minster.** London: Bell & Daldy, 1860.

THE ancient collegiate church of St. Cuthberga and King's Free Chapel, at Wimborne, is an interesting edifice. It has recently been restored and reopened; and it was in connection with this restoration and the traits and relics thus brought to light that the present volume was prepared and published. The objects aimed at have been to give a correct account of the building as it now stands; to place on record all that is known of its history; to register the results of the late explorations and draw fair conclusions from them; and to rescue from oblivion any collateral facts, unimportant in themselves, but indirectly bearing on the history. These objects seem to have been very well carried out; and the volume, which is illustrated by sketches, views, and plans, gives a good account of the minster and its history. The names of the builders of the present church have disappeared, as well as those of its benefactors: the fondness is almost mythical; and generation after generation has lived and died without leaving any memorial of the progress of the sacred precincts; which, to a certain extent, therefore, have been left to speak for themselves; but in this instance they have been fortunate enough to have a good interpreter; who, besides, has managed to fish a good deal of additional information after all out of historical and local records.

A terrible calamity befel the church in the year 1600. For many years before that date fears had been entertained for the safety of the spire, which crowned the central tower. As far back as 1547, masons had been sent for to inspect it, and repairs of various kinds had been made at intervals from that time to this. But things were getting worse and worse, notwithstanding that iron bars had been introduced to support it but a short time before; and at last, on a Friday morning, the market day, when the church was more full of people than usual, perhaps to hear the lecturer, it fell. Strange to say, no one was hurt by it; and equally strange, no direct mention of the disaster is to be found in the accounts, though we find collections made for

repairing the ruins of the church, and for carrying away stones and rubbish during the next few years. Its fall is thus quaintly described by a contemporary writer, the Rev. John Coker:—

"Having discoursed thus longe of this church, I will not overpass a strange accident, which in our dayes beinge thus full of people at some of clock service, likewise the streets by reason of the market, a sudden mist arising, all the spire steeple, being of a very great height, was strange cast downe, the stones battered all the lead, and brake much of the timber of the roots of the church, yet without ains hurt to the people; which ruine is sithence commendable repaired with the church revenues: for sithence hath not yet swept away all, being assisted by Sir John Hamham, a neighbour gentleman, who, if I mistake not, enjoyeth revenues of the church, and hath done commendable to covvert parte of it to its former use."

Few incidents worth recording occur in the history of the church and school after this time.

The churchwardens' accounts contain some curious and illustrative items. Extracts from these, from so far back as 1475, and for 200 years thereafter, are given in an appendix to the volume under notice.

The venerable saint, "Cuthberga the Virgin," however mythical, must surely have had some relationship, no less mythical it may have been, to St. Cuthbert of the beds (though the Virgin could not have been Mrs. Cuthbert, of course); for we find that respectable old gentleman represented by an image, among the "goods" of the church, with 100 pair of "bedys stones, silver and gilt." Were they *real* St. Cuthbert's beds? and was the image supposed to keep count of its paternosters thereby? St. Cuthbert probably stood side by side with St. Cuthberga; for we observe, about the same time, an item of expenditure for a clue of worsted to make a decent apron for St. Cuthberga, and even for four yards of greensilk for her heehof. These "goods" existed shortly after 1475, when a note of them was taken. A little further on, mention is made of a new "epicaustrorium." What was it?—a hypocast for warming the church? The author under notice queries whether it were not a "boiler;" but for what purpose, unless it were for heating water wherewith to warm the church? It occurs along with "stone and sand" (sabbion) from Kingston, a cartload of "aler pyles," and "casytry dome de lapid."

Candlemas in those days was really Candlemass; for we find, alongside of one of the perpetual items of payment for "mending the orgonys," an expenditure for 46 lbs. of wax at 8d., "for making of lyghts against Candlemas." We have also items for "wex agensit Cuthbroggyde, to make our lady lights and ij torches." A mysterious entry often occurs in the shape of an acknowledgment of value received of "the two wyves for cakys,"—of "the wyfe of the town for cakys," and of "the wyfe of the land" or "the landwyfe," and "the wyfe of the country," for the same edible. The author guesses that these may have been two women "who made and sold cakes for the benefit of the church, in the same way as the heer was sold," the profits being handed over to the churchwarden.

"Paid for ij bokes of prayers for envadinge of the Turk" seems to have constituted a very early, but rather a hopeless, endeavour, however meritorious, to convert the Turk. But what Turk? The Turk in the abstract? or Lord Bateman's individual Turk,—*"This Turk?"*

Not one whit less odd and obscure is,—*"Pd for greaso to greaso the Bear."* Was it not rather a supererogatory act of kindness to "greaso the Bear"? The bear was not worth his keep if he did not supply greaso to greaso the churchwarden. Our author sheds a little spark of light on this mystery, however, by suggesting that the "bear" was the "hier," which was, probably, even then a wheeled vehicle.

But we cannot dwell longer on these topics, and must conclude by reminding our professional readers that, while these merely occupy an appendix, the utility of the volume is comprised in a full and detailed account of the architectural and archaeological features of this well-known minster, and of its recent restorations, to all of which we have already occasionally given attention in the *Builder*.

**A Handbook for Travellers in South Wales and its Borders, including the River Wye. With a Travelling Map.** London: Murray, 1860.

THE general features of South Wales during the last twenty years have undergone great changes in social, commercial, and even geographical points of view. The enormous development of mining enterprise and the opening of new railways have peopled districts which were formerly uninhabited. New towns have arisen: new harbours have been formed; and the picturesque counties of South

Wales, particularly those of Gwent and Morganwg, have woken up to a new phase of existence.

It is pleasing and satisfactory to find Mr. Murray persisting in the issues of his approved handbooks to districts of our own fair land. These books cannot but tend to turn the tourist stream away from its continental meanderings, even in spite of his own continental handbooks, and to promote the desire for home tours which has of late arisen amongst us.

The editor of the present Guide has, it appears, lived the greater portion of his life in the district which he has endeavoured to delineate; so that it ought to be a dependable one; as, indeed, it is, so far as we have noted. The information is said to be brought up to the present day in the hope that it will really guide the tourist to what is most worth seeing; but there is no such book without occasional inaccuracies, and the editor, frankly confessing the possibility of this, takes the next best course, short of a perfection not attainable, by soliciting a correction of possible misstatements.

Besides its cathedrals (Llandaff and St. David's; and, as a border edifice, Hereford) and (a very few) of its churches, there are many other objects of architectural and archaeological interest in its Medieval abbeys and castles, its ancient cromlechs and stones, camps, and British and Roman roads. Interest of another kind attaches to its stores of coal, iron, and lead, and its iron works and copper-smelting establishments. Nor is the district unattractive in its social aspects, and its curious customs and superstitions, its kindly inhabitants, their Celtic language, their tall peaked or conical hatted and red flannelled "witches," and their watted and beguiling music, in some of which, doubtless, we have still the entrancing strains of the rapt Druidical harpers who "sang the night songs" of the hyperborean god.

Mr. Murray is piling up a mighty cairn to his own memory. It is formed of red volumes.

### Miscellaneous.

**BAD VENTILATION AND DRUNKENNESS.**—It has been related, remarks the *Labourer's Friend*, by a person employed by the City Missionary Society of London, whose duties lead him among the inhabitants of St. Giles's parish, that there was scarcely any one of them who might not obtain a comfortable livelihood if he could leave off gin. But it had been shown that many of these persons had been driven to this liquor as affording a temporary relief to the feelings of depression and exhaustion caused by living in a noxious atmosphere; and instances have been known of individuals who, when they were enabled to reside in a less crowded and healthier locality, where pure air was attainable, spontaneously abandoned the practice of gin-drinking. Adopting this view, the number of gin-palaces which flourish in the metropolis not only show a tendency to tipping, but also point out the condition of the habitations of the great bulk of those who frequent these gin-shops.

**DRUNKENNESS IN FRANCE AND ITS CAUSES.**—While we are introducing French wines to the notice of the lower classes, in the hope that drunkenness may be diminished by their substitutions for worse liquors, the mayors and statisticians of France are crying out—"Shut up the wine-shops," because, according to M. Jules Simon, who has investigated the subject, "drunkenness is the beginning and the end of French industrial life." Considering the character for temperance which the working classes in France have hitherto borne with us, this is somewhat surprising. It appears to be considered, however, by M. Simon and others, that the wine-shops are not to be blamed, at least primarily; but the squalid, uncomfortable homes of the people in the manufacturing districts, where, chiefly, the drunkenness prevails. And nothing can be more likely in such a case, than that—there as here—ill ventilated, close, and unwholesome dwellings, will lead those resident in them to an unnatural craving for stimulants. By reaction, too, of course, drunken habits must render dwellings still more squalid and unwholesome. The testimony of M. Simon applies to England no less than to France, although it is questionable whether the evil and its concomitants be not even worse in France than has long been known to be in England. If some of the liberal subscriptions which are (figuratively, if not literally) sent to Borrioboola-ga were expended in the improvement of dwellings at home, the money would not only be reproductive of cash profit, but of profit to humanity a far more important kind.

**A CEMENT FOR GLASS.**—A transparent cement for glass, it is said, is made by dissolving one part of indiarubber in chloroform, and adding six-tigest parts, by measure, of gum mastic in powder. Digen for two days, and frequently shake the vessel in which these substances are contained. The cement is applied with a fine camel's-hair brush.

**KENT ARCHEOLOGICAL SOCIETY.**—On Thursday before last the council of the Kent Archeological Society held a meeting in the council chamber of the Guildhall, Canterbury, under the presidency of Mr. E. Foss, F.S.A. Several new members were elected, and it was proposed, but not finally settled, that the congress should be held at Maidstone in 1861. It was announced that the Society's journal, profusely illustrated, would be in the hands of the local secretaries for distribution among the members in a few days.

**NEW WATER ELEVATOR.**—An improved apparatus for raising water has recently been exhibited,—the invention of Mr. Robert Nelson, of America. It consists of a large cylindrical receiver underneath, which is attached to the suction-pipe. The vacuum is produced by the combustion of volatilised hydro-carbons. The principle is said to be so simple that a child may employ the machine, which may be kept in full play by the withdrawing and replacement of a valve every six or seven seconds.

**THE MAGNETIC TELEGRAPH COMPANY.**—The facilities for sending messages by telegraph appear to be gradually approaching the conveniences of our postal system. The Magnetic Telegraph Company are now issuing small adhesive stamps for franking messages throughout their lines in the United Kingdom. The principle is precisely similar to the postage stamp system. A message can be written wherever convenient, and, after affixing the necessary stamp, it can be sent either by post or messenger to the nearest magnetic telegraph station, and thence forwarded to its destination. There is said to be a liberal discount on these stamps in order to assist in bringing them into general use.

**FALL OF A CANAL BRIDGE AT MANCHESTER.**—Across the Rochdale canal, in the Oldham-road, at the bottom of Prussia-street, and connecting that street in Potts-street, is a narrow wooden-floored iron girder bridge. During some holiday doings, a great number of girls from neighbouring factories proceeded to cross the already-crowded bridge, and a police constable ascended the steps on the Potts-street side to clear the bridge. While doing so, a sudden creak was heard, and immediately afterwards the bridge fell into the canal beneath, carrying with it upwards of 150 persons, chiefly young women. The bridge snapped the stone clean off on the Prussia-street side; on the Pott-street side it moved a mass of stone weighing about two cwts. out of its place, while the bridge fell in an upright position, the centre breaking after it had reached the bottom of the canal, and the crowd upon it were kept standing by the iron railings. A number of men dashed into the water, and the affrighted, half-drowned people were extricated: only one life was lost—that of a child.

**AN AGRICULTURAL HALL FOR ISLINGTON.**—A company, with limited liability, has been formed for the purpose of erecting an important public edifice at Islington, at a cost of 20,000*l.*, raised by 10*l.* shares: the building will be mainly of glass and iron, and will serve not only for the fortnight's cattle-show of the Smithfield Club, who are its chief promoters, but, it is hoped, as a permanent and attractive exhibition, mainly of an agricultural character. In reference to this project, the *Islington Times* says,—"We fear, however, the directors are about to commit a very awkward *faux pas*. Dixon's Lairs is a well-known spot of ground, having a large frontage on the Liverpool road, whilst its eastern extremity looks toward Islington-green, from which it is separated by a number of old rickety buildings. Intrinsically, of no value, their position on the main thoroughfare of the parish yet gives them a worth sufficiently great to render them an obstacle to all but such an undertaking as we are considering. The removal of these unsightly sheds, for they are little better, would open up a second frontage of far greater importance than that which exists on what was long known as 'the Back-road.' Yet, so it seems, the directors of the new Agricultural Hall are either so ignorant of the locality, or so blind to the interest of the undertaking they represent, that they have not yet seen the wisdom of placing the main entrance in the great northern thoroughfare that runs through this parish, and in the centre of our shops. They purpose placing it on a road which directly leads nowhere."

**AUCTIONEERS LENDING ON FURNITURE.**—A firm of auctioneers at Birkenhead has been fined 12*l.* 10*s.*, for lending 7*l.* 10*s.* on a quantity of furniture, and receiving interest thereon, not being licensed as pawnbrokers. The gentleman who appeared on behalf of the Inland Revenue said the full penalty was 50*l.*, but as defendants, he believed, had acted in ignorance, he only pressed for one-fourth of that amount.

**IMPORTANT TO WORKMEN.**—A wages case has recently been heard at Warrington. Thos. Hart had been employed for a number of years as a worker in iron at the Callum Forge Foundry, near Warrington, conducted by Messrs. Neild & Co. It is Messrs. Neild's custom always to retain one week's wages in hand. On Saturday, August 26th, there was 1*l.* 5*s.* due to Hart. On the Monday following, Hart, while at work, in a state of intoxication, assaulted the foreman with an iron bar and rendered him insensible. Next morning, the Messrs. Neild summarily dismissed Hart, and refused to give him any wages. He summoned them for the wages due for the week previous to that in which the *fracas* had taken place.—Mr. Marsh, for the Messrs. Neild, quoted the law bearing on the case, as laid down by Lord Denman and Mr. Justice Coleridge, which showed that "if a party hired for a certain time (whether by the fortnight, month, quarter, or any other period), so conducts himself that he cannot give the consideration for his salary, he shall forfeit the current salary even for the time during which he has served." Mr. Justice Coleridge had also laid it down that "under circumstances of gross misconduct the workman cannot recover *pro rata*." The case was dismissed.

**SUFFOCATION TO DEATH IN A GAS MAIN.**—The Imperial Gas Company are running a large three-foot main from Sloane-street across Hyde-park, a portion of which, about 90 feet in length, passes under the Knightsbridge-road, near Albert-gate. The joints of the mains are first caulked with pitched yarn as tightly as possible: upon this caulking a thick coating of molten lead is run, which is hammered close into the joint by a peculiarly-shaped chisel. With the view, however, of making the main gas-proof, there is a further process of filling the inside portion of the joint with Roman cement. To enable the two operations of cementing inside and lead jointing outside to be carried on simultaneously, the man who cements is obliged to work several "lengths" up the main, beyond where the outside work is going on, so that the blows of the hammer wedging in the lead will not shake the cement by percussion, which may be the case if the two kinds of work were being done too near each other. The main is made up of 12-feet "lengths," and the cementing men will sometimes be working a couple of hundred feet from the open end of the street. It was while so engaged that the gas man was suffocated. The coroner's jury returned a verdict that the deceased was suffocated by the inhalation of coal gas, and adopted a suggestion of the coroner, that men should not be allowed to work inside more than six lengths of pipe in future.

**THE DEBUSCOPE.**—A small instrument has lately made its appearance, which it is said will be of great utility to designers and others engaged in the ornamental and decorative arts. It is of French origin, and, as described, consists of two silvered plates of great reflective power, put together in a framework of cardboard or wood, at an angle of 70 degrees. On being placed over a small picture, or design, of any kind, no matter how rough, or whether good or bad, the Debuscope, says a contemporary, "will reflect the portion immediately under the eye, on all sides, forming the most beautiful and elaborate designs, and, being slowly moved over the picture will multiply new designs to any extent. No matter what the subject is on which the instrument is placed: the result is marvellous: there is produced, from the most unlikely objects, such as scraps of paper-hangings, blots of ink, leaves, flowers, bits of lace, &c.,—an endless series of new and really beautiful designs. Although of the same species, it possesses an advantage over our old friend the kaleidoscope. It gives the design, and that in such a manner that it can be made stationary at pleasure, until copied as new patterns for draughtsmen, calico printers, dyers, paper-hangers, painters, or others. Setting aside the utility altogether, it can be made the means of gratification in the drawing-room, and will doubtless soon assume its proper place, along with the microscope and stereoscope, as a source of amusement at once innocent and instructive." Could not the patterns in some such instrument, and even in the kaleidoscope itself, suitably formed, be readily copied, and fixed as photographs, by aid of the camera?

**CHAMOUNIX AND ALBERT SMITH.**—A new English church has been consecrated at Chamounix, and the first monumental tablet that decks its walls is an *in memoriam* to Albert Smith.

**DEATH OF MR. INGRAM, M.P., PROPRIETOR OF THE "ILLUSTRATED LONDON NEWS."**—We regret to learn that the melancholy fact of Mr. Ingram's death by drowning, as reported, on the sinking of the *Lady Elgin* steamer, while on an excursion in the American lakes, is now past any doubt, the body having been identified by two gentlemen who have been many years in his employ, one of whom has at the present moment the custody of the body on its way to England for interment. The body of his son Herbert has not yet been discovered.

**FALL OF HAY AND FEATHERS, GOSWELL-STREET.** Sir: The surprise in this matter is by no means lessened as the house has been mentioned as an example of good workmanship. Would not a better tie be got for corner buildings by allowing in such cases timbers to lie in walls? Had the party well been connected with the accident it would most probably have pushed the building into the street.—A BUILDER.

**THE COURT CASE.**—Every one knows how deeply the country is indebted to the family of Henry Cort, "the father of the British Iron Trade." A poor pension was at last meted out to Mr. Richard Cort, who is now not far off eighty years of age; but this aid is quite inadequate to relieve him of expenses incurred by his long and tedious efforts to bring the country to a sense of what was due to his father's family, especially in the midst of adversity. It has been decided to raise, if possible, a sum of 100*l.*, for the purpose of setting poor Mr. Cort free from all dunning on this score in his extreme old age, and we earnestly hope the attempt will be successful. The names of numerous supporters of the "Cort Claims," including sixty M.P.'s and 100 other eminent authorities, iron manufacturers, and engineers, may be seen recorded in the library of the Institution of Civil Engineers.

**MANCHESTER ROYAL INSTITUTION: EXHIBITION OF PAINTINGS.**—The exhibition of paintings at the Manchester Royal Institution for the year 1860 comes before the public under the auspices of the recently-formed body, the Manchester Academy of Fine Arts, as well as through the arrangements of the council of the institution; and as a consequence of the infusion of new blood into the executive, says the *Courier*, the beaten track of former years has been departed from so far that the exhibition has much more the character of an exposition of the state of art generally than it had a few years back. The last two or three catalogues have shown a regular increase of French names; but now instead of having the works of foreign artists dotted up and down the rooms among those of Englishmen, so much of expansion has been given to the liberality noticeable in late years, that we have at last small but complete collections resulting from the labours of "our own commissioner" and other connoisseurs, illustrating the present characteristics of the German, Belgian, and French schools, as well as those of our own.

**CURIOS ALLEGED DISCOVERY IN FLORICULTURE.**—It is said that Maylor Tiemann, at his paint factory at Manhattanville, has accidentally made a discovery which threatens to revolutionize horticulture. One of the factory hands having thrown some liquid green paint of a particular kind on a flower-bed occupied by white anemones, the flowers have since made their appearance with petals as green as grass. The paint had in it a peculiar and very penetrating chemical mixture, which Mr. Tiemann has since applied, with other colours, to other plants, annual, biennial, and of the shrub kind, "the result being invariably that the flowers so watered took the hue of the liquid deposited at their roots." By commencing experiments early next year, during seed time, and applying different colours, we shall no doubt soon be enabled to "paint the lily." For the truth of this wonderful discovery, the *New York Tribune* is responsible. This, however, we can personally testify,—that charcoal put to the roots of dahlias and other flowering plants will render them vividly, flowers nearly white being thus turned to a deep red, sometimes altogether, and sometimes mixed with the lighter hue in half-a-dozen varieties, from one and the same root. Since noting this curious fact in our columns some years since, it has been repeated, and with success, for several seasons in France, having admittedly been tried there in consequence of reading the paragraph quoted in the *Builder*.

**INDIAN-RUBBER SEATS.**—Garden-seats, made of vulcanized Indian-rubber, have been introduced as an improvement: their elasticity saves discomfort to the sitter.

**CUTTING GLASS.**—Alexander Taylor writes as follows to the *Photographic News*:—"In treating of glass, I may give you another way of cutting bottles, shades, or any glass vessel the neat thing you wish, and that is to get a rod of iron heated to redness, and having filled your vessel the exact height you wish it to be cut, with oil of any kind, you proceed to very gradually dip the red-hot iron into the oil, which, heating all along the surface, suddenly the glass chips and cracks right round, when you can lift off the upper portion clean by the surface of the oil. This never fails, and many a couple of servicable bell glasses have I made in this way from a six-pouud confection bottle."

**HAMMER FOR SHAPING METALS.**—An improved hammer, applicable to the manufacture of globular articles, and the formation of borders upon articles of sheet metal, has been patented by Mr. William Spurrier, of Birmingham. He fixes a hammer-head or swage upon the long arm of a lever turning upon a horizontal axis. The short arm of the said lever is operated upon by means of cams, or teeth upon the periphery of a wheel, made to rotate by steam or other power. A rapid reciprocating motion is given to the hammer or swage by the said wheel, and the metal to be shaped is hammered thereby. The metal operated upon is supported on sand in hags or dies, or in some other convenient manner.

**MILLSTONE MASONS.**—It appears that there are in London a certain number of masons whose special avocation it is to prepare for use a peculiar kind of millstone, known as the French burr. This stone consists essentially of flint. The "picking" of the "burr" is effected by a steel chisel struck by a hammer, and every stroke is attended by a flash of light and a cloud of dust and small particles of stone. Having seen many of the men as patients at the Victoria-park Hospital, on account of chest affections brought on by their employment, Dr. Peacock was led to make extended inquiries at the places of work, the results of which he embodied in a paper in the *Medical Times*. The subjoined are the principal of his conclusions:—1. That the average age of those engaged in this occupation is very low indeed. Of twenty-three who had been apprenticed to it the average age was only 21-1 years; and one of the foremen stated that the longest period he had ever known a man to work at it was thirteen years. 2. That the fatality among these men is directly due to their inhalation of particles of silex; but that the injurious influence of the latter is much aggravated when the men are intemperate. 3. That the form of the disease induced may be either chronic bronchitis or phthisis, according to the predispositions of the patient. 4. That the presence of the silicious particles in the lung-tissue may be proved by chemical examination.

**TENDERS**

For road and drains on building land, on Alceon's College estate, belonging to W. Phillips, Esq., between Forest-hill and Sydenham hill. Messrs. Banks & Barry, 27, Sackville-street, architects:—

Walker	£959 0 0
Dearis	855 0 0
Potter & Love	892 10 0
Porter	789 0 0
Neave	772 0 0
Constable	731 0 0
Clarke	728 11 6
Colson	686 0 0
Morris	680 0 0
Becton	663 0 0
Strickson	660 0 0
Stacey	610 9 9
Hartland & Bloomfield	627 0 0
Ladd	609 0 0
Hare (accepted)	585 2 6

For alterations and additions to Biscot Park, Surrey, for Mr. Carew Gibson. Mr. Henry Clutton, architect:—

Mansfield	£7,949 0 0
P'Anson	7,775 0 0
Pitchard	7,748 0 0
Brass	7,334 0 0
Foster	7,216 0 0
Myers	7,089 0 0

For works at Tulse-hill. Mr. Eales, architect:—

Clemence	£215 0 0
Batterbury	879 0 0
Airey & Bellingham	785 0 0

For erecting a house in Long alley. Mr. J. Tanquer, architect. Quantities supplied:—

Taylor	£653 10 0
Elston	570 0 0
Maers	497 15 0
Cass	497 0 0
Brooks	485 0 0
Green	422 18 0

For works at No. 18, Cork-street. Mr. Eales, architect:—

Fish	£1,796 0 0
Batterbury	1,556 0 0
Airey & Bellingham	1,755 0 0
Conder	1,747 0 0
Cowland	1,676 0 0
Sanders	1,568 0 0
Longmire & Barge	1,543 0 0
Smith	1,485 0 0
Rudkin, junior	1,455 0 0

For new Baptist Chapel, Derby. Messrs. Hine & Evans, Nottingham, architects:—

G. Myers	£6,301 0 9
Simpson & Lyham	4,996 0 0
Robinson & Freeman	4,950 0 0
R. Dennett	4,925 0 0
J. Wood	4,850 0 0
R. Young	4,800 0 0
Edw. Thompson	4,800 0 0
Thompson & Fryer (accepted)	4,590 0 0

For the erection of the Ladies' Invalid Home, St. Leonard's-on-Sea. Mr. Francis H. Fowler, architect. Quantities taken up by Mr. Smithers:—

Myers	£3,550 0 0
Ayers & Co.	3,762 0 0
Wheeler	3,659 0 0
Kenwood	3,635 0 0
Hughes & Hunter	3,567 0 0
Howell	3,394 0 0

For altering the Literary Institution, Southwark, into a vestry hall for the parish of St. George the Martyr, Southwark.—The tender of Mr. Thos. Rudkin, jun., was accepted by the Vestry Board, from the quantities supplied by Mr. John M. Bryson.

For erecting brick-hut accommodation for 100 soldiers at Hounslow barracks, for the War Department, under superintendence of the Commanding Royal Engineer of the district.—The tender of Mr. Jennings was accepted by the Director General of Contracts, from the quantities supplied by Mr. John M. Bryson.

For cottage at Titchmarsh, near Reading, for Mr. Wm. Blandy. Old materials from present house and farm-buildings in addition. Messrs. Poulton & Woodman, architects:

Laker	£1,956 0 0
Wheeler	1,935 0 0
Woodroffe	1,800 0 0
Orton & Child (accepted)	1,593 0 0

For hall and committee-room for West-street Institution, Reading. Messrs. Poulton & Woodman, architects:

E. Strong	£830 0 0
Orton & Child	822 0 0
Leach (accepted)	751 0 0

For the erection of national schools and master's house at St. Leonard's, Aston Clinton, Bucks. Mr. Frederick Gatto, architect:—

Fanshidge	£1,042 0 0
Honour	703 19 0

For first portion of the new buildings at Ford, Liverpool. Mr. E. Welby Pugin, architect:—

Farrell & Ledger	£1,859 0 0
Denver	1,639 0 0
Yates	1,550 0 0
Steel	1,444 0 0
Glester (accepted)	1,420 0 0

For a cottage residence at Hartley, near Plymouth, for Mr. Richard Hicks. Mr. O. C. Artlur, architect. Quantities not supplied:—

Ellott	£1,480 0 0
Norbeck	1,460 0 0
Call & Pethick (accepted)	1,395 0 0
Letbridge	1,335 0 0
Marshall	1,291 0 0

For three new warehouses, Booth-street, Manchester. Mr. Thos. Bird, architect. Quantities supplied:—

Terras	£1,687 0 0
Thompson	1,583 0 0
Nell	1,592 0 0
Tully	1,558 0 0
Penk (accepted)	1,549 0 0
Jaffrey (accepted)	157 0 0

For three villas at Higher Broughton, Manchester. Mr. Thos. Bird, architect. Quantities supplied:—

Penk	£3,799 0 0
Terras	1,769 0 0
Harrap	1,733 0 0
Farrell & Ledger	1,659 0 0
Tully (accepted)	1,576 0 0

For a drapery establishment, Chorlton-upon-Medlock, Manchester. Mr. Thomas Bird, architect. Quantities supplied:—

Nell	£2,916 0 0
Thompson	895 0 0
Savage & Geuney	810 0 0
Clark & Jones	805 0 0
Metcalf & Waterson	819 0 0
Vickers	810 0 0
Penk	798 0 0
Terras (accepted)	727 0 0
Tully (too late)	795 0 0

For three houses at Dartmouth Park, Forest-hill, for Mr. William Rendle. Mr. Thomas Fred. Franklin, architect:—

	£	s	d	Total
Macey	2,380	145	2,525	
Gannon	2,259	121	2,380	
Downs	2,128	146	2,274	
Crabtree	2,079	724	2,400	
Rider	2,660	105	2,166	
Thompson	1,988	140	2,128	

# The Builder.

VOL. XVIII.—No. 922.

*The Metropolitan Main-Sewerage: the Northern Outfall Sewer.*



IN the course of the past week, according to original arrangements, tenders were to be received by the Metropolitan Board of Works, for the Northern Outfall Sewer. An advertisement in our present number, extends the time to the 15th inst. It will be recollected that this portion of the general work of the sewerage of London, upon which the success of the whole of the operations on the north side of the Thames, excepting only what is called the Western Division, will depend, is complicated and difficult from features of the district to be traversed, and the nature of the soil. In the account of the scheme for the metropolis, which we gave some time back, we specified the principal obstacles that would have to be surmounted at the commencement of this particular sewer, within a distance of little more than a mile. The remainder of the line (making the entire length for the sewer, 5 miles 1,400 feet), passes through that very treacherous ground, the marshes, between West Ham and Barking Creek. Eighty borings have been taken along the whole line, to ascertain the nature of the soil; and the results are shown on three sheets of the drawings.

We have before expressed a high opinion of the completeness of the preparations, by the engineering staff of the Board, for subsequent works, at least in whatever is comprised under drawings and specifications; a completeness which has contributed to that efficiency of superintendence which also we have acknowledged. The details in the present case are even more deserving of notice than were the corresponding preliminaries for the contracts in hand. Of these, the chief points interesting to those who would visit the works whilst in progress, and points that might subsequently be referred to as precedents, have been all duly laid before our readers. But it may be well to state once more, for information of distant readers, that on the south side of the river, there are now in progress, works of the High-level Sewerage and of the Outfall Sewer, besides portions of the Low-level Sewer,—for which last the general drawings are not yet finished,—and that the engines and other machinery for the Depford pumping station are in hand,—the Low-level Sewer, and the pumping machinery and reservoir at the outfall below Woolwich, being thus the only divisions of the work of which the details have to be furnished; and that on the north side of the river, the works in progress (some of which may be regarded as complete,) include those of the High-level Sewerage, the Middle-level, with a storm-water outfall passing beside the Serpentine and across Hyde Park, and what may be considered the upper portion of the Western Division. It should also be recollected that the Hackney Branch, which is included with the contract for the High-level, will intersect the line at Old Ford, and pass southward to join eventually the Low-level Sewer. After that portion of the scheme which we are about to describe, there will remain for particular design, the works, on the north side, of the Low-level Sewer, of the pumping machinery, of the reservoir at the outfall, and those generally of the Western Division.

The difficulty which there is for us, in presenting in moderate space, the interesting and useful points to be noted in examination of the drawings and specification now before us, will be supposed from a mere statement of their bulk. The form of contract, which embodies the specification as well as a schedule of prices for possible extras or omissions, fills eighty-five printed pages, besides six pages of an index; and the drawings occupy seventy-five large sheets. The specification contains 267 clauses. The details we have to notice will be understood best if we here give, as succinctly as we can, the particulars of the course the sewer will take.

It will be well remembered that the works comprised in the contract for the Northern High-level Sewer terminate at the western bank of the Lea. These include a portion of the outfall as well for the Middle-level as for the High-level division. The Northern High-level and the Middle-level Sewers, after a junction at the overflow-chamber, so often described, westward of the North London Railway, proceed in separate and parallel channels to the point from which the works now to be noticed commence, the before-mentioned western bank of the Lea, where, also, and slightly divergent on plan from the upper channels, there are two outfalls at a lower level, for storm-waters. The parallel channels of the upper level or main outfall, (two sewers, in fact,) are to continue, crossing several different watercourses and branches of the Lea, and intersecting the Eastern Counties Railway and the Stratford-road, to the site of the intended pumping station and junction of the Low-level Sewer, which is just westward of the branch known as the Ahney Creek of the Channelsea River, itself a portion of the waters of the Lea. Thence to the Thames, just westward of the mouth of Barking Creek, the Northern Outfall Sewer, so called, will continue as three channels,—except at the outfall itself, and excepting in one or two other places where it has been necessary to divide the flow into a greater number of courses. The general line is easterly or south-easterly, except at the outfall for rather more than 800 feet from low-water mark, in which distance the line has turned to the south. The sewer will have a uniform inclination of 1 in 2640, or 2 feet per mile, to the end of the general construction, where the invert appears to be about 1 foot below high-water level, after which there are a tumbling hay, nine lines of sewer, and lastly campsheating, together falling about 18 feet in a length of 400 feet to near low-water mark. The ground over the sewer or sewers will form a continuous embankment and a new line of road. The line intersects, in the following order, the main branch of the Lea, the East London Water-works Feeder; at an acute angle, the Pudding-mill River and Marsh Gate-lane; similarly the Eastern Counties Railway and the City Mill River close southward of the crossing of the latter by the former; afterwards the Water-works River and the Stratford-road; Abbey Mill-lane; Ahney Creek, and the Channelsea River close together; the North Woolwich Railway at the intersection of Marsh-lane, the Bow and Barking Railway, Balaam-street in the town of Plaistow, Barking-road, and many lanes and water-courses requiring special provisions. The line crosses East Ham Manor-road just south of the church.

Each of the channels, two, or three, of the sewer, will be 9 feet in the span of arch, or the clear width between the curved sides, and 9 feet from the invert to the soffit; and excepting for about one-fourth of the length, or the portion eastward of the church just named, where cross walls or piers of concrete are used and arches, and excepting where the channels or culverts will be on foundations slightly below the present level of ground, and of course excepting the crossings, the brickwork will be placed on a continuous substructure of concrete, which, in some places, will be not less than 14 or 15 feet in depth from the bottom of the sewer, and 50 to 60 feet transversely at the base, in addition to what is carried up as continuous counterfort to the sides of the sewer. There may have been

good reason which is not apparent, for the adoption of the imbedded piers of concrete with arches, for support in one case, and the solid embankment of concrete in the other.

It will be understood that in all the crossings, as of railways, roads, and streams, over or under them, the 9 feet in clear height of culvert, plus a roadway above, had to be provided for; and that thus the difficulty of crossing was increased. The requirements of the "Metropolis Local Management Act, 21st and 22nd Vict.," are stringent as to the non-obstruction of the navigation of the streams. In most of the cases the construction is of iron, and the drawings are very elaborate. Of course provision had to be made for contraction of the iron, without allowing sewage to escape. The mains of the Water-works Company also entailed special contrivances. The land on the line from the Lea, of the width of 100 to 150 feet, has been, or will be all purchased by the Board.

In construction of the main portion of the line, a good foundation is to be first obtained by excavating; and the concrete is then to be deposited with sides at a slope of 1 to 1, finishing along the sides of the sewer within 2 feet 6 inches of the soffit of the arches. The inverts and side walls of the sewers, the former 13½ inches thick, and the latter 2 feet 3 inches for the external walls, and 18 inches for the internal parallel divisions, will be built in Portland cement; whilst the arches and continuation of the side walls above the springing, will be in Roman cement. The former cement is to be of not less weight than 106 lbs. to the bushel of four pecks, and the Roman not less than 73 lbs., the Portland to be mixed two of cement to three of sand, and the other in equal parts. The concrete, so far as the embankment aboveground is concerned, is to be composed of four measures of approved ballast, one measure of sharp grit sand, and one of the best description of Dorking, or other stone lime of equal quality to be approved, the whole to be mixed in a pug-mill, and thrown in from the greatest practicable height. But, for the foundations of piers of bridges, and brickwork over streams, as also where to be used below present surface of the ground, the same proportion of ballast is to be mixed with two measures of sand, and one of freshly burnt lias lime. All the lime is to be delivered in lump, and ground upon the line of works. The ordinary bricks are to be the best description of picked stocks; but the inside of each sewer is to be faced with "shippers or paviors," to be according to samples at the office of the Board. Joints of the brickwork are not to exceed 3-16ths of an inch in thickness next the interior surface; and the external joints are to be raked out and pointed with neat cement. Hoop iron of 1 inch in width, and 1½ lb. to every 10 feet length, is to be used in the outside walls of the sewers, four widths in every fifth course, also at the bridges; and at the outlet near the river, there are to be two widths for every brick in thickness. The facing of the soffit of arch and top of invert, is to consist of half-brick rings on edge, and particular directions are given for the work of the side walls, in old English bond, for the wetting of the bricks, and for the immediate carting away of old or rejected bricks; and no broken bricks are to be brought on the works. In all cases where excavations are made for brickwork, embankment or otherwise, the trench is to be filled with concrete, and wherever the drawings indicate "made ground," concrete is to be used. Where the concrete piers are used, we observe that they are to be only of the width, 37 feet 6 inches, required for the width of the three lines of sewer. The space apart, or span of the arches springing from them, and carrying the sewers, is about 18 feet; and the thickness of the arches is 18 inches. Each ordinary pier, of concrete, will be the 37 feet 6 inches by 4 feet on the plan; and is to be estimated as about 16 feet in depth from the present surface (which has about the same level as the line of springing of the arch), down to the surface of gravel or foundation of good ground. Every sixth pier, however, is 6 feet across, instead of 4 feet. The backing of the

arches is made up with concrete, wherein 3-inch pipe drains are laid to the ditches outside the line of sewer. The continuous counterfort of concrete to the sides of the sewer, as will have been understood, is not provided in the portion of the work just described. The external faces, however, of this portion, as well as of the concrete slopes of other portions of the line, are to be covered by outer slopes of 1½ to 1, with dry rubbish or other material, well rammed in layers of not more than 6 inches in thickness, with an iron punner of not less than 10 lbs. weight,—the top of the embankment, or roadway, finishing 40 feet in width, and 2 feet 6 inches above the crown of the arches of the brickwork. Each ditch at the toe of the embankment, will be 3 feet 6 inches wide at the top, and 1 foot 6 inches at the bottom, and about 2 feet 6 inches deep, and will discharge into the present open ditches. Before the roadway is formed, 12 inches in depth of clay-puddle will be placed along and over the top of the brickwork, and down to 1 foot below the top of the concrete slopes. The external slopes are to be faced with turf of not less than 4 inches in thickness; or where the land is arable, particular directions are given for sowing with grass seeds; and the kind of quicksets for the hedges, and manner of planting also are specified. Culverts of brickwork in Portland cement are to be built in the open ditches met with and intersected. These works, in 1½ brickwork, alone amount to 520 feet of 7 feet by 6 feet; 620 feet of 6 feet 6 inches by 5 feet; 820 feet of 4 feet by 3 feet, and 500 feet of 2 feet barrel. Numerous side entrances and air-shafts will be required. The latter will be of the common form, and the others not greatly different from it. Where the side entrances occur, openings will be formed in the division-walls of the sewers, to allow of access from one to the other; and in each opening, double flaps will be placed.

Besides the work in raising Balaam-street, Barking-road, Prince Regent-lane, Blind-lane, and East Ham Hall Manor Way, and the lowering of Marsh-lane and West Ham Abbey-lane, there will be forty "occupation roads" to be formed, to lead to the lands on each side.

The more important works in the construction of aqueducts or bridges, include the bridge over the Lea, of one span; the bridge over the Waterworks Feeder, of two spans; that over Marsh Gate-lane, Pudding Mill River, and (Knob's Mill) Marsh Gate-lane, of four spans; that over the City Mill River, of one span,—each of these carrying the double line of sewer; the bridge over the Waterworks River, of one span, carrying four lines of sewer; that over Abbey Mill-lane, of one span, carrying a double line; and that over Abhey Creek and Channelsea River, of two spans; that over the Bow and Barking Junction (intended) Railway, Marsh-lane, and the North Woolwich Railway, of three spans; and that over the Bow and Barking Railway main line, of one span (besides certain bridges of one span, over occupation roads), all carrying the triple line of sewer. In some of these cases, the construction is repeated: but separate designs and sets of drawings have been required for the bridges of the Lea, the East London Waterworks Feeder, and the Waterworks River near Stratford-road; for the works adjoining the latter and crossing the road; and for the bridge over the Bow and Barking main line, as well as for the crossing over the Waterworks main, and the method of passing under the Eastern Counties Railway, and of crossing Balaam-street and other roads. The outlet into the Thames, the tumbling-bay, nine culverts, and other works, also are the subject of distinct drawings and clauses of the specification. In our present limits, we cannot do more than say that each of these features in the design of the Northern Outfall Sewer displays much ingenuity in contrivance, and great variety of construction; and much experience of corresponding varied character, as well as large resources, will be necessary in whatsoever may be the contractor.

The contractor is to provide for works which may be required or deducted, 200 rods of brickwork in Portland cement, 10,000 yards of blue lias lime concrete, 10,000 of the con-

crete of Dorking lime, 500 feet of Bramley Fall stone, the largest block not to exceed 30 cubic feet, the outer faces, beds, and joints to be dressed; 500 feet similarly of Aberdeen granite, the largest not to exceed 30 feet; and 1,000 yards of 3-inch tooled and squared York stone, heddled, jointed, and laid. In the schedule of prices, such brickwork as that mentioned, in blocks or otherwise, is set down at 15*l.* per rod, that with "shippers or paviers" being 17*l.* The concrete with blue lias lime is priced at 7*s.* per cubic yard, and that with Dorking lime at 5*s.* 3*d.*, but where ballast is got out of the trenches, at 3*s.* 6*d.* Under the head of stonework, Bramley Fall stone, tooled, squared, and bedded, is priced at 4*s.* 9*d.* per foot cubic, and the 3-inch York stone, at 9*d.* per foot superficial,—2½-inch being 7*d.*, 4-inch 1*s.* 6*d.*, and 6-inch 2*s.* Digging, including every expense of shoring, watching, carting, and so forth, and filling in and punning, are priced 2*s.* 6*d.* per yard, and without cartage, 2*s.* But in the case of foundations of piers of bridges, the same kind of work, including carting, is put at 7*s.* 6*d.* per yard, to defray every expense of keeping the work clear of water, a matter which may possibly involve, as in the recent case of work connected with the Low-level sewer on the south side, extraordinary difficulty and attendant expense. Timber, Memel or Riga, left in trenches, is to be charged per foot cubic, 2*s.* 6*d.*; and used as sheathing, piles, and similar works, 5*s.*, with the necessary caps and shoes; 12 feet planks left in, are to be 3*s.* 9*d.*, and 1½-inch deal is to be 3½*d.* per foot super. Cast-iron work in side-entrance flaps, will be 18*s.* per cwt.; in gully and ventilating grates, 12*s.*; and in covering plates, girders, pipes, and columns of any pattern, 10*s.* Wrought-iron work as in ladder-irons, will be 3*d.* the lb. Clean Thames ballast will be 4*s.* 6*d.* per yard. Labourers will be 3*s.* 9*d.* the day of ten hours; excavators, 4*s.* and 4*s.* 6*d.*; whilst bricklayers and other workmen, except engineers, who are 7*s.*, will be 6*s.*

In the general conditions upon which the works described are to be performed, besides such usual clauses as that the decision of the engineer as to meaning of the specification, is binding, it may be noticed that in case of any suit against the Board, or any of their servants, in respect of damage from the execution of the works, the Board may compromise the action, and at the same time claim indemnification from the contractor. The contractor is not to assign the contract, nor to make a sub-contract with any workman for any part of the brickwork, earthwork, masonry, or work connected with these; and under pain of a forfeiture, he is not to give a gratuity to any officer of the Board. Weekly accounts of extras and omissions ordered, are to be delivered. When improper materials directed to be removed, are not sent away in twenty-four hours after orders, they may be removed at the expense of the contractor, who may also be made to forfeit as damages, 5*l.* for every day's delay. Obstruction to footways entails similar damages on the contractor. Coins and other articles of value, are to be delivered up. The works are to be finished within two years after date of the order to commence; or 50*l.* per day will be claimable as liquidated damages; but in the event of strikes or combinations on the part of the workmen, the engineer will allow such additional time as he may deem fair and reasonable. Moneys payable to the Board by the contractor may be sued for and recovered on the contract, or may be retained out of moneys due or to become due, even though the sum to be retained may be unascertained at the time of the withholding. The sum of forty thousand pounds for extra works, is to be included in the tender. Advances are to be at the rate of 90 per cent., as the works proceed, until one-half the contract is completed, when a further 5 per cent. will be advanced upon the amount of work executed. Similarly, 90 per cent., and 5 per cent. will be advanced, as regards the second half of the works, and also the remaining 5 per cent. upon the approximate value of the first half. But such advances are not to be made oftener than monthly; nor are they to affect any subsequent question, or

to be taken as admission of any particular work. A further advance of 2½ per cent. will be made in three months from completion of the works; or one of 1½ per cent. at six months; and the balance will be paid at the end of twelve months, provided the contractor shall have given a full account of all his claims, and the engineer shall give a certificate. Two surties, jointly and severally in 20,000*l.*, are to be found by the contractor; and no member of the Board is to be personally liable; the payments being to be made out of the funds in the control of the Board. Mr. Edmund Cooper will be the resident engineer, under Mr. Bazalgette.

The least difficult portion of the work, so far as foundation is concerned, would seem to be at Plaistow, where the hard gravel is reached within two or three feet, and where the invert of the sewer for about 2,500 feet of length, will be below the present surface level. In other cases, as near the Lea, where the greatest height of embankment will be required, there is made-ground to a considerable depth.

#### ON ROUND CHURCHES.\*

The Knights of St. John were so named, in the first instance, from their patron saint, John the Patriarch, and they were called also Hospitaliers, from their early connection with the hospital, or hostel, or hotel (for it is the same word), attached to the St. Sepulchre at Jerusalem, for the reception of pilgrims to the sacred places. Originally they were Brethren of Mercy attending on the sick, the poor, and the stranger, and rendering them the offices of hospitality and charity. But about the year 1113, when the disturbed state of the Holy Land drove them from these works of peace and love, the lay members of the society drifted themselves off into a new order, under the name and guardianship of St. John the Baptist, taking the three vows of poverty, chastity, and obedience, and making the defence of the holy places and their visitors the main object of their union. These Knights Hospitaliers of St. John, being first called of Jerusalem, were afterwards known from their possessions and change of domicile, successively as Knights of Cyprus, of Rhodes, and of Malta, at which last place many vast buildings and unceded records yet remain. Their dress was a black cloak, with white cross, in contradistinction to that of the Templars, which was white, with a red cross. They became exceedingly powerful and numerous in England, and at one time, after they had acquired the possessions of thir-dissolved Templars, they had as many as 53 establishments or "commanderies" ("preceptory" was the name assigned to the Templars' houses) in this kingdom, of which I may mention one—Dingley, in this county, in the cellars of whose modern houses there are yet, I believe, remains of ancient vaulting, as early as the time of the Knights' proprietorship of the place. Long after their occupation was gone they lingered on, a rich and dreaded body, who might longer have stood their ground, and kept their own, had not the sweeping revolution of Henry the Eighth whirled them along in the wholesale destruction of all kindred societies. However, they had spirit enough to "die game," and our native historian, Fuller, speaking of their dissolution, says:—"The suppression of the Hospitaliers deserveth especial notice, because the manner thereof was different from the dissolution of other religious houses, for manfully they stood it out to the last, in despite of several assaults. The Knights Hospitaliers (whose chief mansion was at Clerkenwell, nigh London), being gentlemen and soldiers of ancient families and high spirits, would not be brought to present to Henry VIII. such piling petitions, and public recognitions of their errors, as other orders had done. Wherefore, like stout fellows, they opposed any that thought to enrich themselves with their ample revenues, and stood on their own defence and justification. But Barabas-day itself hath a night, and this long-lived order, which in England went over the grave of all others, came at last to its own."

And this last grave of its last prior is yet to be found in this county. In the parish church of Rushton (removed, I believe, from the destroyed church, which stood in the last century close to the hall), is the beautiful monument of Sir Thos. Fresham, in his robes of prior of the order of St. John of Jerusalem. Though Henry VIII. suppressed the order, Queen Mary revived it on her

\* See p. 623, ante.

attainment to the throne, and appointed St. Thos. Tresham, well regarded for his adherence to the unreformed faith, as the head and prior of the order in England. He died shortly after, and this most unique and curious, but little known, monument (of which I am enabled, by a friend's kindness, to exhibit a most faithful drawing), remains a singular memorial of the last brief revival of this ancient society; though I have an indistinct recollection of seeing, on the walls of the Royal Academy, either this or last year, a full-length portrait of Sir G. Bowyer, M.P., in the robes of the prior of the Knights of Malta.

Still grander monument of the order, and in closer connection with our present subject, is the round church of Little Maplestead, in Essex, the most perfect of all the crusade churches in England, and which, by the cruel irony of Time, though still a parish church, has passed from the patronage of the world-known and dashing Hospitallers into that of an obscure and feeble sect of Sabatarians.

Founded within a few years of the same time (1118) was the order of the Knights Templars, who were of a more exclusively military character, and effected no deeds but deeds of arms. Nevertheless, the rule of discipline was strict, and after St. Bernard's rule. They took their name from a palace adjoining the Temple at Jerusalem, which was appropriated to their use by Baldwin I. Their dress was a tunic of chain-mail, with a long white cloak, on which a red cross was subsequently engraved, and became their well-known badge.

They came to England in Stephen's reign, and first settled in Holborn, whence they removed to the site nearer the Thames, which, though the arms have yielded to the gown, and the long white cloak of the soldier to the long black robe of the lawyer, still retains the name of the "Temple," and rejoices in that round Temple Church, which exhibited almost the first noble, though still imperfect, example of the spirit of church restoration which has since so widely spread. The pride and haughtiness of this order brought it to an early fall, and though the name of the Templar is more popularly known than that of the Hospitaller, the existence of the former society was of far shorter duration, the Templars having been, with great severity and cruelty, suppressed in the thirteenth century, and their lands passed over to their more fortunate rivals. Of their domains, of which the Hospitallers took possession, I may name as places probably familiar to most of you, Temple Bruern, in Lincolnshire (described in the volume of our architectural reports for 1858), Temple Balsall, in Warwickshire, and Rothley Temple, in Leicestershire. I do not find that they were ever established in Northamptonshire, and I am told to-day that they had possessions at Hardwick.

The ground-plan of the Temple Church is the least elegant of all that remains, the round being smaller in proportion to the rest of the building, and forming rather a vestibule than the chief feature of the church. It differs from our own church in having twelve instead of eight piers, and so far has closer resemblance to the plan of the original. In its triple arches, opening from the rotunda into the chancel, it follows its Northampton sister.

We have, then, the round church of the Temple built by the Knights Templars, the round church of Maplestead by the other great society of the Hospitallers, while in the other two round churches, of Cambridge and of Northampton, can be traced no connection with either order; but they sprang, in all likelihood, from the unaided bounty of individual benefactors; that of Cambridge from some unknown pilgrim or crusader, whose name has perished, though his good work remains; that of our own town, from indirect but very convincing evidence, may almost surely be attributed to the first great name in Northampton annals,—Simon de St. Liz, first Norman earl of this county, the founder of the castle, and of St. Andrews, twice a pilgrim to the Holy Land, and whose name has become so identified with Northampton as to have gained a settlement in the racing card of the spring meeting.

Twice, at least, after the erection of this church, was the town of Northampton prominently connected with the Crusades. On the 14th of September, in the year 1189, within a fortnight of his ascent to the throne, Richard Cœur de Lion assembled a council, at the neighbouring Abbey of Pipwell, of all the English and Irish Bishops, the Abbots and Priors, and lay nobility, to organize a crusade for the recovery of the Holy Sepulchre;—and, no doubt, the now remote site of Pipwell was selected, both for its central position as regards the whole kingdom, and its contiguity to the neighbouring commandery of Dingley. After

his return to England in 1193, Richard kept his Easter with great pomp in this town, and, we may hope, knelt in thankfulness in the round church of this town, so suggestive of the object for which his wars and his perils had been undergone.

Again in 1240, the twenty-fourth year of Henry the Third's reign, a gathering of nobles took place in Northampton, previously to their setting out for Jerusalem; and again on Midsummer-day, 1267, in the fifty-second year of his father's reign, Prince Edward, with upwards of a hundred knights, here assumed the cross, previous to their departure for the Holy Land, in the presence of the King and the Queen Eleanor, who was afterwards to be so gracefully bound up with the associations of Northampton in the beautiful cross which is the finest architectural monument it can boast.

There are other slighter connecting links between Northampton and the Crusades, which I pass over, not professing to have made any research into the subject beyond what may be found in the commonest histories of the place. You may expect me, however, before I conclude, to refer to the past and existing state of your own church, though that subject has been more fully and faithfully treated by Mr. Poole this morning. I need hardly tell you how sadly the original form has been marred, even in times to which we have generally given the credit of knowing better. Originally consisting only of a round and an apsidal chancel, the present round pillars were some 2 feet lower than they now are. They supported an open gallery or triforium, and above that was a circular clerestory (not octagon, as we now see it), crowned by a conical roof. The circular aisle (if I may so call it) running round the pillars was groined over. There were round-headed windows, alternating in position in the aisle and triforium, some of which yet remain. Probably, in the fourteenth century, the roof and vaulting had decayed, and the restorers in those and subsequent days thought it cheaper to pull down the whole of the vaulting, turn the two lower stories into one, raise the piers, put up pointed arches, insert large windows, add chancel aisles and two more arches into these new aisles, turn the round clerestory into an octagon, and otherwise mar the original design. Subsequently the tower and spire were added at the west end; and then, in still more recent times, followed the abandonment of the chancel and its aisles, the accumulations of galleries and pews, stoves and pulpit, into the round: so that it has been said, and I know it to be a literal fact, that strangers have gone into St. Sepulchre's to see the round church of Northampton, and have come out again conceiving that they had mistaken the building, so utterly is its characteristic form obliterated. Now, whether we shall ever restore it to its original form, whether even it is desirable to attempt to do so, to make it again "as round as the O of Giotto," I will not undertake to say. When we have placed the congregation in the new nave beyond it, and the choir in the new apsidal chancel, still further eastward, it will be time to see what can be done with the round. It will, at any rate, be a vestibule to the church, at the same time that it forms a most noble baptistery, with the font in the centre. The plans before you will show that, in round churches, the round was not always the nave, as it was originally here and in all the English churches. Sometimes it formed merely the vestibule, sometimes the nave; sometimes was placed between nave and chancel, sometimes formed the chancel itself, or the apse, eastward of the chancel. Sometimes it was an attached chapel, sometimes a detached baptistery or tower. But in all these churches, which were distinctly imitative of the rotunda of the Holy Sepulchre at Jerusalem, it formed the western or nave portion.

Symbolically, the Round church has its significance; imitatively, its associations; and, aesthetically, its beauty; but its circular form is not fitted—never was fitted—for devotional and congregational purposes.

There is one case only in which it is well suited for liturgical use, viz. for the administration of the sacrament of baptism. To this the round form was early devoted: to this it should have been confined. For a ceremony admitting many spectators, directed to one central object, no form could be more beautiful or more convenient. But it is not suited for the Holy Communion, nor for prayer, nor for preaching. Your own experience in St. Sepulchre's, and its present anomalous arrangement, prove that it was a bold thing, therefore, for a lecturer in this town, not long ago, with such an example close at hand, to advocate the

round form for English churches. There are fashionable watering-places where the experiment has been tried, and octagon chapels were once becoming popular in London, but even as mere preaching-houses their form is inconvenient, and still less is it adapted to the Liturgical services of the Church of England.

It is well, therefore, that you propose to give up the Round for congregational purposes, and place the worshippers in the rectangular portion eastward, reserving the round as a most noble vestibule, and most appropriate and serviceable baptistery, in the centre of which a font, worthy of the position, may, I hope, soon be placed as a memorial to the late Marquis of Northampton, who took so much interest in the church, built by the first Norman earl of the same title. When the contemplated extension of the church is completed, and the present cumbersome fittings of the round swept away, I can conceive no interior more picturesque and unique than what St. Sepulchre's will furnish to a spectator standing under the western tower, which will then constitute an outer porch. I feel sure that there will not be one contributor to its enlargement and restoration who will not feel that, whatever he may have given, it will have been more than repaid him even by the architectural effect produced.

Before I conclude, I would briefly sum up the inferences which may be drawn from the very cursory and imperfect statements I have made on the very wide and as yet unexplored subject of Round Churches. You will at least have seen that our four round churches are only a small remnant of a much larger number which once existed in England, and that of the Templars or of the Hospitallers, though probably in almost every case (the round chapel of Ludlow Castle perhaps being one exception) with some crusader, or pilgrim to the Holy Land, and therefore constructed in imitation, more or less direct, of the Rotunda of the Holy Sepulchre at Jerusalem; in all which cases, as I have said, the "round" constituted the nave or western portion.

But from the earliest Christian ages, and linking on by subtle but unbroken chain, with ancient Rome and Greece, and indeed with the monumental history of almost every people, there existed a series of tombs, towers, temples, baptisteries, chapels, of circular or curvilinear form, which had no connection with the Holy Sepulchre (except that it was itself one link in the general chain), and which, quite irrespective of any imitation of that sacred building, are to be traced in the round portion, wherever situated, of the ecclesiastical buildings of the Middle Ages, and which received their greatest and final development in the manifold and unlingular apses, which constitute so striking and beautiful a feature of the finest continental churches.

In contradistinction to the use of the rest of Europe, England kept steadily, as a rule, to a square east end, and though at Canterbury and Tewkesbury, and in a few other noted examples, the circular form appears, yet often, with obstinate and hardly excusable persistence, as at Peterborough and Westminster, she capped the curved apse with a rectilinear addition, protesting, as it were, against the foreign element, and reserving the round form for the western end. Round apses have been a favourite re-creation with modern architects, and where, as in the new chancel of St. Sepulchre's, they can give the reason why, there can be no objection to their introduction, but a new round church we can never hope, never wish, to see again: the reason and the feeling for it are past; and its form, which was ill-suited even for the unreformed church, is doubly so for our own. As a baptismal vestibule, nothing can be grander; but in these days we want too much room for our congregations to be able, in a new church, to throw away so much space on mere architectural effect. The more incumbent upon us, therefore, is it to preserve that unique and beautiful feature, when we find it here. The fifth round church in England we shall never see; but we may yet make ours the most remarkable of the remaining four. There is more of the original in Maplestead, more completeness in Cambridge, more splendour of decoration in the Temple; but for size and usefulness, for correct arrangement and artistic effect, for local association, and, above all, for supplying the urgent spiritual wants of a daily increasing parish, the work which your committee has taken in hand will, if carried out in its integrity, yield to no church restoration, whether of round church or square; and will, when finished, become the glory, as it has hitherto been the shame, of Northampton. That work is now thrown upon your

hands, and I fully believe that you will accept the responsibility, and carry it out. Don't trust to great men, or to rich men, or to strangers; but do you, the middle classes of Northampton, hold it to be an honour that you have such a church to restore and enlarge, and enlarge and restore it accordingly.

SOCIAL SCIENCE IN GLASGOW.\*

EACH morning's business of the Social Science Association was opened with an address in the City Hall to the whole body, from the President of one of the Departments, and then the members dispersed themselves to the various sectional meetings to hear and discuss papers. These sectional meetings were held in the College Schools, which have but one entrance, and that close to the platform, so that they were very inconvenient. On Thursday, the address in the City Hall was read by the Hon. A. F. Kinnaird, M.P., on Punishment and Reformation; on Friday, Sir James Emerson Tennent spoke eloquently on Social Economy; and on Saturday, Mr. Edwin Chadwick discoursed on "Public Health." These presidential addresses have been fully reported in the journals. We must confine ourselves at present to the papers and discussions in one or two of the departments which more specially belong to us, but shall refer hereafter to Mr. Chadwick's address. Of some of the papers and remarks on "Trades Unions and Strikes" we shall also make mention under a separate head.

Returning, then, to the proceedings on Tuesday, a paper was read by Mr. John Watts, Ph. D., on

Co-operative Societies,

which the writer thus concluded:—

Although the possibility of great success and of great usefulness is now demonstrated, the further spread of these societies is not likely to be barren of failures any more than will future individual enterprises; but a few failures do not stop general trade, nor will they stop the progress of co-operation; nor is it likely that, with ordinary prudence, the Court of Chancery will be often troubled to wind them up. They are, of course, open to the common danger of a business entrusted to management,—the danger of dishonesty; but, where all the assistants are shareholders, and working under superintendence, and obliged to deposit security either by private bond or by the policy of a guarantee society, a greater danger than dishonesty is deficient judgment in the selection and purchase of goods. A well-conducted co-operative store is a large business with a guaranteed round of customers and cash payments, and therefore with very little risk of bad stock, and none of bad debts. But if inferior goods are supplied, or more than the average market price is charged, the general public first comes to buy, and then the members, one after another, draw out or sacrifice their shares in preference to paying more than market price, even with the prospect of getting a portion of it back again as profits. So, in a co-operative manufactory, if well conducted, it is not only a safe place of work, but it is a land and building society and savings bank combined. Every workman, being interested beyond mere wages in the success of the concern, will endeavour not only that a full day's work shall be done, but also that it shall be well done; and the result will be that the yarn, or twist, or cloth of that mill will command the market; but if the manager be not a good buyer, and so gets inferior material to work up; or if the workpeople have not confidence in the manager and his assistants; then the goods will deteriorate in quality, and the market will be lost. A few years ago a co-operative manufactory concern was started at Fallowfield, in Lancashire, and at first made good progress; but in course of time too many of the workmen wanted to be overlappers, and they came to quarrelling. They had invested about 7,000*l.* and were owing about 9,000*l.*, a sum which continued to increase very soon have covered; but during the quarrel one of the shareholders broke into the mill at night, and cut out a large proportion of the wares from the looms. The creditors, looking forward to a certain loss by such proceedings, came at once upon the estate and realized, and the shareholders lost the whole of their money. Another manufactory was started in Pendleton (Manchester), and from similar causes had the same kind of result. But the rocks which wrecked these attempts are now marked on the map of co-operative progress; and, it is hoped, sufficiently marked to be avoided in future. And instead of wondering at the progress of these efforts by working men, to secure a larger share of the fruits of their own toil, we shall begin soon to wonder why strong existing organizations do not adopt the principle; why, for instance, the 20,000 members of the Amalgamated Engineers' Society do not apply their 100,000*l.* stock to the establishment of a co-operative steam-engine manufactory, a boiler manufactory, or a nail and locom manufactory; why the masons do not use their trade funds in working contracts on their own account; why the bricklayers, joiners, and painters do not build and finish houses, either by contract or for sale; and why, in any case of dispute with employers, such as led to the great strike at Preston, or in the late case of the building trades in London, or the strikes at Coventry and Colne, the workmen, instead of striking work and the country, do not continue to work, and, by increasing their subscriptions to the trade society, in due time gain the power of the pence in establishments of their own. Such a course would increase, instead of decreasing, the wealth and comforts of society; would raise instead of demoralising the men; and would bring a new element into the competition of employers, showing them that, whilst the utmost cheapness of production consistent with the welfare of society is desirable, it is necessary at all times to consider the connection between the amount of wages paid and the possibility of an intelligent man bringing up a family thereon.

\* See page 617, ante.

Manufacturing Companies, either wholly at Work or in Progress of Execution, &c.

Beap and Wardle Commercial Co. (1859).....	£40,000
Do. Additional (1859).....	20,000
Rosendale Industrial (1854).....	40,000
Rochdale Co-operative Infy. Co. (1855).....	50,000
Walden Do. Co. ....	8,000
New Church Spinning and Manufacturing.....	40,000
Bury and Elton .....	40,000
Bury Co-operative .....	40,000
Bury and Heape .....	30,000
Crumble Manufacturing .....	20,000
Heywood Commercial .....	5,000
Heywood Spinning and Weaving .....	20,000
Middleton and Touze Cotton Mill.....	20,000
Calliards Rochdale Manufacturing .....	50,000
Manchester Cotton Mill .....	20,000
Bagshaw Manufacturing .....	10,000
Lancashire and Yorkshire Cotton Mill.....	100,000
Rawtenstall Cotton Mill .....	50,000
Rosendale Co-operative .....	50,000
Bacup Cotton Mill .....	20,000
Church do. do. ....	50,000
East Lancashire .....	100,000
Bury Engineering and Weaving .....	20,000
Bury Paper Mill .....	50,000
Bury Waggon Co. ....	20,000
Atherton Cotton Spinning Co. ....	25,000
Gillham Spinning Co. ....	30,000
Manchester and Salford Spinning Co. ....	20,000
Middleton Spinning Co. ....	20,000
Lancside Industrial Co. ....	30,000
	£1,088,000

Sanitary Legislation.

On Wednesday, in the department of Public Health, Mr. Mouteith, of Carstairs, presiding,—Dr. Lankester made a spirited and telling address on the results of recent sanitary legislation in the metropolis, and described the working of the Metropolitan Management Act. One of the great functions of civil government, he said, was to protect the life in the community out of which it sprang. This was necessary to its religious and moral existence. It was only as the health of the body was protected that it became a fit and proper receptacle of the mind; and that was a general position which should be held prominently in view. The sanitary affairs of the people were generally entrusted to small boards or vestries; and these could not be easily convinced that disease and death among the people was an expensive thing. They did not think in the same way of their cattle, just because animal life was a marketable commodity. Amongst the blacks in America, the money worth of a human being was better realised. Now the money value of lives in this country was of much greater value, though this was overlooked. Supposing the life of a human being were worth 100*l.*, and that the rate of mortality of any locality were found to be very high, such as had been shown to be the case in Greenock; they could easily see the vast amount of money that was squandered away by the neglect of sanitary laws, and which might be turned to a much better account. They should try to realise the value of a human being in a money point of view, and they would see that disease and death were very expensive things. Speaking of the duties of the medical officer of health and the sanitary inspector in London, he said he himself had been called, a short time ago, to the Marlborough Police Office, and had found the cells there in a very dangerous condition from the want of proper ventilation. Churches and theatres had been found to be very badly ventilated; and the influence of the public officer had been found to be of great value in remedying these buildings. Workshops, too, were often found to be in a very bad state from the same cause, and employers were not so ill to deal with as the prejudices of the workpeople themselves. Amongst them there appears to exist an impression that a workshop could not be properly ventilated without being dangerously cold. The people could not be impressed with the value of fresh air in their apartments. Every room must be imperfectly ventilated the windows of which did not come down at the top; and yet people could only with the greatest difficulty be induced to go to the expense of having their windows so constructed. In towns where the death-rate was fifty in the thousand, that was murder; and he hoped the day would come when corporations who showed such a rate would be arraigned for it criminally. The kitchens of old houses there, which were underground, were generally occupied by families, and were found to be a very great source of disease. He found from a paper, which had been read in reference to Glasgow, that in some places people lived where there was only a space of a yard and a half to each person. People would not keep the inferior animals in such a space. A cowkeeper would never dream of adopting such a course with his cows. He referred to the original bad construction of Burlington Arcade, where the death-rate had been thirty in the thousand; but the roof had been raised, and a better state of ventilation introduced.

One of the worst-drained houses in the metropolis had been that of the Bishop of London; and, during the absence of the bishop, he had visited the house, and introduced some alterations, which would have a beneficial effect, he hoped, on the health of the bishop for the future. He would like to see an organization, having for its object the improving the public health. They had lately seen what had been done in the great volunteer movement; let them organise, in the same way, a system by which they would have healthy mothers and healthy children to form these volunteer corps. The speaker concluded by recommending, to the notice of all, the efforts of the Ladies' Sanitary Association.

Architects and Sanitary Arrangements.

Mr. Chadwick impressed upon the meeting the necessity of getting returns of the disease and death rates of the community, by which they could at once see upon what portion of a town there was the greatest necessity for operating sanitarily. He had sent down to Glasgow to ascertain the death rate, but found there were no available data. There was no measure of economy so profitable as enforcing such a return. It was easy to be got, and would be sure to be followed with good results. Architecturally, sanitary science was a department which ought to be cultivated. Medical men should be enabled in these times to send their prescription, not only to the apothecary, as they had been in the habit of doing, but to the architect. He thought that architects were scarcely doing their duty in this respect, or houses would not be built as they were, with all the old defects and inconveniences. If architects were paying attention to these matters, he hoped Mr. Godwin would tell him so. As to hospitals also great improvements were needed. Mr. Godwin said he could not allow Mr. Chadwick's inquiry to pass without stating on the part of architects that they had, unfortunately, nothing whatever to do with the great mass of habitations erected in the United Kingdom; and that, even where they were employed to design private houses, the question of expense, and dislike to novelties felt by employers, prevented the introduction of new inventions and arrangements. With respect to hospitals, what had been done for many years past in this country was most unsatisfactory; but he believed attention had been awakened to the advantages of what was known as "the pavilion principle," which he and others had been advocating for some time. It was distressing to see what had been done by the Government. As to the great hospital at Netley, where thousands were being spent, he had pointed out, in the *Builder*, when the first stone was laid, the error of the plan, and asserted that, if so carried out, it would destroy more than it cured. This view had been confirmed by Miss Nightingale and others to the fullest extent.

A paper by Mr. G. W. Muir, on "Sewers and Sanitary Reform," was read, in the course of which it was argued that the present system of connecting the water-closet with the common sewer should be given up. The writer advocated the use of a Dry Closet (D. C. *versus* W. C.), wherein earth was used as a deodorizer. A model was exhibited.

Mr. John Carrick, Superintendent of Streets and Buildings, Glasgow, read a report on the

Drainage of Glasgow,

in the course of which he said:—

"In 1816 five miles of common sewers had been formed. At the present time there are sixty miles of sewers, nineteen miles of which have been formed since 1848.

All the sewers are, with one or two exceptions, of brick-work, varying in size from 2 to 8 feet diameter, and, at present there are no fewer than 13,000 water closets upon the water, the bottoms being formed to the curve of heavy freestone (which is plentiful in the neighbourhood) or moulded blocks of glazed ware, all set in hydraulic mortar or cement.

The water-closet has now become universal in the dwellings of the upper and middle classes, and also in the better description of houses for the working classes. At present there are no fewer than 13,000 water closets within the city, in connection with dwelling-houses, and many of the factories and warehouses are provided with them.

The amount of drainage from the various manufactory, distilleries, chemical works, dye works, &c., is very great. Excluding the water of the Kelvin, it is estimated that 40,000,000 gallons of sewage are daily discharged into the Clyde.

The Clyde and its tributaries have become exceedingly foul and offensive in summer weather, and various schemes have been laid before the authorities having for their object the purification of the river and the profitable disposal of the sewage. Mr. Manning proposed to precipitate and deodorize the sewage. This scheme was reported on at great length by Dr. Anderson, Professor of Chemistry in the University of Glasgow, Mr. Bateman, of London, Engineer for the Water Supply of Glasgow from Loch Katrine. Experimental works were erected

by the Town Council, at a cost of several thousand pounds, near the outlet of a most noxious common sewer, and experiments were conducted in the direction of these gentlemen by Mr. James Napier, a practical chemist of great experience. The result of their investigation was embodied in a report addressed to the Sanitary Committee of the Town Council.

In the discharge of my official duties my attention has been directed to the improvement of the drainage of Glasgow, and the purification of the sewage of these gentlemen by Mr. James Napier, a practical chemist of great experience. The result of their investigation was embodied in a report addressed to the Sanitary Committee of the Town Council.

A system of public water-closets has been adopted during the last few years, the contents of which are removed daily, and not allowed to pollute the drains and sewers; and the local authority is now enforcing the adoption of an improved older closet and refuse bin in various districts of the city, the general adoption of which will go far to ensure the comfort of the inhabitants.

The Rev. William Arnott read a paper on "The State of the River Kelvin in the neighbourhood of Glasgow," wherein the ludicrous and the horrible were mingled. Through the romantic valley of the Yarrow, he said, flows a stream of about equal value with the Kelvin. The manufacturers below have acquired the right and the power of strong water in the great natural basin of St. Mary's Loch, towards the upper part of the valley, in order to equalize this supply during a period of drought. For that purpose they diminish the flow during the night and the Sabbath, but a clause in the engagement firmly binds the parties to keep a certain amount of water always flowing, and never leaving the bed of the river at any part for a moment dry. Why? Because there are trout in the stream, and every security is taken for preserving them alive. Ah! if we had trout in the Kelvin, or if we who live on its banks were trout, there would be a law binding all the millers on its borders to keep a perennial flow of water in its bed. The inhabitants of the west end of Glasgow might be addressed in the classical apostrophe, slightly altered in accommodation to circumstances, "Flesh, flesh! Oh, wert thou fishified!" But as only the lives of men and women are at stake we must take what comes.

Mr. J. Newlands read a paper on "The Sanitary Statistics of Liverpool." He adverted to the evils attendant on overcrowding of houses and the bad construction of houses—the result of a gross, if not a criminal parsimony. In Liverpool, in one very bad district, they had grappled with the overcrowding evil, though it had cost as much as 88. per square yard. Having referred to the overcrowded state of certain districts in Liverpool, he detailed the means taken to lessen the evil, by means of house visitation by sanitary officers, who ordered cleansing operations. He exhibited a table showing the sanitary improvements which had taken place in this city within the last twelve years, together with its increase.

Mr. Bateman, C.E., described the difficulties which attended the drainage of Glasgow, and detailed how useful McDougall's disinfectant powder had been in deodorising the sewage of Carlisle, and also of Tavistock sewer, London; and said that at a cost of 5,000, or 6,000, the whole sewage of Glasgow could be purified for a year.

Dr. Lankester objected to trusting to deodorisation, but would rather have sewage kept out of rivers, and said that so bad was the Kelvin, that he would forbid any one connected with him from walking near its banks.

*Dwellings of the Working Classes.*

In the Department of Social Economy, Mr. H. Roberts read a paper "On the Progress and Present Aspects of the Movement for Improving the Dwellings of the Working Classes." He began by directing to some of the recent Acts passed having reference to the improvement of the dwellings of the working classes; and then stated a number of facts connected with the condition of dwellings in Ireland, and showed that it had been estimated that there were no fewer than 135,580 single-room cabins in that country. He remarked that a great step had been taken in the right direction by Parliament, in having during last session voted 30,000, for the accommodation of unmarried soldiers. Mr. Roberts alluded to the operations of various building societies in London and various parts of the country, and dwelt on the advantages that had been derived from them, both financially and otherwise. In one instance, on an outlay of 13,200, in providing accommodation for about 125 families, there was a clear return of 55 per cent. He thought that, even for self-interest, the parochial authorities in towns ought to encourage the building of such houses. The number of new buildings of this description in London was but as a drop in the bucket compared

with what the extent of its population required. He then referred to the improvements that had been made in the domestic arrangements of many persons in London, as the results of the efforts of the Female Domestic Mission, which was carried on by 130 agents, combined together to promote the physical, moral, and spiritual well-being of the lowest classes of the population.

Mr. Roberts afterwards gave "Examples of Efforts in Scotland to provide Improved Dwellings for the Working Classes." He said that his recent sojourn for a few days in the capital of Scotland, a city unrivalled for picturesque beauty, and remarkable for the classic elegance of so many of its modern buildings, had revealed to him what he had not seen on former visits,—a degree and extent of wretchedness which has exhaled more painful feelings than all that he had witnessed of a similar character during a long residence on the Continent. Even amidst all the misery and degradation which might be seen in the back slums of Paris, Genoa, Rome, and Naples, the vice of drunkenness rarely outraded itself, and was certainly but to a very slight degree, as it was with us to a very considerable extent, both the cause and the consequence of the miserable state of the dens which so many of things were called their homes. Such a state of things was a reproach to our country and to our Protestant Christianity. The Pilgrimage Buildings, Leith-wall, were the first of that description erected in Edinburgh. The construction of these houses originated with a number of gentlemen who were accustomed to visit the district in which they were situated, with a view to the spiritual and the temporal improvement of the labouring classes. Besides these, there were in Edinburgh and its suburbs eight distinct blocks of dwellings, either completed and occupied, or now in progress; three belonging to associations, and five to individuals, one of whom was a lady of property. Mr. Roberts concluded by referring to the efforts that had been made in Dundee and Aberdeen, and stated that the financial results had been on the whole satisfactory.

Mr. James Salmon read a paper "On Working Men's Houses:"—

In the investigation of this subject it is difficult to point to any circumstance more aggravating and alarming than the fact, that the houses built for the working classes some fifty or sixty years ago, especially in the suburbs, were much better adapted for securing the health, comfort, and morality of their tenants than those generally erected now. To verify this fact, we have only to visit Bridgeton, Calton, Tradeston, and other suburbs, where the streets are wide, the houses two stories high, and behind each an ample court or green. Unfortunately, distinguished from this, we find, increasing in every direction, tenements of houses of four and five stories in height, besides sunk stairs, with scarcely as much space around them as furnish a dim light to the tenants. Trying these two classes of houses by the test of square area, it will be found that these old suburban two-story tenements were so constructed as to provide each inhabitant with from 20 to 30 square yards of area, while many of the modern tenements too often provide little more than from two to three. As for many of the older portions of Glasgow, on both sides of the river, the census of 1841 revealed the startling circumstance, that the square area on which they stood did not admit of more than from one to two square yards of space to each resident. The importance of this fact as a test of health or salubrity will be better understood when contrasted with the square area which has been provided for the upper and middle classes of Glasgow districts occupied by the working men, and in those occupied by the middle classes, from twenty and forty square yards provided for each inhabitant. Let even the worst houses above ground in any ward or vennel of Glasgow be removed to an open locality, where it can share the sun and wind of heaven, and it will be infinitely more healthy and desirable as a residence than the best provided house we have, if squeezed into a place of Gorbals or High-street close. Indeed, I am convinced that the whole of this great subject is bound up in the question of "space or area." Provide what other requisites you please for our workmen's houses, nothing will compensate for the want of light and air. With this knowledge it is lamentable, as already stated, to know how many houses for the industrial classes are still building on principles which set this law of existence at defiance. In England, a very large proportion of the labouring classes inhabit self-contained houses, each family having their own entrance and their own back yard. But what will our friends from the South think when we tell them that, on the space which answers for five or six of their houses, the people of Glasgow erect a lofty tenement to accommodate from sixteen to twenty-five families? What I am at, in the first place, is to correct the erroneous principles on which in Glasgow the houses for the industrious classes have been blocked off and erected. Mr. Salmon here called attention to a plan upon the table, exhibiting four sections of dwellings-houses as they exist at present in four different localities of Glasgow. One was a dwelling-house of the upper classes in Sauchiehall-street, another a middle-class house, a third a working-man's house in Anderston; and another in Gorbals. For the first, for each inhabitant a space of 60 square yards was provided; for the second 40 yards; for the third 20 square yards; and for the fourth 14 square yards. This crowding of human beings into these breathless continuities accomplishes its mischief in too many ways to be easily understood. Permit me now to refer to one or two of the causes which have led Glasgow into its present unfortunate position. As for the older portions of the city, it may be supposed that a good deal of the crowding arose from sheer thoughtlessness. The naturally brings me to refer to what has now become the

great cause for this perpetuation of confined courts and narrow lanes, and this building up of five or six stories of human beings one above another. That cause is the high price of ground. At this moment in Glasgow, ground in what would be reckoned a convenient site for work-houses, cannot be purchased at a less rate than 100,000 pounds per acre. At that amount as it absolutely necessary for the bare necessities of health and morals, there would be imposed a mean yearly rent on each small dwelling of 5l. before even a single stone of the building was erected. The arresting and gradual healing of these frightful evils appear to me to lie chiefly in four directions—viz. in the efforts of philanthropy, in the efforts of speculative enterprise, in the efforts of extensive employers, in the efforts of the legislature. Speculative enterprise could do much, especially with the older portions of the city, where the plague is blackest. Extensive employers of working men could do much to assuage the evils. Requiring, as these great firms do, to erect their works in the suburbs, for the sake of cheap ground, what hinders them to purchase a few acres more than required for business, on which they themselves, or others for them, might erect houses for their workers? On ground costing from five to ten hundred pounds per acre, such employers could build workmen's houses, with everything necessary to insure health, morality, and comfort; and, while giving them to their workers at moderate rents, would realize a fair return for their invested capital. Let the conditions be simply these—"And be it enacted, That, after this date, all new houses erected for the accommodation of the industrial classes of the kingdom shall provide a superficial area of not less than seventy square yards for each individual house or dwelling, including the back yard and the half of the street; that not more than six families shall approach their dwellings by one entrance or one stair; that not more than one family be permitted to live in each house; that no family occupying a house of 100 rent and under be allowed to accommodate lodgers without a license; and, finally, that each house, besides the living-room and its adjuncts, shall contain three sleeping compartments, well aired and lighted by large wall windows." Let such an enactment as that be obtained, and you will do more to stem the surge of demoralization which is sapping the health and morality of the people, than any other means which our humanity has the power to employ.

*The Meeting of Working Men.*

Wednesday evening was appropriated to this; and a most remarkable sight did the City Hall present, being crowded in every available spot with more than 3,000 earnest, attentive men, averaging as it seemed to us not thirty years of age. They were admitted by tickets at sixpence each, and it was understood, represented no fewer than 30,000 who had applied to be present. Foreign gentlemen who talk about the invasion of this country should see and contemplate such meetings as this of our hard-handed sons of toil. It had been arranged that each resolution should be seconded by a working man named by the working men, and very able representatives they selected. The first resolution was proposed by Lord Brougham, who presided, and whose reception was tumultuous; and was seconded by Mr. Wilkinson, in a clear and forcible address. He said, at the commencement of it,—"We are asked by this resolution to perform two things, viz.—firstly, to give in our adhesion to the objects of this Association; and, secondly, to furnish facts within our reach bearing on the different social problems under discussion. In seconding this resolution I am anxious in the outset to impress the fact that this labour sought for will be productive of important results. There is one naked and imperishable truth that should never be lost sight of by the working classes, viz., that there is only one step between us and the lake of hell, and that step on which we rest is broken, and the chances are that we ourselves go to swell the numbers in the workhouse and our children to augment the ranks of the criminal population. But give us health—surround us with those sanitary influences that will produce strength of body and soundness of mind—and at the same time let our conduct be regulated by those great moral principles on which we are all agreed; and, with these essential auxiliaries, bad as the world is, and Heaven knows that to us, who have to fight its hard battles, it is bad enough; yet, notwithstanding its corruptions and its commercial and manufacturing competitors all working against us, give us health and moral rectitude, and with these two accompaniments, we are prepared to fight the battle of life successfully. One of the objects of this Association will be to stimulate the necessary means and exertions to build suitable dwellings in suitable localities for the working classes.

Much excitement was caused by the speeches of two French visitors, M. Garnier Pagés and M. Desmartez, both warmly eulogized by the president. Mr. Kinnaird, Dr. Lankester, Sir John Pakington, and Mr. Fawcett, of the members, and Mr. McFarlane and Mr. Cullen, of the workmen, also addressed the meeting.

*Poverty and Disease.*

In the Public Health Department, on Thursday, Mr. J. A. Easton, M.D., read a paper on this subject, not omitting, in showing its various bearings, the results of the huddling together and

the over-crowding found in the dwellings of the poor.

"It has been well remarked," he said, "that of all the circumstances affecting health none is so important as the condition of the air we breathe. On it, more than on any other, depends the purity of the body. Let it be impure, and all the organs of the body are affected. It is well known, also, that in every portion of the oxygen which we breathe, in every drop of the water which we drink, and in every particle of the food which we eat, there is contained an equal volume of carbonic acid gas sent forth from our lungs; and thus, if dwellings be overcrowded and imperfectly ventilated, this deleterious gas corrupts the vital air of heaven. Hence the prevalence, in overcrowded localities, of typhus and other zymotic diseases. For it has been proved that, even with free ventilation, health and strength cannot be maintained in a space of less than from 700 to 800 cubic feet for each individual; and that to live and sleep in a space of less than from 400 to 500 cubic feet is dangerous to life, even though there be not, as there generally is, in our wynds and long narrow lanes—well-named lanes—the superadded evil of extraneous noisome emanations. Now, when the 'subjects' literally 'gather themselves together,'—when ten or twelve human beings are huddled into a space which only two should occupy,—when each miserable occupant, instead of having 800, has only 90 cubic feet to live in, and have his being,—can we wonder at the ravages of disease under circumstances so favourable to its propagation? In proof of the prevalence of disease in overcrowded dwellings, I submit the following facts:—The area of the city parish of Glasgow embraces 1,924 imperial acres, or about three square miles; and I have ascertained that, during the twelve months which ended on the 31st of August, 1859, there were 7,500 applications for medical relief among the necessitous poor who resided within the bounds just given. But the important circumstance is, that 1,592, or more than one-fifth of the whole applications, came from a portion of High-street, from Salmaker, Bridgegate, New, Old, and Back Wynds, which cover about a fiftieth part only of the area of the whole parish. Now, by actual measurement, and should be witnessed by the district surgeons, and witnessed by myself, it was found that the average space for each individual in some of those places just named was 210 cubic feet; and thus my own experience as a district surgeon, five and twenty years ago, confirmed by recent personal observation and the testimony of some of the district surgeons of the present day, attests that overcrowding still continues in these wretched localities, making them the hotbeds whence, during epidemic visitations, typhus fever may spread again, as it has often spread before, through the whole of Glasgow. No doubt there are other places, here and there, in which sanitary, as well as greater reforms, are much required: at the same time it is undeniable that the plague spots of Glasgow are concentrated in the district which I have just named, and that, on account of those, the whole city has been denounced for general insalubrity. But, while I regret that there is in the midst of this great community so compact an aggregation of morbid agencies, and should rejoice at their removal, I am glad to be either just or generous to characterize Glasgow in the aggregate as pre-eminently insalubrious, when it can be proved to the satisfaction of every reasonable and unprejudiced person that small, circumscribed, and exceptional portions only deserve that unenviable distinction. But, even in these pestilential districts, improvement is visible; and, as this has resulted from what I conceive to be some of the modes of dealing with similar evils wherever they exist, I shall conclude this paper with a mere enumeration of a few of the remedies which either have been or might be applied. In the first place, the municipal authorities should exercise a vigilant supervision over all lodging-houses in the denser portions of large towns, and should insist that the space already spoken of as being essential to health and strength should invariably be provided. I am glad to notice that the police in Glasgow are attempting to root out this clamant evil, and that offenders have been brought to justice and punished. Further, an Act should be obtained, applicable to the United Kingdom, for regulating buildings, and for the licensing of dwelling localities. During the last thirteen years the Corporation of Glasgow has been acquiring, destroying, and rebuilding on old and unsuitable property in some of the worst parts of the city,—slowly, no doubt, and to a limited extent; but perhaps as well as the want of compulsory power and of a special rate will allow."

#### Drainage and Rivers.

In the Health Department, on Friday, Mr. Edwin Chadwick read a paper "On the Pollution of Rivers and the Economy of Sewage." Alluding to the charges brought against him in the House of Commons with reference to the system of sewage for London, and the use of the river Thames in connection therewith, the reader proceeded to explain the nature of his views on that question, applicable, as well, to all similar cases, and to defend the same against the propositions advanced by his opponents. By the adoption of the plans advocated by him in certain localities, he stated that the death-rates had been reduced one-third, and, in another instance, the pestilence, so well known in former times as the jail fever, entirely removed. While pursuing his investigations on the question of sewage, and before publication of his plans, he had had careful abstracts drawn out of those localities in the London district where epidemic diseases were most in the habit of appearing, from and upon which his report was founded. From these it appeared that notwithstanding the indignation of those who had raised such an outcry about the pollution of the Thames, it was immeasurably to be preferred, as a general system, that excremental matter should be at once carried off than allowed to remain till decomposition had commenced, under or contiguous to human dwellings. It was proved by statistics that the representations as to the noxious effects of the river had been very much overstated; as an example of which he would

adduce the rate of mortality amongst Custom-house tide-waiters, whose life was almost wholly spent on or beside the river, as against that of the Guards in barracks, altogether away from such a nuisance. In the former case, the rate was ten or eleven in 1,000; in the latter, twenty in 1,000. In his opinion, the fundamental principle in establishing a system of sewage was to have the excremental matter removed as rapidly as possible before decomposition or fermentation had set in; not, as under the old method, to allow it to remain to be carried off at some subsequent period. In concluding his paper Mr. Chadwick remarked that all plans for decolorizing sewage on a large scale had been found failures, and were now abandoned; and insisted on the necessity, according to his own theory, of its immediate and complete removal from human habitations.

We must now, however, hasten to a close, not stopping to speak of the *concretions* in the Galleries, in Sanchiehall-street, where the corporation have a large collection of pictures, or the banquet in the City Hall, on Friday, which was brilliantly attended, and passed off with great satisfaction. Enthusiasm prevailed up to the close of the congress, and it may be hoped that what was said and done will not be without good fruit in due time.

#### CONCRETE BUILDING IN THE COLONIES.

Mr. B. H. BARRAGE having sent a notice of the concrete employed by M. Coignet (an imitation as we have elsewhere shown of an English process), and having occasion to enlarge a building in Australia, made trial of it, and gives the following as the result of his experience, which he thinks may be useful to others, especially in the colonies. He says:—

The internal dimensions of the concrete building I erected are 21 feet long and 8 feet 9 inches wide in the clear; the walls are 6 feet 9 inches high; and the roof consists of a concrete arch 9 feet 3 inches high at the crown. One of the sides is formed by the garden-wall, which is of cob, 15 inches thick, against which a lining of concrete, 1 foot thick, was built. The opposite wall is of concrete, 18 inches in thickness, as is one of the ends; the other end abuts against a cob building, which was also fortified by a thin wall of concrete. The concrete roof is formed inside with a pointed arch, consisting of two segments, 6 feet 9 inches in radius, the rise at the crown being 5 feet, whilst externally it is dressed off to a double slope, like a common roof. The thickness of the arch is 11 inches at the crown, 1 foot 10 inches at the springing, and 6 inches in the thinnest part, which is at about two-thirds up. I have been particular in giving these dimensions, because no concrete roof of this form has, as far as I am aware, been hitherto constructed.

The foundations were dug out in the form of a trench, 18 inches wide and 18 inches deep, and filled in up to the surface of the ground with ordinary concrete consisting of one part of North Adelaide lime and seven parts of gravel and sand, taken from the bed of a creek. Upon this foundation a durable frame about 2 feet 6 inches high, and 10 feet long, similar to those used for making *piés* work on the Continent, was fixed, the sides 18 inches apart, into which the concrete for the walls was thrown, and well rammed in layers of about 1 foot in thickness. This concrete was made according to the proportions adopted by Coignet, and was mixed in the following manner:—Seven parts of sand and gravel and three parts of common earth were mixed together, and formed into a ring, inside of which one part of unslacked lime was put. Sufficient water was then poured in to slack the lime and convert it into a paste. After being allowed to stand for an hour or so, the whole heap was thoroughly mixed together, and more water added if necessary, so as to make the concrete sufficiently moist to run into all the corners of the frame. After being turned over with shovels it was thrown into the frame and rammed.

The concrete for the arched roof was formed of the same proportions as that of the foundations—namely, 7 of gravel and sand to 1 of lime, thoroughly mixed together in the same manner as the concrete for the walls. The ribs for the centres were made of 1½-inch deal, and were 4 feet apart, 1½-inch planks being laid upon them in layers like arch stones, and brought to the slope about 1½ feet of the arch was built first, and the centres were then struck and shifted forward to

build the remaining portion. The feet of the ribs were supported by wedges in order to allow of the centres being gradually eased.

That portion of the concrete of the walls which was made during the warm weather set sufficiently to allow of the frames being shifted on the following day; but, during wet weather, it was found necessary to leave them for two or three days. In order to tie the walls together at the angles, two pieces of 2-inch hoop iron, 3 feet long, were built horizontally into each wall at the corner, and were riveted to the corresponding pieces of the wall at right angles, making a kind of grid-iron in the angle; the further ends of the hoop iron were turned up for about an inch, to give them a better hold in the wall. Only one set of these ties were put in; but if I were making another building I should be inclined to put them in about every 5 feet in height.

The concrete of the arch, being made with a larger proportion of lime, set quicker than the concrete of the walls; but I did not think it safe to stack the concrete before three weeks had elapsed from the completion of either portion of the arch. On both occasions after easing the wedges and finding that the arch evinced no signs of any settlement, I proceeded at once to remove the centres.

It has been justly observed, that very often more is learned from a failure truly described than from a successful experiment; and, as my object in going into these details is to enable any one who may be inclined or obliged to become his own builder, I will proceed to point out the mistakes I made in not sufficiently supporting the middle portion of the centres, and in making the concrete for the first portion of the arch far too wet. Being accustomed to arches of stone and brick, in building which it is an object to key them in as soon as possible, so as to relieve the centres from a portion of the weight, I pushed on the concrete of the first 14 feet of the arch, so as to complete it in two days; the consequence was that the centres settled a little at the crown, and the weight of the wet concrete slightly pushed out the 18-inch wall, cracking it at the angle, and thus suggesting to me the use of the hoop-iron ties, which I adopted in the next portion I built. In settling, a slight crack was opened in the outside of the arch, at about 2 feet above the springing. A very few days sufficed for the concrete partially to set, and no more movement took place; but, as a matter of caution, before striking the centres, I built two concrete buttresses, 2 feet square and 6 feet high, against the 18-inch wall to support the thrust of the arch. The other wall, consisting of 15 inches of cob with 12 inches only of concrete, was not affected by the settlement, and I did not, therefore, build any additional supports to it. I believe that the 18-inch wall would have supported the arch very well without the buttress, but I was afraid to risk it in a first attempt. After the centres were struck, which was done in three weeks and a half from the completion of this arch, not the slightest appreciable settlement occurred. Warned by my experience with the first length of the arch, I took a week to the second one, and built hoop-iron ties, as above described, into the walls just below the springing. This portion of the arch was built during the wet weather, but it has set equally well with the first portion, and the centres were removed after standing the same time, namely, three weeks and a half.

The cracks on the outside of the arched roof were pointed with mortar made with blood instead of water, which set very rapidly; and a thin coat of common mortar was spread over the two slopes of the roof to make them smooth, which I intend to cover with a whitewash made of blood and lime, to enable it the better to resist the rain. The concrete arch was commenced on the 19th April, and completed on the 26th of May, and the centres finally removed on the 13th of June, so that it has had some very unfavourable weather to contend against; but, since the cracks were pointed, it has completely kept out all the rain. Both the concrete made with a mixture of earth after Coignet's receipt, and that made only of gravel, sand, and lime, have set very well, and promised with time to become as hard as a rock. I believe that concrete walls properly made, not the mortar walls used in Norwood, &c., are more solid and durable than the ordinary stone and brick walls in use in this colony, while a concrete roof has the advantage, not only of being fireproof, but of being, what is of great importance in this climate, exceedingly cool. In making larger buildings in this way I should advise the introduction of light iron tie-rods to assist the walls to resist the thrust of the arched roof, and I should

have no hesitation in making buildings of more than one story, in which case the floors should be made of a concrete arch with iron ties, and might be faced with cement and painted in oils in the Italian fashion so as to do away with the necessity for carpets in the hot weather. Concrete affords great facilities for introducing buttresses and other projections in building; and has, moreover, the great advantage of affording a surface to which stucco adheres so intimately as to become a portion of the wall itself, so that there is no danger of its peeling off as it sometimes does from a stone building.

In point of economy there is no comparison between concrete and other buildings. My walls cost 2s. 6d. a square yard for labour and materials, whilst for even a cobb wall I paid 3s. 6d., and an 18-inch stone wall costs 8s. a square yard. The economy of a concrete roof is also striking. My arched roof cost 2l. a square yard, being less than half the expense of a shingle roof; and, of course, considerably cheaper in proportion than either iron or slate. I should, however, state that I did not take the expense of the wooden frames, or the centering, into the calculation, as the same ones might have been used for a dozen other buildings. I should also mention that I had only half a mile to go for sand and gravel; but, on the other hand, as a set-off, I had to send six miles for the lime.

Settlers at a distance from towns, who find it difficult to procure skilled workmen, I strongly recommend to try this economic building; and even for stations in the Bush when, as often is the case, limestone is to be found. Concrete buildings would be nearly, if not quite, as cheap, as log huts; and, whilst being infinitely more comfortable, they would, being fire-proof, set at defiance all the attempts of the blacks to burn them, and thus, in case of an attack, enable their inmates to hold out until help arrived: in fact, to parties about to build, I say, try concrete.

#### MR. HERBERT INGRAM AND ILLUSTRATED LITERATURE.

Of late the hand of death has fallen heavily on men of mark in many walks. Some have dropped with great suddenness, and the public have been startled and surprised. In no instance, however, do we remember a more painful impression recorded than that which has been caused by the accidental death, the well-known originator and successful proprietor of the *Illustrated London News*. Mr. Ingram's career is encouraging to those beginning life; and he is worthy of honourable mention, as well for the good which he has done in advancing illustrated literature for the multitude, as for the energy and perseverance that distinguished him.

In 1811, Mr. Ingram was born in a humble home in Boston, in Lincolnshire. Here he received a useful amount of education, and was then apprenticed to a general printer. In that position he would be more likely than in a large metropolitan establishment to get a knowledge of the various branches of his business,—an advantage felt by many in this and other trades who are brought up in the provinces. On finishing his apprenticeship he removed to Nottingham, where he commenced business as a printer, bookseller, and newsagent. In the news department of a comparatively small but thriving establishment Mr. Ingram showed activity and judgment, and he managed to supply periodicals with a quickness which sometimes surprised his neighbors.

This shop brought him a certain amount of prosperity; and, in course of time, Mr. Ingram was induced to embark in the manufacture of a patent medicine—a "life-pill,"—by which some-what questionable means a large sum of money was made with extraordinary rapidity. While thus engaged, the idea of an illustrated newspaper, originating, it is said, in the success which had followed an illustrated handbill, was conceived, and the idea of it so matured, that, on the 14th of May, 1819, upwards of eighteen years ago, No. 1 of the *Illustrated London News* made its appearance, mainly with a view, originally, it has been asserted, to assist in making popular the life-pill. Much diversity of opinion was expressed respecting this venture, but at the time many thought that it must end in failure. Artists of skill were difficult to be had for the execution of the subject needed; and, as we have before said when alluding to the growth of our periodical literature, box-wood of sufficient size was not to be readily obtained: the system of steam-printing, too, was not then so perfect as it is now, and there were no organised means of obtaining sketches of events from distant parts of the country or from abroad.

In a well-written announcement in the first volume of the *Illustrated London News* it is stated that it was "determined to pursue the great experiment with boldness, and to associate principles with a purity of tone that may secure and bold fast for the new journal the fearless patronage of families,—to seek in all things to uphold the great cause of public morality,—to keep continually before the world a moving panorama of all its actions and influences."

It is curious to refer to the commencement of attempts which have led to success, and it is with interest we look at the illustrations of the first number of this periodical. On the front page is the same heading which is still used, and a small ill-executed view of the great fire at Hamburgh: the fashions of the day are ill-given; and, over the heads of various kinds of intelligence, are emblematical designs: the police reports are illustrated with rather coarse and humorous designs; there are besides some rather rough comical cuts with appropriate letter-press: on the last page there is a view of 200 men passing the Bank of England carrying placards announcing the publication of the "*News*." A marked improvement may be seen in each week's cuts: they become larger in size, and more hold and spirited in execution. A *l'al masqué* given by the Queen and other events were well engraved: notwithstanding, however, the sale did not advance; and the writer has been told that so greatly had Mr. Ingram's resources been exhausted, that it was feared it would be necessary to stop the publication. Mr. Ingram was, however, strongly impressed with the idea that there was no staying the advance of art into all the departments of our social system. It had begun in a few isolated volumes, stretched itself over fields of natural history and science, and penetrated our general literature. At one plunge it was in the depth of the stream of poetry, working with its every current, partaking of the glow and adding to the sparkling of the glorious waters, and so refreshing the very soul of genius, that even Shakespeare came to us clothed with a new beauty, while other kindred poets of our language seemed as it were to have put on festive garments to crown the marriage of the Muses to the Arts. Then it walked abroad among the people, went into the poorer cottages, and visited the humblest homes in cheap guides—and, perhaps, in roughish forms,—but still with illustrative and instructive principles strongly worked upon and admirably developed for the general improvement of the human race. Lastly, it took the merry aspect of fun, frolic, satire, and badinage, and the school of the *Charivari* began to bleed itself with the *gambol* of Henry's Cyclopaedia and Saturday Magazines. He, therefore, persevered; and, on the occasion of the Queen's first tour in Scotland, so great was the general enthusiasm and so novel were the illustrations, that a great demand was created, and from that time the publication might be said to be firmly established.

Although not endowed with a very great or refined knowledge of either art or literature, Mr. Ingram had the faculty of selecting what was interesting to the general public. He was liberal in his treatment of those whom he had occasion to employ, and strictly punctual in his arrangements with artists and others. This and the advancing reputation of the publication made the supply of news and sketches more regular: Mr. John Gilbert (who did much to advance the paper) and other artists of ability were employed, and no cost was spared in sending competent persons to places where extraordinary events were occurring.

During the long period wherein Mr. Ingram kept the management in his own hands, he showed that perseverance which is so often the means of success, in very distinctly keeping his publication to the illustration of the passing events of the day. Respecting the correspondence, he was carefully particular; and in the production of fine-art blocks which had a reasonable interest he did not begrudge any expense.

As the circulation of the *Illustrated London News* grew, Mr. Ingram showed much administrative ability in the arrangement of his now extensive establishments. Old buildings were purchased, demolished, and rebuilt in a substantial form; powerful engines of the best description were purchased; and the whole business was arranged with remarkable regularity. In the midst of this success Mr. Ingram showed the praiseworthy wish to stand well in the estimation of the dwellers in his native place. He purchased land in the neighbourhood, fostered useful institutions, directed attention to sanitary matters, and used surprising exertion in improving the railway communication of the town of Boston and the neighbourhood.

In 1852 the electors of Boston did credit to themselves and honour to him who, as the school-boy and printer's boy, had so often, in simple guise, unnoticed and undistinguished, rambled through their streets, by sending him to represent them in Parliament. In 1857 he was again returned without opposition. Moreover, Mr. Ingram was appointed a magistrate of the county of Herts, where he had considerable property; chairman of the Boston and Sleaford Railway; and deputy-lieutenant of the county of Lincoln. To such distinction had Mr. Ingram arrived by diligence and with energy pursuing a straightforward and useful course.

In future histories of self-made men Mr. Ingram's name will take a prominent place; while his sad fate, at the age of forty-nine, when fortune and position were realized, and he was regarded as one of the "lucky men" of the day, may be made to point a moral, and teach moderation in success and contentment with apparently had fortune.

#### REPORT OF FALL OF IRON FOOT-BRIDGE IN MANCHESTER.

We mentioned last week the fall of an iron foot-bridge over the Rochdale Canal. At the inquest held on Wednesday, the 26th ult., Mr. E. T. Bellhouse, of the Eagle Foundry, Manchester, read the following report:—

"Agreeably with instructions received yesterday, I have carefully examined the foot-bridge which crossed the canal at Prussis-street, Salughton. The clear span of the bridge was 37 feet 6 inches, in addition to 3 feet 6 inches which was taken up by a projecting mass of masonry connected with the stone steps on one side. The width of the path was 3 feet 6 inches. The bridge consisted of two compound trussed girders, of cast and wrought iron, which form the railing or parapet on each side of the path. The structure has been in existence a long time, and was designed at a period when the construction of iron girders was not so well understood as it is now. The combination of wrought and cast-iron trussed girders was proved to be bad in principle at the time of the fatal accident which occurred on the railway near Chester, from the failure of a trussed iron girder bridge. In the present case the construction is decidedly faulty, inasmuch as the cast iron is in tension and the wrought iron in compression, whereas the very opposite should be the case with these materials. The corrosion of the wrought-iron uprights near the bottom materially weakened the girders, as the great majority of them were completely rusted away. These uprights formed the suspension bars, by which the pathway of the bridge was hung to the wrought-iron curved pieces, so that, by their being rusted away, the very principle of the trussed girder was destroyed. When originally made, the bridge might have been strong enough to bear the heavy test to which it was subjected at the time of the accident; but, in its corroded state, it certainly could not have been expected to bear such a test. The overhanging masonry from which the bridge commences on one side is decidedly objectionable. At the time of the accident there may have been a weight of ten tons distributed over the surface of the bridge. This would be equal to a weight of 2½ tons on the centre of each compound trussed girder. I should consider half this weight sufficient load for the girder in its original state."

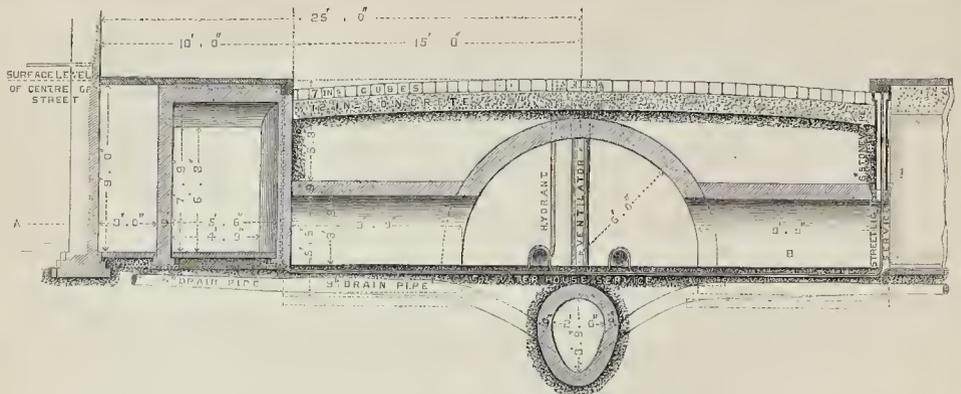
The jury, after a few minutes' deliberation, returned a verdict that the cause of death was accidental; at the same time suggesting that the Rochester Canal Company should replace the bridge by one on an improved principle.

#### THE PUBLIC HEALTH.

By the Health Act of 1858 the Privy Council are empowered to cause inquiry to be made, when they see fit, in relation to the public health in any place; and a medical officer, Mr. Simon, is attached to the Council, and superintends such investigations. His report of the proceedings of 1859, which has recently been issued, deals with several subjects of great interest. Among them is that which has still to be called "the Thames nuisance."

In a paper communicated by Mr. Ord, that gentleman describes the symptoms of a poisoning of the nervous system which occurred very generally in the summer of 1858 among persons employed upon the river, and observes that in 1859, when extensive disinfecting operations were carried on at the mouths of sewers, the sulphuretted hydrogen gas was not in proportion sufficient to the production of the symptoms; and he remarks, that if the emanations of a river in so foul a state do not actually originate disease, and, on the other hand, percolations from cesspools into the soil and wells is proved to be highly injurious, then even this stage in the process of purifying London must be accepted as an improvement upon its previous condition. The putrefactive matter, instead of adding in a thousand places as a focus of disease, is brought into one large aggregate, where it may be more readily submitted to disinfecting processes, and where it finds in the water of the receiving stream elements which appear to disarm it of much of its destructive influence. Happily this source of disease is destined in a very few years to a much more complete banishment.

The state of "the diarrhoea districts of England



THE SUBWAY IN THE NEW STREET TO COVENT GARDEN.

is one of serious import. Dr. Greenhow was commissioned last year, as a temporary inspector, to inquire into their sanitary condition. The towns selected were Coventry, Manchester and Salford, Nottingham, Birmingham, Dudley, Leeds, Wolverhampton, and Merthyr Tydfil. In all of them Dr. Greenhow found it coincident with one or other of these two circumstances—the habitual drinking of impure water, or the tainting of the atmosphere with the products of organic decomposition, especially of human refuse. In other words, in the districts which suffer from high diarrhoeal death-rates the population either breathe or drink a large amount of putrefying animal refuse. He traces street by street, showing how diarrhoea, visiting cleanly districts but slightly, is especially grouped round those spots where there is an accumulation of nightsoil infecting the air in the midst of a dense population, or so placed that the exhalations permeate into the houses, or can be but slowly dispersed into the general atmosphere. The comparative immunity of other districts resembling these in all respects, save the absence of this focal impurity, is found to be so constant, that it seems impossible not to admit the relationship as one of cause and effect; and the medical men affirm that diarrhoeal disease is not only more prevalent, but also more unmanageable, in ill-conditioned places. Dr. Greenhow remarks that the occurrence of epidemic epochs may arise from peculiarities of season giving greater efficacy to local causes, or possibly from the products of decomposition at such periods being different from those at ordinary times. How preventible this disease commonly is may be judged from the success of sanitary improvements in almost all those very districts in reducing the local prevalence of diarrhoea. But, though much has been done, the report shows that it is very far from enough; and it may surely be hoped that the authorities of these towns will take means for removing from their administration “the reproach of preventible but unprevented disease.”

THE SUBWAY IN THE NEW STREET FROM CRANBOURNE-STREET TO COVENT-GARDEN.

The Metropolitan Board of Works has published the plans for the subway in the new street to Covent-garden (commencing at the junction of Long-acre and St. Martin's-lane), which were prepared for them by Mr. Marshall and Mr. Bazalgette, their architect and engineer. We have already briefly described the work as in progress, and now give an engraved section that will sufficiently illustrate it. The following report accompanies the drawings:—

“Having been directed by the Committee on New Streets to prepare a design for a subway under the new street leading from Cranbourne-street to Covent-garden, in which the pipes and mains for gas and water might be laid in such a manner that easy access could be had to them at all times without disturbing the surface or roadway, we now beg to submit the accompanying plans, which we believe to embrace all the desiderata of such an arrangement in the simplest form and at the least possible expense. The plan consists chiefly of a central continuous passage or subway, extending the whole length of the new street, of sufficient dimensions (12 feet by 6 feet 6 inches) to admit of the deposit of any requisite number of gas and water mains, with ample working room for alterations, additions, or repairs. Under the centre of this

passage runs the sewer, to which means of access by man-holes are provided at convenient distances, as also ventilating shafts, gullies, &c. Side-arched passages communicating with the central way will be constructed between every two houses, in which the service-pipes will be carried from the mains into the open areas in front of the houses, and open channels will be left in the footings of the walls dividing the house-vaults, through which the service-pipes will be passed, without any interference with the structural arrangement, and these channels although of small dimensions (4½ inches by 3 inches), being always left open, will act as drains for the admission of air from the open areas into the central passage, which, in conjunction with ventilating shafts at convenient distances into the roadway, will secure an ample current of air for all the purposes of ventilation. An entrance to the main passage will be provided in Rose-street, similar to the ordinary side entrances, but of such dimensions as will allow of the ready admission of the main pipes for gas and water, which, as all the service pipes will be laid in sunken channels, can be readily carried to any required point on a small truck kept in the subway for the purpose. Provisions have also been made for the hydrants or fire-plugs, and for the service of the street-lamps, but these are matters of detail which would doubtless be subjects for final arrangements with the different companies.

Careful estimates have been prepared, showing the cost of the private vaults to the houses, the paving of the foot and carriage ways, and the cost of the ordinary sewer, including dipping, side entrances, ventilating shafts, gullies, &c., by which it appears that the extra cost of constructing the subway as now proposed will not exceed 2½ ds. 11d. per foot run, or about 14. per foot frontage on each house, which, together with the cost of the vaults, sewers, and road, might either be charged at once on those taking up the ground-rents, or be added as an annual charge, in addition to the ground-rent, and which would of course form a part of the annual rental to be sold when the Board should think fit to realize the ground-rents. The estimates in all cases are given at so much per foot run on the frontages, so that the charge on each house may be seen more readily.”

It will be remembered that premiums were offered by the Board for the best designs for a subway, and we may conclude that the plan adopted was the result of careful consideration of all that were submitted.

The following is the estimate given:—

	Quantity.	s.	d.	dec.	£.	s.	d.
<b>SEWER.</b>							
Excavations, Carting away, &c. . . . .	cubic yds.	0'42	2	6	1'05		
Brickwork . . . . .	cubic ft.	4'66	0	11	4'97		
Junction Blocks, 9 in. pipe		..	..	..	0'05		
<b>SUB-WAY.</b>							
Excavations, &c. . . . .	yds.	2'272	2	6	5'98		
(Central Passage) Brickwork . . . . .	cubic ft.	13'160	0	11	12'05		
Excavation, &c. cubic yds. . . . .		0'300	2	6	0'76		
(Side Passage) Brickwork . . . . .	cubic ft.	2'140	0	11	1'95		
<b>CELLARS.</b>							
Excavations, &c. . . . .	cubic yds.	3'554	2	6	8'93		
Brickwork . . . . .	cubic ft.	22'930	0	11	21'02		
Pitching (brick on edge) . . . . .	sq. yds.	0'525	3	6	1'54		
Paving, area 2½ days, yds. . . . .		6'924	4	10	15'85	1	13 3
<b>FORMING OF STREET.</b>							
Excavations . . . . .	cubic yds.	1'02	2	6	2'55		
Concrete . . . . .	cubic yds.	0'83	0	6	4'39		
7 in. Granite Cubes sq. yds. . . . .		1'05	16	0	26'50		
Kerb . . . . .	cubic ft.	0'23	6	5	0'125		
2½ Paving . . . . .	sq. yds.	0'635	4	10	3'21		
3 in. do. . . . .	sq. yds.	0'193	5	7	0'57		
<b>ADD PROPORTION FOR SIDE ENTRANCES, VENTILATORS, &amp;c. &amp;c. . . . .</b>							
Per foot run . . . . .		..	..	..	0'16		
Total cost per foot run of frontage . . . . .		..	..	..	24 19 9		

THE “PROMOTER” LIFE ASSURANCE OFFICES, FLEET STREET.

THESE premises occupy a plot of ground, No. 29, Fleet-street, about 20 feet broad by 50 feet deep, and the rear is in close proximity to the Temple Church. The front is executed entirely in Portland stone, excepting where enriched by polished granite and marble.

On the ground floor there are three openings in the front, two of which are the windows of the public office, and the third (which is the western) the doorway; these openings have stone arches, supported by four red granite columns, which stand on Portland stone pedestals; and between these pedestals are the basement-windows: the capitals of the granite columns are each carved in a different design, one being the grape, another the hop, and a third the rose. The spandrels of the arches are filled in with green marble and red granite, in patterns, the key-stones being bunches of fruit and flowers, which hang over a dentilled string above the ground story, at the ends of which are carved lions' heads. Over this string are three elliptical panels: the outer ones are filled in with red granite, and the middle one with green marble, upon which are carved the name of the office, and the date of its establishment (1826); between these panels is a hand of red granite, with diamond centres filled in with marble.

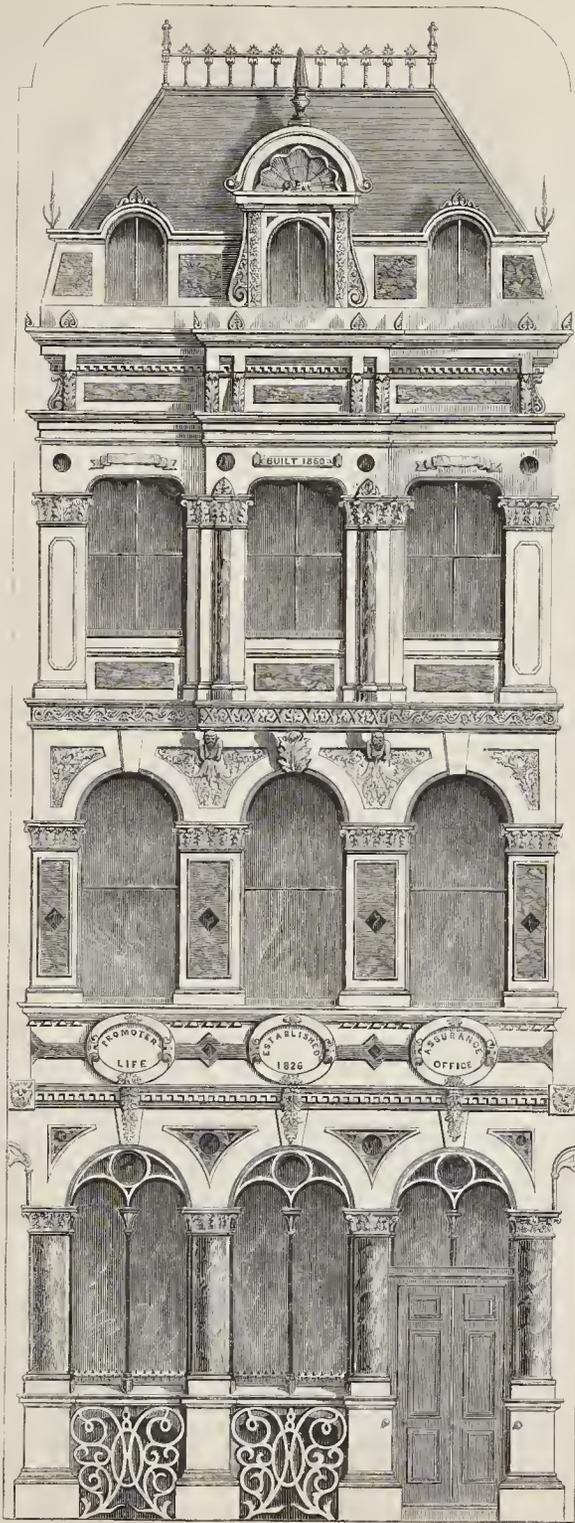
The first-floor openings are divided by stone pilasters, the panels of which are red granite, with green marble diamond centres. The capitals of these pilasters are also all of different design. The arches of these openings are Portland stone, and the spandrels elaborately carved: two of the key-stones are quite plain, and the centre one carved. The sill over first-floor window is supported by two carved figures, projecting forwards.

The openings in the second floor are divided by pilasters, the two end ones being panelled; and in front of the two centre ones stands a slender red granite column, above which are carved bands bearing the date of the erection. Above these is a frieze, upon the string course of which stand consoles, and eary blocks, which form part of the principal cornice, and between these consoles are panels of red granite, set projecting. Above the cornice are the attic windows, between which are slabs of red granite. These windows are arched over,—the capping continued over them: the centre window, which projects, has a cornice and circular pediment, in which there is a carved shell, and in the centre of the pediment is a finial.

The entrance lobby is paved with encaustic tiles, and communicates with the stairs, and by a door to the public office, the sides of which are ornamented by pilasters with enriched caps and frieze. Behind is the secretary's office. The ground floor is constructed of Fox & Barrett's fire-proof flooring. In the basement is a living-room, with a bedroom in the rear; and in the front are lavatories, &c. for clerks, while in the centre is a fire-proof room.

On the first floor is the board-room in front, and doctor's room and lavatory are at the back.

The architect of this new building is Mr. W. G. Bartlett, and the builder Mr. J. Wilson, of Southwark. The work has been carried out by Mr. Allen, the clerk of works. The carving has been executed by Mr. Forsyth, under the superintendence of the architect.



THE "PROMOTER" LIFE ASSURANCE OFFICES, FLEET STREET.—MR. W. G. BARTLETT, ARCHITECT.



APPRENTICESHIP TO TRADES.

LOOKING at a large number of important manufactures and other works in town and country, a great change will be found to have taken place in respect of the training of apprentices to the different branches of trade.

Formerly, in nearly every establishment it was the custom to take a number of apprentices in proportion to the men engaged. This arrangement differed in various trades. In blacksmiths', brass-fitters', cabinet-makers', and other shops in which works were carried forward on an extensive scale, the boys were distributed amongst the men, who for a certain payment taught them their business. Now, however, it seems that, in some of our chief establishments, where hundreds of skilled workmen are engaged, no employment is afforded for apprentices.

At Maudslay & Field's there are no boys; at Messrs. Pellatt's glass works, neither in the cutting-room nor in other parts are there apprentices. Thirty or forty years ago there would have been a large number. In carrying forward great building operations, amongst carpenters, bricklayers, and stonemasons, particularly in the metropolis, scarcely a boy is to be seen; and it would be easy to mention a hundred other instances of this remarkable change.

Year after year works are increasing in extent, and small workshops are becoming more scarce. This naturally raises the question as to how a supply of skilled workmen is to be kept up, and it is also a question what is to become of the boys? This is now a difficulty among the working classes and persons of limited income who have a number of children. From the ages of thirteen to sixteen there are various ways in which boys can get employment which enables them to earn from 5s. to 6s. or 7s. a-week. The nature of their occupation—work in printing-offices, potteries, filling situations as errand-boys, &c. &c.—does not fit them with the means of gaining a livelihood after they have ceased to be boys; and it is owing to this that so many youths, just at the time when their labour ought to become of greater value, are thrown out of work: the skill they have acquired is useless to them: fresh boys are coming into the field with the same miserably prospects.

Although this phase of our present social system has not met with much attention, it is of vast importance, and must, before many years have passed, cause much difficulty and lead to much mischief. It demands the consideration of all who are interested in the matter.

MANCHESTER WAREHOUSE ARCHITECTURE.

We have often asserted that there are duties, that there is a responsibility, incumbent upon all, both as regards the cultivation of their own perceptions, and their influence upon the tastes of others. And we rejoice that this belief appears to have spread beyond the ranks of artists to others who are quite as important in their place—the capitalists who employ their money in building. The *Manchester Review* on this head says,—“Our mercantile and manufacturing towns have hitherto been concentrated within themselves almost everything that could make human habitations repulsive. The lowering smoke, the sulphurous air, the river blacker than Styx, the dire array of coal wharves, the endless lines of sooty brick, are features more or less common to them all. Yet why should the same spirit of trade, which has conjured up places of beauty on the shores of every sea, enumber England with so much unattractive ugliness? No doubt the circumstances which surround business in Venice, Milan, or Florence, were very different from those by which it is attended now. Trade is no longer in the hands of exclusive guilds, or mainly controlled by a few wealthy and educated merchants. It cannot now be conducted without generating volumes of smoke, which reduce all things in heaven and earth to one dingy funeral hue. And, above all, the economy of space and material, enforced by the pressure of competition, might seem to forbid the pursuit of any enterprise loftier than the desperate scramble for existence. But we have already ample proofs that these difficulties are not impossibilities; and we rejoice at the unmistakable signs of a better spirit which may now be observed in our streets. We cannot, indeed, undertake to maintain the correctness or good taste of all that has been done; but there is, at all events, an effort in the right direction; and, in some cases, not always in those of greatest pretensions, considerable success has been achieved. Even if we are to look upon some of these warehouse fronts as only equiva-

lent to the ornamental and fantastic advertisements which are thrust before our eyes everywhere in these days of competition, we should hail with pleasure the spreading conviction that, on the whole, it will pay better to show some respect to the desire for beauty, which we all share more or less, than utterly to set it at defiance. But though such a feeling undoubtedly has its weight, yet we cannot believe it altogether excludes a higher motive. Let us hope that, as Manchester merchants have never been slow to recognise their responsibility for the vast influence which their commerce exerts upon the world at large, they have begun also to feel that no one has a right to use his capital for the purpose of encumbering the world more immediately around him with monstrous forms of ugliness. This is the position which we should like to see more generally taken up. Surely if, as we are assured on high authority, eating and drinking may be done to the glory of God, there is nothing very extravagant in the idea that any one who overshadows a public street with a pile of buildings ought to feel some responsibility for its effects upon passers-by. What right have half-a-dozen rich capitalists to drive us melancholy-mad by hedging up our way with their acres of dirty brick-wall? What right have thieving traders to insist that the increase of our misery shall be commensurate with the increase of their business? Yet this must necessarily be the case wherever a city is swallowing up the country round, unless the men for whom the city mainly grows feel some responsibility for the sights by which they surround us. We rejoice, therefore, that better ideas than of old are manifested in the warehouses of Manchester.” We have often before spoken of these buildings.

“AN ADDRESS TO BUILDING OPERATIVES AND WORKING MEN OF THE WEST RIDING.”

UNDER this title John Plummer, of Kettering, believing that it is “the bounden duty of every person, no matter what may be his station in life, who may possess any experience or information relating to the questions at issue, to speak out frankly and boldly, so that the expression of his honest opinions and convictions may aid the endeavours of those who seek to devise some method of preventing” the repeated contests between labour and capital, or mitigating the baneful influence which they have so often exercised in our attempts at social progress, has issued another little pamphlet, which deserves the consideration of his fellow-operatives.\*

Speaking of the nature of the relations which subsist between the employers and the employed, he says—

“Nothing is more common than the error that the employers can regulate the rate of wages at will, or that they can alter the established customs of a trade at their own pleasure; consequently, the men, as a rule, deem it but just, that they should curtail their power as much as possible; and, in various methods, *deplete* the rate of wages, hours of labour, &c. The men have a perfect right to state on what terms they will work for the employer, and the employer has an equal right to accept or refuse those offers. But if others are willing to work for the employer, on the terms refused by them, then they have no right to interfere farther; otherwise they are guilty of injustice and wrong. Labour is a marketable commodity like anything else, and is worth what it will fetch in the market, and no more. Some kinds of skilled labour may be worth 60s. per week, while other descriptions may be dear at 10s.; but that is no reason why the purchaser of the labour at 10s. should be censured for not giving 60s. for it. Suppose that the grocers of Leeds are selling sugar at 2d. per pound, and they take it in their heads that this is too low a profit, considering the risk and labour involved in the retailing of it, and that they accordingly raise the price to 6d. per pound. What an outcry would arise against them! Well, suppose again, that the purchasers of the sugar, feeling dissatisfied with the increased price, encouraged some tradesman to procure a hogshead of sugar, and sell it at the original rate, and that the combined grocers, hearing of the circumstance, ‘struck’ selling any articles to their customers until they refrained from purchasing of the cheap sugar dealer. Would not the working men of Leeds and the West Riding be the foremost in denouncing such conduct as tyranny and coercion, and hold up to public execration the names of the combined grocers? Yet what is this but the very principle of the present strike amongst the masons of Leeds? The grocers have a perfect right to place any price, say 5d., 9d., or 1s. per pound, on their wares, but they have no right to coerce the public into buying at the increased rates; and the same principle applies exactly to the purchase of labour by the employers. The price of the sugar is regulated by the state of the market: if the stock of sugar be small the prices will be high; and if the stock be large the prices will be low. If the wholesale price of sugar be 10s. per pound, and the grocer sell it for 12s. per pound, he will soon find himself on the road to ruin, for all his dealings will be conducted at a loss. Should the wholesale price rise to 12s. per pound he will not sell so much as former, because the increased price will lessen the demand for it. The same will labour. If the employer gives an increased rate of wages, without raising the price of the labourer’s produce, his profits will fall

in proportion; and if he does raise the price of the produced article, the demand will diminish in exact proportion to the increase of price, and a less amount of labour will be employed.”

On the question of *piece-work* the writer says:—

“We shall have to ascertain whether piece-work is injurious or not to the interests of the operatives. If it is not, then there is an end of the question; and if it is, then we must inquire into the advisability of a strike for the remedy of the same. In paying for labour performed, it will always be found that, as a rule, the industrious men will receive more wages than the indolent. We may suppose the labourers to be paid for their work by the piece, or by the day. If by the piece, it must be clear that those who do most work will receive most wages; if by the day, those who work the larger number of days will receive more than those who work the smaller. Or, if, while each laboured the same number of days, some, by greater assiduity, executed more and better work; so soon as this difference was clearly ascertained, the effort among the capitalists to secure the services of the most efficient workmen could not fail to establish a difference in their wages.\* Now, what the reasons desire to establish at Leeds, Halifax, and elsewhere, is a uniform rate of wages and hours of labour; so that the industrious and skilful operative shall receive no more than the indolent and unskilful. Now it is not reasonable to suppose that an industrious man will care about labouring so hard as the less industrious one, if there be no difference in the amount of wages received by both. Consequently, the quantity and quality of the work performed will deteriorate in proportion to the attempted equality of wages. Good labour will always find a good price, if there be any market for it. The great objection of the employed to piece work is, that it tends to cheapen wages; that a man, who made by time work two articles for a penny, would, under the piece work system, have to make three for the same price. Now is this belief really based on fact? Does the extension of piece-work tend to cheapen wages? I believe that, with a few exceptions, it does not do so, and I will quote the words of Mr. James Howard, the agricultural implement manufacturer, of Bedford, from a lecture delivered by him at Northampton. He says,—“I like the system, as it enables the workman to obtain higher wages, and the master pays for no more and no less than is done. I never had any difficulty in letting a job by piece-work. I hear there are difficulties in other trades, but I think they would vanish when the system came into operation. It is worthy of remark and consideration that those trades have made the greatest progress where piece-work is the rule. It gives the industrious and skilful man a great advantage over the lazy and unskilful one. And such is the result of my own experience. I generally find that, where time-work is used, the inferior workman has to pay for the loss occasioned by the employment of the indolent and incompetent; and that it is the inferior workman who, as a class, desire time-work; while the superior men prefer to labour by the piece. Possibly the increased skill of an intelligent and industrious man may occasion him to produce articles at a quicker rate than formerly, and that he, consequently, may be enabled to do them a little cheaper, so that, by the increased demand, he may be enabled to increase the net total of his weekly earnings; but this does not operate more injuriously—allowing such to be so, which I do not admit—on the interest of the employed, than does the practice of time-work.

Should the men persist in refusing to accept piece-work, then employers at a distance, labouring under no such restriction, would be tempted to accept the offered contracts, and send their own men to perform the labour lost to the others. The enforcement, therefore, of the rule, that piece-work and sub-contracting be prohibited, would tend to seriously cripple the trade of Leeds, and to inflict much suffering and misery on the operatives.”

THE WESTHAM DISTRICT SEWERAGE WORKS.

A REPORT recently made by Mr. Rawlinson states that the whole of the works comprised in the original plan have been let, and are either completed or in hand. The annexed statements show the particulars and cost of works finished, and the particulars and estimated cost of works remaining to be done. The sewers throughout the district have been designed with a view of obtaining the best practical gradients, more especially for tributaries. In some cases, however, it has been necessary to lay the mains with a fall of not more than 1 in 3520, or 18 inches per mile. All sewers terminate at the least practicable depth to ensure proper falls for house drains. A system of ventilation has been adopted which prevents the road dirt falling through the ventilating gratings and impeding the flow in the sewers. An intervening screen, filled with charcoal, filters all the sewer gases, so as to render them innocuous. The outlet sewers in Canning-town have been laid level, to allow of their being used as depositing and deodorising tanks.

There are 27,311 yards, or about 15½ miles of public sewers completed, varying from 3 feet 3 inches by 5 feet 6 inches, to an earthenware pipe of 9 inches in diameter. The cost of such sewers, including manholes, lamp-holes, junctions, &c., has been 38,064l. 13s. 5d., or an average of about 2,450l. per mile. The greatest cost has been 34,10s. 7d. per lineal yard. A portion of tunnel heading, in Barking-road, cost, complete, about 90s. per lineal yard. The cost of sewer, 9 inches in diameter, laid 10 feet deep, is 6s. 10d. per lineal yard.

There remains to be executed a length of 27,025

\* Phenomena of Industrial Life.  
† The first contract was taken in June, 1858.

\* Kettering: Thomas Waddington, Printer, High-street.

yards \* of public sewers, from 3 feet by 2 feet, down to earthenware pipes of 12 inches diameter, at an estimated cost of 26,971*l.*, or an average, including manholes, lampholes, &c., of about 1,800*l.* per mile. The greatest cost per lineal yard will be for sewer in Romford road, about 40*s.* The cost of a 12-inch earthenware pipe laid 8 feet deep will be 7*s.* 3*d.* per yard. In the sewers executed there are 213 manholes, or a means of access to the sewers for flushing and cleansing, and 100 lampholes for means of inspection; making, on an average of the entire length, one opening to the sewers from the surface of the street or road at about each 87 lineal yards. The manholes have step-irons, flushing grooves, and movable covers complete, and about 100 have ventilating chambers, charcoal strainers, and ventilating grates. The ventilation and safety of the sewers and house drains will be secured by 200 points of permanent ventilation, where all sewer gases will be disinfected so as to render any accumulation or emission of foul air impossible, and 9,000 side junctions will be provided for house, yard, and other drains. No system of sewers has been executed up to this time with the same amount of facilities for permanent working and ventilation.

	£.	s.	d.
Works executed as per statement	43,959	5	2
Works not completed as per statement	35,861	0	0
Engineering and superintendence, say	5,615	14	2
Land and compensation, say	3,050	0	0
	8,665	14	2
<b>Total</b>	<b>£88,515</b>	<b>19</b>	<b>4</b>

#### PUBLIC BUILDINGS IN THE PROVINCES.

**Boss.**—At a meeting of the committee for the erection of the Ross Corn Exchange, public rooms, and markets, Mr. Nicholson, of Hereford, architect, two tenders were sent in. The first was from Messrs. Hayes & Son, of Gloucester, for the whole of the works, at 2,912*l.*; the other was from Messrs. Pearson & Son, of Ross, at 2,638*l.* Messrs. Pearson & Son's contract being 27*l.* less than the other, it was unanimously resolved that it be accepted. Each of the builders who tendered offered to substitute a Bath stone front for one in cement, should the committee deem it desirable, for an extra sum of 150*l.* It was decided to make an effort to obtain a Bath stone front.

**Dartford.**—The new cattle-market for this district has just been completed and opened for business. Mr. Bray, the landlord of the Bull, obtained plans from his father, which were submitted to a committee; and, being approved by them, the works were accordingly determined upon. The place selected was contiguous to the Bull yard, and the building was entrusted to the Messrs. J. C. & T. Waller, of Dartford, Mr. Bray, sen., acting as architect. The new building will accommodate about 300 oxen and 1,500 sheep. The market is so arranged that the beasts are placed round, the sheep being in the centre in iron pens, constructed by Mr. Howe, agricultural implement maker. The total cost of the erection was over 600*l.*

**Midsomer-Norton.**—The new market-place here has been opened, and a monthly market inaugurated. Messrs. Fosters & Wood, of Bristol, prepared the plan of the market-place; and the contract for the erection of the building was let to Mr. Shearn, of Midsomer-Norton, and Mr. Stamp, of Dunkerton. The market-house, which has been erected in the centre of the town, has two fronts, one towards "the Island," and the other towards the road to Stratton. It is Italian in character, and built of the yellow lias stone of the neighbourhood, with freestone dressings, and band courses of Pennant stone. The doors and windows being arched heads; the upper windows being in ranges, and supported by freestone columns, with carved capitals. The market-place occupies the whole of the ground-floor; and a public-room, committee-room, and clerk's office, are on the first floor over it. A separate entrance on the Stratton-street side leads, by a flight of stone steps, to the public-room, which is calculated to accommodate about 300 persons. It has a coved ceiling. The whole is lighted with gas. The gas-fittings were supplied by Messrs. Davis & Son, of Bath.

**Cambridge.**—The tender of Messrs. Bell & Son

\* The completed sewers, and those to be completed, will measure together about 30 miles. The commissioners' scheme would have measured only 12,157 yards, or rather less than seven miles, and was estimated to cost 20,000*l.*

for the new Townhall has been accepted, and a beginning, according to the local *Chronicle*, will be made at once. It is hoped that in a year from this time the new rooms will be ready for use.

**Loughborough.**—The new Police Station, which was to be opened on the 27th ult., comprises a general classification. All the apartments and conveniences, excepting the bed-rooms, are arranged on the ground-floor. Next to Wood-street is the main entrance to the building and courthouse, on the right of which is the clerk's office and magistrates' retiring-room, communicating with each other as well as with the court or bench. On the left is arranged the residence for the superintendent of police. The building throughout has been fitted up with gas, the court being lighted with three ornamental star-lights. The magistrates' court and cells are heated from hot-water pipes by Mr. Messenger's triangular tubular boiler. The buildings are executed of red and white brick with Bath and native stone dressings, with rusticated base. The frontage next Wood-gate is 47 feet, side front facing the right of road 190 feet. The style adopted is the modern Italian. The architects were Messrs. Bellamy & Hardy, of Lincoln. The same architects have been engaged by the Savings' Bank Committee for their proposed new bank. The works of the Station have been executed by Messrs. Pepper & Dolman, of Spalding; the ironwork by Messrs. S. Frisby & Son, of Loughborough. The clerk of the works was Mr. John Savill.

**Manchester.**—The corporation of this city have accepted the tender of Mr. James Hayward, jun., Phoenix Foundry, Derby, for the new market about to be erected in the London-road, from the design of Mr. J. L. Lynde, city surveyor. The same firm recently supplied the cast-iron ornamental entrance-gates to the Queen's Park.

**Salford.**—Rapid progress is being made with extensive additions to Salford Town-hall, but in the rear of the building. There will be a frontage of more than 200 feet to West Market-street, of two stories high. Outside, the building will be plain; inside, some care will be bestowed on decoration. Mr. Evans, the district surveyor, prepared the plans. Mr. Sothorn has the contract, the amount being about 6,000*l.* The new building will provide offices for the town-clerk, the surveyor, committee-rooms, large room for the Court of Record, with retiring-rooms, &c., and a new council chamber, 52 feet by 28 feet, and about 22 feet high.

**Derby.**—The foundation-stone of the new Corn Exchange, in Albert-street, has been laid by the mayor. The new building will stand about fifty yards from the Royal Hotel, in Albert-street at the junction of the great frontage in Princess-street, having its greatest frontage in Albert-street, leading to the Market. At the junction of the two streets is the principal entrance. The ground plan consists of a circular vestibule, 26 feet in diameter in the clear, having three large entrances from the two streets already named, and all verging to one centre. From the central vestibule are entered the various offices; the telegraph-office, ante or cloak rooms, the large concert-room, and the principal staircase to the rooms above. On the Albert-street frontage, owing to an irregularity in the site, various offices are obtained, together with cloak-rooms and entrances to the large hall. A private entrance for reserved seats is also obtained, having cloak-rooms on each side of it, and possessing separate entrances from thence into the large hall. These front offices are only proposed to be one story in height, with a lead flat roof and stone parapet, so that windows are obtained in the hall above them. There will be two news-rooms, one circular, 26 feet in diameter, lighted by three stone windows, and communicating through sliding doors with another room, 20 feet by 17 feet. The dimensions of the large hall are 110 feet by 55 feet. The committee decided upon adopting designs recommended by Mr. Wilson, for the interior, at an increased cost of upwards of 300*l.* This will the Corn Exchange, and other purposes, there being in this case a double instead of a single roof, a ceiling divided into compartments, which are again sub-divided into domes, the flat surface at the top being filled with glass, and the sides covered and divided into ornamental panels, starting from a moulded plaster cornice, which is supported by ornamented plaster corbels sprung from the sides of the hall. The gallery runs up the two sides parallel with the walls, but is not opposite the orchestra is semi-circular, and it is capable of seating about 400 persons. The exterior will be erected with bricks and stone dress-

ings, in the Italian style of architecture. Mr. Benjamin Wilson furnished the plans and design. The tenders for sewerage works in Derby having been opened by the Sewerage Committee of the local Board of Health, Mr. William Hyslop's, amounting to 1,468*l.* 8*s.* 1*d.*, being the lowest, was accepted.

#### SCOTLAND.

**Galashiels.**—There has been a grand Masonic demonstration here at the laying of the foundation stones of the Galashiels Public Hall and Corn Exchange. The public hall will be, externally, 75 feet long by 45 feet in width, and it will have a spire. The plans were designed by Mr. Lessells, architect, Edinburgh, and the builders are Messrs. Herbertson & Son, their estimate being 2,368*l.*, which includes the plaster and plumber work. The hall proper is on the second story, the lower part being set apart for sheriff and police-court rooms, committee-room, kitchen, and other necessary accommodation. The dimensions of the public hall are 70 feet by 40 feet. The building is of freestone in front. The windows of the hall are arched with cornices above, and the roof is to be finished with a block cornice. The orchestra gallery will be placed in a recess in the centre of the south wall. The large hall will accommodate 500 people seated at dinner. The Corn Exchange, erected by Messrs. B. & A. Stirling, of this town, is a plain erection. The length is 59 feet, and the width 30 feet; height 22 feet to the tie joists. The roof below this is open, and of dressed wood, which will be stained and varnished. It is lighted entirely from the roof, and like the other erection, has a freestone front, the back part and side walls being of the common blue stone of the greywacke formation of the district. This building also contains a committee-room and other accommodation for the use of the farmers and grain dealers, and it can be let for public meetings, concerts, &c.

**Leith.**—Some time ago competitive plans were obtained for a new Corn Exchange for Leith, and the competition resulted in the adoption of designs by Messrs. Peddie & Kincaid. Contracts have now been entered into for the work, and the erection of the building will be proceeded with immediately. The site is the angle between Baltic-street and Constitution-street. The building is in the Roman style, and includes a corn-hall or exchange, 110 feet in length, and 70 feet in breadth. This apartment has a roof of one span, supported on semicircular ribs of laminated timber. Light will be admitted entirely from the roof, and the hall will be so finished as to afford accommodation for public meetings, &c. This hall occupies the rear of the building. That portion of the structure fronting Baltic-street includes offices in connection with the exchange, and five or six suites of chambers for merchants. Externally, the building comprises a large octagonal tower, placed at the junction of the two streets. This tower rises one story above the other elevations of the exchange, and is finished by a dome surmounted by a small octagonal lantern: the rest of the building is of two stories, each areaded. The whole will be executed in polished ashlar, Kilmurree stone being used. The contracts, which amount to 4,000*l.*, are several hundreds below the architect's estimate. The contractors are Mr. George Lorimer for the mason-work, and Messrs. Henderson & Wilson for the wright-work.

#### CHURCH-BUILDING NEWS.

**Ipswich.**—The south aisle of St. Matthew's Church was, at the commencement of the present year, extended as far as the east end of the chancel, and the latter restored and benched, the new part being also filled with open seats. The old part of the church is of a Late Perpendicular date, and the additions are carried out in the same style. The roof of the new part of the south aisle is of a low pitch, with moulded tie-beams, supported by corbels carried by angels. Pierced tracery fills in the space above the tie-beams, and carved bosses are placed at the intersection of the intermediate timbers. The mouldings are ornamented throughout with four-leaved patras and other carving. More funds were collected than required for these works, and it has now been decided to hench the nave and north aisle with square-headed benches, and to build a new south porch. The total cost of the works will amount to between 1,100*l.* and 1,200*l.*, and the increased accommodation will exceed 200 sittings. The contractor for the general work is Mr. Garnham; for the pulpit and reading-desk (of carved oak and stone bases), Mr. Ringham; for the stone work, Mr. Newton; for the plumbing and glazing, Mr. Manning; and for the henching of the nave and north aisle, Mr. Bacon,—all of Ipswich.

Messrs. Hart & Son supplied the brass gas standards and altar railing. The architect is Mr. R. M. Phipson, of Ipswich.

**Brighton.**—The chief stone of the Church of St. Michael, situated in the Montpelier-road, opposite the Temple, has been laid by the Vicar of Brighton. The founders of this church are two ladies, who have contributed 4,500*l.* Mr. Pabian was the contractor. The edifice is of brick, and will have 550 sittings, 350 free. The site cost 1,250*l.*

**Upper Sapey (Herefordshire).**—The parish church of Upper Sapey has been closed for some months, in order that it might undergo a renovation and improvement; and it has now been reopened. Previously to its restoration the church consisted of chancel, nave, south porch, and western bell turret. The church being in a very damp, dilapidated, and unseemly state, and the turret and roof showing unmistakable signs of giving way, Mr. W. J. Hopkins, of this city, says the *Hereford Times*, was called to report upon the best method of effecting a thorough restoration of the edifice. The plans prepared by him were subsequently adopted, and the work has been carried out, under his superintendence, by Mr. Warner, of Leigh. As much of the old church as possible has been preserved, including the greater portion of the walls, the doorways, and original windows. The chancel arch, being inconveniently small, has been removed to the west end, where it forms an opening into the tower. The latter is entirely new: the belfry stage, of wood, is surmounted by a shingled spire. A three-light middle-pointed window has been inserted at the east end, and a two-light window of the same style on each side of the nave. Stained glass for the east window is being prepared by Mr. Preedy. The single light in the north wall was transferred thither from the west end. The roofs are open, that in the chancel being of oak, and the nave roof of deal. There is a lofty pointed chancel arch, formed of alternate courses of light and dark tinted stone. The open seats in the nave are of deal, of a simple design. All the woodwork is simply varnished. The floor of the nave is laid with Maw's red and black tiles. Minton's tiles, the gift of the Rev. E. Addenbrooke, are used in the chancel: they have a blue and white border. In front of the altar is a row of memorial tiles, bearing inscriptions to the members of the Addenbrooke family, many of whom are buried in the church, and to whose memory were some stone slabs, for which the tiles are a substitute. The stained window is given by Mrs. Newman. The exterior of the walls has been relieved of the plaster and whitewash, and pointed and drained. The roofs are covered with Broseley tiles. The total cost of the renovations will approach 1,000*l.* Sir Thomas Winghamton, Bart., gave the sum of 500*l.* towards the restoration fund: the recently-appointed rector, the Rev. Phipps Onslow, gave 150*l.*; Mrs. Newman, 100*l.*

**Corris.**—Corris and Machyulleb are two scattered hamlets, which generally go by the simple designation of Corris, and are situated in a wild and romantic spot at the south-east extremity of the county of Merioneth. Here a new church has been erected. The style is Early English. The windows, which are nine in number, are of the concrete form, and the one in the chancel is of stained glass. The roof is of stained pitch pine, and the floor is of flags, obtained at the adjacent quarry at Genwern. The edifice was erected at the cost of Lord and Lady Vane, to the memory of their relative, the late Sir John Edwards, Bart.

**Wrexham (Denbighshire).**—The chancel of the new church of St. Mark, Wrexham, has lately been decorated in polychrome. The prevailing tone is murrey. The central panel over the altar, on a light green ground, presents the sacramental emblems, the eorn and vine, in a cruciform arrangement, encircling a white cross, interlaced with the sacred monogram, on a crimson ground, diapered in gold. On the right of the central panel are the Creed and Lord's Prayer; on the left the two tables of the Law in old church text, emblazoned in gold and colours, and surrounded by borders. Above these in gold medallions are the emblems of the four evangelists in panels, which contain also representations of the Lily, surrounded by a border of light grey. The designs were furnished by Mr. Fisher, of the firm of Harland & Fisher, Southampton-street, London, and executed under his direction.

**Lutterworth.**—The church of Ashby Magna, near Lutterworth, has been restored and reopened. In the present year a public subscription, amounting to something like 400*l.*, having been raised, it was determined to restore the church as far as the funds would allow. Mr. Firm, of Leicester,

was appointed to carry out the alterations, and under his management, and that of Mr. Clifton, who has supplied the woodwork, the restoration has been partially completed. The windows on the south side have been altered, and a new one inserted in the place of the southern porch. The gallery has also been taken down, and open deal varnished seats have been substituted for the pews. The church will now accommodate nearly 300 persons. Something has also been done to the walls, columns, and arches, the whitewash having been scraped off, and the original stonework exposed to view. A carved pulpit of Bath stone has been erected, and a font of similar design, together with a new vestry adjoining the chancel.

**Horsley.**—The work of church restoration, now so busily carried on in Derbyshire, has been brought to its completion as far as Horsley is concerned. The old church, dedicated to St. Clement, has undergone a thorough renovation, and been formally re-opened for Divine worship. The total cost of renovation has been about 2,000*l.* The work has been carried out by Messrs. Kerry and Allen, of Smalley, the contractors for the stone and wood work. The vicar has been engaged in carrying out the architectural details. The principal portion of the cost of the work has been defrayed by Miss Eliza Sitwell and other members of the Sitwell family.

**Rochdale.**—The new church recently erected at Norden, near Rochdale, has been opened for Divine service. The church is a plain structure, with a spire, a nave, and a north aisle separated from the nave by arches. The seats are open stalls, and will accommodate 600 people. The cost has been between 2,000*l.* and 3,000*l.* Mr. Slaw, of Saddleworth, was the architect. A small stained glass window, at the north end of the church, was presented by him, in which are inscribed the names of the chief promoters of the undertaking. Another small stained glass window, in memory of the Rev. Mr. Hodgson, has been presented by Mr. T. Ferrand Dearden, who has also presented the church with a baptismal font.

**Colne.**—The cemetery at this town has been completed, and was lately consecrated by the Bishop of Manchester. The cemetery contains about six acres of sloping ground, and the Board have erected two chapels, each 30 feet by 16 feet inside, with tower and spire between them, 80 feet high; also a lodge at the entrance gates. The whole has been designed and carried out by Mr. Pritchett, of Darlington, whose design was selected in competition about a year ago.

#### ST. PATRICK'S CATHEDRAL, DUBLIN.

A WRITER in *Scander's News-Letter*, commenting at some length on the letter in our pages signed "Medievalist" (p. 597), denies its correctness, and calls it "an ebullition of ill-temper and envious feelings." In the interest of architecture and our national antiquities, we have one question to ask for ourselves,—are the works under the direction of a properly qualified and experienced architect?—a question we have before now put. We have the greatest respect for the fairness and good intentions of the *News-Letter*, and have no doubt it will assist in obtaining for us a distinct reply. The works ought not to be allowed to go on at St. Patrick's, without satisfactory guarantee that they will be executed with skill, conscientiousness, and loving care.

In our notice last week of works progressing in Ireland, the fifth paragraph should commence, "St. Audeon's Church, Dublin, has been recently partly restored." The printers turned it into "St. Andrew's." St. Andrew's is at present a ruin, having been destroyed by fire, as already noticed.

#### TORQUAY INFIRMARY.

A WING has lately been added to the Infirmary in this town, for the reception of fever patients. Plans were advertised for, and those sent in by Mr. Edward Appleton, architect, of Torquay, were approved, and have been carried out. The new buildings consist of rooms in the basement, for offices, &c., not yet to be fitted up: on the ground-floor level are two convalescent wards, closet and lavatory, entrance-porch, and a room for the surgeon.

The upper floor is occupied by the fever wards, two in number, with nurses' rooms, lavatories, and water-closets; the two latter in a separate building, with the lavatories placed between the wards and the water-closets, and thorough ventilation provided for in each.

Upwards of 1,500 cubic feet of space is allowed for each patient: the wards are 24 feet wide and

16 feet high, with windows carried up to within a foot of the ceiling on three sides, and the fourth side is provided with ventilating screens of perforated zinc, controlled by flaps: in addition to this an exhausting-shaft passes over each line of beds, above the ceiling, with ventilators at intervals; and these communicate with a flue carried up in the chimney stack.

The heating is by open fireplaces. The probable cost, including fittings and furniture, will be about 90*l.* per patient. The walling is of limestone, hammer-dressed, with tooled main quoins, &c.

Mr. John Harvey, of Melville-place, Torquay, is the builder.

#### TRAMWAYS ON ROADS WITH CARRIAGES PROPELLED BY MANUAL LABOUR.

SIR,—Both publicly and privately I have long suggested the adoption of tramways for roads as well as for streets, from one end of the island to the other. My plan was only adopting that which has been so long and successfully tried in Friday-street, Cheapside, the Commercial-road, up Reigate-hill, &c., viz., by laying down a double line of the long granite kerb-stone of the streets in a double line for the wheels of all carriages to run on. This plan is cheap, safe, practicable, and humane,—dispensing with half the horses. The produce of the land they consume would afford employment and bread for all unskilled labourers, disbanded militia, discharged and discarded prisoners without end. Well, Sir, an ingenious American has at last persuaded us, at Birkenhead, and at Burton-on-Trent, to adopt the tramway of New York and Boston, on two lines of iron; but surely these are both expensive and perishable, compared with granite. No matter: only give us a rail; and I have great pleasure in presenting to the public three or four earnings, easily worked by manual labour, promising them both health and pleasure. I have amused myself with the subject, and, from experiments made on common roads, am pretty certain that on rails they will lay the foundation of improvements that may, ere long, supersede, in a degree, both steam and horses. I anticipate the return of much traffic and pleasure, now lost, on our public roads.

D. F. W.

#### A BRIEF HISTORY OF THE GREAT BELLS.

SIR.—Upwards of four years have passed away since the first great bell, called "Big Ben," for the clock at Westminster Palace, was cast; and many readers will remember that, while he was temporarily suspended from a beam at the foot of the tower, in October, 1857, he received a death blow. During the month of May, 1858, his successor, Big Ben the Second, was produced; and, having been raised to his chamber in the clock-tower in October, and subsequently fixed to the large iron beam, he proclaimed the hour at the bidding of the clock on or about the 12th of July, 1859. But on a certain day in the month of September, in the same year, he was silenced also. So much for the performances of the two Big Bens.

A few days after the latter occurrence, a suggestion from a correspondent appeared in the leading journal to the following effect:—"Let the clock strike the hours, *pro tem*, upon the largest of the four bells, intended for the quarter chimes; the other bells being mute." Time, however, still rolled on silently; and thus it has continued up to this moment; so that about twelve months have elapsed since the clock struck—a space of time more than sufficient for designing, casting, and hanging out of the finest peals of twelve bells in the world.

With respect to the condition of the great bell, the "Reports" by Dr. Tyndall, Dr. Percy, and the Astronomer Royal, may be interesting so far as they relate to the cavities, cracks, and composition of the bell. But, whatever may be the opinion of these eminent professors as to whether it may again be made use of without any risk of breaking, the all-important question is,— "What is the condition of the bell in a musical point of view?" I must say, then, that it is by no means satisfactory; for, though we may perceive no jarring, nor grating of surfaces of the cracks; and though the note of the bell may have been called pure, it is defective, very dull, and, in my opinion, incurable. The truth is, that, since this Big Ben the Second was fixed in the clock-tower, he has never given out his "fundamental note" with its proper complement of "harmonics;" and this is the reason why the sound emitted does not "ring" like that of a perfect bell. In other words, this suggests the reason why the sound which strikes the ear is destitute of grandeur and richness of tone. Nevertheless, for the



## Miscellaneous.

**HOSPITAL CONSTRUCTION.**—The second note in Dr. Combe's plan for a hospital (p. 606, ante), should stand thus:—"The latest, and, as far as I know, the best and completest detail of these principles is to be found in the various papers by Mr. Robertson, of Manchester; in those which have appeared in the *Builder*, especially three in August and September of 1858; and in the papers by Miss Nightingale which were read to the Social Science Association at Liverpool." The omission by the printer of the words "in those" attributed to Dr. Robertson, erroneously, the authorship of our leaders of August and September, 1858. Next week we shall give some observations on Dr. Combe's plan. It should be quite superfluous to say that we do not necessarily agree in all the views the statement of which by correspondents we insert. Out of differences and discussion come certainty and truth.

**IRON BRIDGE AT BORDEAUX.**—This bridge rests upon ten piers about 230 feet apart, and is formed of enormous iron tubes. The columns which compose the piers are 75 feet high, and terminate in a handsome capital of entirely new design, rising some 60 feet above the ordinary level of the river. Many difficulties which were thought to be well-nigh insuperable have been overcome by the use of hydraulic rams, and some very ingenious apparatus invented by Mr. Nesven, the engineer in charge of the works. The bridge was commenced in 1858, and it is hoped that the present year will suffice for its completion. An engraving of it from a photograph appeared in the *Illustrated Times*.

**EPSOM SALTS.**—The spring of mineral water at Epsom is said to have been first noticed in Queen Elizabeth's days. It seems, however, to have had an older origin, and to have been found by one Henry Wicker in the year 1618. Its property as a purgative was first ascertained, according to Aubrey, about 1630. Its virtue depends on the presence of sulphate of magnesia, which was obtained from this water by chemical processes, and sold under the name of Epsom salts. The water is colourless and pellucid; it has no odour, and but a slight saline taste. The quantity of saline matter held in solution in this water is variable. Dr. Lister obtained from a gallon of the Epsom water taken up during a dry season one ounce and a half of solid substance; while Dr. Lucas, on evaporating a similar quantity of the water, procured but five drachms and one scruple of residuum.

**BRANCH OF LADIES' SANITARY ASSOCIATION FOR MANCHESTER.**—A meeting has been held in the Manchester Townhall, at which Mrs. William Fison, of Brighton, read a paper, and urged the formation of a branch of the Ladies' Association, established in London four years ago, mainly for the improvement of the homes of the poorer classes. The Rev. James Bardsley, M.A., introduced Mrs. Fison to the audience. The Association, she said, was formed by a few ladies who desired to alleviate the physical condition of the poor, and to popularize information on sanitary subjects. It was most important to provide counter attractions to the beer-shop and gin palace; and, wherever practicable, newsrooms should be established, where the working man could see the papers and have a cup of cheap coffee, like a gentleman at his club, without being driven to more objectionable places for them. Mrs. Fison pointed with sorrow to the sad violation of the Creator's immutable laws amongst the poor, and put to shame those landlords who sacrificed precious life and health by ill-ventilated dwellings, possessing neither pure water nor good drainage, so essential to life. She quoted the emphatic words of Professor Owen:—"It is proved to be practical to make those garments, the frail bodies of the population, last fully ten years, or probably one-third longer, in the wilderness of this world." Dr. Southwood Smith asserted with confidence that the cause of the depression which induced the poor to drink was bad air. Crime was not the necessary attendant of poverty or low wages; but it was most abundant in crowded towns and ill-drained localities. The encouraging fact was mentioned that the Religious Tract Society was about to publish a sanitary series of tracts. The cheap pamphlets of the Ladies' Sanitary Association, she remarked, deserved the widest publicity. The titles of a few, from a halfpenny to twopenny in price, are, "The Worth of Fresh Air," "The Use of Pure Water," "The Value of Good Food," "The Cheap Doctor," with others devoted to the feeding and clothing of infants. In Brighton and other places the happiest results had followed from these sanitary labours.

**BAZAARS AND LOTTERIES.**—It has hitherto been not unusual for the articles left unsold at bazaars, held for building or charitable purposes, to be disposed of afterwards by lottery. It appears, however, that that method of dealing with them is quite illegal, and, if practised in future, may be attended by unpleasant results. The Solicitor of the Treasury has just pointed out to some promoters of a bazaar at Stourbridge, that their proposal to hold a lottery would render them liable to heavy penalties, and it has been found necessary to abandon the scheme.

**PUBLIC OPENING OF THE VICTORIA TERMINUS AND THAMES BRIDGE.**—The new terminus at Finsbury and the railway bridge across the Thames, near Battersea Park, with the lines of rail in connection with the Crystal Palace and Brighton railways, were all opened to the public on the 1st instant. Progress, we may here note, is also being made with another railway bridge a little above Battersea and Cremorne, by means of which and the connecting lines of rail the railways on the south side will be brought into junction with those on the north through the short West of London line. Great changes in the railway conveyance centering in the metropolis are thus on the eve of occurrence. Further progress is also being made with the foundation cylinders of the Charing-cross railway bridge on the Surrey side.

**HOUSE BUILDING IN CHINA.**—The erection of a house is well worth watching, though to be next door to one is dreadful, as the workmen keep time to a barbarous, monotonous, drawing tune the whole time. A scaffold of 14 feet having been erected, a dozen boys mount upon it, and by means of a heavy stone drive down a row of piles in order to make a firm foundation. Now it is this pile-driving that is so objectionable. The leader of the gang keeps time by singing a song which no pen of mine can describe. Attached to the stone are ropes, so that they (each holding one) can drop it on the head of the pile. After five blows they join in chorus—such a chorus! At ten strokes they stop, waiting for their leader to sing a verse solo; then the chorus and ten thumps; then a solo and a rest. And so they keep on from five a.m. to five p.m.—*The Englishman in China*.

**THE GLASS TRADE.**—Messrs. Sowerby & Neville, of Gateshead, says the *Gateshead Observer*, are recorded among the patentees of the month. Their patent is for "moulds for making pressed glass." This invention consists in holding the body of the mould down to the bottom thereof by means of pins or trunnions, which enter suitable holes made for their reception in the bottom; and in forming a flange on the top of the plug to determine the thickness of the glass at the top or rim: the inventors are thus enabled to dispense with the top ring, upright hinge, and catch.—The workmen of Messrs. Sowerby & Neville's flint-glass trade have come to an arrangement with their employers yet, and are therefore still out on strike.—The representatives of the Belgian glass-trade have been proposing to the French government, since the treaty with England, that French glass should be admitted into Belgium *duty free*, on condition that Belgian glass, on its importation into France, should pay a duty of not more than 9 per cent.

**THE NEW CAMBER DRY DOCK FOR PORTSMOUTH.**—The foundation stone of this new dock has been laid. By the Act obtained for its formation, the council were empowered to borrow 30,000*l.* upon the security of the borough rate; and the contract for the construction of the dock was taken by Messrs. Bottomley and Hanson, at between 28,000*l.* and 29,000*l.* Since the undertaking was commenced the contractors have dissolved partnership, and the work is now being carried on solely by Mr. William Hanson, under the superintendence of Mr. C. W. E. Pineo, the engineer to the Corporation. The dock is to be 345 feet long, by 70 feet wide, and there is to be a concrete foundation of 4 feet 6 inches thick. The greatest depth will be 23 feet 6 inches; and it is calculated that the dock will hold a vessel of upwards of 2,000 tons. The materials, &c., required for the work are as follows:—Granite from Cornwall, 10,700 cubic feet; Roach Portland stone, 101,000 cubic feet; Purbeck stone, 12,000 cubic feet; Memel timber, 500 loads; excavation to be removed, 25,000 cubic yards; clay for dam, 1,700 cubic yards. Only about one-third of the bottom of the dock has yet been completed. Up to the present time about 2,000 tons of worked stone is on the ground, varying in weight from six tons downwards. The unfavourable weather which has prevailed during the late summer season greatly retarded the progress of the works, and the excavations, in consequence, were made with great difficulty.

**PROJECTED RAILWAY IN JERSEY.**—A number of gentlemen interested in the establishment of a railway between the towns of St. Aubin and St. Helier met last week in the town of St. Helier, to consider this subject, when a committee was formed, and the States of the Island, it is said, are to be pressed to facilitate the undertaking.

**HEREFORD OLD TOWN-HALL.**—Mr. Clayton states that the block with the use of which we were favoured was made from his restoration,—a restoration founded on the present remains and an old vignette engraving on the corner of Price's Map of the City. Mr. Clayton adds a long letter denying the correctness of Mr. Anthony's statements. We do not find in it, however, sufficient matter of general interest to justify the devotion of the space it would require.

**A NEW CHURCH AT PADDINGTON.**—The foundation-stone of the church of St. Michael and All Angels, in the district parish of St. John, Paddington, has been laid. Mr. Hawkins, of Stanhope-street, is the architect of the edifice, which is designed to be a chapel of ease, capable of containing about 1,000 free seats.

**THE LATE MR. J. C. WELLS, ARCHITECT, UNITED STATES.**—We have to mention the death of this gentleman, a prominent architect of New York, on board an English steamer, bound for his country, of which Mr. Wells was a native. He died two hours before the vessel reached land. He designed several of the public buildings of New York, including Dr. Phillips's church on the Fifth Avenue. Various large stores, and a court-house at Wilkesbarre, Pennsylvania, also illustrate his skill. He held the office of treasurer in the American Institute of Architects.

**THE LATE MR. THOMAS MOTLEY, C.E.**—This gentleman died at Washington, U.S., on the 13th of July last, aged seventy-six. He was formerly of Bristol, and was the projector of the design of the wrought-iron arch bridge over the Avon from the rocks at Clifton, a model of which was exhibited many years ago. He went to America about seven years since, in hope of getting his plans adopted in that country. Last year, in consequence of the severity of the previous winter, he became affected with a disease of the hand, underwent the amputation of three of his fingers, and seems never to have thoroughly recovered from the shock. He was interred in the Friends' burial-ground at Washington, and his remains were attended to the grave by the mayor of Washington, several official persons connected with the Government works, and a number of friends and acquaintances, by whom he was highly respected and much regretted.

**THE LATE MR. JOSEPH LOCKE.**—The *Daily News* gives expression to the opinions of many who say,—"So long as Joseph Locke lived and laughed and laboured amongst us, there were obvious reasons why we should abstain from challenging the neglect which he experienced in high quarters, and his exclusion from office, court, and coterie. When we think of the rubbish which lofty places are filled, of the imbeciles and impostors we are annually called on to pay for doing mischief or doing nothing, and who are daily jobbed into every species of public preferment, we cannot feel surprised that the presence of a hard-beated, clear-sighted, independent-minded man like the late Mr. Locke should have been deprecated diligently, and carefully avoided. If posts of power and responsibility were once thrown open to middle-class men who have proved themselves fit for them, the craft of the Ephesians would be in danger, and the great imposture would fear to be set at naught. But the sordid prudence which exigently seeks to preserve power and emolument in close monopoly hardly requires that the impudent and dishonest rule should be applied as strictly to other matters. Social courtesies and personal marks of distinction convey, indeed, to none but the most ignorant the idea of recognition of public service. A profligate or a fool, if he be ever sprung from the right loins, is certain of either or both. Usefulness, perseverance, consistency, energy, inventiveness, talent, or the universal respect of the community, are, we will understand, but dust in the balance where the broad ribbon of the Bath or the rank of Privy Councillor is in question; and as for haronecties, they are professedly given as prizes for the greatest number of hedges and ditches of which the contributors can show themselves to be the owners, great works and great virtues having nothing whatever to do with the matter. For engineering services rendered to France, Mr. Locke was decorated in that country with the cross of the Legion of Honour; in England, where he had earned ten times the gratitude and reward, the rule of the Government is to spurn and ignore such men."

**THE MASONS' STRIKE IN LEEDS.**—We are glad to learn that there is some probability of this strike being shortly brought to a termination, as the masters and the operatives have agreed to submit the matters in dispute to arbitration.

**EMPLOYMENT OF WOMEN AT THE GREAT NORTHERN RAILWAY.**—The abandonment of the coal trade by the Great Northern Railway Company is the occasion of some stir at King's-cross. The directors have given up the business to others, for whom they have recently built offices in the station. The circulars now issuing are said to have required the united labour of twenty-six clerks (all of whom are young women) a full fortnight to fold and address them, while the postage-stamps alone have absorbed £257.

**ESSEX ARCHÆOLOGICAL SOCIETY.**—The annual general meeting of this society was held on 27th ult., in the Old Castle, Colchester. It was the first occasion for opening the new museum of antiquities in the Roman Chapel, which has been granted by Mr. Charles Gray Round, and a large number of the gentry and clergy of Essex attended: a great many ladies also were present. The Rev. Charles Merivale, B.D., read a paper entitled "Notes of the Roman Conquest of Essex." Mr. Merivale controverted the statement of Professor Airey, that Julius Cæsar landed in Essex, and endeavoured to show that history and popular belief were right in fixing upon Kent as the place where the Roman conqueror landed. The Rev. J. H. Marsden next read a paper on "Greek Coins found in Colchester." Mr. Duncan, in a paper on "The Roman Topography of Colchester," pointed out the several localities where the tessellated pavements and other Roman antiquities had been discovered. The visitors inspected the antiquities of the town, and dined together at the Cups Hotel.

**STATUES AND MONUMENTS.**—The Government is said to have refused to give metal for the statue to the late Sir John Franklin, proposed to be erected at Spilshy.—Tenders have been accepted for the enclosure of the Nelson Monument at Yarmouth. Mr. E. O. Johnson, of Yarmouth, undertakes the stone-work at 188*l.*, and Mr. Barnes, of Norwich, has contracted for the iron-work, at 117*l.*—The statue of the late Mr. Robert Hall, M.P., is now finished, says the *Leeds Intelligence*, in the studio of Messrs. Dennis, Lee, & Welsh, Woodhouse-lane. It is a representation of the deceased gentleman in his robes, as the recorder of Doncaster.—A monument to the late Mr. H. A. Littlehale has just been erected in the church of Bolton-by-Dowland. The style is Perpendicular Gothic. The façade comprises an arcade of three double sunk ogee arches, standing on moulded base and plinth, the spandrels being filled in with open tracery. These arches are flanked by two buttments, having canopied buttresses, and filled in with tracery and armorial bearings, the whole being crowned by a moulded cornice (with carved vine-leaves), surmounted by a broken battlement of open tracery. Within the arcade is placed the gravestone, with an incised crosslet, surrounded by a nimbus, and standing on a calvary of four steps, and the incision is filled in with blue cement. At the back of the tomb is the inscription.

**ELECTRO-TELEGRAPHIC PROGRESS.**—The Pneumatic Despatch Company have commenced laying down their pipes in Throgmorton-street.—About 1,000 miles of telegraphic cable, manufactured by Messrs. Glass, Elliott, & Co., are, it is said, to be used between Rangoon and Singapore. The distance is 800 miles, but allowance has to be made for "slack," and for any casualties that may arise. It has not been finally decided, however, that the cable shall be laid between these points, although the idea of submerging it between Falmouth and Gibraltar appears to have been altogether abandoned by the Government, from the uncertainty of success to which so many failures with deep sea cables have naturally given rise. We are not aware that any vital improvement has been made by Messrs. Glass, Elliott, & Co. in this new (?) scheme.—Two lines of land telegraph from the Atlantic to California are now in rapid progress. The most northerly, which passes through Kansas and Nebraska, is expected to be so far completed in November that the remaining gap will be only about 1,000 miles.—The aurora borealis is said to produce a remarkable effect upon telegraph lines. The auroral current has even been used, it appears, for transmitting and receiving telegraphic despatches, on the American Telegraph Company's line between Boston and Portland, and upon other American lines.—The line named has been worked in this manner more than two hours; and, when the aurora subsided, the batteries were of course resumed.

**MEMORIAL DRINKING-FOUNTAIN AT SOUTHAMPTON.**—The ceremony of laying the first stone of the monument to the memory of the late Mr. Alderman Richard Andrews, in the public park of this town, took place on the 1st inst., in the presence of thousands of spectators. The design is a drinking-fountain, surmounted by a pedestal and a statue, 9 feet high, of Mr. Andrews. The whole building will be above 25 feet in height, will stand on a high spot of ground, and will be visible at a long distance. The architectural building forming the fountain is described as being in two stories, and of a triangular form, the style being Provencal Romanesque. Each of the three faces will be sheltered by a deeply recessed arch, below which will issue the fountain with double jets, each crossing each other under the crown of the arch. The fountain will be adorned with inscriptions and carvings commemorating and illustrative of the life and character of Mr. Andrews.

**KITCHEN BOILER EXPLOSIONS.**—Accidents of this kind are not infrequent, and something should be done, in perfecting kitchen arrangements, to obviate such risks. A safety-valve, opening in the side of the boiler, next the fire, so as to prevent weights from being set upon it, and to obviate scalding with the steam, might do. An explosion of a kitchen-range boiler has just taken place, we observe, in a house at West Derby, Liverpool. The accident, which was of a very dangerous character, was occasioned by one of the servants inadvertently turning the tap of the feed pipe, by which the water-supply was stopped. In a short time the boiler became overheated, and the expansion of the steam caused it to explode with fearful violence. A large portion of the kitchen wall was blown completely out: the kitchen-range and fireplace were shattered to pieces; and the furniture was thrown into a promiscuous heap.

**BRISBANE, NEW SOUTH WALES: OPENING OF A CHAPEL.**—In June last, a new Independent chapel was opened for divine service at Brisbane, in Eastern Australia. The chapel is situated near Government House, on the rise of the hill. The walls, according to the *Brisbane Guardian*, are of brickwork stuccoed outside and in, and the mouldings and water-tables are run in Portland cement. The entrance is in the second bay on the south-east side of the building, and is protected by an open-timbered porch. On the opposite side is a vestry of similar design to the porch. The roof is finished at the south-west end with an open turret. The gables are filled in with windows of open tracery: that at the south-west end is circular, and at the north-east triangular, the tracery being executed in cedar and painted. The lateral windows and those in the south-west gable are lancet shaped, and finished with hoodmoulds with foliated terminations. The roof is open timbered, and constructed of Queensland pine: it is supported on six pairs of principals with curved ribs, each forming a pointed arch. The interior is not quite finished, as it still requires a coat of warm colouring on the walls. The pulpit is of varnished cedar. The seats are of pine, stained. The style is the transition from the Early English to the Decorated. Mr.iffin, the colonial architect, provided the design, and contributed his services in the erection of the edifice.

**A NEW ROMAN CATHOLIC CHURCH,** dedicated to St. Anthony, has been opened at Walko, near Newcastle-upon-Tyne. The nave is 100 feet long by 30 feet wide; and the church, when completed, will altogether comprise about 850 sittings. The nave, south transept, and baptistery, containing accommodation for 600 people, forms the portion already completed, at a cost of a little more than 1,700*l.* The remaining additions are a north transept and a bell tower. Stone is the material used in its construction, and the woodwork in the interior is stained and varnished. The cost of the whole, when finished, will be 2,100*l.* Instead of the usual east window, the chancel is lighted from above by a flat light of stained glass, fixed in the highest point of the roof, throwing a red, subdued light on the altar and chancel. On the exterior, the place of the east window is occupied by a carved niche, to contain a life-size statue of St. Anthony, the patron saint of the church. The roofs, which are very high, are of open timber-work of simple construction, and, like all the other woodwork, are stained and varnished. A gallery for the choir, which, however, does not project into the chureh, is constructed in the transept. With the exception of a rose window in the transept, there is no attempt at ornamentation. A presbytery now in course of construction adjoining the church, is also included in the designs of Mr. Archibald M. Dunn, the architect. The contractors are Mr. W. Foggin for the masons' work, and Messrs. Waite & Howard for the carpenters' work.

**ALUMINIUM WORKS.**—Extensive works for the manufacture of aluminium and aluminium bronze have recently been erected at Washington, says the *Newcastle Courant*, and are likely to be kept in active and profitable employment. Mr. Bell has secured the sole right to use the patent for making this new metal, from Professor Deville; and, under the superintendence of Mr. Henry Brivet, the works (the only ones in this country as yet) have been erected.

**GAS.**—The owner of the gas-works at Whitby, Mr. Anthony Atkinson, M.A., is erecting new works, at a considerable outlay, on a site between the river Esk and the railway. It is expected that they will be completed before the end of this autumn. The railway company has contracted with the proprietor for the supply of gas for fourteen years. The price of the public lights has been reduced, and a uniform charge of 5s. per 1,000 cubic feet is made to private consumers, instead of 6s. 8d., as heretofore.—The Plymouth and Stonehouse Gas Company, from the 20th September, have reduced their price to 3s. 4d. per 1,000 cubic feet.

**TENDERS**

For consecrated and unconsecrated chapels to the cemetery now being formed at Halifax, Yorkshire. Mr. Chas. H. Edwards, architect. Quantities supplied by Messrs. Pearson & Dougherty:—

Whitely, Brothers.....	£3,100 0 0
Myers.....	2,540 0 0
Drake & Co.....	2,700 0 0
Evans, Brothers.....	2,485 0 0
Charnock & Booth.....	2,467 0 0
Robinson.....	2,400 0 0
Bancroft & Son.....	2,361 0 0
Pickard & Co. (accepted).....	2,287 0 0

For Plumbing.

Lees.....	185 0 0
Walsh.....	178 14 0

For rebuilding the Red Lion, Brompton, for Mr. Lathbury. Mr. G. A. Burn, architect:—

Piper.....	£2,593 0 0
Myers.....	2,360 0 0
Turner & Sons.....	2,320 0 0
Downs.....	2,170 0 0
Laurence & Sons.....	2,134 0 0
McLennan & Bird.....	2,045 0 0
Stimpson.....	2,045 0 0

For Barnby Dun Church. Messrs. Hadfield & Goldie, architects:—

Messrs. Anclay.....	£1,258 0 0
Hopkins & Read, Seales, Dod-worth, and White.....	1,173 4 6
Stimpson.....	1,122 0 0
Chadwick & Son.....	1,099 0 0
Richardson (accepted).....	1,095 12 0

For a passenger station at Marske, Yorkshire, for the Stockton and Darlington Railway Company. Mr. Wm. Peachey, architect:—

Bulmer.....	£1,563 0 0
Bulmer.....	1,257 9 7
Arncliffe.....	1,115 3 10
Pearson.....	1,060 10 0
Chapman.....	1,044 10 0
Kemp & Abildgaard.....	1,029 13 6
Arwin (accepted).....	1,015 1 4

For a pair of cottages, at Colney Hatch. Messrs. Richard Tress & Chambers, architects:—

Deards.....	£90 0 0
Powder.....	94 0 0
Hawkes.....	93 0 0
Eley.....	88 17 6
Pearce.....	87 17 0

For two new dwelling-houses, Percival-place, Tottenham, Middlesex, for Mr. Orme. Mr. James Dudley, surveyor. Quantities supplied:—

Chessum.....	£350 0 0
Humphreys.....	835 0 0
Brett.....	820 0 0
Turner & Sons.....	797 0 0
Cushing.....	757 0 0
Baldock.....	730 0 0
Clarke (accepted).....	748 0 0

Received by the vestry of Chelsea for the supply of

<i>Broken Granite.</i>	
Messrs. Fernings.....	s. d.
Mowlem & Co.....	13 6 per ton.
Messrs. Marnelle (accepted).....	12 11 "
<i>Flints.</i>	
Smeed.....	4 0 per yard.
Tyler.....	4 6 "
Tuff.....	4 6 "
Hart.....	4 5 "
Baldock (accepted).....	4 5 "

*Sewerage Works.*  
G. Todd, Jun. 2*½* per cent. discount from price in schedule. King & Howe's 10 per cent. ditto.

*Mason's Works and Materials.*  
Robinson..... Referred to a  
Nowell & Robson..... Committee.

\* Accepted.

# The Builder.

VOL. XVIII.—No. 923.

Hospital Construction.



R. COMBE invites criticism on his plan of a regimental hospital, which we published in a recent number,\* and we hope, therefore, any remarks we may make will be taken simply as an attempt to further elucidate sound principles of hospital construction. It is most gratifying to see army surgeons again turning their attention to this question, and it will be well for the army and for the nation if such attention be continuous. The names of Pringle and Lind will be more and more revered as the sound doctrines they enunciated and enforced are practically applied, and the spirit of their teaching is acted upon in the army and naval medical schools. Miss Nightingale has shown, by her evidence before the Army Medical Board, as also by her writings generally, that, in practice, sanitary science has been and is most sadly neglected. The army and naval death-rates are sufficient confirmation. Argument is an idle waste. The figures to be found in published returns are facts beyond dispute. Let any one compare the death-rates for the whole period of the Crimean campaign, contrasting the state of the British army and the British hospitals, month by month, with the state of the French army and French hospitals in parallel months, and he will see that as sanitary works and regulations were put in force in the British army and hospitals, the death and sickness rates were reduced; whilst, in the French army and hospitals, they increased to the termination of the war. It has, in fact, been said that the terrible mortality in the French hospitals (at the rate of 5,000 per month for the last three months of the war), necessitated, on the part of France, a speedy peace. We have a high respect for Dr. Combe, because he has evidently been studying sanitary science; but we are not able to approve fully of his plan for a regimental hospital, for reasons to be given.

In the first place let us say "model plans," like model rules, seldom work in every-day use, if rigidly applied: there may, however, be an alphabet of sanitary science, and a grammar; and the better these (the alphabet and grammar) are learned, the more wisely the science will be applied, and so much the more beneficial will be the results. With respect to hospitals and barracks for the British army, who shall devise a model plan and model rules suited to all climates, sites, and subsoils? British soldiers are expected to do duty amidst the winter snow of Canada, the tropical heat of Central India, and all the intermediate gradations of climate. It must, therefore, be clear that a model plan for hospital or barrack, to be always followed, would be a model nuisance. One law of nature must be attended to—the law of constant change of air within rooms inhabited by men. Fresh air and sunlight must be rendered available, with pure soft water, and fresh food in wholesome variety: clothing, work, and exercise, that is amusement, must also be attended to. Any medical officer must not only act, but must first think and feel for the men under his charge; and, as the result of experience, we will answer for it that such medical officer will receive his reward in the gratifying respect and esteem of the men under his care.

Dr. Combe recognizes the pavilion plan, but

does not fully express it in his arrangement. The word "pavilion" implies unity—a tent, a room under one roof; and it ought, in future, to be understood, when applied to hospitals, as meaning a separate building. This is certainly our idea of it, and also the idea Miss Nightingale has embodied in her Liverpool papers. Each ward must be one pavilion, and in its arrangements complete. A building planned so as to present three wards in radii, with a central block and closed angles, is not on the true pavilion plan. The hall, with glass roof, would be found a costly nuisance. Glass radiates heat, and condenses moisture: if the framing is of timber, this decays rapidly; if of iron, there are constant expansion and contraction, and "joint" leakage. Top lights of large area, acting also as a roof, are not often advisable, excepting for covering plants, when dropping water cannot do much injury. The idea of large areas covered by glass, is more poetical than practical. Ask the tenants at the Crystal Palace their experience. The ward dimensions given by Dr. Combe are not what we should recommend,—100 feet by 22 feet by 15 feet, for twenty-eight beds, or 1,178 cubic feet per bed. Such room would be too narrow by at the least 3 feet. Miss Nightingale gives 111 feet 6 inches by 30 feet by 17 feet, for thirty-two beds, or 1,760 cubic feet per bed, with closets, bath, &c., at the end. Dr. Combe cannot give the cubic space indicated by Miss Nightingale, because of a recent army regulation as to hospital accommodation. Dr. Combe has placed closets in the middle of the length of his model ward on one side, and a scullery opposite. The results would be that the scullery so placed would become a mere gossiping place for patients and orderlies. As to the soil-pan closets projected from the side, there is evidence to show that a taint would be driven against and through the windows by every side wind,—modified, no doubt, and reduced in intensity, but still sufficient to carry, with certain states of the atmosphere, an actual and sensible cause of smell into and through the ward. The continuance of a stream of foul gas, at times, is very curious. It has been known to continue perceptible to a human nose, in the open air, for a full quarter of a mile. As to the arrangement of the separate apartments or rooms, thirty, if we mistake not, are shown for ninety-two ward-beds. Now, in military hospitals, as in civil hospitals, separate rooms should be reduced to a minimum. Rooms have holes and corners to harbour dust. They are additional places to clean, and also to skulk in.

The two small wards shown for four beds each, have neither light nor means of ventilation sufficient. Dr. Combe, it is true, gives a qualified approval of such wards, but he counts the eight beds to make up ninety-two. Small wards are specially objectionable for ophthalmic cases. They become nests of disease, and aggravate rather than cure. Further, the administrative offices are scarcely so planned as to facilitate administration. The hospital sergeant is placed at too great a distance from the wards. An hospital sergeant ought to overlook his ward by day and by night. Military hospitals should be places to cure the sick, not to be married in. The sewerage and drainage, as shown on Dr. Combe's plan, would be extravagant: "external and in right lines," certainly, but with the greatest possible lengths to do the least possible good. Sewers and drains should remove subsoil-water from the covered site, surface-water, and roof-water, as also waste and soil-water from within the hospital. Sewers and drains may run parallel to buildings, but external, so as to remove subsoil-water, to the full depth of such sewer, from the area covered by any building.

As to a general hospital, Dr. Combe appears scarcely to have apprehended the idea of a "general hospital," as he seems to consider it necessary to "agglomerate" sick together in order to realize a "general hospital." The pavilion plan of structure, rightly understood, is recommended expressly in order to make "a general hospital" possible without any one of the risks of "agglomeration."

There are general hospitals at this moment with fewer sick under one roof than Dr. Combe

proposes to put in his. "Segregation," which he justly insists upon, will, we are told, be effectually carried out in the new military hospital about to be erected at Woolwich; if by segregation he means placing a small number of sick in each building, and isolating each such building, so as to form houses much more separate than houses are in a street within a town. The new hospital at Woolwich is not to be an agglomeration of regimental hospitals, but a general hospital under the new regulations. With regard to the site selected for the new hospital at Woolwich, we are assured that it has not a clay subsoil, but is geologically known as the "Woolwich pebble bed;" a mixture of shingle and loam resting on clay. This site will be sewered and drained; and, to obviate any risk even of subsoil-damp, the floors will be isolated by a basement above the level of the ground. The authorities, it is asserted, have used their utmost exertions to secure the best available site. The hospital question deserves to be fully discussed, and needs to be. Dr. Combe evidently feels this: hence the last paragraph in his paper; and he will not be angry with us for showing him where we differ.

With respect to sites and climates, we may offer a few remarks, the result of a tolerably wide experience, and we are bound to say that sites are more rarely in fault than defective structures, overcrowding, and bad management. A few feet elevation from the ground will mitigate the evils of a damp subsoil. Sidelong ground, that is, a steep hill-side, is about the most difficult site to manage safely, because there is the temptation to level a site by excavating and embanking, and the excavated portion becomes a sort of cellar dwelling, damp, cold, and a reservoir of stagnant air. In all climates, houses half buried in sloping ground are liable to promote excess of disease. Dr. Sutherland noticed this fact in the cholera epidemics in England; Mr. Rawlinson has pointed it out in his sanitary report on Alnwick, 1849; and physicians on the Continent, have independently remarked the same fact. The huts of the 79th regiment, forming part of the garrison of Balaclava in the spring of 1855, present a noticeable example, as may be seen on reference to the Report of the Sanitary Commission in the Crimea. There are, of course, "best sites," such as dry gravel; and, "worst sites," such as a marsh or wet clay. There are also healthy climates, and unhealthy climates; but the wonderful mechanism and power of adaptability in man, which enable him to live in health amidst the frosts of a Polar winter, where mercury becomes a solid, and to breathe air having a temperature which roasts dead meat, certainly have the power of adaptation within ordinary ranges of heat and cold from 50 degrees to 90 degrees Fahrenheit. The prime necessity in each case is abundant oxygen, or ever-changing air. In a hot climate there must be an artificial current or change of air created, and in a cold climate there must be artificial warmth; but no room should ever have its temperature raised by animal heat. In a cold climate, animal heat must be preserved by suitable and sufficient food and clothing; in hot climates, heat-producing food should be avoided, and a more rapid change of air should be provided for. With respect to cold the Chinese have a saying, namely, that "only fools and beggars feel cold." The one have not wit to clothe adequately, the other are too poor to provide necessary clothing. Neither our army authorities, nor the general public, sufficiently consider this. Man is a warm-blooded, and, therefore, in a civilized state, clothing animal, and man also requires pure air. The clothing is a matter of adaptation. There is, however, only one reservoir of pure air, and that is beneath the all-encircling canopy of heaven. Fresh air is external, and that will be the best hospital plan which admits it in the most direct manner. Elongated flues, complicated chambers, patent-heating apparatus, and artificial means of change, seldom answer alone. A punkah may be needed in India, but no form of air-fan can be needed in a British winter.

In the army, as in civil life, cost must ever

\* See p. 606, ante.

be an important element in hospital, in barrack, and in house construction. But this element of cost should be considered in all its bearings. First cost is one element,—working, or administering cost, is a second element, and in any calculation,—and the proportions amount of health or sickness is a third element, and, at present, most unfortunately by far the most important element of cost in hospitals. It could be shown, in figures, that many hospitals have destroyed more money value in human life, in one year, than would have made up the difference betwixt a bad and a good plan, supposing a best plan, in all cases, to be more costly than a bad plan,—a statement we do not allow.

Dr. Combe remarks, justly, that cubical space necessarily bears some relation to other things; especially to the rapidity with which the air is changed. This is true; but only to a limited degree. Any inclosed space, to be inhabited continuously, night and day, as hospitals are, must have large cubic capacity in proportion to the number of inmates. The means of ventilation should be abundant, and the action certain, constant, and requiring the least amount of human care, and there should be a fixed amount of permanent ventilation as little as possible under any servant's or patient's control. Windows with double sashes—both sashes hung—will be best for cold climates, and louvered openings, beneath verandas, for tropical climates. Where double sashes are required for winter-cold, one set may be made removable for summer use; because, in such a climate as Canada, there is an Arctic winter with a tropical heat in summer. Windows with double sashes would probably save their cost in fuel alone, even in the climate of Great Britain; and, as judiciously managed, the intermediate air-space would be a means of ventilation and of economizing the heat of the room at the same time, by opening the inner sash at the top and the outer sash at the bottom. Air passing out would give a portion of its heat to the air entering, and the inner glass would retain something of the temperature of the internal air.

In hospitals, each ward should contain such a number of patients as one head-nurse may overlook: Miss Nightingale names thirty-two, Dr. Combe twenty-eight. The width of such a room should not be less than 25 feet: Miss Nightingale prefers 30 feet. The windows should be at regular intervals, on both sides, and opposite: soil-pans, sinks, lavatories, and hath should be at the farther end; the room for superintendent and nurses at the entrance end, with internal windows so arranged as to command a view of the ward night and day. Vitreous substances, such as glazed bricks, tiles, marble, flags, or asphalt, should not be used within the ward, as these absorb and conduct heat rapidly, and, in damp weather, condense moisture. Marble halls sound romantic, and do to dream of, but would make most objectionable hospitals. For the same reasons, metal structures should be avoided. Permanent hospitals, built of brick or stone, should have abundant means for window and door ventilation: temporary hospitals should have abundant means of ridge-ventilation. Any material like patent felt should be used with judgment. Huts must not be made air-tight, like extinguishers, as those at first used in the Crimea were made. The one prime requisite for all hospitals, in every variety and range of climate, is FRESH AIR: to secure this with comfort to the patients and economy of administration is what is wanted. Hospitals may be made places in which the sick may have a chance of recovery rather than an almost certainty of death. Cobbett said of writing, "That is the best writing which the greatest numbers can most easily read." We would say of hospitals, that is the best planned hospital in which the sick can be placed and nursed at the least cost of money and labour with the certainty of the greatest proportion of recoveries throughout the year. The true pavilion system may be one ward or many wards; but each ward must be a complete unit, securing at all seasons means of cheap and efficient nursing; as, also, of sunlight and fresh air.

#### TRADES' UNIONS AND STRIKES.

In the department of Social Economy, at the recent Glasgow meeting,

Mr. EDMUND POTTER, President of the Manchester Chamber of Commerce, read a paper on this subject. He said, in the course of it,—

Strikes I consider as the action and the almost inevitable result of commercial bargaining for labour. They will always exist, but their operation will be softened and rationalized by education and sound views. When intimidation or force is used to compel a bargain by either side, it becomes criminal, and ought to be treated as such. Labour ought to be bought and sold, and be considered as a mere purchasable article, and the bonest fulfilment of contracts should be adhered to. Where the unions are the strongest, there the men are the most unthrifty and the population most degraded. Where, also, labour forms a large component part of a trade and there is least mechanical power and capital, the same spectacle is exhibited. Here the speaker gave a recent instance of the working of trades' unions for utterly selfish purposes. It was that of the Coventry workmen and the Blackburn Union. The power of the trades' unions then robs the worker of his right to work, and robs the capitalist of his right to purchase. The union does what in the individual would be dishonesty, and I am not yet willing to think that, by counteracting unions of masters, such things should be prevented. All protection combinations arise from jealousy, fear, or weakness; and how is this caused? The labourer does not save as he might do; hence he is dependent. I would wish him to have power, based upon free thought and self-respect. Strikes would not have much of their misery, were the labourer saving. And yet it is possible that many workmen, such as builders, could be saving, and they should not be obliged to appeal to their fellow-workmen for aid. If it was right to take the step of striking, it should have been prepared for by saving. In 1857 and 1858, thousands in certain districts were working on short time, and yet there was no misery, for the workmen could draw upon the savings' banks. Many of us could look upon the restrictive influence of trades' unions on individual progress, and many men have sacrificed the advancement of a life to the narrow subjection of a trades' union—some from honourable motives, but in most cases from bodily fear and a want of moral courage. Many have consented to abide by a uniform rate of wages, and many might have become masters. In regard to the alleged indifference of the masters as to the cause of strikes, I believe this arises from the conviction that the fact of his being a purchaser of labour ought not to subject his transactions to the special interference of third parties. The condition and education of the present generation of working men should make them, if they choose, as honestly independent of the master-class as does competition between buyers and sellers of other commodities. The success of all private concerns, and more particularly of those larger ones which are constantly looked upon by the unsound philanthropist class as those which ought to be shared in by the workman, is mainly owing to the energetic employment and the working of saved capital, and not to large profits. If the workmen choose to use their small savings, they can now avail themselves of partnerships in almost every trade, under the Limited Liability Act. I do not say this with a promise of success, as I do not think they will be successful in competing with individual energy and capital. Unsoundness must attach itself to every purely trade union, whether it be a burial club, a society for the regulation of wages, or for the enforcement of partnerships. The executive, supported by the mere majority, that majority the least educated, will offer a retarding influence. Further, no trade union ever encouraged invention. Hundreds of inventions are not used because trades' unions are strong enough to prevent them. This is shown in the case of brick-making machines, and thus millions of bad bricks are annually made, and thus society is injured. Unfortunately, the working man continues, in almost every trade—in policy or feeling at least—the unionist. To my mind, one of the most mischievous fallacies of the day is the idea that labourers have the power to form successful and useful combinations, and that masters will voluntarily give in all that had hitherto been tried by force to obtain from them; and that between employers and employed the relations will be those of voluntary partnership. There is a strong distinction between associations for competitive trade purposes, or for national ones, and trades' unions, which are so many unsound monopolies.

Associations are voluntary: unions are entered into from class feeling, from fear, and for restriction. No trade union, no protective monopoly, has ever really benefited a people. It may have benefited, temporarily, a small class, but it injures the mass. My opinions do not tend to shelter my class—the masters—by combination against competition. We advise competition. We say, education and industry are the best securities for individual and national progress. The conclusion I come to are,—that trades' unions are founded for an unsound purpose; that consequently their moral effects are bad; that society can be best aided by free and open competition; and that education and forethought alone can secure to every one his fair reward.

Mr. A. K. Hunter, of the Council of United Trades, Glasgow, read a paper on "The objects of Trades' Unions." He wrote to rebut some of the mislaided of allumies which have been uttered, contemned, and believed against them; and said the object of trades' unions was the moral and social improvement of their members. They aim at this elevation by endeavouring to obtain for them as much of the means of living as can be had by fair means. We may be met by the political economists who hold the doctrine that bare sustenance is all that labour requires, and that to violate this law is against political economy. While it may be true that labour only requires sustenance, it does not follow that the labourer should not receive more than what will keep body and soul together. This would be more than slavery. We know that some men think that all paid-for labour may be looked on as so much withdrawn from the trading power of the nation, and consequently would keep down wages, in order that such persons be not impaired. Such persons are alarmists of the worst kind. Their counsel breeds discontent, and, by indicating strikes, are a curse to the country. Labour may receive and retain command of a greater share of the profits of trade, and the country be nothing the worse, the money still being available for trading purposes: no matter who gets it, if they who get it spend it. National wealth may be owned by all the nation, and the greater the better. Then we would have a people industrious, contented, loyal, and conservative. Working men are determined to be greater sharers in the profits of labour, and make a better use of them than hitherto; in proof of which, we refer to the gigantic schemes of co-operation that are wrought successfully out in our day. A change in our social relations is impending, and we think that the starvation doctrines of those political economists already mentioned have done much to bring about such a change. It is the object of trades' unions to make men independent,—something more than mere hangers-on, wanting, nay begging of their employers to toil. Were trades' unions better supported, we believe it would be for the advantage of ratepayers. The most thoughtful men were unionists, the most careless non-unionists. It was the object of trades' unions to prevent that undue reduction of wages that has so often followed the introduction of machinery. If that was not attended to society would be composed only of millionaires and paupers. While we admit that all the acts of trades' unions are not what we could wish, we venture to predict that in our own day they will be as well conducted as any other popular institution. Mr. Hunter adverted at length to the struggles of the operative hakers of England and Ireland, and concluded by saying that men not in union were generally in the lowest state possible, both as regards wages and position. Carlyle had said with great force and beauty,—"Yet ten men united in love were capable of being and doing what ten thousand singly would fail to accomplish. Infinite is the help man can yield to man." That was the condition on which we take our stand; otherwise there would be what Carlyle calls a "community of drudges."

On the next day a report of a committee appointed by the Council of the Social Science Association was brought up and read. The suggestions and observations with which it concluded are as follows:—

1. That trade societies have of late years increased in number, and that an increased number of working men have become members of them.
2. That societies composed of workmen who are engaged in the same trade in different parts of the country have shown a disposition to unite; that societies connected with different trades in the same town have also shown a disposition to unite.
3. That the principles upon which trade societies regulate their proceedings are more moderate, and that discussions between the workmen belonging to them and their masters have been managed in a fairer spirit than in the times before the repeal of the laws against combination.
4. That the workmen belonging to these societies form

a better estimate now than heretofore of the condition of their respective trades; that they are less unreasoning in their expectations of obtaining increased wages; that they understand better the necessity of submitting to arbitration, and that they generally overcome the prejudices which they once entertained against machinery; and that their leaders are men of high character and intelligence.

6. That the strikes, though more frequent, are conducted with less violence than in former days.

7. That these changes are owing in a great measure to the increased publicity which has been given to the rules of the societies, and to the action of public opinion upon them since they have ceased to be illegal.

8. That among the causes of improvement in the general temper of the working men must be reckoned the establishment of joint stock associations in different parts of England; these associations having contributed both when they have succeeded and when they have failed, to increase their experience, to show them that there are fluctuations in trade over which the masters have no control, and to teach them the necessity of self-control and self-sufficiency.

9. That there are still in many trade societies rules, some acknowledged, some concealed, which interfere with the freedom of the masters and the men, within as well as without the bodies that impose them, and which are inimical to the interests of political and social economy must utterly condemn.

10. That trade societies have secured the co-operation of many prudent workmen by undertaking to provide maintenance for those who are casually out of employment, or who are seeking for work by means of the agencies of benefit societies, occasionally by promoting emigration, or establishing reading-rooms or libraries.

11. That the union of purposes adds to the attraction of these societies, and seldom enables a majority of their members to be in an unwilling minority in strikes and all their consequences.

12. That the teaching rich societies experience in finding a profitable investment for their funds, often increase greatly the temptation to employ them in strikes and all their consequences.

13. That disastrous as have been the immediate results of most strikes, to masters as well as to men, they have often been without their use to both, by inducing wiser and more reasonable concessions on one side, and less unreasonable demands on the other.

14. That minor questions connected with trades, which often produce serious visitation, might be advantageously referred to a tribunal of masters and men, but that in the opinion of a majority of the committee it would be over sanguine to hope for the removal of the more direct and serious causes of strife from such arrangements.

15. That the rate of wages must be settled between the masters and the men; and that the intervention of third parties, unless specially invited by both, and possessing a very high degree of the confidence of both, can be of no avail.

16. That the Legislature may do much good service to workmen, by providing an easy and cheap remedy both in law and equity to meet the case of disputes between trades' societies and the masters, especially in respect to the application of benefit funds.

17. That the slightest return to the old policy of prohibiting combinations would be most mischievous, and that a majority of the committee think that no legislative measures for preventing strikes and lock-outs could be devised.

18. That combinations of masters and of men have always tended to become tyrannical, when their rules, disputes, and modes of action have been kept secret; and that the wisest course is to expose them to the public in the best manner they can give, and that they are not engaged in plots which are dangerous to the public.

19. That the improved education of masters and of workmen is a good reason to hope, doing more to avert collisions between them than any other arrangement, whether voluntary or enforced; that the experience of the committee has convinced many of the employers that not to care for the education of their men is to promote their intellectual and moral ruin; and that the employment of uneducated slaves, without temperance and self-government, they must regard as a whole land, that the more they respect their own interests the less they will be at war with every other.

The President said they had now heard the report, and he would now call upon Mr. Hughes to move the adoption of the report *pro forma*. Mr. ("Tom Brown") Hughes then moved that the report be received. He believed for himself that the action of trades' unions was to stop strikes—not to create them. He believed it was the duty of the Legislature to provide for the regulation of wages in a dispute. One of the great employers in Yorkshire had suggested that this very meeting of the Social Science Association, a society should be formed to get masters and men to arbitrate.

Sir Archibald Alison, in course of a long speech, said—No one has any conception of the magnitude of the devastation caused by these strikes. I do not think it is possible to exaggerate the evils attending strikes. I have been brought into the country, officially, as public prosecutor and as arbitrator, with five or six great strikes in this country, and I am sure I am within bounds when I say that each of these strikes has cost the labouring classes of Lancashire not less than 500,000,000. It was not sustained merely in wages: it was divided by them with the persons with whom they dealt, and who depended upon their labour for their own employment. For every one

that strikes there are, at least, six or eight other persons thrown into distress who have never struck—who are advised, perhaps, to strike, but who, nevertheless, are the innocent participators in the sufferings it produces. Now, gentlemen, in contemplating this subject, there are two facts, which appear to me to be of vital importance, with the view of showing how these evils which we deplore may be remedied. The first of these is the great and growing improvement which has taken place of late years in the mode by which strikes are conducted. I think that is owing, not so much to the change made in the law in 1825, when trades' unions were legalized, as to the growing influence of public opinion. I think trades' unions in themselves are not only a proper but a necessary balance in the fabric of society. I think that without them capital would become far too powerful, and workmen would be far too much beaten down. I wish now to point out a mode in which they may avoid the character which their former conduct has caused, and gain their legitimate objects. In the first place, I agree with the report that nothing tends more to conciliate the working classes, and remove hostility between master and tradesmen, than kind intercourse with them. I would recommend, also, that trades' unions should attend to the circumstances under which a strike will be effectual, and my advice to those trades' unions, who have consulted me has always been—"Don't strike except when prices are rising: never strike when prices are falling." The propositions were discussed by numerous other speakers at considerable length, but no resolution was come to.

THE RESTORATIONS AT WARKWORTH.

A CHARM, both architectural and literary, attaches to Warkworth. Here, the divine Williams,—as the French savant designates Shakespeare,—laid the scene of the principal part of his drama of Henry IV. The rock-been hermitage that suggested one of Bishop Percy's reliques of ancient poetry, "the hermit of Warkworth," is close at hand; and the fringe of sea-coast is that described by Sir Walter Scott, in "Marmion," when the abbess of Whitby's "cloistered pite" voyages to Lindisfarne,—

And now the vessel skirts the strand  
Of Coquet-Isle northbermerland.  
At Coquet-Isle their heads they tell,  
To the good saint who own'd the cell;  
Then did the Abbe attend him claim,  
And Warkworth proud of Percy's name.

All who have recently travelled to Glasgow from the south, using the York and Berwick Railway, must have noticed the castle, prominent with its watch-tower; and other southerners who have not seen Northumberland, may know the castle through Turner's picture of it, in the Water-Colour-room of the Brompton Museum.

On the crest of the hill, up whose gentle acclivity the one wide street is built, stand the remains of the once mighty castle; at the foot is the church. The term, "remains," in connection with the castle, must not be construed to mean a pile of ruins; on the contrary, the shell of the keep is nearly entire; nor is it till we are close upon the structure, that we can perceive any marks of decay in the curtain-wall, which, strengthened with several mural towers, surrounds the bailey beneath the south and west fronts of the keep. The picturesque neighbourhood is thus described in the Elizabethan survey made by Clarkson:—"The castle is environed on three parts with the sayd ryver (Coquet); and of the north parte, in an angle within the said water, is situate a towne, called the boroughe of Warkworth, and the parish church, and at the north end thereof a bridge over the water, and a little towne buyld on th' end of the sayd bridge, wher bridge, with th' litle tower at the end thereof, are still standing; and it is of the good stewardship of those upon whom the charge of them is present devolved, that we are going to tell.

Both church and castle have been restored: the former, thoroughly; the latter, partially. The old chroniclers relate that the church was originally founded by the Saxon monarch, Ceowulph, and that he insured the immortality of his name by founding many churches, and resigning his kingdom, and taking the monastic vows and habit of the monks of Lindisfarne. All honour to their veracity! In the course of the recent restorations, the oldest portions of which are Norman, were uncovered the foundations of a Saxon edifice. They were 4 feet thick, and the lowest corner-stone was found

hollowed for deposits, as in modern times. It was with regret we learnt that the Normans had been beforehand, and left the receptacle empty. There are some minds that refuse to credit the statements of the monastic chroniclers; but here, to support their testimony, is an evidence that has been buried nearly eight hundred years; and, as if this were not corroboration enough, a small Saxon cross, carved with a basket-work pattern, was also brought to light. On the decay, or, more probably, demolition of this church, the Normans proceeded to build a nave and chancel over the same site, though not, as we have seen, upon the same foundations. About a century later an Early English tower was added at the west end. There are suggestions of a slight renovation having been effected in the Decorated period, which are most home out, perhaps, by a niche in the chancel arch. Then, in the Perpendicular period, a thorough rearrangement must have been organized. The south wall of the nave was taken down and replaced by columns, and a south aisle added, which was lighted by the large windows characteristic of the Perpendicular period. The pointed roof of the nave was also condemned to give place to the prevailing mode: so the walls were heightened, clerestory windows inserted, and a flat roof thrown across, leaving a tall-tale mark of the apex of the old roof still visible on the tower. Subsequently a wrought ornamental iron altar-rail was fixed, *tempo* Queen Anne. After this Georgian churchwarden did their best, or worst. They voted it high pen pews, plenty of whitewash, large sash windows in lieu of the Norman lights, and a bran new gallery, supported on iron posts. Then came a long season of complacency and inaction, till at last the pews began to rot and harbour mice and insects, and the fabric fell a prey to damp. The rain found its way through the roof, and the work of so many centuries was threatened with utter ruin.

To avert this catastrophe the worthy vicar set on foot a proposition to restore the edifice, when he was met with the usual amount of preparatory opposition. On these occasions there are always some people who think decayed churches very nice and interesting as they are; others, who believe that to touch them would end in spoiling them; others, who are more difficult to be convinced than any, that if there is to be an expenditure of money, it would be better to build a new church than to patch up an old one. Strong in the labour of love, the vicar waved all objections, and commenced his task. When once fairly in hand, support and aid came from all quarters; showing, beyond all words, the catching influence of a lovable work if only set about. Gifts of stained glass, and other objects of ornamental art, were freely promised: thus encouraged, the vicar brought the good work to a successful termination—the handsomely renovated church being opened for divine service on the 16th ult.

As the church was originally Norman, the selection of the Norman style, as the basis for the restorations, was considered correct. The care of the nave was entrusted to Mr. Dobson, of Newcastle; while Mr. Christian, as architect to the Ecclesiastical Commissioners, was responsible for the chancel. The flat perpendicular roof over the nave was taken down, and superseded, in its turn, by an open timber one; the sash-windows were removed, and the Norman lights replaced; the high pen pews dismissed, and open benches substituted; the gallery demolished; and the old plank-pannelled pulpit and reading-desk replaced by new. In the removal of so much of the perpendicular masonry as was rendered necessary by the determination to return to the high-pitched roof, numerous fragments of Norman sculpture were found built up in it: corbels of the usual grotesque character, portions of mouldings, and of shafts. This operation laid bare the Norman corbels that had borne the weight of the original roof, consequently the identical starting-point might have been chosen; but, for some reason, these corbels are left standing out from the wall, and the new roof is carried on others at a slightly increased altitude.

The chancel still boasted its Norman stone groined roof, although the Norman east lights had been displaced for one of the churchwarden's neat sashes; so it remained for Mr. Christian to re-open the Norman triplet, and to see to any needful repair of the ancient groining. All this, and more has been done. The triplet is filled with stained glass, from the studio of Messrs. Clayton & Bell, the subjects of which are depicted in medallions, with much religious sentiment and some harmony of colour.

A small memorial window by Wailes, in the north wall of the nave, and another in the circular opening over the chancel arch, have been inserted,

besides a large, six-light, perpendicular window in the west end of the south aisle, representing the whole army of martyrs, elaborately executed by Messrs. Clayton & Bell.

Tearing from the church, and climbing the steep street, we see the proud, grey, lieben-tufted castle, with the bold bas-reliefs of the Percy lion sculptured on its towers, grand, impressive, and heart-stirring, like the strains of martial music. We pass through the entrance-tower "with our heads full of the ancient Percys," as Wordsworth said, and find ourselves within the bailey. Through the green sward rise the bases of clustered columns, fragments of an intended collegiate church, whose founder did not live to carry out his purpose. Here and there hillocks reveal the burial-place of fallen masonry, and all the towers are roofless, and bestow glimpses of the sky through the frayed and mullioned window openings; but the wide stone steps that lead up to the entrance-door of the keep, are new and white, and neatly squared, and as the eye takes further survey it finds the windows of the south-west tower glazed, with new stonework all round about them, and a new ribbed lead roof also visible. This is the tower lately restored and furnished in Medieval style by his Grace the Duke of Northumberland. Of a surety we can subscribe to all the royal surveyor said, when he wrote, in 1538, that this was "a marvellous proper donjon."

The plan of the keep is a square, out of the four sides of which advance four additional towers. It contains, besides private apartments, a fine banquetting-hall, which had a dais and music-gallery, a chapel with oratory, a mighty kitchen, with butteries, cellars, large tanks for water, oven and boiler. The masonry, as we have said elsewhere, is in good preservation; but the timber of the floors and roof, with the lead, have been abstracted; regarding which, a document, still extant, shows that they were presented to one of the auditors of the family, by the Countess of Northumberland, in 1672, as a contribution to a house he was building for himself at Chenton.

The southernmost of the eight towers is that which has been chosen for restoration; it has been roofed in, floored and fitted with oak, hung with stamped Venetian leather, and furnished with ancient carved oak furniture,—making, when the Oriental carpets are unrolled, and the sideboards set out with choice specimens of ancient ceramic art, a very cabinet picture of an interior in "ye olden times."

Descending to the bank of the river, we trace its shining course till we see upon the opposite shore a high sandstone rock, pierced with a doorway and loop-lights. This is the Hermitage. A ferry-boat assists us across the twinkling, salmon-haunted stream. "My tears have been my meat day and night," wrote the hermit over the inner doorway, and every detail of his cell was pervaded with the same intense and passionate expression. It is divided into three chambers, of which the principal is the chapel. Here he seems to have lavished his solitary labour. He wrought the roof into groined compartments, divided by ribs, which terminated in pillars resting on the ground. He ornamented the windows with tracery; he begrudged not the tedious and scrupulous exactness required for mouldings; he hewed out an altar, a piscina, and a lavatory. But more than of his soul on the recumbent effigy of his lady-love, "My tears have been my meat day and night" must have been the heart-rending chant to which he attained the strokes of his chisel, as he lingered tenderly over this part of his task. By a lynxoscopic arrangement he contrived to obtain a view of this monument from his sleeping couch in an outer apartment. He also furnished a smaller chamber with an altar, an aumbry, and a confessional. Traces of a kitchen are not too obliterated to be altogether discredited; while a flight of rude steps, hewn on the outer surface of the rock, conducts us to the patch of ground above it, which the hermit cultivated as a garden. On the road thither we pass his well. The breeze from the river dissolves the old-world charm with which we have been enthralled, and we get sceptical as to the diet of tears—the kitchen, the garden, the well, the river, teeming with salmon, force suggestions of more substantial and less saline fare upon us. This state of mind leaves us open to the conviction that modern antiquaries entertain, viz.—that Bishop Percy's pretty lullaby was a mere fiction, and that this interesting excavation was a chantry, hollowed out at the direction of the third Earl Percy, of Alnwick, and that the effigy represents Mary Plantagenet, his departed countess.

It is delightful to know that a feeling akin to

the old fervour that dictated the erection of these buildings animates their present possessors, and that while the public are permitted to enjoy the beauties of both castle and hermitage, they are well cared for and maintained.

#### SUBWAYS FOR GAS AND WATER MAINS: REGENT STREET, &c.

EVERYBODY knows that in London our water and our gas are conveyed to our houses by pipes which pass under the streets. Yet few persons are at all aware of the labyrinth of this pipework that lies under the surface of some of our great thoroughfares, unless they may perchance have peeped down some transverse opening that gas, water, or sewer work had caused to be dug in any leading street, and seen a section of the pipeage laid bare. Take Regent-street as an example: there are nineteen lines of mains, of various calibre, from the 10-inch bore down to about 3-inch, that thread their course through this street, the progressive accumulation from time to time as consumption of gas and water, and competition, have increased. With such a multiplication of pipes alterations or repairs to some or other of them must necessarily be of frequent occurrence; and what with this and the circumstance of altering service connections consequent on the consumer changing the source of his supply from one company to another, or from one kind of gas to another, there is a perpetual breaking up of the street, to the annoyance of all that have to pass, and the serious loss of the parish on which devolves the charge of maintenance of this most costly bit of road. Nor will the operation of the New Gas Districting Act diminish the evil, the only charge effected here by this being that one company will light the entire of the west side of the street, whilst the other retains the east. For the last few years the representative vestry of St. James's has committed the keeping of this road to a committee of their own body, consisting of a few active tradesmen. And the vestry,—concurring in opinion that it is not only to the advantage of those of their fellow ratepayers who occupy in the street, and also to the interest and credit of the parish generally; but, taking a more enlarged view of the case, by regarding the street as one of not the least attractive of the metropolitan ornaments, that its roadway should be kept in the most perfect state of ornamental repair,—has ever conceded to the committee great latitude of action, and ample funds for their purpose; yet with all this power the committee has ever found itself frustrated in the endeavour to maintain a good road, in consequence of the constant disturbing of the surface by the openings out to get at gas or water mains. A little more than two years ago the committee employed Mr. Cary to lay down in the street an entire new road on his improved sub-sension principle; but sections of the work were scarcely out of the hands of the workmen, ere other workmen commenced the digging of holes to get at gas or water mains, and the committee had the mortification of seeing their new road, which had cost 6,450*l.*, thus destroyed bit by bit. In the space of some twenty months, no less than 359 trenches had in this way been dug in it; and scarce a piece of road, of a dozen years' run, then existed that had escaped the infliction of a trench. In April of the present year the committee called to their assistance another professional gentleman, one of the most experienced and eminently esteemed of the metropolitan roadmakers, and under his direction a vast expenditure on the street has been going on ever since; the intent being, in this instance, to attain an entire new 10-inch surface crust of Maadnam of great compactness, by means of the simple process of a series of layers of granite of from an inch and a half to two inches thickness, each succeeding layer being allowed time to thoroughly bind and consolidate before the next spread. Six months having been patiently occupied in the pursuance of this process, at an expenditure of 5,800*l.* (less, however, by the cost of cleansing the street for one year), the surface is just arriving at a state of great perfection; perhaps as fine a bed of Maadnam as ever was laid down—thanks, however, in this instance, to the partial cessation of trench-cutting consequent on the pending of the new Gas Bill,—and gives promise that, with fair play, it could be maintained for some years to come at a comparatively small outlay. But now again steps in this abundant gas-work excavating—a wholesale affair this time, that will destroy at one fell swoop all that has been gained by these six months' patient work and outlay. The Chartered Gas Company has just intimated to the vestry that they are about to lay down in the street two new mains of great

dimensions, in place of two that had become of insufficient size for their business, which work implies the breaking up of the roadway from end to end by a great trench excavation some five or six feet wide being cut right up the centre of the road.

The companies, it is true, are bound to make good, and do reimburse the parish the expense of so doing; but the amount received for restoration in these cases, though covering the actual expense occasioned, yet no more compensates for the damage inflicted on the road than does the payment of the chimney-mender's bill of 6*l.* per rivet by the housemaid who has broken her mistress's Sévres vase.

On the receipt of this vexatious intimation the vestry, taking under review the constant source of annoyance this breaking up of Regent-street has ever been, and the little probability there seemed that in the continuation of existing arrangements there could ever be any abatement, turned attention to the consideration of the propriety of seeking to bring about the formation of an accessible subway, after the plan of the one now being laid down in the new street near Covent-garden, to receive all the necessary mains, as the only apparent means of permanent relief from the evil; the proposition being that such subway should be made at the joint expense of the parish and the several companies whose mains pass through the street, in contributions proportioned to the amount of saving each would derive on the practical working of the arrangement. These bodies are,—1, the parish; 2, the two gas companies; 3, the Waterworks Company; 4, the Electric Telegraph Company; and lastly, on the ground of its being a public improvement, the metropolitan general rate.

The vestry instructed their Works' Committee to seek a conference with the directors of the Chartered Gas Company, with a view to induce delay in the commencement of the proposed works in Regent-street, in order to allow time for a fair consideration of the sub-way project, as also to induce their co-operation in the furtherance of the scheme. The conference came off on the 13th ult., when the committee put forth their case, urging all the points adverted to in the foregoing. The directors admitted the convenience and economy that would accrue on the use of the sub-way, and promised to report without delay to their Board. The Board has entertained the subject of the proposal, and declined to take action upon it; whereupon the vestry determined to withhold their permission to the company, to break up the street for laying down their new mains until the practicality of their being laid in a properly constructed sub-way shall have been fairly tested. The company, however, assert their power (Gas Works Clauses Act, 1847) to proceed without parish permission; but, backed by clause 109-10, of the Metropolitan Local Management Act, 1855, the vestry has resolved on resistance by going, if need be, for an injunction to restrain their proceedings.

Regent-street presents most favourable circumstances to the successful application of the sub-way, and will well repay for being done, even if it remained an insulated example of the provision; but it is quite certain, that one general connected sub-way system throughout the great leading central lines of thoroughfare of the metropolis is what must be come to before many years. No constructional difficulties stand in the way of the appliances in Regent-street. The whole course of the carriage-way is uninterrupted by vaults or other underground impediments, and ample space exists above the sewer for the introduction of a tunnel of any requisite dimensions. The time for carrying out the work, too, is now opportune since but little more breaking up of the street and little more interruption of traffic, would be occasioned by the construction of a sufficient sub-way than will be caused by the laying down of these ponderous gas mains. The only apparent difficulty in the matter is about the source of the ten or twelve thousand pounds, the probable cost of the work.

The saving to the gas companies by the use of the subway would be incalculable. Under existing circumstances they incur enormous expense in the maintenance of the conducting pipes. For instance it is calculated that the two gas companies pay the vestry of St. James's about 150*l.* per annum for reinstatement on account of Regent-street alone, which, if their own costs of opening, &c. be added, which latter at a moderate estimate may be put down at 250*l.*, gives an annual outlay of them of 400*l.*, all of which would be saved to the by their mains lying in a conveniently accessible subway, an amount which capitalized would allow

produce a principal sum sufficient to complete the necessary constructions. Besides which in their favour there would further be the saving by the avoidance of loss from leakage, through defective joints, &c., which the facility of detection and repair would enable them to effect,—a loss which is said to amount to 22 per cent. of all the gas sent out. Nor would the simplification of their piping be a small matter in their working economy, since the necessity of the system of service, or secondary, mains would be dispensed with: a single main, it is apprehended, would suffice for the business of each gas supply, and one also would serve for the water distribution; and thus the nineteen mains now in use in Regent street might be reduced to less than half a dozen.

A principal object of this communication is a hope to draw public attention to the subject of the subway generally; though, in the foregoing, the reference is to one particular street alone; yet the evil existent in Regent-street prevails in a greater or less degree in all the leading thoroughfares; hence the subject is of more extended interest.

An inspection of the plan of the subway now proceeding in the new street—the Covent-garden approach, as illustrated in the last number of the *Builder*—shows the simplicity and economy of the arrangement so manifestly as to insure its adoption in the laying out of any future newly opened thoroughfare; but whether the appendage be adaptable to existing streets so as to eventually become a comprehensive, connected system, embracing all the central trunk lines of communication—the “consummation devoutly to be wished”—seems not so certain. The settlement of that question, however, might be much furthered by the subject getting a little ventilation in the *Builder*. Nor in the consideration of the subject should the one fearful drawback be overlooked, viz., the possibility of the occurrence of explosions.

Some of the able, practical, and scientific correspondents of the *Builder* might render good service in the consideration, by throwing enlightenment on the several points. In conclusion it may be observed that, if the advantage of the subway principle be the reality anticipated, the opportunity ought not to be lost of providing the accommodation in such of the leading streets as are now about to be taken up for the formation of the main drainage low-level sewer. Here at least there would be no constructional difficulties presented; and if executed in connection with that greater work, it would be accomplished at greatly diminished expense, and cause no additional public inconvenience during the process. F. C.

#### MANUFACTURING ART AND MACHINERY.\*

The course of Lectures on Manufacturing Art and Machinery, which I have had the honour to be elected by the Council of this College to deliver to the students in the department of Applied Sciences, may, I think, be prefaced by an introductory lecture, which will give me an opportunity of laying down a general outline of the topics which I propose to discuss, and some idea of the method of discussing them which I propose to pursue; and I think it may afford some little aid to the students in the future pursuit of their studies, if I impart to them a few hints gathered from my own experience in fighting the battle of life; and if I encourage them to press forward, without wavering in the difficult although interesting task which they have set themselves to perform, by bringing under their notice the names of those men who have begun their education at the same fountain-head, and who are now occupying responsible posts, and executing some of those improvements which are attracting the notice of the scientific portion of the community, and which will, undoubtedly, serve as an example and incentive to future enterprise and invention. For the proper comprehension of these principles, then, I am sure, feel themselves indebted to the course of instruction which they received in the class-rooms of this excellent institution; and I venture to hope that I may be successful in leading those now placed under my charge to emulate the meritorious endeavours of those to whom I am about to refer, and to inspire them with appreciation of mechanical and manufacturing art, which is on all sides acknowledged to be so eminently beneficial.

Many of those gentlemen who have now come up here with the object of studying the Applied

Sciences, have, I dare say, already made up their minds as to the particular calling or profession which they intend to educate themselves for, and which they afterwards purpose following up. Many others, I dare say, are here studying, and at the same time feeling, as it were, their way to find the particular branch which suits their tastes, and waiting till they find the path which lies the most open for them before they finally determine upon the exact course which they intend to pursue in future. I think that I may be allowed to tell each of these classes of students that they are wise; for those who have already made up their minds as to their intended calling or profession may rest assured that if they are determined to adhere to their choice and to persevere in their task, they will overcome all obstacles, and speedily attain to excellence in the profession which they have chosen; while those students who have not yet determined upon the exact course which they intend to pursue after leaving the college, may be confident that if they study well there will be abundant opportunity for them to turn their knowledge to account one way or another either in England or abroad; for they must remember that subjects such as mathematics, applied to physics, together with chemistry, geology, and the development of machinery, are the means of daily adding to our national wealth; that as our wealth increases, so there is every probability that our resources will be developed; and that as our sources are developed, so there will be a continual demand for the services of those men who made it their study to understand scientific principles, in order that they may direct and guide others in the performance of the manual labour which it may be thought necessary to bring to bear upon the object to be attained.

Indeed, the course of study in the Applied Sciences prescribed to be followed, is such that, supposing a student upon entering his name has made up his mind to follow up a particular profession, and supposing that at the termination of the time of his probation here, unforeseen circumstances compel him to give up his original intentions, and necessitate his entering upon another calling, I do not see that he could have followed up any other course of study which would have afforded him such facilities for making a good change as that of the Applied Sciences. Supposing, for instance, that a student had come here with a promise of obtaining a commission in the army by the time of his completing his studies in the military department of the Applied Sciences, and supposing that circumstances subsequently arose which disappointed him in procuring his commission (a disappointment which often occurs), how easy it would be for him, with the knowledge he had obtained of mathematics, natural philosophy, chemistry, geology, art of construction, geometrical drawing, manufacturing art, and machinery, and the variety of knowledge which he here has the opportunity of acquiring,—I say how easy it would be for him, having mastered these subjects, to change his intentions of being a military officer, and to become a civil engineer; or, supposing he had intended to be a civil engineer, how easy it would be for him, if desirable, to become the manager of some important manufacture. I do not think, gentlemen, that another set of subjects for study, like those which form the curriculum of the Applied Sciences, could be framed together which would give the student such an opportunity of deviating, without injury to himself, from the path which he originally proposed to follow, but from which uncontrollable circumstances compel him to depart.

Now the section of the department of the Applied Sciences which it is my province to lecture upon is one which, although it treats of common things—that is, treats of the preparation and the method of manufacture of things which are in daily use with almost all of us,—and explains constructions and contrivances which are continually being brought under our notice, yet it must be remembered that improvements in arts and machinery have wrought greater changes in the condition of mankind than any other power or influence; and it is the knowledge of these arts and of these contrivances which gives to civilized nations the superiority which they possess over the ruder and less enlightened people of other lands. It is scarcely necessary for me to bring under your notice, as an illustration of the great social changes which have taken place, owing to the development of the mineral wealth which we have been enabled to obtain by the scientific and beautiful improvement by Watt in the steam pumping-engine (which remains to this day nearly as he left it); the changes which have arisen through the formation of railways, of which Stephenson is commonly

called the father, and with the theoretical principles of which the name of Moseley is so intimately connected and justly celebrated; or of the changes which have resulted owing to the diffusion of literature, which has to a great extent been brought about by the improvements of Cower in the printing-machine; and lastly, the changes consequent on the invention and improvement of the electric telegraph, which appears, I think, to ordinary minds the greatest marvel of them all, perhaps on account of the rapidity with which the researches of Continental philosophers, of Faraday and of Daniells, have been brought into practice by the work of many minds directed to the same end, and in which the intellect of Wheatstone played so important a part. I am sure that every one who is in any way connected with King's College must feel proud that four out of the seven distinguished names which I have just mentioned are those of gentlemen who have been professors here; two out of the four are not with us now, but we cannot recall their memories to our minds without feeling that they have, by their individual talents and by their brilliant discoveries and inventions, advanced us as a nation in our national greatness.

And now, gentlemen, to revert more especially to the professional point upon which I have the honour to address you, and begging your kind patience for a few minutes, I will venture to call your attention to a few facts and premises which may perhaps be of interest to you.

The principle of a given manufacture may be explained to, and is easily understood by, any person of ordinary education; yet it does not follow from such explanation, however perfect it may be, and however thoroughly understood by the person who receives it, that the process can there and then be gone through, and put into practice, for there may be many little minute points, many little difficulties of manipulation to be attended to, which can only be ascertained and carried out by a number of years' continual application and training, beginning, perhaps, from the early infancy of the operative, who will have to devote the greater part of his lifetime to the special handicraft in which he excels.

Labour performed by the hands of man, without any other assistance, would be extremely limited in the usefulness of its application; and in order to carry out any great work, some means must be found for uniting the exertion of several men, or else of increasing the power of one man: the combinations and contrivances which effect this unity of exertion or increase of power are called machines.

The labour of cultivating the ground or tilling the earth, which is the earliest form of work with which we are acquainted, requires in its primitive form but little skill and no machinery. Regularity and uniformity in the work are not necessary in turning over the surface of the soil; the rudest and simplest forms of tools may be used; the seed may be scattered by the hand without any external guide or practice; it may be covered with earth in the same manner as it is sown, and requires no further assistance from the labourer. Nature now lends her aid: the highest degree of skill is brought to bear upon the seed; it germinates, sends forth its roots, its stems, its leaves, and grows into a thriving plant, which absorbs its nourishment from the earth, the air, and the light, always keeping in truthful balance the atmosphere in which it lives, performing functions by day and by night which are continually aiding in supporting the life of the man who sowed the seed from which it sprang. The plant flowers and bears fruit, it yields seed a hundred-fold, and in due time man returns and with his unskilled labour gathers in the produce and prepares it for his sustenance. We cannot help comparing the small amount of skill which is required of the man to perform his part of the work with that unbounded wisdom and intelligence which are displayed in the changes which are wrought in the seed after it is once in the ground. We cannot but admire the providence exhibited in the admirable contrivances, the delicate functions, the adaptation of every part for the service which it has to perform. The eye is gratified by the beauty of the colour of the leaves and of the flowers, and with their variety and graceful outline of form, and the reasoning mind wonders at the economy of material and its perfect distribution: with this evidence before us of our utter incapacity, we cannot help admitting the existence of an all-powerful hand immeasurably surpassing us, whose works we can at best but attempt to imitate; and the more we study the superlunary accomplishments of Nature, the more we feel impressed with the short comings of our ability in

\* Introductory Lecture to a course on Manufacturing Art and Machinery, delivered at King's College, London, on the 4th of October, before the principal, professors, students, and visitors, by Professor C. Percy Blyssie Shielley, C.E.

approaching that degree of perfection which is one of its own attributes.

There is not to my mind any labour to which man at his origin could have been appointed which would have given him such a wide field for his intellect, such an unlimited boundary to his inventive faculties, which has formed such a firm basis for the science and theory of the present age, and leads us to put confidence in that Higher Power by which all things are created for our good and pleasure, than that of tilling the ground.

[Here Professor Shelley referred to several leading and recent inventions which owed their origin to students of King's College, and mentioning the names of several who had distinguished themselves by their scientific acquisitions, proceeded to say,—]

In the former part of my lecture I alluded to the importance of theoretical knowledge: but this alone is not sufficient for those who intend to put the Applied Sciences into practice. To the theoretical knowledge taught in the class-rooms must be added the practical knowledge which is only to be obtained in the laboratory and workshops.

In the laboratory the hand will be trained to manipulate with delicacy; the eye will be taught to distinguish, with facility, the various changes of colour and the effects of reactions upon the substances under examination, and that all important difference between dirt and cleanliness, in experimenting, will be better impressed upon the student by one failure through want of attention to it, than by a whole course of lectures on this particular subject.

Chemical cleanliness can, I think, be only learnt in the laboratory; and, in like manner, that which is technically called "truth," and the difficulty of approaching it, can only be learnt in the mechanical workshop.

I have casually referred to some of those former students in this department who have distinguished themselves by the important works they have carried into effect in after-life, and I might add to these many more who derived their education from the same source, and who are deserving not only of the highest praise, but of great public commendation, for the assistance they have lent towards the progress of science, and the appliances they have brought to bear upon the requirements of the age. This, however, time will not allow me to do, but I trust I have said enough to encourage the just emulation of those whom in future I shall have the pleasure to meet in the class-room, and to convince them that the difficulties which must necessarily be experienced in this, as in all scientific occupations, may be easily overcome by the exercise of that patience, perseverance, and application which I feel sure I shall meet with amongst those I see around me.

WAGES AND BUILDING NOTES IN THE TIME OF HENRY III.

AMONG the records deposited in the Public Record Office, one has been lately discovered by Mr. Burt, entitled "A Roll of Payments of Wages, and of Purchases for the Works at Westminster, 37 Henry III." Professor Willis, considering it a perfect specimen of this class of documents, gives the following account of its contents in the *Gentleman's Magazine*.

It contains the entire accounts of the building works during thirty-two continuous weeks, beginning with the first week after Easter, which, in that year, 1253, fell on April 20; consequently the works in question began on Monday, April 23, and the last week of the roll ended with Saturday, December 6. The account for each week is complete in itself, but no day of the month is mentioned, neither are the weeks numbered continuously, although for convenience I shall designate them as if they had been.

The first six weeks are indicated as first, second, &c., after Easter (Ehd' prima post Pasche, &c.). The seventh week was Whitson week, and was evidently kept as a holiday, but is not mentioned in the roll; the week next following, the sixth after Easter, being termed the first after Pentecost, is thus actually the eighth week from the beginning of the account roll. This enumeration continues to the fifteenth week, which is termed the eighth after Pentecost. The sixteenth week begins a new series, termed the first, second, &c., "after the agreement for wages for eight weeks" (Ehd' prima post pascione' stipendiator' pro' viij' Ehd'). This enumeration continues through two weeks, and carries us to the end of the twenty-seventh week of the roll. The

twenty-eighth is termed the first week after the feast of All Saints, and the succeeding second, third, &c., concluding with the "Ebdomada viij'" or thirty-second week of the whole, which closes the account.

At the head of each week one or more saints' days are sometimes mentioned in a peculiar manner. Thus, to begin,—the complete title of the first week is—

"Ehd' prima post Pasche' conditio factum Apostol. Philipi et Jacobi p' die' Jovis quod est d'ni Regis et festo' Inventionis s'c' Crucis p' die Sab' quod est cent'ar'."

"First week after Easter, containing the feast of the Apostles Philip and James on Thursday, which belongs to the King, and the feast of the Invention of the Cross on Saturday, which belongs to the masons." The second week is similarly said to "contain the feast of St. John ante portam Latinam on Tuesday, which belongs to the King;" and the third week is "sine festo." Thus, throughout, the roll feasts occur, sometimes two in a week, but generally only one. Fourteen of the weeks have none. Whatever feasts are mentioned, however, are assigned alternately to the king and to the masons. The only intermission of this rule is in the twenty-seventh week, where the feast of SS. Simon and Jude ought to have been given to the masons, but is assigned to the king, apparently because of the fact, stated in the title of the week, that it is the first day of his regnal year.\*

It may be presumed, therefore, that the feast-days thus assigned to the masons were kept as a holiday, and that they worked on the feasts assigned to the king, who in this roll is the employer of the masons.

I am not aware that this curious custom has been noticed by any previous writer. I have set down in the note below the list of the saints' days selected.† It is probable that in other years some other principal saints would have been also included which happen in this year to fall on a Sunday.

Having now discussed the titles to show the mode of designating the weeks, we may examine the accounts themselves. They are placed, for every week, under two heads, the wages and the purchases, or employees. The sum of each of these is separately stated, as well as the total. The nature of these payments will be best understood by giving a translation of one week complete; for, generally speaking, the workmen, the materials, and other items recur nearly in the same order in every week. There is a great advantage in this; for as the same terms are repeated, it happens that in some cases they are written more at length than in others, or spelled in a more intelligible manner, and thus the collection of so many examples of the same word greatly assists the interpretation of the unusual or technical expressions.

\* Second week after Easter, containing on Tuesday the feast of St. John ante portam Latinam, which belongs to the King; :—

To wages of 39 cutters of white stone, 15 masons, 26 stonemasons, 32 carpenters with John and his partner at St. Albans, 20 painters with an assistant, 15 polishers, 19 smiths, 14 glaziers with four plumbers, 15<sup>o</sup> 10<sup>d</sup> 10<sup>o</sup>. [This will give an average of 1s. 10d. per week.]

To wages of 176 inferior workmen with overseers and clerks, and two two-horse carts daily, 9 17<sup>o</sup> 2<sup>o</sup>. [About 9d. a week.]

\* This is the title of the twenty-seventh week :— "Ehd' xij' conditio festi Apostolorum Simoni et Jude quod est d'ni Regis anno Regni Regis Henr' xxxvij' inclinate et festo' octium s'c'or' p' die Sab' quod est cent'ar' . . ."

† List of the feast-days assigned alternately to the King and the masons, and marked R and C accordingly :— "Philip ad James, R; Inven' S. Crucis, C; John ad port. Lat., R; Ascension, C; John Dapt., R; Thom. Mart., C; Marcialen., R; James, C; Pet. ad vinc., R; Assumptio, C; Decollatio, R; Nativ. B. M., C; Michael, R; Trans. b. Edw. C; Luke, R; Sim. and Jude, R; Omn. S'c'ora, C; Martin, R; Edmund, C; Katerina, R; Nicholas, C."

‡ "Ehd' ij' post Pasche' conditio festu' b' Jovis an' porta Latina p' die martis quod est d'ni Regis in s'c'is' xxxix. albor' ciss' xv. narm' xxvi. enbitor' xxxij. carpent' cu' l. et socio suo ap'd Sem Alban' Duobz Petior' ca' xvij' x' d'. Ricard' O'p'd p' v. duoden' cratic'lar' cu' virg', xvij' x' d'. In s'c'is' c'iss'ij. op'ar' cu' custodijs clericis cu' ij. big' d'vraus, lxx' vij' x' d'.

S'c'is' s'p'ead', xxx' vij' x' d'. Emp'lones. Marco Albro' p' p' arrenalis formar' et . . . lxxvj. p' llij. ped' de p'p' p' arrenalis formar' et . . . cu' ij' p' ped' ij'ij. m' cc. et xij. ped' et d'ij' p' ped' ij'ij. l. assisij p' assisic' v'ij. xij. chambraned', xxij. ped' maig' narm'. cxxvij. ped' cerch' xix. ped' de bossous, et vij. passib' cissis ad tasc'h', xvij. p' l' p' l' x. capitul'. lxxvij. ped' de essus, m' v'ij' xj. ped' de cercis', llij' et ij'ij. l' p' m. cc. et ij. q'r' franc' p'ndent' crete, vij' vij' x' d'. Ricard' Regate p' vij' q'r' franc' p'ndent' crete, vij' vij' x' d'. Ricard' Calton' p' ecc. calc', xv'. Agnes p' cc. d'm' calc', xij' vij' x' d'. Ricard' de Estchen' p' v. duoden' cratic'lar' cu' virg', lxx' vij'. Ricard' O'p'd p' v. duoden' cratic'lar' cu' virg', xij' vij'. Henr' de Ponte p' clavij ferri et pressis' xvj. Bened'co p' vecta, portag', et pesg, xxij. char' plumb', lxx' lxx'. Richo' p' lilia, xvij'ij. S'c'is' total' emp'lonu', xxvij' x' d' ob'. S'c'is' total' Ehd', llij' et d' ob'.

Sum of wages, 257 7<sup>o</sup> 3<sup>d</sup>. EMPLOYERS. To Master Albericus for arrears of farm pieces . . . 66<sup>o</sup>; 53 feet of parpenta, 4<sup>o</sup> per foot; 59 feet of masons' with fillets at 3<sup>o</sup> per foot, 1221<sup>o</sup> feet at 3<sup>o</sup> per foot; 50<sup>o</sup> assisic' at 5<sup>o</sup> each assisic; 43 chambraneds 22 feet of masons' 243 feet of cerch' 9 feet of bossous and seven steps, cut by taskwork, 7<sup>o</sup> 13<sup>o</sup> 1<sup>o</sup>. Item, for 3 capitul', 56 feet of essus, 1,591 feet of cercles 24<sup>o</sup>. Item, for 25 hundred and a-half quartern of chalk for the vaults, 87 2<sup>o</sup>. Item, for 25 hundred and 3 quartern of freestone 67. lxx. 6<sup>o</sup>. To Roger of Reigate for a hundred and 4 quartern of freestone, 53s. 7<sup>o</sup> 1<sup>o</sup>. To Richard the lime burner for 3 hundred of lime, 15s. To Agnes for two hundred and a half of lime, 12s. 6<sup>o</sup>. To Richard of East-champ for 2 dozen hurdles or crates \* with poles, 9s. 7<sup>o</sup>. To Richard Ogel for 5 dozen hurdles with poles, 12s. 6<sup>o</sup>. To Henry of the bridge for iron nails and wheelstones, 10s. 8<sup>o</sup>. To Benedict for carriage, portorage, and weighing of 23 cartloads of lead, 9s. 4<sup>o</sup>. To Richard for litters, 15s.

Sum total of emptions, 277. 12s. 10<sup>o</sup>d. Sum total of the week, 53s. and 14<sup>o</sup>d.

This week may be taken as a fair specimen of the whole. The first part informs us of the number of workmen of each kind that were employed in daily labour: the second part gives the materials and their carriage. The number of white stone cutters was gradually increased from 39 in the first three weeks to 78 in the fifteenth week, and diminished again to 35 in the last weeks. The masons, about 16 in the first eight weeks, were suddenly increased to 49 in the ninth week, who remained at work till the eighteenth week, and then were suddenly reduced to 31, and went on diminishing to 7. The stonelayers vary from 35 to 4. The 32 carpenters working in the first seven weeks are then reduced gradually to 9 only. The polishers are about 15, and the smiths 18 throughout; but about 14 glaziers employed in the first ten weeks are suddenly reduced to 6 for a month, and then to 2 for the remainder of the time. The inferior workmen vary from 220 to 37. The gross amounts are: stipends, 696<sup>o</sup>. 8s. 7<sup>o</sup>; emptions, 89<sup>o</sup>. 9s. 5<sup>o</sup> 1<sup>o</sup>; giving a total of 1,657<sup>o</sup>. 18s. 0<sup>o</sup>d.

From these particulars the nature of the work may be surmised; but, unfortunately, there are very few exact indications of the actual buildings upon which the workmen were employed. The only evidences of this kind that I have detected are the following, numbered to correspond with the weeks in which they occur: (1), tables or planks for the CHAMBERS of the king and queen; (2), panels for the king's bed, and for a table in the king's chamber; (3), 100 tiles provided for the entrance of the CHAPTER-HOUSE (It., p' tasc'h' iut'ij' capituli l. s.). From the nineteenth to the twenty-sixth and thirty-first weeks charge occurs in nearly every week for nails for the CHURCH AND BELLRY; and in the twenty-fifth week Roger the plumber is paid 10<sup>o</sup>. and 5<sup>o</sup>. 13s. 4<sup>o</sup>d. for taskwork at the belfry (belfrydam). This was probably the detached belfry of the Abbey church, which is known to have stood on the north side, upon the site of the existing Sessions-house.

Stukeley gave drawings of it in the *Archæologia*, vol. i. p. 39, under the name of the *Sanctuary*, but states that it was still called the *Belfry*. Stow relates that Edward III., about 1347, built to the use of St. Stephen's chapel, in the little sanctuary a "cholebard" of stone and timber covered with lead, &c. Widmore (History of Westminster Abbey, p. 11) found it mentioned for the first time in a charter of Edward I. (1290). "It was then called the belfry and continued to be used as such, or at least to go by that name till the present towers of the church were built by Abbot Iselp." The roll we are now examining shows that it was in course of construction and apparently covered with lead in 37 Hen. III. The building represented by Stukeley is of stone and in two stories, of a form well adapted to serve as the substructure of a lofty timber-framed tower, similar to that of Salisbury, destroyed by Wyatt, but preserved to us in the drawings of Price. The wooden tower had disappeared long before the time of Stow, and the stone substructure was pulled down, in 1750, to

\* In the Westminster Rolls (printed by Smith, Author, of Westminster, p. 182, and Brayley and Britton, Hist. of Houses of Parliament, vol. 151, 153), "Hurdles for the scaffolds of St. Stephen's Chapel" occur 4 Ed. III., &c., with beams, and poles, and leather thongs to the said beams and hurdles together." The original latin is not generally given in these publications, but in one case Smith (or rather Hawkins), p. 184, has "twenty-four hurdles pro eis super dictam scaffolam," which explains the use of the hurdles to serve in lieu of the planks we now employ.

† Henr' de Ponte p' clavij ferri et pressis' . . . xixs. But in the previous week we have "Henr' de Ponte p' gress ad Martella acuedu'." Duncane gives "gressus p' cassis Silax. gall. gress." (i.e., sandstone or grit). The gress for sharpening the picks or stone-hammers is therefore, not the English word gress, as it might appear, but a whetstone. ‡ "LITERIA, stramentum."—Duncane.

\* PACATIO . . . pactum, conventio.—Duncane.

make way for a new market-house. It had been for a long while occupied as a cellar for the Quakers' Tavern in Thieving-lane. The market-house was in turn pulled down about 1770, and the present Guildhall built as nearly as possible upon the site of the old building.

In the second week Magister Albericus is paid for task-work of the *form-pieces* ("pro tascha formarum"), that is, for window tracery, probably of the Abbey church, and also 6l. 9s. 10d. in the twenty-fifth. On the back of the roll it is recorded that on Tuesday of the fourth week after Pentecost,\* on the morrow of the blessed Thomas the Martyr, Master Albericus with three associates began the task-work of three windows. Also that on the Monday after "ad vincula S<sup>i</sup> Petri" (that is to say, in the fifteenth week of the roll) two parcels of coloured glass, valued at 12s. 2d. a parcel, and two of white glass at 6s. each parcel, were delivered to Master Henry, to be employed in the task-work of the windows, charging per foot wrought of coloured glass 8d. and of white glass 4d.

Another memorandum records that on Monday, the morrow of St. Bartholomew (August 25), the work in the king's quarry began.

Attached to the roll in the sixth week is a letter from Robert de Brumele to Master John de Oxonia,† informing him that he has despatched a boat-load of marble by William Justice, to whom five mares and a-half and 10s. are to be paid for freight. He also promises to send another boat-load before Pentecost, and a third if he can find a vessel to convey it. Similar letters are attached to the second week and to the twenty-second.

The *emptios* in each week's account include, in the first place, pieces of freestone cut by task-work into various shapes required for doors, windows, arches, vaults, or other portions of the structure, and made ready for setting. These are sometimes separately enumerated by name, as in the second week above, and furnish very curious illustrations of Medieval nomenclature. But in the latter part of the roll such pieces are all entered in the general form, "In diversis modis france petre ad taschan cisse," "to various shapes of free-stone cut by task-work," and similarly for marble. Next occur stones from the quarries, probably in a rough state, or at least only fit for walling. These are "Came stone" (Caen stone); "Reygate stone," generally from Roge de Reygate, and sometimes described as freestone, "franca petra," e.g. (8), "Roge de Reygate p<sup>r</sup> et ad di<sup>o</sup> France pet<sup>r</sup>, xxxv. ixd." Grey stone, "petra grisea," (6), "pro. ii. navatis grise pet<sup>r</sup>," and chalk for the *pendentia*,—"creta al pendencia," the latter being the term universally employed in Medieval documents for the vaults that rest upon the ribs. In (24) we have "p<sup>r</sup> marmore apud Cerne xvij<sup>i</sup> xix<sup>i</sup>." Beside these, other materials for building occur, as (1), "maccoc ferri tenacis de gloueria, iiii<sup>i</sup> xij<sup>i</sup>;" iron from Gloucestershire, and in (18) the spicemen well inserted above. In some of these entries we obtain names of trades which are of unusual occurrence. Thus (6), (21), and (12), "Ade Meremunia pro bordis et lateis," i.e. Meremunia, a timber-merchant from Meremium. Ricardus *Californarius*, the lime-burner (from Californium or the French *Chalfournier* occurs throughout. In (4), (13), (25), Ricardus *Cuparius*, or *Cuvarius*, the cooper, from *Cupa* and *Cuva*; in (1), Jacobo *Junar* p<sup>r</sup> panell<sup>r</sup> ad lectu<sup>m</sup> d<sup>i</sup> Regis junij<sup>i</sup> &c.

The masons' terms for shaped stones are for the most part the same that I have discussed in my "Architectural Nomenclature,"§ in the fifth edition of the "Oxford Glossary," 1850, and elsewhere, but they furnish a variety of spellings which are often instructive. I subjoin a list of those which appear to require explanation. They are arranged in alphabetical order, and the numbers in brackets prefixed to each word indicate the weeks of the roll in which it occurs:—

- (1, 3, &c. &c., &c.) *Ascetors*, or ashlars stones.
- (3) (2). "1. assis p<sup>r</sup> assise v<sup>r</sup>d." (5). xxi. *Assis*,—stones prepared for covered masonry, from the French *assise*.
- (2) (3) (5). "ix. ped de bossus." xxxiiij. ped de bossus"—the carved stones placed at the intersection of the ribs of vaults, which are still called *bosses* (vide "Arch. Nom.," p. 43, and "Glossary"). They were sometimes termed *keys*, or *claves*, of which the present roll has an example in (6), "ii. Clavinus et vij. Capitrel."

- (4). "... xli. buscell<sup>r</sup> p<sup>r</sup> buscell iij<sup>i</sup>." (7). "p<sup>r</sup> xi. 'busch', xix." Will. Jacobo p<sup>r</sup> cc and q<sup>r</sup>tr<sup>a</sup> 'busch' v<sup>r</sup>. vij. ob." (16). "... q<sup>r</sup>tr<sup>a</sup> busch', ix." The first entry is in a list of stones shaped by task-work, and I know no other instance of this use of the word.

But in another list of stones (3) we find "xvi. ped et di et di<sup>o</sup> q<sup>r</sup>tr<sup>a</sup>. de grossis rotundis," which seem, for want of a technical name, to be simply called *great round stones*; and in (2) "xxij. ped *maignanz*," which appear to be merely large stones (*magnum*), from the old French *maigne*. It may be supposed in the same way that the "bushel stones" above were round stones, suitable for a column, which were so distinguished for the moment because they happened to be about the size and shape of a bushel measure (about 18 inches across and 8 inches thick).

The other two examples of the word *bushel* are at the end of the emptios, amongst hurdles, "hokettes," &c., and are probably bushel baskets, or bushel measures of some article not mentioned.

- (3). "xi. ped de *Chapem<sup>t</sup> bowe*" occurs but once, with nothing to indicate its meaning.

(2). "xliij. *chamberand*." (3). "xviij. *cham<sup>r</sup>and*," also (4) (5). I have found this word repeatedly in the accounts of King's Hall, Cambridge. Thus in 6 Edward IV. in the form *chamberkint*, and in 6 Henry VI. as "xix. ped de *chamercans pro magna porta*," and soon after, "xxij. ped de *jaubles*." In 4 Henry V., "laxid<sup>r</sup> vocat *chamys*," and in 5 Henry V. "*jambye*." I have also found it in other account rolls, and in my "Nomenclature," art. 81, have given another form apparently of the same word, namely, *chameres*, which I supposed to be *jammers*, or stones for the *jamb*s of doors or windows. The spelling of the above examples appears to show that this word is the same as the French *chambreante*, the ornamental border or set of mouldings about a door, window, or chimney, and in these early examples was used for the molded stones of the jamb, if not also for the archnolds, or at least for the hoodmolds.

(2). "cxlvij. ped. *serches*." (9). "cxlvij. ped. de *serches*." *Chercho* and *serche* are old French words for circular arcs, and are used by workmen for convex or curved pieces. In this place they may mean convex stones such as would be employed in building cylindrical piers.

(2). "lxvij. ped de *escus*." (3) also (9). "iij<sup>i</sup> x<sup>i</sup> et di<sup>o</sup> ped<sup>r</sup> de *scutis*." (5) "xvij. ped de *escut*." These are *skew-stones*, i.e. stones cut with a level edge. Similar terms occur frequently in masons' accounts. (Vide *Skew*, *Skew-table*, &c., in "Arch. Nom.," and "Glossary.")

(2) (3) (9). "Folsuris cum fillo." (4). "*Rotundis*, folsuris cum fillet," i.e. *voussoirs* with a filleted molding.

(1) (5) (3). "Rotundis folsuris," i.e. *voussoirs* with round moldings.

(9). "iij<sup>i</sup> v. folsure chanferete" i.e. chamfered *voussoirs*. *Chanferain* means also chamelled or furrowed, and therefore we may include *voussoirs* with moldings under this expression. All these are *voussoirs* for molded arches or ribs, and as they occur in company with "chalk for the vaults and bosses" (*creta ad pendencia*), are intended for their ribs.

(5). *Formellis*. (3). *Formellis*. The same as "form-pieces," namely, the stones cut for tracery, ("Arch. Nom.," p. 48, and "Glossary.")

(6). *Lothenges*, stones cut into the form of the heraldic *lozenge*, perhaps for paving.

(6). "I<sup>r</sup> Roge de Tri pro iij. *orbilons* xxxij. sol." This word only occurs in this example, and here in small number. We may guess the thing to be a carved boss or bracket of a globular form; or, as *orbile* is the rim of a wheel, they may be stones in a ring form for tracery.

(2) (3). "... *perpens*, *parpens*, or through stones.—(Vide *Perpent-stone* in "Glossary.")

(1). *Seutcheon*, or *seenthon*. This is a word which frequently occurs, with varied spelling, in Masonic documents. (Vide "Seutcheon," in "Arch. Nom.," p. 37, and "Glossary.") It is always used for stones with an obtuse external angle.

(3). "c. et iij<sup>i</sup> ped. de *tablements*,"—string-courses. ("Arch. Nom.," p. 25, and "Glossary," art. Table.)

ROB. WILLES.

THE CRIMEAN MEMORIAL NEAR WESTMINSTER ABBEY.

The Medieval column of granite, about to be erected in the Broad Sanctuary by "Old Westminsters" in memory of those brought up in the school, who fell in the Crimean war, is at last rising above the boarding. An engraving of it will be found in our volume for 1858 (p. 694). The group of St. George and the Dragon, which will surmount the column, erroneously attributed in the daily papers, is being executed by Mr. J. I. Clayton. The exigencies of the position (the necessity of obtaining a columnar outline) have enforced a peculiar treatment of the group; but it promises to be an interesting production. It is about 10 feet 6 inches in height. Mr. Scott is the architect; and the work, generally, we believe, is in the hands of Mr. Philip.

HOSPITAL NURSING.

The various opening addresses have been delivered at the great Metropolitan Schools of Medicine. These addresses were all more or less marked by desire to elevate the position of the rising generation of medical men, and administer to the sufferings of humanity. In some of them it was said that earnest endeavours are now being made, and not before it is time, to provide proper nurses for the sick. Mr. R. D. Grainger, at St. Thomas's Hospital, remarked that he had great satisfaction in stating, that, owing to the wise munificence of one whose name would find an echo in every English heart, and who belonged to that noble, self-sacrificing band already illustrious by a Marguerite d'Angoulême, a Lady Rachel Russell, a Louisa of Prussia,—Florence Nightingale,—one of the greatest wants in the management of the sufferers from accident and disease, skillful and tender nursing, promised to be supplied. There were, at that time, in the wards of St. Thomas's Hospital, fifteen nurses, supported entirely by the "Nightingale" foundation, who had been selected with great care, and who, after proving themselves qualified by examination, would be sent to public institutions to minister to the sick. Already persons of a superior rank, prompted by Christian charity, offered their services; and there was reason to hope that an entire revolution in the system of hospital nursing,—indeed, of the whole class,—would be the result, at no distant period, of this philanthropic measure.

At King's College it was mentioned that Dr. Todd and the late Bishop of London were the originators of St. John's House Training Institution for Nurses. This institution supplied the hospital with a very efficient staff of nurses and lady sisters; and the hospital in its turn afforded to St. John's House the means of training its nurses, many of whom were annually sent out to private patients in all parts of the country. This movement is in operation both in town and in the provinces, and must, before long, lead to beneficial results.

BODELYWYDDAN CHURCH.

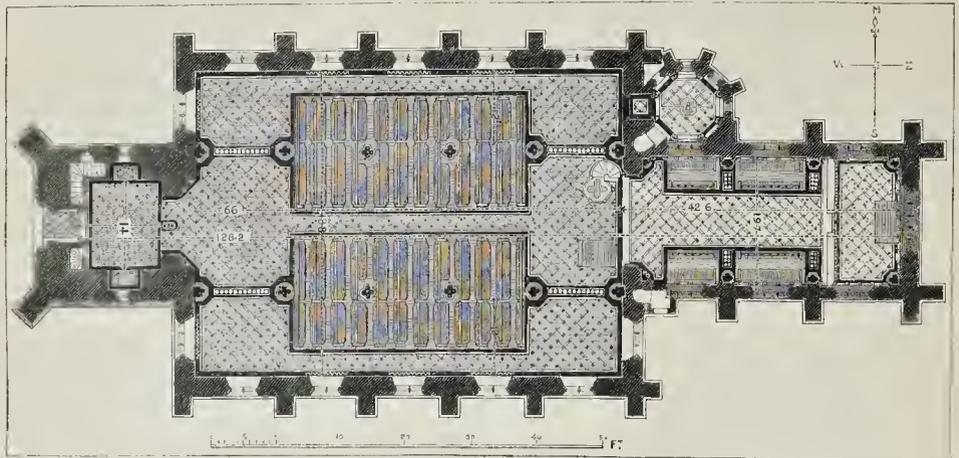
St. MARGARET'S, Bodelwyddan, near St. Asaph, of which we give some illustrations, is, internally, if not externally, one of the most elaborate of recently-built Gothic churches. It was consecrated on the 23rd of August, having been commenced on the 21st July, 1856. The church has been erected at the expense of the Dowager Lady Margaret Willoughby de Broke, in memory of her husband, the late Lord Henry Peyto Willoughby de Broke. It stands near to the north front of Bodelwyddan Hall, the residence of Sir Hugh Williams, Bart., and Lady Willoughby's native place, in one of the most picturesque parts of the Vale of Clwyd. Here a parsonage-house, schools, and cottages, also have been erected. Our view shows the exterior of the church; and we also give the general plan, and plans of the tower and spire.

The church, it will be seen, has the usual form on the ground, with addition of an octagonal vestry north of the chancel. The chief dimensions are figured on the plan, which also shows the arrangement of the fittings and heating apparatus, and gives some idea of the decoration of the chancel, and of the flooring of the whole church. The small cut shows the tower and base of the spire in plan, at four stages. The material of the main portion of the fabric is the Bodelwyddan stone, or hard limestone, similar to that of Anglesea, rough or dressed, according to position; whilst the plain-facing to the interior of the nave

\* L. the eleventh week of the Roll.  
 † Join of Oxford occurs in the Westminster Rolls published by Smith, p. 134; s. Edw. 111.  
 ‡ This is given by Ducange.  
 § Vide "Publications of the Cambridge Antiquarian Society," vol. I., 1844.

INDURATION OF THE EXTERIOR OF THE NEW MUSEUM, TRINITY COLLEGE, DUBLIN.—We learn from the *Dublin Builder* that Messrs. P. S. Barff & Co. have now completed the induration of the Portland stone work of the Museum, Trinity College, with Ransome's patent solutions. We mention it that the result may be noted.

## BODELWYDDAN CHURCH: GROUND PLAN.



is from the Talacre quarries of Cheshire, a cream-coloured stone. There is no plastering. The nave piers have the clustered shafts of Belgian red marble, the blocks 6 feet 4 inches in length, and 2 feet 4 inches in diameter, on bases of the native stone. The capitals, richly carved with the passion-flower and oak and ivy leaves, are in the native stone, except the abacus, which is of the Belgian red marble. Above the piers, in the spandrels, are shafts of Belgian red marble on corbels. Each corbel of these is foliated, and otherwise enriched, and exhibits a coronet and one of the letters of the name of Lord Willoughby de Broke. The intermediate shafts are carried also by enriched corbels, these forming the apex of each label of a nave-arch. The several shafts carry springers of the open timber roof. There is, however, a band which might be called clerestory, of small trefoiled openings, not showing in the exterior, to light up the nave roof; and the same object is furthered by the lucarnes at a higher level, which appear in our view. The nave and aisles are covered over in separate spans, with arched principals and collars (hammer-beams also in the nave), with cusped spandril spaces, the whole in oak. The external covering is of slate, cut in patterns. The internal height in the nave, from the floor-line to the top of the wall-plate, is 23 feet 9 inches; and thence to the apex of the roof, internally, is 16 feet 6 inches. There is a gallery in the tower. It is carried at the front by two arches, springing in the centre from shafts coupled transversely, and has an open-work front or parapet.

In the chancel there is a more ornamental character in the whole of the details. Ogee crocketed canopies, rising from shafts and corbels, and projecting to form niches, run along the three sides, more elaborately enriched where the reredos occurs. Alabaster, varied in tint, is used for backs of the niches at the sides, Langueooc marble for shafts, and picked white alabaster for the capitals and corbels, the bases being Parbeck marble. The arcades or niches at the sides have the canopies of Caen stone, whilst alabaster is used for those at the reredos. Much carving is introduced, as in crockets and the half-flower, that at the reredos being in alabaster, and that at the sides in Caen stone. This carving has been executed by Mr. Harmer, under the architect's direction, Mr. Field having contracted for the general marble-work and carving. Beyond the extra richness given to the reredos in the points already named, it has a diaper at the back, and foliated instead of plain capitals. The centre panel has the monogram IHS, with wheat and vine, and the diaper carved with the passion-flower. The fly is much used in the canopies. The roof principals in the chancel are carried by clustered wall-shafts. These last are of grotto red marble, with a thin fillet of Irish black marble in each hollow to separate the red lines of the shafts. Irish black marble also is used in the necking and the abaci of the capitals, and in the hands of the shafts. The facing of the chancel is of the Bodelwyddan stone in lieu of the Talacre, only enriched, as described, with the shafts and other features in the decorative

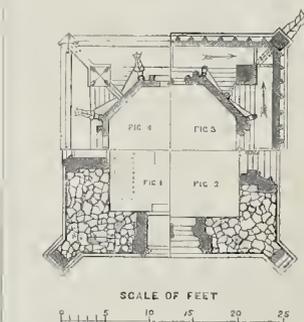


Fig. 1. Quarter Plan of Clock-chamber.

- " 2. " Bell-chamber.
- " 3. " Base of Spire.
- " 4. " Spire above Flying-buttresses.

marbles. The chancel arch is carried on red marble shafts, which rise from corbels. The latter, carved from the native stone, represent angels holding books: with the carving of the nave, they were executed by Mr. Henry Smith. The chancel ceiling is formed into square panels by moulded ribs, with rosettes and bosses at the intersections, and springs from an enriched cornice of which the lower mouldings are carried down to the capitals to form a square head or label, with spandrels over the wall arches above the windows. Each arched principal rib is formed with a cusped trellis work filling-in of what may be called the web, and with mouldings and the half-flower on the inner edge, corresponding with the projection of the capital from which it springs. The chancel is seated stall-wise, and the nave has open seats, in each case with appropriate panelling and ends. The roofs and seats in the nave were executed by Mr. Grey, of Leamington. The general carved woodwork,—including the pulpit presented by the Misses Williams, sisters of Lady Willoughby, (which has kneeling figures), the reading-desk, the stalls, and the bosses to the chancel ceiling,—was by Mr. Earp. We should add that the commandments are lettered in gold, on panels of dove marble, in the proper places.

The east window,—one of five lights, with geometrical tracery,—is filled with glass by O'Connor, who executed the glass for the windows next to it. These last mentioned are memorial windows with subjects. There is a circular window at the east end of the north aisle, over the entrance to the vestry; and the western window is also circular, and is filled with geometrical tracery, and surmounted externally by a high crocketed canopy or label moulding, with pannelled tracery and coat of arms in the tympanum. The glass for both these windows was presented by the Misses Williams. There is stained glass also in the north

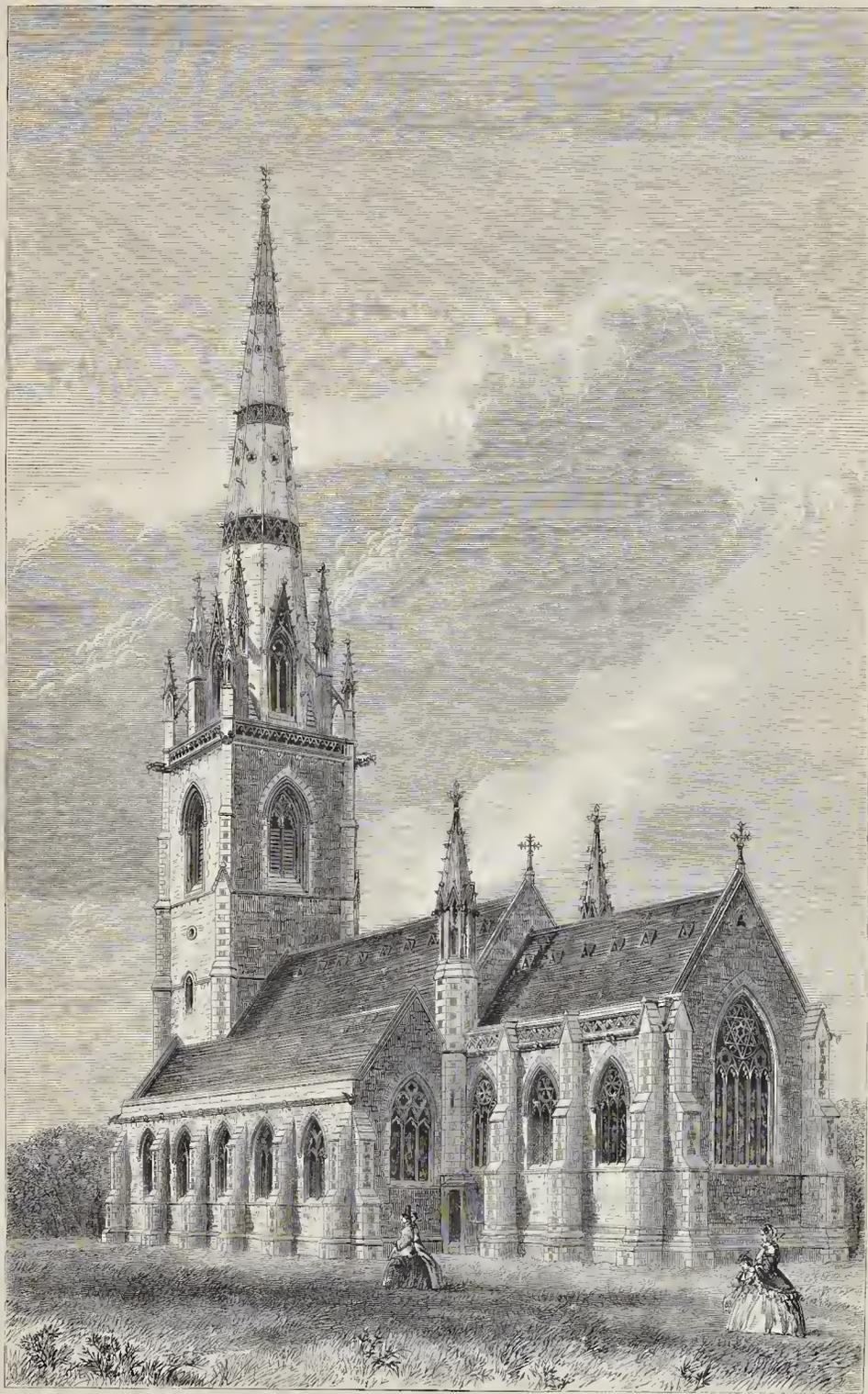
and south windows of the tower or entrance, representing—one, Kentigen, the first bishop of St. Asaph; and the other, St. Margaret. In the east window of the south aisle are the arms of St. Asaph and other bearings. The vestry is covered with a leaded roof concealed behind its parapet; and it is lighted by cusped spherical-triangular windows in the upper part of the walls.

The pavement of the church was supplied by Mr. Field. In the nave and aisles there are borders of Irish black and rouge-royal marble polished, bands of rouge-royal and dots of Irish black marble polished, and squares of Portland stone rubbed. In the chancel, communion, and vestry floors the same arrangement is adopted, but the squares are Sicilian marble. In the tower and its recesses the bordering is of Irish black marble polished; the bands are of slate, the squares of Portland stone, and the dots of red tile; whilst in the tower-entrance, Portland stone, and Irish black polished dots, are used. The steps of the communion, chancel, vestry, and private entrance to the chancel, are of polished Sicilian marble. The western doorway, which is skillfully planned to get extra effect from depth beyond that from thickness of the wall, has shafts of polished Aberdeen granite. The screen of the tower archway has the shafts of polished Anglesea marble.

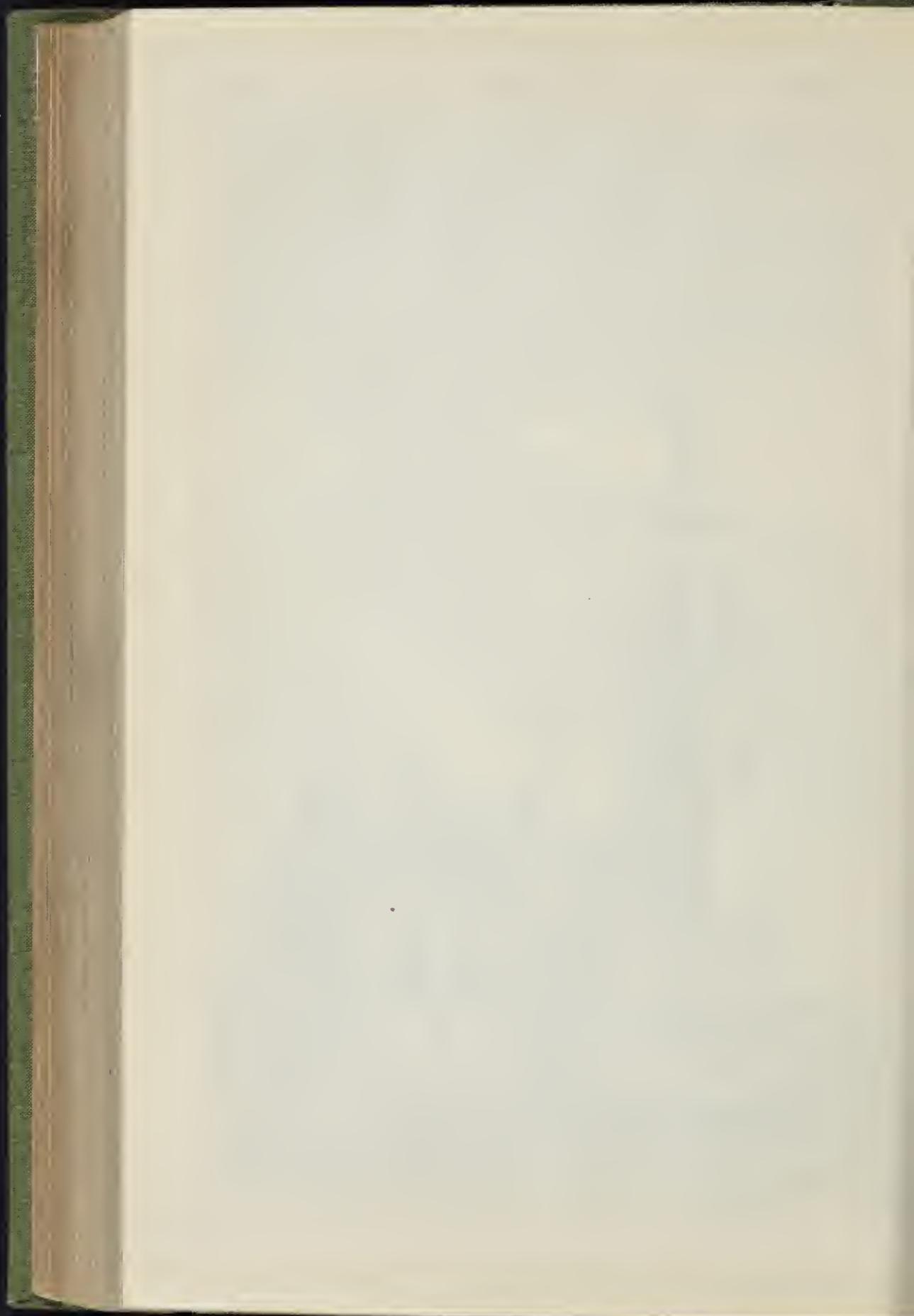
The tower measures 24 feet square on the outside, exclusive of buttresses: the height to the base of spire is 82 feet 6 inches; and the whole height from the ground is about 202 feet. The view and small plans together will show much of what has been aimed at through details. The actual effect of the pierced work of the spire and of the shafts of pinnacles, and of the peculiar crockets, is, we believe, good. Some attention has been given to modifications from the original perpendicular or other right lines of the buttresses and spire, in a manner analogous to the optical corrections in the Greek temples. The buttresses are all built with a batter on the face: the pinnacles of the tower and lucarne lights of the spire incline towards the centre, the horizontal lines being kept horizontal; and the spire has an entasis of about 6 inches on each side, or an addition of 1 foot to the total breadth in the middle.

The structural part of the design seems to have been carefully attended to: the masonry throughout is well jointed and put together, especially where the open work occurs in the spire in a thickness of material diminishing from 9 to 6 inches. The gutters of the roofs are protected from an accumulation of snow, by an arrangement of short lengths of battens, fixed transversely to longitudinal pieces, and laid, on blocks, like a ladder, along the gutter. The spaces between the battens will be not more than  $\frac{1}{2}$  of an inch wide after the shrinkage; so that snow will not pass through, and there is a clear depth for water to flow in the gutter beneath.

Many contractors have been engaged on the mason's work of the building: some of the number have been already named. Mr. John Thomas (not the sculptor) constructed the carcass of the building, or greater portion of it; and Messrs. Holme & Nicol, of Liverpool, built the spire. Mr. John Gibson, of Westminster, was the architect.



BODELWYDDAN CHURCH, NEAR ST. ASAPH.—MR. JOHN GIBSON, ARCHITECT.



ILLUSTRATIONS OF FRANCE IN THE BODLEIAN LIBRARY.

SOME months ago the archaeological section of Historical Works (Paris) ordered several of its members to study a question which for some long time past, has occupied the attention of the scientific world, viz., the importance and origin of a collection of drawings known under the name of the "Collection de Gaignières," now in the Bodleian Library at Oxford. The report, presented by M. Dauban, in the name of the commission, to the Minister of Public Instruction, &c., has signalled the great value of this collection, and has shown what interest the Imperial Library ought to take in completing, by a reproduction of the Oxford drawings, the rich collection which it already possesses from the same source.

The collections of M. de Gaignières, tutor of the sons of the Grand Dauphin, were presented in 1711 by the *savant* to Louis XIV. They consisted of a considerable number of books, manuscripts, prints, drawings, &c., containing most precious information as to the history and ancient customs of France, and were placed in the King's Library, now the Bibliothèque Impériale. This establishment has preserved the greater portion, and their being so frequently consulted proves their utility to the scientific world. A number, however, of drawings, consisting of twenty-five portfolios full of designs of monuments, especially tombs, escaped from the French possession during the period 1785 to 1801, according to various documents. In comparing the list of drawings at Oxford with the detailed catalogue of the Gaignières collection, drawn up in 1815 by Clairambault, there is every reason to believe that the sixteen folio volumes, hatched in 1809 by Richard Plough to the Bodleian Library, belong to this collection. A commission has been appointed to consult upon the best means of reproducing the above, and M. Jules Frappaz, an experienced artist, has been charged by the Minister with the mission of executing, first experimentally and then definitively, the drawings of the Oxford collection, containing about 3,000 subjects. M. Frappaz speaks in the handsomest terms of his reception by the conservators of the Bodleian Library.

THE LATE MR. EBENEZER LANDELLS, ENGRAVER ON WOOD.

We hear with regret of the death of this clever artist, who has in his time done good work. Mr. Landells was a native of Newcastle-on-Tyne, where he was born in 1808, and was descended from a family reared on the banks of the Tweed, but who removed to Newcastle, and carried forward a successful business as drapers. He received an excellent education at Mr. Bruce's academy in Newcastle,—the same good school wherein Robert Stephenson, the engineer, laid the foundation of his knowledge. When about fourteen years of age Landells was apprenticed to Mr. Isaac Nicholson, a wood-engraver, who, however, like the Bewicks, executed general work—engraving on brass, copper, and silver. At that time Thomas Bewick and his brother were showing the capabilities of engraving on wood; but generally the work done was still of a very coarse description. During the days of Mr. Landells's apprenticeship schools of art were not thought of; but in Mr. Nicholson's establishment the boys had an opportunity of learning to sketch and draw: they had also the means of gaining a more general knowledge of art than is obtained by many wood-engravers at present. Having finished his apprenticeship, Mr. Landells came to London, where he found plenty of demand for his work: he was, however, induced to undertake the management of an eminent printer and publisher; and this office he held for a considerable period. By this means Mr. Landells was thrown amongst many artistic and literary celebrities, and eventually he was enabled to commence business on his own account, and give employment to a number of engravers and draughtsmen. From that time Mr. Landells has been eminently connected with the illustrated periodical literature of the metropolis. Many of our readers will remember the commencement, in 1841, of the now venerable but still healthy and vigorous *Punch*. Mr. Landells was one of the original three who started the publication. At that time the market was polluted with several journals, which pretended to wit, but had an injurious tendency. It was thought, and wisely, that the wit and satirist, assisted by the draughtsman and engraver, might play a useful part without indulging in calumny or profanity. *Punch* was accordingly launched,

Mr. Landells being the chief proprietor, and supplying the engravings. Mr. Mayhew, and, if we remember rightly, Mr. Mark Lemon, the first and present editor, were the other two originators. A late member for Pontefract assisted Landells with cash, and was to undertake the printing in order to repay himself. The sight of a journal, in a coffee-house, printed by Bradbury & Evans, led him to call upon them for a tender, and resulted in a very short time in their purchasing the copyright of what has been to them a fortune, and to the public a boon.

After this Mr. Landells, together with the late Mr. Douglas Jerrold, projected "The Illustrated Magazine," which, under the editorship of Jerrold, was continued for two years. Some of the drawings by Kenney Meadows, engraved by Landells, have much merit. After the decline of this, Mr. Landells, advised, we believe, by Mr. Henry Mayhew, started the *Lady's Newspaper*, which, for many years, was under the management of Landells. The *Express*, a weekly journal illustrative of the Great Exhibition of 1851, and other works, which have had a varied amount of success, were also planned by him. About the time that he originated *Punch* he was employed upon the *Illustrated News*, and was deputed to follow the Queen in her visit to Scotland, referred to in our notice of the late Mr. Ingram, in our last, and to sketch and engrave the incidents of the journey. This was the first attempt of the kind, and Mr. Landells executed it so successfully that he was afterwards deputed to follow Her Majesty in various other progresses for the same purpose.

More lately Mr. Landells, assisted, by one of his daughters (Alice), produced several artistic works for children (the boys' and girls' toy-makers). These ingenious contrivances enable the young to prepare models of houses, locomotives, and other objects, and so to create things for their amusement, instead of, in the common fashion, destroying the toys which are put into their hands ready made. The last years of Mr. Landells's life have been clouded by difficulties, in a measure resulting from a want of that adherence to matters well planned and commenced, and of those business habits, which, when united with talent, lead to fortune. Many will long remember Mr. Landells for his genial and friendly disposition, and join in the regret experienced by his family at his loss.

THE RECORD OF MATTERS AFFECTING OUR PURSUIT.

AMONG the papers read at the Social Science Congress at Glasgow, was one of some interest to the order of architects. It was by

Mr. Arthur Symonds, recommending the systematic formation of libraries adapted to every calling, from the Sovereign or Minister of State to each class of man of business. He traces to the want of systematic method in recording matters as they arise, many drawbacks to our social progress, and to the development of the knowledge appropriate to each class of public and private service. To obviate this evil he proposes that, instead of the haphazard formation of libraries, they should be prepared for by an apt, logical, practical arrangement of receptacles, after the manner of books, which would afford a proper place for whatever arises. In exemplification, he produced plans of the arrangement of a state register, and other subsidiary registers, exhibited in due order in cases capable of receiving papers of the folio size, the contents of which are indicated on the backs of the cases. The plan showed various methods of distinguishing by signs and by colours the classes of the books, as well as of relieving the monotony which a long range of books of the same sort would occasion.

Though thus embodied in convenient form, the plan is not formal, but logical. It is framed so as to comprehend every class of matter in due subordination to the general plan, which comprehends the entire field of public service, each out into the minutest detail, according to the peculiar position and exigencies of the person by whom the plan is used, while, if all Associations would each according to the scope of their own purposes adopt it, the community at large would find in its possession, somewhere, the whole range of science and art provided for.

The author stated that he had originally been led to adopt the plan for official and legislative purposes; but in doing so had discovered its applicability to all other purposes; and that, in the measure of its general adoption, would be the facility of applying it in any instance.

He had read, at the three former meetings of the Association, papers declaratory of the prin-

ciples and general methods; and it was now his purpose to give, according to a promise, some illustration of the details.

The subject was recommended to the Council of the Association for investigation, as to its applicability to the purpose of reducing, into some scientific shape, the multitudinous topics and communications which it has under consideration.

Every one of us must feel, and every public office and associated body must know, how advantageous it would be if every suggestion, memoir, or record that had been brought forward, bearing on their special objects, were so put away that it could be at any time referred to without trahle.

ARTICLED PUPILS AND THEIR MASTERS.

A CORRESPONDENT writes as follows:—

"Sir,—May I ask you a question? First, is it legal, and, secondly, is it gentlemanly, in a case where an architect is engaged in public competition, for his articulated pupils, without his knowledge, to send their private designs to the same competition? A short notice in your next number would greatly oblige a reader, and one who values your journal and his profession. ARCHITECT."

Although we do not know the terms of the "articles," we say at once it is neither legal nor gentlemanly, and we do not envy either master or pupils between whom such a feeling exists as should permit the occurrence. There ought to be between artist-master and pupils deference, confidence, anxiety to aid and instruct, gratitude for aid given, mutual affection; and, these existing, no one of them would think of inquiring whether such a dirty act as that mentioned be "legal" or not.

Years ago, in the early travel of hoy-days, we enjoyed for a short time the society of the venerable Dr. Müller, of Darmstadt. In his office there were two pupils, or disciples as they would have been called in earlier days. The earnestness with which one of them said, in the course of a conversation as to his master, "If Dr. Müller were to tell me to polish his boots, I should do it, satisfied he was right in asking it, and only too glad to show my thankfulness for the advantage I derive simply from being near him," recurs to us as illustrating a relationship between master and pupil one would desire to find more often than we do.

BIRMINGHAM ARCHITECTURAL SOCIETY.

THE first meeting for the present session of the Birmingham Architectural Society was held on Thursday evening, the 4th. It was announced that during the recess a correspondence had been carried on with the Royal Institute of British Architects, relative to the establishment of a voluntary professional examination; a scheme having been proposed by the council of the Institute which, in all its main features, met with the thorough approval of the Birmingham Society. The following gentlemen were put in nomination as honorary members of the society: Sir Francis E. Scott, Bart., Mr. J. T. Bunce, Mr. S. Timmins, Mr. A. Davidson. The president of the society, Mr. J. G. Bland, then proceeded, after a few prefatory remarks, to read a paper "On the Disposition and Construction of Farm Buildings." Mr. Bland sketched the rise and progress of that class of improved farm buildings which is now becoming every day more and more common. He pointed out the great necessity for economising labour as much as possible, and showed that by judicious arrangements with regard to the position of buildings, a great portion of labour that is ordinarily wasted might easily be saved. The questions of site, of aspect, of the concentration of the buildings, of the uses of water and steam-power, and a variety of other topics, were successively brought forward. After the conclusion of the paper, a conversation followed, and various matters of detail were debated by the members.

HERBERT INGRAM'S PARLIAMENTARY SUCCESSOR.—We last week gave a review of the life of the late Member for Boston, and are led to add to it, that he seems likely to be succeeded by another self-made man, connected with those trades, undertakings, and works, in which our readers are more particularly interested.—Mr. S. C. Kitley (a native of the town), who has just returned from America, where he has been many years engaged in the construction of railways, docks, and public works. In his address to the Electors he declares himself to be in favour of various improvements calculated to benefit Boston; and having a large fortune to spend, he will not be stopped for lack of means. There is a want of such men in the House of Commons.

## THE LIFE-BOAT STATION BAROMETERS.



To the subject of life-boats and their arrangements, and the importance of the barometer, we have ere now given attention; and we are glad to learn that the life-boat stations on our coasts will soon be supplied, as some forty of them already are, with barometers such as that in our engraving. A good barometer will not infrequently indicate a coming storm two or three days before it actually takes place or reaches the locality where it has been indicated. If such barometers were placed in every harbour, with instructions given to capable residents appointed as storm-warners, an immense saving of life and property would speedily be the consequence. Practical instructions, just such as are wanted, have been drawn up by a nautical man of experience and intelligence, namely, Rear-admiral Fitzroy, F.R.S., and it was he who, as chief of the Meteorological Department of the Government, obtained, some time since, the sanction of the Board of Trade to supply about forty of our poorer fishing villages with barometers, some of which have already proved their value by the services they have rendered. The subject has now been taken up by the National Life Boat Institution, of which the Admiral is a committee-man, and who propose to fix such instruments as the engraving represents wherever useful and practicable at the Society's stations, and in charge of their permanent coxswains as storm-warners. The manufacturers of the instruments will probably be Messrs. Negretti & Zambra, who supplied the forty already fixed, and the cost will be under 6*l.* each. A gentleman has already subscribed 50*l.*, and it is anticipated that the public will readily make up what more may be requisite.

Some curious and interesting information on "signs of weather" are given in the admiral's "Instructions."

"Whether clear or cloudy, a rosy sky at sun-set, presages fine weather; a red sky in the morning bad weather or much wind, perhaps rain; a gray sky in the morning, fine weather; a high dawn, wind; a low dawn, fair weather." Light, delicate, quiet tints or colours, with soft, unde-

\* A high dawn is the break of day seen above clouds, instead of the horizon.

fined forms of clouds, indicate or accompany fine weather, but gandy or unusual hues, with hard definitely-outlined clouds, foretell rain, and probably strong wind.

Remarkable clearness of atmosphere near the horizon at distant objects, such as hills, usually visible; or raised (by refraction), and what is called "a good hearing day," may be mentioned among signs of wind, if not wet, to be expected.

More than usual twinkling of the stars, indistinctness or apparent multiplication of the moon's horns, halos, "wind dogs" (fragments or pieces of rainbows, sometimes called "wind galls"), seen on detached clouds, and the rainbow, are more or less significant of increasing wind, if not approaching rain, with or without wind.\*

Whether we are indebted to the Admiral for the rhythmical form in which the following "wise saws" are put we know not; but the form is at all events a useful one, and well adapted for record in the sailor's brain, among his longer and tougher but less valuable rope-yarns and other odds and ends:—

"When the wind shifts against the sun,  
Trust it not, for back it will run.

First rise after very low  
Indicates a stronger blow.

Long foretold, long last;  
Short notice, soon past."

Perhaps this is the first "poetry," as well as one of the first specimens of weather-wisdom, ever issued on the authority of an official member of a grave Government department. The lines remind us, by the way, of a very old rhythmical weather axiom prevalent in Scotland, and which is in perfect accordance with the Admiral's first prose axiom:—

"The evening red and the morning grey,  
That's the sign of a bonnie day."

## BREAKWATERS AND HARBOURS.

A SELECT COMMITTEE was appointed by the House of Lords to inquire how far it may be practicable to afford better shelter to shipping upon our coasts than is at present afforded, by the adoption of some plan for the construction of breakwaters and harbours less costly and better adapted for certain localities than the system of solid masonry harbours in use. This committee has just published a report, of which the following is the principal point:—

"The committee feel the importance of seeking every means by which harbours and breakwaters of a less costly construction than those at present in use, or formation could be placed on various parts of the coast.

They have taken much evince on this subject, and have had their attention especially called to floating breakwaters, of which several plans have been submitted to them. Upon the advantages to be derived from these constructions the evidence is conflicting.

The committee are not prepared to recommend that the Government should undertake the task of constructing breakwaters on these principles; but, looking to the vast cost of harbours constructed upon the systems hitherto in use, they are of opinion that a moderate sum might be advantageously expended by Government in testing any plan which may offer a probability of important results in great future saving of money, and in giving protection to life and property in various localities. To carry this object into effect, the committee recommend that a sum, not exceeding 10,000*l.*, be placed at the disposal of the Admiralty."

## LIVERPOOL ARCHITECTURAL SOCIETY.

## THE BANKRUPTCY CASE.

The first meeting of the thirteenth session of this society was held on Wednesday evening, the 3rd, at the Royal Institution. Mr. James Hay, the president, occupied the chair. The president presented to Mr. Raphael C. Isaac a copy of "Brandon's Parish Churches," the prize offered by the society, for the best design for a villa, during the session of 1859-60.

The president announced that a special meeting of the society had been held that day upon professional matters, and called upon the secretary to read the report of that meeting, which was as follows:—"At a meeting of the professional members of the Architectural Society, held for the purpose of receiving an explanation from two members of the society in reference to certain paragraphs which have appeared in the press reports of a bankruptcy case,—It was resolved, 'That, as these members have volunteered a full and detailed statement of the transaction, the meeting desire to record their deliberate opinion;—1st. That it is very much to be regretted that these gentlemen should have been betrayed by any provocation into the adoption of a proceeding so extremely irregular and open to abuse;—2nd. That from the evidence there is no foundation for the imputation of any fraud on the part of these gentlemen;—3rd. That the sum obtained is a very inadequate remuneration for the services rendered in the preparation of the drawings and specifications referred to."

The president drew attention to a report of

\* Full particulars are given in the journal of the Association, *The Life-boat*.

the sub-committee of the five literary and scientific societies of Liverpool, appointed to take into consideration the offer of Mr. William Brown to set apart a portion of the new Free Public Library for the purpose of exhibiting scientific and mechanical appliances. The committee reported that the result of their labours would be the realisation of Mr. Brown's wishes, and that a valuable addition would be made to the scientific institutions of the town, not contemplated when the library was commenced. Mr. Huggins exhibited and explained a chart of the various styles of architecture in the form of a stream, with various branches and ramifications, showing the way in which the styles flow out one from the other. The president then read his inaugural address, which was warmly applauded; and Mr. J. Audsley read the paper of the evening, "History of the Art of Illumination, and its Revival and Application in the Nineteenth Century."

## A BIG PIPE.

A NEW iron main of great size is being formed near New York, for the Croton Water-works. The sheets prepared for this pipe are 6 feet wide by 8 feet long, and half an inch thick. The iron used is required to stand a strain of 40,000 lbs. per square inch. The pipe is 1,350 feet long, and 7½ feet in diameter. It will be made in sections of 12 feet, requiring 675 sheets, each of which contains 48 square feet, and weighs 960 lbs., or 20 lbs. to the square foot.

Each sheet is punched near the edges with 200 holes. The sheets are then put under a drilling-machine, and each hole is countersunk so that the rivets may be driven flush, leaving the pipe perfectly smooth on the inside. Next the sheets are sent to the rolling-machine, and rolled to the required curve or radius, three sheets hatted together forming the pipe. In each 12 feet section there are just 1,200 rivets. The weight of the plates is 618,000 lbs.; of the straps, 145,125 lbs.; of the rivets 50,000 lbs.—making in all a total of about 810,000 lbs. The contract of Abbot & Son, for furnishing the plates and straps, was for 28,859 dol. 81 c. Sweden & Rowland do the remainder of the work, and supply the other materials, for 29 dol. 31 c. per linear foot, amounting to 43,260 dol. 50 c. Total, 78,120 dol. 31 c.

The pipe will rest on about 170 cast-iron standards, or saddles, which are placed 8 feet apart, and weigh about 1,000 lbs. each. It will be protected inwardly and outwardly by coatings of Prince's metallic paint.

The estimated difference in the length of the pipe in summer and winter is 4 inches; and to provide for this expansion and contraction there will be a slip joint at either end, which will be made of cast-iron, with slipping surfaces lined with brass, to prevent their becoming fixed by oxidation. The pipe is mounted on rollers. In regard to the strength of this pipe, it is said that, if supported at its extremities, with 1,350 feet intervening between the supports, it will sustain itself when filled with water.

## METROPOLITAN BOARD OF WORKS.

## THE PROGRESS OF THE MAIN DRAINAGE WORKS.

At the usual meeting of the Metropolitan Board of Works, held on the 5th instant, Mr. J. Thwaites in the chair, Mr. Bazalgette presented the following report of the progress and cost of works executed on the several lines constructing for main drainage purposes:—

"I beg to report that the progress of main drainage works during the past summer has not been so satisfactory as could have been wished, owing mainly to the unusually wet season we have had, and other unforeseen difficulties which have occurred.

On the North Side of the Thames.—The Northern High Level Sewer would, with ordinary fine weather, have been completed ere this, but the old Hackney-brook remains to be filled in, and several branch connections and divisions of local drainage will have to be made under this contract. The value of the work executed up to the present time is about 157,760*l.*

The Middle Level Sewer Works have also been delayed by some difficulties with the contractor; it is hoped these will now be satisfactorily settled, and that the works will proceed more rapidly. About 1,300 feet of sewer, 9 feet 6 inches in diameter, has been constructed at Old Ford, and about 2,000 at Paddington. The value of the work executed under the contract is about 16,400*l.*

The Ranelagh storm overflow across Hyde-park is being well executed, about 660 feet of sewer, 8 feet 6 inches in diameter, having been completed, and works to the amount of about 2,200*l.* executed, besides 630*l.* for the underpinning of the Ranelagh Sewer in connection with these works.

On the South Side of the Thames.—The Southern High Level Sewer works were delayed considerably by the inability of the former contractor to proceed with them, but they are now being more satisfactorily performed by their successors, and about 960 feet of double sewer, from about 10 feet 6 inches in diameter, have been constructed at Pinner, about 1,650 feet of 10-foot sewer at Brixton,

and about 2,000 feet of smaller sewers, besides 3,000 feet of the Effra branch, 9 feet 3 inches in diameter, and another 900 feet, 7 feet in diameter. The works executed under this contract are valued at about 35,000.

"Southern Low Level Sewer"—The portion of this work under the Surrey Consumers' Gas yard, recently let, has not been commenced, owing, first, to some delay in getting the late contractor's plant off the ground, and then to the necessity of sinking further cylinders for the pumping-engines, and the time required to provide suitable engines prior to the commencement of this work. The contract with Mr. Aird for the completion of the work done is still in the course of settlement. The Deptford pumping engines are rapidly progressing, and will be ready for delivery before the engine-house foundations are ready for their reception."

The report was received, and ordered to be printed and circulated.

#### THE THAMES' EMBANKMENT.

Mr. Le Breton rose to move the resolution of which he had given notice:—

"That it be referred to the Main Drainage Committee to consider and report as to what measures it is expedient to take as to the proposal of carrying out the Thames Embankment in connection with the Northern Low-level Sewer; the throwing open, toll-free, of Waterloo and Southwark bridges; and the making of a viaduct across the Holborn valleys, with power to confer with the Government and other parties as to the provision of the necessary funds for all or such of the above works as the Board may resolve upon undertaking."

But, adopting Mr. Deputy Harrison's suggestion, he altered his resolution as follows:—

"That it be referred to the Main Drainage Committee to consider and report as to what measures it is expedient to take as to the recommendations in the report of the Committee of the House of Commons on the Thames Embankment and other improvements connected therewith, and to report to the Board."

The resolution was put and carried unanimously.

#### ELECTRO-TELEGRAPHIC PROGRESS.

The contracts for laying down the wires (under Allen's new patent) of the United Kingdom Electric Telegraph Company, to Manchester, Liverpool, and Birmingham, have been signed. It is stated that the works will be completed and messages transmitted by Christmas. It is estimated that the entire cost of completing the line (including all necessary offices for 32 stations, instruments, &c.), from London to Liverpool, will be 35,000*l.* The annual expenditure is estimated at 13,500*l.*, and the returns at 41,181*l.*, leaving a profit of upwards of 27,000*l.*, or about 50 per cent. on the capital!

News has arrived of the laying of four submarine cables in the Mediterranean, by Sir Charles Bright, between Valencia and the islands of Ivica, Majorca, and Minorca, and thence to Barcelona.

The Asiatic telegraph has now been carried down to Jezrah, on the Tigris, a hundred miles north of Mosul; and it is expected that, by the end of this month, messages will be transmissible from Constantinople to Nineveh.

New kinds of deep sea telegraphs are now the order of the day; but we are still of opinion that all such schemes should have been preceded by a formal and authoritative investigation, which has not yet taken place.

One of these new telegraphic cables is thus spoken of:—The Algiers and Toulon cable, says the *Birmingham Journal*, is made on an entirely new principle, being composed of hemp and steel wire, and is the invention and the patent of Messrs. John & E. Wright, of the Universe Works, in this town. The wire used is manufactured by the new process of which the firm of Webster & Horsefall are the patentees. Some idea of the extraordinary lightness of this cable may be gathered from the fact that it weighs a ton to the mile. The cable is laid down at the expense of the French Government.

Another new cable, said to be suitable for the Atlantic, is thus described by another contemporary:—We have had the opportunity of examining the entire details and process of manufacture, from the covering of the copper wire to the completion of the cable, upon a system introduced by Messrs. Hall & Wells. The copper wire is first covered with cotton, over which are wound two or more spiral layers of pure India-rubber, each spiral running in the reverse direction, the whole being covered with a cord of well-tarred hemp: this forms the core, which in turn is protected by longitudinal strands of hemp and wire, kept in position by a closely-plaited hempen covering.

The specific gravity of the finished cable is little greater than that of water [and may it not be too light for safe laying? One extreme may be as bad as the other: the safe mean is just one of those important points which still require to be investigated], and the tensile strength is considerably above that of an ordinary electric cable of equal bulk. The machinery by which the core-covering is made, we should mention, is

simply the application, on an enlarged scale, of the ordinary plating machine, with the addition of a series of independent hollow tubes for laying the longitudinal strands, so that the practicality of manufacturing any length cannot be questioned."

#### GAS.

UNDER the operation of the Metropolitan Gas Act, the directors of the South Metropolitan Gas Company have reduced the price of gas 4*d.* per 1,000 feet. The Phoenix Company has reduced the price 3*d.* per 1,000 feet. It is anticipated that a similar reduction will shortly be made by the Imperial Company.

The Surrey Consumers' Gas Company have declared their usual dividend of 8 per cent. per annum for the half-year last past. The net profit amounted to 6,609*l.*, odd, out of which a balance of 1,227*l.* was carried over to the account of unappropriated profits after payment of the 8 per cent.

The Manchester gas committee report that the sale of gas continues steadily to increase, the rental for the past year having amounted to 154,655*l.* 4*s.* 2*d.*, being an increase of 9,403*l.* 6*s.* 2*d.* upon the rental of the previous year, notwithstanding the reduced price which, during the last six months, has been charged to private consumers within the city. The gross profit amounts to 64,779*l.* 1*s.* 10*d.* as against 58,789*l.* 13*s.* 4*d.* the previous year, leaving,—after deducting for interest, 16,255*l.* 12*s.* 4*d.*, and on Sinking Fund account 13,306*l.* 5*s.* 6*d.*,—a surplus of 35,217*l.* 17*s.*, divisible between the improvement and water-works departments. From the pressure, apparently, made by the Local Gas Consumers Association, who are bent on having their gas at 3*s.* 9*d.*, and object to city improvements out of gas profits, the gas committee and the council have resolved on further reductions in price according to quantity consumed, the lowest to be 3*s.* 8*d.* for 1,500,000 feet and upwards per quarterly consumption, and the highest 4*s.* for quantities under 200,000 cubic feet. Beyond the city the prices are to range from 4*s.* 2*d.* to 4*s.* 6*d.*

The Sheffield gas company directors report their dividend for the half-year to be the maximum of 10 per cent. on old, and 8 per cent. on new stock, leaving a surplus of 2,269*l.*, which will raise the reserve fund to its conditional maximum, being now 6,908*l.*; so that the directors contemplate a further reduction in price. They therefore propose at once to reduce the charge for their gas to 3*s.* 9*d.* to the general consumer, and they anticipate a greatly increased consumption when they shall have reduced it to 3*s.* 6*d.*

About eighteen months ago a company was formed for lighting St. Petersburg with gas. The works have now been successfully started: upwards of fifty miles of main pipes are laid, the greater portion being the larger sizes, from 12 to 36 inches diameter.

#### PROPOSED UTILIZATION OF SEWAGE.

*Croydon*.—A prospectus of the Croydon Sewage Irrigation Company (Limited) has been issued. This company proposes to apply the sewage of Croydon to irrigate the land contiguous to that town, on a plan devised by the company's engineer, which is said to have received the approbation of high agricultural authorities. It is mentioned that by the plan proposed the sewage manure can be supplied over a large area to estates and farms, at a rate remunerative to all parties. It is to be pumped into a reservoir situated on an elevation about two miles from the town, whence it is to flow to each farm and field by gravitation. The company has obtained privileges for a term of 100 years. The capital is fixed at 30,000*l.*, in shares of 10*l.* each, with a deposit of 2*l.* 10*s.*

*Birmingham*.—The residents along the banks of the River Tame, says the local *Gazette*, "have frequently complained that the sewage of this town has polluted their river, killed the fish, and half-poisoned the people. In some instances, legal proceedings have been taken against the corporation, and no slight degree of anxiety or small amount of expense has resulted. The works carried on for some time past at the outlets of the sewers have, we believe, done a great deal towards removing the former causes of complaint; and it is now in contemplation to go a step further, and ascertain whether the sewage matter, having ceased to be a nuisance to the neighbouring farmers, cannot be converted into a positive benefit to them, and at the same time be made a source of revenue to the town. The subject will

receive ample discussion; and we believe it will not be the fault of the mayor and corporation if some plan cannot be devised to carry into effect an object in every way so greatly to be desired." A meeting with this view has already been held. It was convened as a conference, by Mr. Lloyd (the mayor), and attended by a number of land-owners, farmers, and others. The meeting has appointed a committee to consider the best method of bringing the corporation and the farmers into close contact in this matter.

#### PROVINCIAL NEWS.

*Belper*.—The waterworks directors have accepted the following tenders, viz., the Butterley Company's for the supply of cast-iron pipes, &c., and the tender of Messrs. Tomlinson & Harper, of Derby, for the construction of the reservoirs and pipe laying. Operations will be commenced forthwith, to ensure the works being ready by the spring of next year. The plans were furnished by Mr. R. Bayliss, of Derby.

*Newcastle-upon-Tyne*.—The new Mechanics' Institute and Baths and Wash-houses at Low Walker, built by Mr. Charles Mitchell, of the firm of C. Mitchell & Co., for the workpeople of his firm and the inhabitants of that village, have been inaugurated. The building is situate in the principal street of the village. Mr. Mitchell acted as his own architect. There are apartments on the ground-floor for the keeper of the institute. Above these are the reading-room and library, 52 feet in length and 27 feet in breadth.

#### STAINED GLASS.

AMONGST those glass-painters who are at any rate trying to raise the character of their productions, by the employment, amongst other means, of able artists when terms or opportunity permit it, we may name Messrs. Lavers & Barrand. This firm have recently produced a small light, after a cartoon by Mr. E. B. Jones, artist, of the school known as "P. R.," which deserves mention. The subject is the Annunciation. The Virgin is kneeling amidst flowers, holding in her hand the dove. Gabriel,—

— "The angel who came down to earth  
With tidings of the peace so many years  
Went for in vain, that op'd the heavenly gates  
From their long interdict,"—

stands behind. The Annunciation places before us, as Mrs. Jameson says, "the two most graceful forms which the hand of man was ever called on to delineate,—the winged spirit fresh from Paradise; the woman not less pure, and even more highly blessed—the chosen vessel of redemption, and the personification of all female loveliness, all female excellence, all wisdom, and all purity." It is small blame to say that the cartoon falls short of this; but Mr. Jones has given the Virgin a singularly sweet and touching face. This has been transferred to some extent to the glass; and the whole, although confused and wanting in white light, presents an agreeable mosaic of colours, and a pleasing sentiment for those who rightly look for something more than sparkle.

*St. Thomas's, Oxford*.—A new window of some importance has just been placed in this church at the east end of the new aisle. The subject is intended to be an embodiment of the idea of Christian worship as seen by St. John in his Apocalyptic vision. The centre of the three lights contains a figure of the Lamb standing on the heavenly altar, His blood streaming into a chalice. Two angels are represented in the two small lights above as holding candles. Below is seen a Priest celebrating the Holy Communion at an altar in correspondence with the altar in Heaven. In the two side lights are angels "harping with their harps," and saints, with palms in their hands, casting their crowns before the throne. The lowest of these alone appear to be historical figures—most conspicuously those who may be supposed to be connected with the locality—St. Thomas the Martyr, St. Frideswide, and St. Margaret, and with them others well known in the history of the English church. On each side is the tree bearing "twelve manner of fruits." The window, based on a suggestion by Mr. Street, is the work of Messrs. Clayton & Bell, of London.

*Axminster*.—An east window has just been placed in the church of Axminster. The character of it is said to be in keeping with the style of the sacristy, which is Early Decorated,—about A.D. 1315. The ground is a diaper of blue and crimson, bearing medallions, representing in their ecclesiastical order the Circumcision, the Epiphany, the Baptism, the Agony, the Crucifixion, the Entombment, the Resurrection, and the Ascension. In the highest

quatrefoil is "The Descent of the Holy Ghost." The works were executed by Messrs. Powell, of Whitefriars.

**Liverpool.**—A stained-glass window has just been completed and placed over the sacristy door of St. Augustine's (R. C.) Church, Liverpool. It consists of three lights in the centre, one the figure of Christ as the Good Shepherd, having a lamb in His arms, and in the side lights figures of St. Charles Borromeo and St. Francis de Sales. These figures are placed under canopies formed of cusped equilateral arches, ornamented with the ball flower, and springing from the foliated caps of slender banded columns, of a character united to the geometrical style of the window. The spaces above the canopies are filled with ornamentation composed of the vine, &c., upon the alternate ruby and blue grounds, and surrounded by borders of the strawberry and lily. The spaces underneath the figures, and the openings in the geometrical head of the window, are filled with foliated tracery. The window has been executed by the St. Helen's Crown Glass Company.

**Halifax.**—The two windows in the north wall of the Rokeby chapel, at the parish church of Halifax, have been filled with stained glass. Mr. Warrington was the artist. Each of the windows consists of three lights, with Perpendicular tracery in the heading. By elevating the centre subject, a pyramidal arrangement has been effected. The window nearest the east is devoted to the life of Abraham. In the centre light the Father of the Faithful is depicted in the act of offering up his son Isaac on Mount Moriah. In the sinister light is the Blessing of Abraham by Melchisedek, king of Salem. The dexter light presents the Meeting of Abraham's Servant with Rebekah at the Well, near the city of Nahor. The other window is devoted to incidents in the life of Moses, viz. the Offerings of the People towards the making of the Tabernacle, the Uplifting of the Brazen Serpent, and the Anointing of Aaron. The Uplifting of the Brazen Serpent occupies the centre light. The head-lights in each window are filled in with angels playing instruments of music; as in the west window of this chapel, which was filled by the same artist about a year ago. For these three additions to the church the parishioners are indebted to the Waterhouse family.

**Newcastle-upon-Tyne.**—The Ions memorial window, at St. Nicholas' Church, in this town, has been inaugurated. It will be remembered that, about this time last year, the local churchwardens determined to place a new east window in the church, with a view of filling it with stained glass to the memory of the late Dr. Ions, the organist of the church. A design for the architectural portion of the work was supplied by Mr. A. M. Dunn, architect, and Mr. Wailles supplied the glass. The window contains seven lights, the stonework of which was executed by Messrs. Patterson & Barstall. The top of the window is enriched by tracery, and the first figure in stained glass, represents the Lamb and Banner; the two immediately below representing St. George and the Dragon and St. Michael. On either side of these are two large ones of angels, conveying emblems of the passions, surrounded by points of foliage, beneath which are the monograms I. H. S. Further down are double rows of figures, of the sixteen prophets, eight forming a row. To the right and left are figures of cherubim, and the side openings are allotted to the four evangelists. The five central divisions are occupied by incidents connected with the crucifixion of Our Lord. The base of the window is devoted to a representation of the Lord's Supper. The sum raised for the memorial was between 400l. and 500l.

#### ROMAN CATHOLIC CHURCH-BUILDING.

**Hoveford.**—The new Church and Monastery of the Benedictines, at Belmont, near Hereford, have been formally opened. The church, the first stone of which was laid six years ago by Mr. Wegg-Prosser, and which has just been consecrated, is cruciform in plan, and comprises chancel, lateral chapels, central tower, transepts, nave, aisles, and south porch. The extreme length is 150 feet by 60 across the transepts. The whole of the interior is worked in Caen, Painswick, and Bath stone. Exteriously it is built in Sargardine coursed stone, with tracery and dressings in stone from the forest of Dean. The roofs are covered with ornamental Bressley tiles with crests in metal and earthenware. The ceiling of chancel is sub-divided into compartments by wrought oak principals resting on curved hammer-beams, which are further supported by cusped brackets

which rest on angel corbels. The ceilings of the side chapels and transepts are also paneled, but in a manner less elaborate. The clerestory of the chancel is partly formed by gables jutting out of the main roof, forming a line of tracery, terminating in crosses carved in stone. The ceiling of the tower is groined in Caen stone, with carved bosses at the intersection: the same is supported on Devonshire marble columns, which jut out in emblem of the four Evangelists. The east end of the chancel has a window of five lights, which is filled with stained glass, by Messrs. Hardman & Co., of Birmingham. It contains five figures, representing our Saviour surrounded by angels; St. Michael, St. Raphael, and St. Gabriel, with choirs of angels surrounding the archangels. The roof of the nave and aisles are open, and are constructed with arch-principals, strengthened with ring posts and collar beams. The west end is filled with a large rose window, the tracery of which forms a cross composed of roses. The internal decorations are not yet commenced, except the high altar, which is executed in alabaster and marble. The church was commenced long anterior to a monastery being thought of, and it is undergoing several alterations. The monastery is entered from the church by a ground cloister, in which recesses are formed for resting. At present only one wing of the monastery is completed: this measures over 200 feet, and contains upwards of 40 cells, with rooms in proportion. The refectory is 60 feet long by 20 feet wide, above which is the library. Of the cloister only one side is at present completed, in local stone, with Bath stone dressing. The whole of the buildings were designed by Mr. Pugin.

**Garstang.**—The foundation-stone of a new Roman Catholic church has been laid at the village of Scorton, near Garstang. It is intended to be in the Early Decorated period of Gothic architecture. The architects are Messrs. J. Hanson & Son, of Clifton. The church will be seated to accommodate 300, and is expected to be completed in about nine months. The contractor for the joiner's work is Mr. J. Turner, of Preston; and for the masonry, Mr. W. Yates, of this town. The building is to cost about 2,500l.

**Brighton.**—A new Roman Catholic place of worship is about to be erected on a piece of ground now occupied as a timber-yard at the top of Hampton-place, Brighton. "Three tenders were at first sent in," says the local *Gazette*, "one from Messrs. G. Cheesman & Freeman, another from Mr. Fabian, and a third from a firm in London, and there was not 40l. difference between any of them. After Messrs. Cheesman & Co. had received a letter stating that theirs was the lowest tender, the next morning they received another letter to the effect that a subsequent tender had been sent in by the evening post, from Messrs. Patching & Son, precisely the same in amount. On Tuesday Messrs. Cheesman & Co. received information that their tender was accepted." The work will be forthwith commenced.

**Wexford.**—We are requested to state that the two churches at Wexford, described in the *Builder* on 29th September, were designed by the late Mr. R. Pierce, of Wexford, and were erected under his superintendance.

#### CHURCH-BUILDING NEWS.

**Sco-Ruston (Norfolk).**—The church of Sco-Ruston, situated about five miles from North Walsham, is having the chancel restored at the sole expense of the impropriator. The roof, which is of hammer-beam construction, will be taken off and re-framed, and new oak timbers inserted wherever required. The altar railing will be of open oak tracery, and the benching, running east and west, of the same material. New buttresses will be erected at the east end, with paneled stone fronts, and the gable finished with stone coping and cross. The paving will be Staffordshire tiles, laid in irregular devices. The interior of the walls will be stuccoed, and the east end diapered in fresco, with the commandments and texts on zinc, laid in flush with the plaster. The works will be carried out, under the superintendance of Mr. R. M. Phipson, by Mr. Mass, of Coltishall. The nave is in a terribly bad state of repair, the roofing covered with thatch in a most dilapidated condition. Plans for this part of the church have also been prepared by Mr. Phipson, and the rector, the Rev. H. White, has offered to guarantee the collection of three-fourths of the sum required for the properly restoring it; but the ratepayers, who consist solely of two farmers, have at present declined to accept this very liberal proposal.

**Ipswich.**—The church of St. Mary-at-Elms, Ipswich, is about to be hemed throughout, and new pulpit, reading desk, and altar railing erected, from designs by Mr. Phipson. The main body of the church, consisting of a nave and north aisle, is a common-place Late structure, but there is a good Norman doorway, with its original ironwork, of elaborate and excellent design, which will be carefully preserved. The tower is red brick, of Tudor date, relieved with black diamond work. The contractor for the works is Mr. Seager, of Ipswich.

**Wednesfield.**—The chief stone of the mortuary chapel, to be erected in the new parochial cemetery at Wednesfield, has been laid. The intended chapel will be erected opposite to the main entrance, the porch facing the gates. The material employed will be red brick, relieved by three bands of white brick, and white stone copings, window sills, and cross. To the left of the entrance porch there will be a small helvry tower, surmounted by a spire. The internal dimensions will be 35 feet in length by 15 feet 6 inches in breadth. Light will be communicated by two main windows, one at either end, and by six side lights. The entire cost of the building will be about 300l. Mr. Edward Banks, architect, supplied the design, and the work will be executed by Mr. Plant, builder, Wolverhampton.

**Bradpole (Dorset).**—St. Andrew's Church, Bradpole, near Bridport, has been opened. The edifice is intended as a Chapel of Ease to the parish church of Bradpole. The church is in the Early Decorated style of architecture. The interior comprises a nave and chancel, with a robing room on the south side, which also serves as an organ chamber. The edifice is capable of receiving more than 300 persons. The length of the nave is 84 feet, and its width 26 feet. The chancel—24 feet long by 18 feet wide—is separated from the nave by a moulded arch. All the seats are open: those in the nave are of stained deal; those in the chancel, of oak, carved. The pulpit and font are of Hambill stone, carved. The east window is of five stained glass, representing the Baptism, the Holy Supper, and the Crucifixion. The quatrefoil window, of stained glass, in the gable, represents the Ascension. Nearest the east window, on the north side, is an angel window, intended as a memorial to the father and mother of the vicar of the parish. There are two figures. Another stained glass window, by the side of the one just mentioned, has been raised by the laudable exertions of the organist and choir. On this are figures of the prophets Isaiah, Jeremiah, Ezekiel, and Daniel. The south window in the chancel is erected in memory of a brother of the vicar of the parish: it represents, in a style corresponding with that of the others, St. Peter and St. Andrew. The reveals of each of the side windows are ornamented with wreaths of passion flowers, executed, principally, by Mr. W. K. Brown, of Bridport. The end wall of the chancel is decorated with ornamental foliage, which, with most of the other decorations, are the work of Messrs. Harland and Fisher, of London. A wreath of grapes and corn ears runs along under the wall plate on each side of the chancel. This is the work of Mrs. Broadley (the wife of the vicar). The chancel is paved with ornamental and plain tiles. The five windows on each side of the nave, are respectively surmounted by a text in scroll. The eighteen corbels of the building are adorned with shields, each bearing a sacred emblem, executed by Mrs. Broadley. A border of passion flowers running the whole length of the nave, on each side, under the wall plate, was executed by Miss Ganning, daughter of Archdeacon Ganning. The roof is open, the rafters being filled in with plaster, coloured. The building will be fitted up for gas. The building site was the gift of Mr. Albert Wray, one of the landowners of the parish. The architect was Mr. Tallot Bury. Messrs. Chick & Son, of Beaminster, were the builders; and Mr. Gibbs, of Bradpole, the mason.

#### THE MIRACULOUS CABINET.

UNDER this title an extraordinary work of art, invented and produced by H. Nadolsky, was exhibited on Wednesday evening last, in the Dudley Gallery, Egyptian Hall. When we say that this cabinet, measuring only 5 feet high, 3 feet wide, and 18 inches deep, contains 150 pieces of furniture, of the same size as in ordinary use, some of our readers will ask for a list; and, as a curiosity, here it is:—A judge's large table, with ornaments, books, and six chairs; four large eard-tables, two Chinese tables, a smoking-table, a lady's work-table, two beautiful large Chinese toilet-tables, a large chess-table, four work-boxes, four flower-

pots with flowers, a what-not, a large candelabra, a full-sized bed with hangings, and a baby's swing cot; a round toilet table, an embroidery frame, a large flower-table, five small Chinese lamps, two large ditto, two Chinese toilet candlesticks, twelve fancy boxes, a footstool, a painter's easel, four music-stands, a dining-table with twenty-four covers laid complete; four large dishes, twenty-eight plates, thirty cups, saltcellars, &c.; a large chandelier containing twelve wax lights; nine garden chairs, four parlour candlesticks, a Chinese writing-desk, a fancy inlaid with wax tapers, rulers, and hells; a tea-tray, a drawing-room table, a throne, a throne-chair, four small flower-tables, a large table, inlaid with specimens of shells, glass top, &c., &c. It certainly is a most ingenious work of mechanical skill. When the various articles are put together and spread over the apartment, the notion of putting them all back again into the snug little cabinet seems scarcely less than absurd. We have seen many a good packing-case, but never such a wonderful case of packing.

#### SANITARY STATE OF ST. GILES'S.

A REPORT by the medical officer of the district, Dr. Buchanan, to the Local Board of Works, has been printed, in which the sanitary state of St. Giles's in 1859 is treated of, together with the means taken for its further improvement. From this report it appears that the unhealthiness of this once notorious district is steadily diminishing.

The district south of Great Queen-street, as about Great Wild-street, is the worst part of St. Giles's; and in this part there has been an increase of mortality, although formerly other portions were more unhealthy. This may probably have in some measure arisen from sanitary attention having naturally been first given to the unhealthiest part of the district, and this would only show more clearly the power of sanitary efforts to save life and improve health. At the old rate of mortality, 292 lives have been saved in St. Giles's during the last two years.

Russell-square must be still a remarkably healthy spot: the mortality there is only 13·6 per 1,000, although 17 per 1,000 has been regarded as the inevitable death-rate of a town population; this axiom, therefore, demands correction.

It is a notable circumstance that the births of females were last year the most numerous in St. Giles's. This is of very rare occurrence anywhere, one should think, although more females live than males, the surplus of the latter, and somewhat more, dying off, till the females exceed the males; but there are generally more males born than females. Last year, in St. Giles's, however, 887 females and 842 males were born: 687 females and 727 males died: 602 children died under five years of age.

The truthfulness of the illustrated delineation of a nuisance in Drury-lane, in shape of a cow-house, given in the *Builder*, is testified by the medical officer, who remarks that an interior view would have proved worse than the exterior one, and adds that some improvements have been effected in this class of unmitigated nuisances.

The reports of the local medical and other officers of health in the metropolitan districts are very valuable, and will be of still greater interest in future years. There ought to be some central repository, in which every one of these reports should be carefully kept, so as to be available to the public when required; otherwise it will soon become difficult to obtain them. Would not the office of the Metropolitan Board of Works be a very proper site for a public sanitary library, in which these records could be stored? The new Society of Officers of Health should see to this.

#### THE COLOSSAL RIVETTED STATUE OF ST. CHARLES BORROMEO.

In my professional peregrinations I have recently come across the curious colossal statue of St. Charles Borromeo, placed on a hill near Arona, overlooking the Lago Maggiore.

This statue, which is upwards of 70 feet in height and mounted on a pedestal which rises 30 feet above the top of the hill, was placed in its present position in the year 1624.

The pedestal is of stone, but the statue itself is entirely formed of plates of bronze and of copper riveted together in patches of every form and description something after the manner, but without the regularity, of the Britannia tubular bridge over the Menai Straits. The work is very strong—stands the war of the elements in its exposed

situation in a very remarkable and instructive manner—and is a monumental attestation to the truth of the proverb, that "there is nothing new under the sun."

It is even more wonderful than our wrought metal bridges and boats, inasmuch as its exterior represents in an almost life-like manner all the beauties of sculptured humanity. The expression of the features, the attitude of the body, I might almost say the vigour of the intellect, are here admirably portrayed; and, down to the minutest details, although on so large a scale, the whole is in excellent keeping. The folds of the drapery are exhibited in the most natural manner imaginable. It is altogether a most interesting work of art, executed with great talent, while it is also a curious specimen of engineering and constructive skill. It cost nearly 40,000*l.* in those days when labour was cheap, and money had not the value it has now: probably, in our days, the cost of such an undertaking could not be afforded. It is, therefore, precious on every account.

In French measure, the face is 7 feet 2 inches wide, and 7 feet 6 inches long. The length of the nose is 2 feet 7 inches. The eyes are 1 foot 6 inches long; the mouth is 2 feet 4 inches. The length of the arm is 28 feet; the length of the thumb is 4 feet; and the circumference of the robe 51 feet.

I went up the statue to examine its structure, but shall not do so again in a hurry; nor would I have done so then merely for the sake of saying I had been inside the nose, and walked about in the head. Had it not been that I wished to make a personal inspection of the work, I should have employed a chimney-sweeper to examine it for me, and bring me back his report in the event of his getting down safely, as the operation I had to perform was (as far as I can judge, seeing that I never did ascend a chimney), much more akin to the performances of his profession than mine—*mais revenons à nos moutons*.

A ladder, about 40 feet long, borne by some three or four men, was brought up to the top of the hill, and placed against the cornice of the pedestal. This was kept in position by a kind of scaffolding of poles, so as to prevent it swaying in the wind, or oscillating with the weight of my body while performing the climbing operation of raising my feet and hands from one rung to the other, which are about a foot apart.

When I got upon the pedestal, which is very narrow, and altogether too small for the mass of metal placed upon it, a circumstance which gives the whole monument a somewhat top-heavy appearance, I began to examine the plates of metal of which the statue is composed. During this time the men were affixing, by means of iron cramps, another ladder on the top of the first, by which I got up a further height of some 20 feet in addition, and then with no little difficulty had to squeeze myself into a small aperture between a fold in the robes and a *core*, if I may so say, of masonry, which is carried up inside the statue to about the top of its shoulders; and here the climbing becomes difficult or rather strange to such as myself, who have not been occupied very lately in such peculiar gymnastic exercises. This chimney is very wide, and has bars built into the masonry of it on either side: thus it becomes necessary to extend the legs and arms very widely apart, and feel on either side with hands and feet for the frail supports to which, *volens volens*, after having got so far, it is incumbent to cling. I do not remember having made such a peculiar ascent anywhere before, and it put me in mind of the mountebanks sometimes seen in Italian cities, raising themselves to an altitude between two columns, so as to enjoy an elevated position from whence they may baroque the crowd congregated to witness their saltimbanics.

Having then, by dint of exercising every muscle in my body, during which time it would not have been wholesome to have been attacked with the least symptom of cramp, seeing that any relaxing of my hold would have precipitated me immediately to the bottom, without meeting anything on the way even to break my fall, I arrived on the top of the masonry, and my head was about on a level with the lower jaw of the figure. No sooner had I arrived, than I was invited to look down on the other side at the book held under the left arm of the statue, which is open at the top, and presented all the appearance of a brewer's vat.

The interior of the head would make a comfortable little sitting-room, as you can well understand when I tell you that it measures some 20 feet round. I looked out from a little chink between the plates, just above the right eye, and which to the less initiated below probably repre-

sents the eyebrow. From this the view is magnificent. The tranquil waters of the "Langen-see," as the Germans call it, lay stretched before me, and the blue hills of Lombardy were scattered and piled up capriciously and fantastically beyond the ripple of its waters; then the wide plains of Lombardy lay farther off in the distance, and lured the eye towards the far horizon. The plates are not half an inch thick, and are connected together by an immense number of small-headed copper rivets. The whole mass must have been adapted to some mould before being put up, otherwise it would have been altogether impossible to get the external shape so accurately.

The eyes are evidently cast, as the pupils are well defined, inside as well as out. The ears stand out remarkably, as the figure is represented with very short hair. All the details are well managed, and even two or three days' growth of beard upon the chin is cleverly imitated, and, from the great size of the figure, may be remarked even from the foot of the pedestal below. Sculptors and artists who visit Italy should not fail to see it, while engineers, if they could not take a leaf out of its big book, may find plenty to learn from it, and perhaps something to copy.

WILLIAM H. VILLIERS SANKEY.

#### THE FUTURE FOR ARCHITECTS.

LONDON AND PARIS.

In his annual notification that the architectural courses at the University College, London, will commence on Tuesday, the 23rd instant (of which, by the way, we hope many will avail themselves), Professor Donaldson makes the following observations, which may be usefully made permanent in our pages:—

In the *Moniteur*, of the 25th August last, there appeared a very striking review of the works executed at Paris by the Emperor Louis Napoleon, since his accession to the throne of France in 1852. This enumeration embraces the operations of the Imperial Government and of the Municipality of Paris: it records lines of streets and boulevards pierced through the centre of the city, the doubling of its superficial area by the addition of a suburban zone; the completion of the stupendous palace of the Louvre; the erection of churches, schools, district courts of justice, six barracks, market-places, fountains, theatres, squares, hospitals, eight bridges, making, together, two which span the Seine; while we have at most eight for all London, with its immense population and colossal commerce, improving also the public health,—the result of a determined concentrated will for the public good.

This presents a humiliating picture to us when we compare this statement with the torpid operations of our Government and our Municipal Corporation, even although we call to mind that many of the works above enumerated are in this country carried out by individual or associated private enterprise. Our Administration requires offices for the Indian Department, and takes refuge in part of an hotel, built as a speculation by a company. And insuperable appear to be the obstructions and difficulties which attend the realization of our public works, however imperative that the absolute need of War and Foreign Offices, for the due administration of the business connected with those departments, urgent as it may be, is made to yield to personal interests and to a battle of parties and styles; and years may intervene before the work is supplied. Even our City Corporation, important as the works have been which they have carried out, can, with unaccountable shortsightedness, cover with a huge warren a vacant plot which afforded the finest view of our metropolitan cathedral and facilitated direct communication with various parts of the City where most required.

Still London, although far behind in the Government activity to promote improvements and to direct, as in Paris, the public taste for monumental splendour and magnificence, has advanced, through private enterprise, in the style of its commercial and domestic buildings more than any other metropolis. We see clubs, banks, insurance offices, and lake institutions, offer erections honourable to the present school of art, and evidencing great progress in professional skill and taste.

There is a noble future for the rising generation of architects. The development of the British empire has been incalculable: the population has doubled within a short period: its commerce knows no limit. England, and even London, of 1859, compared with England and London of 1860, are as giants to pygmies. A like extension of Government establishments, to insure a ready and economic administration of the public business, must take place; and necessarily will compel our Government to satisfy these requirements, which foreign administrations would seize with eagerness, to adorn a sovereign's reign or reflect honour on a ministry that would misuse and them. Our Ministers and Parliament cannot continue to hesitate, when our great commercial cities and provincial towns show what energy and taste for architecture may effect.

It is then for the young architects and builders to fit themselves for coming opportunities. The war of styles may still continue: our usages and tastes may become modified. There will be required fresh combinations and appliances. Science must progress as well as Art; and construction must advance with like energy. There is a wide field open, and who shall be equal to the struggle on the occasion, for reputation, if success? Those only who acquire beforehand the elements of sound professional knowledge,—who make themselves acquainted with the great productions of the ablest and most refined minds of past ages,—who devote a zealous earnestness to the study of the subject,—who are determined to excel and to rank among the great architects and builders and who have endowed their country with noble works,—who take place with our Hugo Jones, our Wren and his master-mason Strong, our Vanbrugh, our Chambers, of the past; with our Barry and Cubitt of recent times.

## STEPNEY UNION COMPETITION.

Sir,—I truly hope, for the honour of the profession, that not a single architect will apply for the "particulars" relative to the above competition. I fear, however, that the usual "unimproved applications" will be made. If so, it would be very desirable, if practicable, to obtain the names of such applicants, and publish them. We should then discover some of the "black sheep."

I have long entertained the opinion that the present disgraceful system is fostered by those architects who enter indiscriminately into all competitions (as a wheel of fortune from which a prize may possibly be drawn), without considering the respect due to themselves or the profession of which they are members.

N. E. STEVENS.

## LEICESTER CHAPEL COMPETITION.

Sir,—As one of the competitors for the Leicester New Connection Methodist Chapel, I ask for the admittance of this protest in your journal. As this result was made known through the *Builder*, I think the injustice of the committee should also be made known through the same medium. I was informed that on no account would the stipulated sum of 1,500*l.* be allowed to be increased by the architect. It turns out, however, that the successful competitor had ornamented his design so as to considerably exceed the stipulated sum,—to the amount of six or seven hundred *l.* more. Of course this amount enabled the architect to please the eyes of the committee far better than would a design which was limited to the stipulated sum. This is a piece of great injustice to the other competitors.

OSK OF THE COVERING.

\*. The tenders will be found in our present number.

## ST. PATRICK'S CATHEDRAL, DUBLIN.

Sir,—If any justification of the statements in my letter of the 22nd of September were needed, such has been amply supplied by the writer of the paragraph in *Saunders's News-Letter* of September 29th.

I have to congratulate the authorities on the champion they have obtained, who has made the startling disclosure that for the last sixteen years they have wilfully and deliberately closed their eyes whilst the cathedral was undergoing a gradual process of "debasement." The had taste of the writer will be best shown by mentioning that these so-called "debasement" works were executed after the design, and, for the most part, under the immediate superintendence, of the late Mr. Carpenter. His ignorance may be guessed from his own admission, that he does not know what is meant by an "Early English wall," or how "a wall" could be designated as belonging to any "order." (2)

In point of fact, there are only two statements to which a denial has been given. As to the first, I have only to say, in reply to the writer's assertion that every care was taken to have an accurate restoration of the nave, that I have reason to believe that such accuracy has not been secured. As regards his denial that there has been any exclusion from viewing the works, I need not say that I did not make the assertion without having what I believed to be good authority for it; but I am glad to learn that I was mistaken; and I shall be happy to avail myself from time to time of the proffered permission to see the progress of the works.

The parties engaged in the present restoration cannot consistently claim immunity from criticism, seeing that they have themselves alluded to the unfortunate misapplication of the magnificent sums placed at the disposal of the dean and chapter of Armagh by his Grace the Lord Primate, for the restoration of that cathedral.

W. B. BALST.

## THE "BUILDER'S" LAW NOTES.

**Leases: Written Memorandum.**—A person agreed in writing to take the lease of a house for the residue of the lessor's term (being five years), and also to take a lease of stables "at the same rent and on the same conditions as the lessor held them." This was for an unexpired term of seven years; but, as the term for which the stables were held was not specified with certainty in the writing, it has been held that there was not a sufficient written memorandum to satisfy the law as laid down in the "Statute of Frauds."—*Fitzmaurice v. Boyley*.

**Railway Company: Compensation to Landholders.**—A landholder agreed to submit to arbitration his claims against a railway company for compensation for injury done to his land, and for the loss of the land taken by the company. He died before the final award was made; and when, after some enlargement of the time for the award, it was at length made, several objections were taken by the company. The whole case came, on appeal, before the House of Lords, and the following important points were decided. It was held that the submission to arbitration did not expire with the death of the landowner; that the time for making the award may be enlarged for the purpose of suiting the convenience of the parties, because the sections in the Lands Clauses Act, providing for the award in three months, was introduced for the benefit of the parties; that an arbitrator may employ any experienced person or scientific man to assist him; that he may award damages for injuries likely to occur; that he may include damages likely to be caused to the tenants of the landowner; and that under the Lands Clauses Act there is no compensation exists if the railway cause the injury, even though the lands affected may be distant from the line.—*Calcutt v. Railway Company v. Lockhart*.

**Charitable Legacy: the word "Poor."**—A lady left by her will certain sums of money to "twenty aged widows and spinsters," in a certain parish. As age did not necessarily imply poverty, it was argued that the legacy could not be supported as a charity, and it would thus lapse for uncertainty. It was decided, however, that, as the object was clearly charitable, the legacy was good, and it was ordered that the word "poor" should be added.—*Thompson v. Corby*.

**Railway Company: Repair of Highway.**—A railway company in Ireland carried its line over a bridge which spanned the highway; and, in order to afford head-room for traffic, the company lowered the highway and placed it in a substantial condition. The lowered part of the road afterwards became out of repair. The local justices ordered the company to repair the same; but this order was reversed on appeal to the Queen's Bench by the judgment of two judges out of three.—*The Waterford and Limerick Railway v. Kearney*.

## PATENTS IN CONNECTION WITH BUILDING.\*

**COMPRESSION OF BRICKS, TILES, &c.**—*L. J. Brethon*, Tours, France. Dated 22nd February, 1860.—This invention cannot be described without reference to the drawings.

**BRICKMAKING MACHINE.**—*G. Convery*, Strood, Kent. Dated 16th February, 1860.—The patentee claims the use of a triangular feeding shaft and endless band or chain of moulds or clay-holders, together with the movable projections on the centre rollers, in combination with the stampers or plungers described.

**BRICKS.**—*T. H. Morrell*, Leyland, Lancashire. Dated 17th February, 1860.—The patentee claims, firstly, the lining of machine moulds or dies for making solid or perforated bricks with raw untanned skin or hide, as described. Secondly, the use of one cross-bar, with two or more rows of perforators or studs attached thereto, for the moulding of perforated bricks, as described. Thirdly, with reference to the apparatus for pressing perforated bricks, the adaptation or use of two press-plates with panels and cores or studs attached. Fourthly, with reference to the apparatus for drying brick, tiles, and other articles made from plastic earths, the arrangement of racks or frames fixed to the roofs and walls of drying sheds, as described. Fifthly, the general construction and arrangement of hot air fires or ventilators in combination with a central shaft, sleds, and hot air chamber, as described, and also the use of such or similar fires or ventilators in combination with a chimney-shaft and sheds only for such or similar purposes.

## Miscellaneous.

**PROPOSED NEW LAW COURTS.**—The inhabitants of Holywell-street, Strand, and places adjoining, have received the following circular:—"Sir: It having been determined to seek powers from Parliament in the ensuing session to concentrate the law courts and offices on the locality on which your house stands, and I having been authorized to prepare the necessary survey and reference, venture to beg the favour that you will permit the surveyors engaged on the work to have access to your premises to take the necessary plans, and that you will further oblige by affording them all the information in your power relative to ownership.—*H. R. ABRAMSON*, Surveyor."

**THE "CONTINENTAL DIORAMA" AT EGYPTIAN HALL.**—This exhibition consists of a hotel-potch of views which have been exhibited already in London under different titles, some of them more than once. Several of the pictures are very well painted; but, holding it to be dishonest to lure the public to what professes to be a new exhibition, but which many of course discover, after they have paid their money, they have seen before, we have no words for it but those of reproach. Mr. Leicester Backingham, who supplies the descriptive lecture, can scarcely be aware of the fact.

**PATENTS.—LOCKS FOR DOORS.**—In your impression of 29th September last, p. 630, is an account of a lock "formed to admit the key at opposite sides," &c., for which a patent has been obtained. Probably the inventor is not aware that a lock of the same kind, upwards of 300 years old, exists upon a door in King's College Chapel, Cambridge. The lock was taken off and carefully repaired last year, at an expense of 1*l.* 6*s.* 6*d.*, and is now in good working order.

CANTAD.

\* Selected from the *Engineer's* lists.

**GREAT LENGTH OF RAILWAY RAILS.**—The Messrs. Barningham, of the Darlington Iron Works, are at present engaged in rolling a large quantity of rails of unusual dimensions. They are 27 feet in length, and their weight is 82 lbs. to the yard.

**COST OF LEEDS TOWNHALL.**—A printed document, produced at the town council the other day, showed that the total cost of the building was 113,239*l.* 19*s.* 7*d.* Mr. Titley said that statement did not include the expenses attending the Queen's visit, nor the cost of the expensive lamps outside the hall, nor was there any allowance for interest. If those three items were taken into consideration, the cost of the building was from 125,000*l.* to 130,000*l.*

**SINKING OF MAGAZINE, WOOLWICH.**—A spacious flat-roofed magazine, under construction in Woolwich marsh, and now nearly complete, was last week discovered to have suffered from the yielding of the base to such an extent that a considerable portion of the building will, probably, have to be removed and rebuilt. The disaster is attributed to the late rains having carried away some of the subjacent marshy stratum insufficiently prepared with concrete and other heavy substances in forming the foundation.

**THE LAND OF SONG AND DANCE.**—According to the "*Travatore*" Italian journal the number of singers of both sexes in Italy amounts at present to 1,730. Among these are enumerated 410 *prima donne*, 330 tenors, 250 baritones, 160 bass singers, 50 comic. Italy produces 1,670 *dansesurs* and *dansettes*, viz., 150 of the first rank of the latter class, called *di rango Francese*; 320 first *dansesurs*, *di rango Italiano*; 110 first dancers, 970 of both sexes, *mezzo carattere*, and 40 ballet-masters.

**NEW INVENTION IN PRINTING.**—At Vienna a printing machine has been brought out, dispensing with the use of all other assistance save that of mechanical apparatus. No persons are required to feed it with paper, or to remove the printed sheets, both processes being accomplished through the instrumentality of the machine itself. The paper for this purpose is supplied in rolls many hundred yards in length. The machine first cuts a sheet off the requisite size, then prints, and finally throws it off—a newspaper ready for the reader. All that manual labour is required to do is to bring forward fresh rolls, and to take away the printed sheets.

**NEW APPLICATION OF PEAT.**—Some improvements in manufactures from peat have been patented by Mr. H. Hodgson, of Ballyreine and Merlin Park, and Mr. P. M. Crane, of the Irish Peat-works, Athy. The invention consists in preparing from peat, in its natural state, blocks, slabs, or pieces of any size, form, or thickness, which blocks, slabs, or pieces are said, when so prepared, to be useful and economical in the construction of parts of buildings, and for various other useful purposes. They place these blocks between cloths of woven or textile fabric, or other suitable material, and the peat is placed between shelves, and submitted to hydraulic or other pressure. The water is entirely forced out and the peat solidified, and drying is effected either by exposure to the atmosphere or in a room heated artificially, or by any other process. They are then put again between the plates of a hydraulic or other press, and extreme pressure put on them. If the product of their invention be required for use for inside work in building, such as partitions, linings, inside roofing, or for other work, as a non-conducting substance, they do not require any further preparation than shipping, provided they are not to be exposed to wet. But the slabs or pieces need for roofing (instead of slates, tiles, or other things of that nature) they prepare to resist the wet, or action of the atmosphere by steeping them in, or saturating or coating them with, some fitting material to resist wet, such, we presume, as pitch.

**THE LATE A. E. CHALON, R.A.**—Mr. Alfred E. Chalou, R.A., portrait painter to Her Majesty, has just passed away from among us, having died a few days since, at his villa on Campden-hill, Kensington, at the ripe age of fourscore years. He was of Swiss extraction, and brother of the late Mr. John James Chalou, R.A. He drew entirely with the pencil and in water colours, and he attained celebrity as a painter of ladies of rank and fashion, more especially in their court dresses and trains. He continued to exhibit at the Royal Academy down to the last. A few months since he offered to bestow his collection of paintings and sketches upon the parish of Hampstead, on condition that the parishioners should subscribe money sufficient to build a place for them, and pay a small stipend to a curator; but the offer was not accepted.

# The Builder.

VOL. XVIII.—No. 924.

Mr. Hodges' Account of the Great Victoria Bridge, Canada.



**R**AILWAY ENGINEERS and railway contractors usually carry things with a high hand, not allowing "I would" to wait upon "I dare not," and here we have a striking example of the fact,—not alone in the remarkable bridge which now spans the river St. Lawrence,—but also in the book that describes it.\* This volume, containing, as we have already told our readers, 21 illustrative plates and 40 engineering plates, giving all the details of construction, and on which book about 4,000 have been spent, was produced in seven weeks. Looking at one of the Columbian folio copies, with its gold borders to the text, its chromolithographs, and sumptuous binding, it would be difficult to believe in this despatch, had we not the assertion of Mr. Weale himself. Within that space the drawings were made, the book produced, and six hundred copies forwarded to arrive in time for presentation on the day the Prince of Wales laid the last stone and drove the last rivet.

The Grand Trunk Railway of Canada, as most of our readers know, traverses British North America from the shores of the Atlantic to the rich country of the Far West. By one unbroken line of railway, through upwards of 1,200 miles of cultivated country, it carries the products of the distant western states of America to the sea-board. It opens up for the inhabitants of the valley through which it passes the means of inter-communication throughout the whole of the year; and, moreover, connects and associates together the British dependencies in North America, and, by means of the Great Bridge over the St. Lawrence, it brings them all into direct communication with the United States and the best ports of the Atlantic. For six months of the year the St. Lawrence was sealed up by frost. For six months of the year, therefore, Quebec and the other ports and harbours of the river were unavailable, and trade was virtually suspended.

Following the course of the St. Lawrence, and uniting all the principal towns, the Grand Trunk Railway of Canada brings the whole country to the best ports on the sea-board by the nearest route, and affords the greatest facilities for communication with Europe by a passage 600 miles shorter than any other that can be made between the continents.

We have on various occasions given particulars of the Victoria Bridge, which forms the connecting link in the line between British North America and the United States, but it may be interesting, now that the work is finished, and with Mr. Hodges' book before us, to jot down a few of the leading points in its history. It was in 1852, at the request of the Provincial Government of Canada, that the firm of Peto, Brassey, and Betts made an examination of the country with a view to assisting in the development of a complete system of railways for the colony; and Mr. W.

Jackson, M.P., afterwards associated in the undertaking, accompanied by Mr. A. M. Ross, C.E., proceeded thither for that purpose.

As early as 1846, the Hon. John Young, of Montreal, suggested the practicability of a bridge across the St. Lawrence, and succeeded in obtaining reports upon the subject from several engineers, with which, and the information he obtained on the spot, Mr. Ross on his return to England designed the structure upon the principle on which it is carried out, and, as engineer-in-chief of the Grand Trunk Railway, afterwards resided in Canada until the works were completed. Upon the inauguration of the company, Mr. Stephenson was consulted; and he, after examining the information and designs laid before him by Mr. Ross, signified his approval of them, and undertook jointly with him the responsibility of engineer to the bridge. In 1853, Mr. Stephenson visited Canada personally; and, with the additional information procured during the previous winter, then decided conjointly with Mr. Ross upon the structure as it at present exists. This is the account of Mr. Stephenson's connection with the undertaking as given by Mr. Hodges.

The site of the bridge is at the lower end of a small lake, called La Prairie Basin, which is situated about one mile above the entrance to the Lachine Canal, at the west end of Montreal Harbour. At this point the River St. Lawrence is, from shore to shore, 8,600 feet, or a mile and three-quarters, wide. The lake, however, which is full of boulders, is extremely shallow; so much so, that excepting in the main channels it is only navigable for vessels drawing from 1 foot 6 inches to 2 feet of water. And even these have difficulty in approaching the shore, there being no landing-place above the site of the bridge except at La Prairie village.

The most serious difficulty to be guarded against, both in the design and in the execution of the Victoria-bridge, was that operation of nature which occurs twice in the year, and which is known in North America as the "shoving" of the ice: of this forcible illustrations are given.

The surface ice, arrested in its progress, packs into all sorts of imaginable shapes: a crust is soon formed, and the river becomes frozen over till many square miles of surface packed ice is formed. As the water rises, the jamb against which this field rests, if not of sufficient strength to hold it in place, gives way; when the whole river, after it is thus frozen into one immense sheet, moves *en masse* down stream, causing the "shovings" so much dreaded by the people of Montreal.

To avoid the dangers consequent on these and other operations of nature, it was determined to build the Victoria-bridge with stone piers, placed at wide intervals, each pier having a large wedge-shaped cut-water of stone-work inclined against the current, and presenting an angle to the ice sufficient to separate and

fracture it as it rose against the piers. Mr. Hodges describes the movement of the ice which took place on the 4th January, 1855, as presenting a sight never to be forgotten—"The whole of the river and La Prairie Basin were one mass of packed ice, which, being held up by the jamb below, had been accumulating and rising for four days. At last some slight symptoms of motion were visible. The universal stillness which prevailed was interrupted by an occasional creaking, and every one breathlessly awaited the result, straining every nerve to ascertain if the movement was general. The uncertainty lasted but a short period; for, in a few minutes, the uproar arising from the rushing waters, the cracking, grinding, and shoving of the fields of ice, burst on our ears. The sight of twenty square miles (over 124,000,000 tons) of packed ice (which but a few minutes before seemed as a lake of solid rock) all in motion, presented a scene grand beyond description."

The engineer may well have "felt relieved" when he found that the solitary pier, No. 1, which had been hantling alone amid this chaos, had not been disturbed.

Stone quarries, on a scale commensurate with the magnitude of the undertaking, were opened at Point Claire, some sixteen miles west of Montreal. But, before this could be done, the Indians had to be arranged with. We may scarcely stop to say how disappointed the author was when, expecting to meet chiefs ornamented after the manner of those in Cooper's novels, with paint and feathers, and prepared, before they proceeded to council, to offer him the "calumet of peace," he was introduced to a body of miserably dirty-looking old men, with lank hair, smoking short clay pipes!

The St. Lawrence, where it is crossed by the Victoria-bridge, was, by the soundings taken previously to the commencement of the work, shown to be of a depth varying from 5 feet to 15 feet at summer water level, and to have a bed of limestone rock, with large boulders upon its surface. This led to the contriving of floating dams or caissons, which might be built during the winter season, and immediately upon the opening of the navigation floated into position and scuttled, so as at once to form a nucleus from which the dam could be constructed.

The construction of these dams will be better understood upon reference to Fig. 1 (page 672). They consisted of a framework of timber, forming a large caisson of proper shape and dimensions to encircle a pier, with sufficient space for piling, puddle chamber, and for the workmen engaged in the construction of the masonry. These caissons were 188 feet in length, and 90 feet in width over all. The front part, or bows, were made wedge-shape to stem the current, and the stem, or hinder part, was made so that it could be removed when the masonry was completed, thus enabling the floating dam to be taken to winter-quarters.

The frame-work, or caissons forming the sides of the dams, were 20 feet broad, and 12 feet to 16 feet deep, the width being increased near the bows to give additional strength where the sides unite, and likewise to give more space for workshops and dormitories. The bottom and lower part of the sides were carefully calked, and when launched they drew some 18 inches of water only.

The floating dams were commenced in the winter of 1853, and two of them were completed and launched in May.

The first working season was a period of disaster, difficulty, and trouble, what with inexperience of the climate and of the country; secondly, numerous strikes of the workmen; and, above all, the ravages of the cholera.

The amount of work in progress at this period was so great, and the demand for labour in consequence so pressing, that it was no uncommon thing for an agent from some other works to come amongst the workmen, and, by an offer of almost fabulous wages, induce perhaps more than half



The Emigrants' Monument.

\* "Construction of the Great Victoria Bridge in Canada." By James Hodges, engineer to Messrs. Peto, Brassey, & Betts, contractors. London: Weale, High Holborn. 1859.

of them to leave. The workmen brought from England were also exceedingly troublesome in that year. In one instance, a number of mechanics, taken out at a cost of upwards of 3,000*l.*, became so unmanageable, that in a fortnight from the time they got to work they were all disorganized, and struck.

It appears to be almost a custom in Canada for mechanics and labourers to strike twice a year, let the rate of wages be what it may. The first period of general strike is in the spring, when increased activity in every business is occasioned by the arrival of the spring fleet. The second is at the commencement of harvest, when there is abundant demand for labour. Nevertheless the writer has occasion to speak strongly of the devotion and energy of large numbers of his workmen. Once brought into proper discipline, they worked as British workmen alone can work; and he records an anecdote which we cannot resist alluding to. The miserable accommodation afforded in vessels that were sometimes used for the emigrant traffic between Great Britain and America killed hundreds of the passengers. Those who survived the voyage and were put on shore at Quebec or Montreal, with the seeds of pestilence implanted in them in the shape of a ship fever, were sent to sheds built away from the city for their accommodation.

During the years 1846 and 1847, perhaps the most fatal that Montreal ever experienced, some 6,000 poor emigrants died in these emigrant sheds, and were interred in a large pit or grave common to the whole, in much the same manner as those are described to have been buried who died of the plague which devastated London in early times.

Towards the close of the work, when the workmen were thinking of leaving Canada, the remains of their poor countrymen were not forgotten, and they determined to erect a monument upon the spot. A large granite boulder, shown by the engraving on the previous page, weighing some thirty tons, was selected, which was placed upon a pedestal some 6 feet high, and which, it may be hoped, will to future generations preserve the remains of the dead from desecration.

On the 1st of December, 1859, the Rev. Canon Leach, in the presence of the Bishop of Montreal, the Rev. Mr. Elligood, and the assembled workmen, set the stone in its place. It bears this inscription:—

TO PRESERVE FROM DESECRATION  
THE REMAINS OF 6,000 EMIGRANTS WHO DIED OF  
SHIP FEVER IN 1846 AND 1847,  
THIS STONE IS ERECTED  
BY THE WORKMEN OF MESSRS. PETO, BRASSEY, & BETTS,  
ENGAGED IN THE ERECTION OF THE  
VICTORIA BRIDGE,  
1859.

Mention is made, too, of the skill shown by many of the men when thrown upon their own resources. Here is one instance. Before leaving England, Mr. Hodges prepared a sketch and description of a "steamer traveller." One of the most eminent firms in England was consulted and employed to accomplish what he required; and, after some two years of experiment and an expenditure of some thousands of pounds, a machine was sent out which could never be made to do very much more than move itself about; and which, after various fruitless attempts to make it available, was thrown on one side and never used afterwards. In the meantime, the same drawings and description were shown to Mr. Chafey, one of the sub-contractors, himself an Englishman, but who had been in Canada a sufficient length of time to free his genius from the shackles riveted to him in early life, and during the winter of 1854 and 1855, the rough, ugly, but invaluable machine, which handled the whole of the work on the south side of the river, was constructed, and in the spring was put to work. This is only one illustration which could be given of acquired skill and ready application, out of many exhibited by members of the staff, men who, when they left home, gave little evidence of being above the ordinary rank, but who, in Canada, proved themselves full of enterprise and resource.

This traveller was 60 feet in span, moving upon gawntrees 1,300 feet in length and 20 feet in height. Between these the stone was sorted and stacked ready for work. The engine and hoisting apparatus formed one machine, moving transversely upon the traveller, which was likewise moved longitudinally with the greatest facility by the steam power. The machine unloaded the waggons, and stacked the largest blocks of stone, some of which weighed ten tons, with the greatest ease. Over 70,000 tons of stone were moved twice by this machine.

The occurrence of boulders such as we have

mentioned constantly interposed difficulties. For example, in sinking the framework to carry the inner row of piles, a large one, fig. 2, was discovered occupying the whole breadth of the puddle-chamber. The removal of it caused a loss of time equal to six days. Several attempts were made to split it by blasting, which failed; but it was eventually removed *en masse* on the 7th of July. It weighed more than twenty tons.

The brevity of the Canadian season made these occurrences the more vexatious. That season is, at the outside, six months. The earlier portion of it was taken up in preparing for the setting of the masonry; and about *sixteen weeks* constituted the whole of the working season for the pier masonry.

This shortness of the season for setting masonry induced a consideration of the advisability of using felt during the winter to bed the ashlar in, as at St. Ann's Bridge, over the river Ottawa, where several of the piers were so constructed, and made good sound work. Strips of asphalted felt, about 3 inches in width, were laid along the whole of the front edge of the masonry, at such a distance in, that the work might be effectually pointed. On each of the cross joints similar strips were laid, as likewise at the back of the ashlar. As soon as one course of ashlar was laid, it was dressed perfectly fair on the bed to a straight edge for the reception of another course, which was laid on in a similar manner, the backing being laid dry and packed as closely as possible. Open spaces or flues were left, about 1 foot square, throughout the whole height of the pier. The work was completed in this manner during the winter; and, as soon as the weather permitted, and the frost was fairly out of the stone, the piers were carefully pointed, and the whole of the interior well grouted from the flues. The work, it is said, thus became one solid mass.

During the extreme cold, or when the thermometer was more than 20° below zero, Fahrenheit, if there was any wind at all, the men could not work, as at such times the smallest portion of the body left exposed was frozen instantly. The greatest care was, therefore, requisite. The men had to work in thick gloves, and with heavy coats on. Fur caps covered their ears, and heavy handkerchiefs were worn over the greater part of their faces, so that only a very small portion was visible. Even with all this care they were occasionally frost-bitten.

It should be remembered that the whole of the iron work for the tubes was prepared at the Canada Works, Birkenhead. At these works every plate and other part was finished ready for putting in place. With what accuracy this was done will be seen when it is said that in the centre tube, consisting of 10,309 pieces, in which were punched nearly half a million of holes, not one piece required alteration, neither was there a hole punched wrong! Therefore, to Mr. George Harrison, the manager of the Birkenhead works, and to his assistants, Messrs. Alexander and Heap, is due a good share of credit.

We must hasten on. The roofing of the bridge was put on. This roofing (Fig. 3 shows its aspect) was of wood covered with tin, which was so laid as to allow the snow and water to run off from it. Upon the top of the ridge was a footway for workmen, two feet broad. Immediately over the sides of the tubes, rails were laid upon longitudinal rods of oak, bracketed up to allow for the passage of water under them. The rails were designed to carry a "traveller" hestriding the tube, to be used for painting. Fig. 4 shows the bridge with travellers upon it; and Fig. 5 is a view down the tube.

The tubes are lighted from the sides, in which holes are cut at every 60 feet. The interior is so light, that on a clear day every rivet-head inside of the tube is distinctly visible.

In closing his account, Mr. Hodges justly says,—"Looking back at all the various difficulties, practical and financial, by which this work was from time to time embarrassed, it scarcely admits of doubt that, in the hands of other and less energetic and persevering contractors than Messrs. Peto, Brassey, and Betts, it would not have seen the successful issue to which it has been brought. Amid every discouragement they stood stonily to the task; and, when the hearts of all around them seemed about to fail, their encouragement, enterprise, and assuring confidence kept everything going."

We should have been glad if we had found a little more said of the designers,—of those who were responsible for the success of the work.

We have left ourselves space for little more than a few dimensions and statistics. The beams of the bridge are 16 feet wide: they are 18 feet

6 inches high at the abutments, increased to 22 feet in the centre, and are constructed of iron plates on the tubular principle, the same as those at the Britannia Bridge over the Menai Straits, except that there are no cells either at top or bottom. The spans are 25 in number, viz., 24 of 242 to 247 feet, while the centre span for the navigation is 330 feet.

In building the tubes, the greatest increase of camber which occurred in one day, consequent upon the difference of temperature between the bottom and top of tubes, was  $\frac{1}{4}$  inch.

The greatest expansion of a single tube from the centre of the resting pier to the extremity of the roller end, say 258 feet, with a variation of temperature of  $-27^{\circ}$  to  $+128^{\circ}$ , or equal to  $155^{\circ}$  Fahrenheit, was  $\frac{3}{8}$  inches. This was ascertained by an index, locked up for twelve months.

The first part of the north abutment coffer-dam was towed into place on the 21th of May, 1854. The first stone of the bridge was laid 20th July, 1854, and the first train passed over the bridge on the 17th of December, 1859. The total length of the tubes is 6,592 feet. The total length of bridge, 9,143 feet. The height of the tube above surface of water is 60 feet. The weight of iron in tubes is 9,044 tons. The number of rivets, 1,540,000. The tube was painted four times; and, as the area is thirty-two acres, there are, of course, 128 acres of painting. Number of piers, twenty-four. The quantity of masonry in piers and abutments is 2,713,095 cubic feet. The quantity of timber in temporary works, is 2,530,000 cubic feet.

The following are the inscriptions at the entrance of the bridge:—

(On the outer limit.)  
ERECTED A.D. MDCCCLIX.  
ROBERT STEPHENSON AND ALEX. M. ROSS,  
ENGINEERS.

(On the interior limit.)

BUILT  
BY  
JAMES HODGES,  
FOR  
SIR S. MORTON PETO, BART., THOMAS BRASSEY,  
AND  
EDWARD LADD BETTS,  
CONTRACTORS.

That this remarkable work, of great social and international importance, may long stand to fulfil its special purposes and to attest the skill, science, pluck, perseverance, and power of Englishmen, is our sincere and fervent hope.

We append the names of the contractors' staff: all who were concerned in the construction doubtless desiring to have their names connected with it.

*Engineering Department.*—John Duncan, engineer in charge of works; Charles Legge, assistant ditto on south side; W. Oliver Gooding, assistant engineer; Frederick Cullib, ditto; William Graft, ditto; H. H. Elling, assistant engineer and draughtsman; J. W. Woodford, mechanical engineer; James Dunbar, mechanical draughtsman.

*Office Department.*—W. C. Spiller, secretary and chief accountant; David Aikman, assistant accountant and storekeeper; Thomas Cole, cash clerk.

*Steam Boat and Berth Department.*—D. Ross Kerr, superintendent; Slater, Davis, J. Ryan, Thomas Dutton, and Robert Duncan, masters; W. C. Dutton, clerk.

*Sub-Contractors.*—Benjamin Chaffey, for south abutment and for nine piers; John O. Hodges, for four piers; Messrs. Brown & Watson, for two piers; William Newcombe, quarrying and cutting stone at Ponte Claire; William Bisant, setting masonry; Hillman, setting masonry; Jacques Normand, crib work; J. W. Wilestad, crib work and staking; Walter Wardle, staking; James Hodgkinson, erection of tubes; Martineau, fitting of roof; Thomas, painting.

*Superintendents, Inspectors, Foremen, &c.*—A. G. Fowler and Milton Sessions, general superintendents; L. Kirkup, Jun., W. R. Bell, Simon Foote, and Goulder, inspectors of riveting; Alex. Sutherland, J. Harrison, J. Akenhead, J. Hill, and John Thompson, inspectors of masonry; G. Pyke, inspector of painting; John Melville, foreman of shops; John McNeil, S. Bonnevile, Joseph Kirkbride, William Kirkbride, Duncan McDonald, and Ed. Williams, foremen of carpenters; D. Wilson, and J. Turner, foremen of masons; Samuel Batchelor and Edward Coulton, foremen of riveters; George Perkins, foreman of sailors; Robert Wilbar and John Bailey, foremen of labourers; Barney Seery, superintendent of divers and boatmen.

#### THE IMPORTANCE OF SANITARY KNOWLEDGE.

PUBLIC HEALTH DEPARTMENT, GLASGOW.

On the closing day of the recent congress of the Social Science Association Mr. Edwin Chadwick, as we have already mentioned, delivered an address as president of that department. He referred especially at the commencement to the injury resulting to the community from the want of sanitary knowledge, and the loss which is taking place in the effective strength of our productive populations. He thus proceeded:—"Great Britain, having regard to her acknowledged position and destinies, and the qualities of labour and service required to fulfil them, is at this time actually getting more and more underpeopled, even at her present rate

of increasing population. Industrial demands of external as well as of internal enterprise are now checked for want of available labouring hands of the quality of those by which, under competent directing heads, her present industrial position has been achieved. The primary qualities of those hands whom we are accustomed to call Anglo-Saxon without any very exact knowledge of what they were, but which include the Lowland Scotch as well as English, are, as I have elsewhere stated, great bodily strength, applied under the command of a steady, persevering will, mental self-containedness, and impassibility to external irrelevant impressions, or to distractive pleasurable excitement, that carries them through the continued repetition of toilsome labour—'steady as time.' To the British workman work is a serious thing; and it is a serious and great thing. Negatively in what it excludes, as well as positively in what it insures, it is a great virtue. In every-day life it ensures truthfulness, getting work done in time and according to order; it excludes lying excuses, cheating, and the necessity for excessive labour of superintendence; it excludes evasion of obligations, and frauds, to obtain without labour the produce of other people's labour, to obtain pleasure and subsistence at other people's expense; it excludes shams. Persistent labour, impassibility to pleasurable excitement, excludes vagabondage. I have been in a position to obtain the impartial testimony of foreign employers to the superior efficiency of the British labourer,—that two British labourers do as much work as three modern Norwegians, or three modern Danes. Our sanitary engineer, Mr. Rawlinson, who directed works in the Crimea, avers that it would have been economical to have exported British labourers at 5s. a-day to have performed the work done by the Eastern workers at less than one-fifth the rate of daily wages. And British engineers who have conducted works in other parts of the world give similar testimony. The quality which singly, willingly, silently, and steadily takes the lead of other labourers in mining and tunnelling takes the lead in penetrating forests and clearances for colonization. Volney and other French witnesses acknowledge the superiority of the Anglo-Saxon in this respect. The foremost labour of every kind and degree, mental as well as manual, which has supplied the waste of life and energy in our towns, has been sustained by superior physical stamina derived from those comparatively good sanitary conditions enjoyed for generations in rural districts which we wish to give to towns,—pure air, pure water, and abundant food. Now the drain upon this description of labour has been and is such as to weaken our defences more seriously than we have been disposed to admit: at this time when the improvements in the implements of war require an improved quality of hands to wield them, though the condition of the sailor in the royal navy has undergone great improvement, as denoted among other things by the death-rate, which, the deaths from violence included, is little more than one-third that of the mercantile marine; yet it has been a complaint of many of the commanders that the hands they now obtain, and those with difficulty, are often the refuse of the ports. The hill districts which formerly 'grew Guardsmen,' where the sons of small farmers who had no capital preferred enlistment to the wages of a shilling a day as agricultural labourers, are now reported to be almost fruitless as enlisting grounds; but the royal com-missioners appear to be uninformed of the fact that the same men have now the indentments of wages of several shillings a day as navvies, and that there is an army of a hundred thousand men of the quality which supplied the Guards, chiefly got from these now almost barren enlistment fields, engaged in the works of new construction abroad as well as at home; and there is another army of upwards of a hundred and twenty thousand men engaged in working the new modes of conveyance.

After alluding to various drains on the working population, he said,—In the manufacturing districts certainly, and I believe the mining districts, extensions of establishments, and entirely new establishments, are standing still for want of hands of the right quality, and the increasing demand for the labour of children is everywhere felt as a most grievous barrier to what is commonly deemed a requisite education. These are large facts, on which it behoves us to ponder for the future of the country. Wide examination will sustain the large premiss which I assert, that Great Britain is at this time underpopled in respect to the demands of a suitable quality of labour and service,—an assertion of importance not to imperial interests alone, but to the progress of civilization,—

and, notwithstanding the increase of the population, is getting, relatively to the future demand for labour of the right quality, more and more underpopled. The important conclusion from the premiss is, that it behoves all civic communities to take measures to arrest the insanitary conditions which annually slaughter full two hundred thousand persons by preventible disease, and which more and more deteriorate, in spite of all manufacturing and commercial and general prosperity, the physical, and thence the mental and moral, condition of the population who survive. It is not because wages are augmenting, or with the view to countenance any notion that the increase of wages should be checked, that I present these considerations for saving and thereby increasing the population. On the contrary, I think it well for the advance of machinery and the arts, as also for the good of the people themselves, that wages should be advanced. I have elsewhere shown that there are conditions inherent to an advance of the arts of production and improvements in machinery exemplified in Glasgow itself, which require advanced rates of wages independently of the ordinary economical principles of supply and demand. With an immense increase of population and machinery in Lancashire, wages have more than doubled since the beginning of the century. And this increase of wages with the advance of the productive arts will, I hope, occasion labour to be better economised, and life to be better cared for. The death-rate in Great Britain may be stated in round numbers altogether at half a million annually. On an analysis of the causes of sanitary science, it is declared that one-half may be prevented; and that, too, by tried and well-ascertained means. In old dwellings the death-rate has been reduced from fluctuations of from 30 to 40 per 1,000, to fluctuations of from 13 to 20 and of from 13 to 15 per 1,000; from 23 per 1,000 to 16, from 26 to 17. In particular districts, by one measure alone, by an improved supply of water carried into houses, and by improved drainage within the houses, abolishing the middenstead and substituting a water-closet apparatus, the death-rate has been reduced by one-third; that is to say, it has been made as if each third year there were a jubilee, and no deaths and no sickness. I have an instance where, in an agricultural district, and with labourers alone, by care, the death-rate has been reduced to less than one-half within twelve in a thousand. From common lodging-houses, by the enforcement, through the police, of sanitary regulations, typhus and diarrhoea, as epidemics (whilst prevalent amongst the houses of the labouring classes), are banished. In our well-regulated district institutions for pauper children those epidemic visitations which ravage the children of the families of working men are almost unknown, and the death-rate is reduced to one-third that prevailing amongst their children.

So certain will the chief data be found to be when competently examined, as to enable a contractor to contract for the attainment of given sanitary results; and he ought, with the requisite powers, to contract for the attainment of given ends; and he ought to contract for the reduction of the sickness and death-rate of such a city as Glasgow, by at least one-third, at an expense of about 1d. a week per head of the entire population, a charge less than the insurance charge for the alleviation of the present excess of sickness and mortality. The course most urgently required by the present demands for labour and service, improved in quality, as well as increased in amount, is first to arrest the great infantile slaughter from preventible causes in towns, and next to improve the physical, and thence the moral, training of the children of all classes, especially the children of the labouring classes. The treatment of children, a real public concern for their welfare, is in itself a high test of the moral and social condition of a city, of a nation, of an age, and commonly of a family. An infantile death-rate, that is to say of children within the year of their birth, I have always held to be the best single test of the sanitary condition of a place or of a population, as that test is the least affected by occupation, or by immigration, or irrigation, as children are the most sensitive to aerial impurities. One pernicious effect of the present uncertainty of infantile life consequent on the insanitary condition of the dwellings of the labouring classes,—and, indeed, of the lower middle classes too, and of the excessive miseries and anxieties encountered in rearing children, and the uncertainty of the means of rearing them, and the uncertainties of the parents' own lives,—is

to render the marriage of the most prudent and competent to become heads of families improvident.

MR. SHERIFF BELL ON ARCHITECTURE.  
THE GLASGOW ARCHITECTURAL SOCIETY.

THE first meeting for the session was held on the 15th inst.; Mr. Charles Wilson in the chair. A report from the Committee having been read, and other business transacted, Mr. Sheriff Bell addressed the meeting. He said—'I felt honoured when your Committee requested that I would make a few observations on this opening night of your session. These observations will be very brief, and I am afraid very desultory, but I have all my life felt the power of architecture, been thoroughly cognizant of its importance, and I trust, therefore, that while I speak with that feeling of respect which architecture deserves, you will, at the same time, pardon my shortcomings in point of skill and practical knowledge. Architecture, in the largest sense of the word, may be defined as artistic feeling in stone. The architect is a person who possesses the power of giving artistic beauty to building in stone; and the design in architecture, when it reaches the highest flights, has been assimilated by many enthusiastic minds to poetry in stone. Madame de Staël spoke of Milan Cathedral as frozen music. I think that perhaps the public mind generally is not sufficiently impressed with the amount of intelligence, information, and intellect that is required to make up a great architect. We have produced in Great Britain some very illustrious architects, who are entitled to take rank with the most eminent men in any department of literature or of art. It is impossible to read of the achievements of such men as Inigo Jones, Sir Christopher Wren, and Sir William Chambers, without feeling that we have to do with minds of the highest order. Sir Christopher Wren, in the course of his life, not only gave this country two of the most splendid buildings which the world possesses—I mean Greenwich Hospital and St. Paul's Cathedral,—but he covered the country with many other noble specimens—at least twenty-five beautiful churches. We know that we are indebted for Whitehall to Jones, and for Somerset House to Chambers. But we need not go quite so far back to find the intellectual power of a great architect. I venture to say that, if we look at any intellectual effort in any department of intellect or of art that has been achieved within the last twenty-five years, there is none entitled to take pre-eminence over the creation of Sir Charles Barry in the British Houses of Parliament. They have been twenty years in building, but they remain a monument of Barry's genius, which will descend, no doubt, to long ages, and excite the admiration of our children's children. Poor Barry was often during his lifetime, when he found it necessary to make additional demands upon the exchequer, when he had to contend with necessary causes of delay and many inconveniences that started up to oppose him—he was often, I say, I may almost call it badgered in the House of Commons by his employers for alleged delays and occasional alleged defects; but I am satisfied that time will show that those were narrow-minded criticisms, and that Barry, going on quietly, determinedly, and with consummate skill in his own noble and beautiful art, has produced a building which reflects honour upon this nation, and which would be an ornament in any quarter of Europe. Now, just let us consider, in some of the kindred departments of intellect, what has been done within the last twenty-five years, in order that we may form some sort of notion of this great work of Barry's: shall we compare it with any of the poetry of the last twenty-five years? I do not know any single poem that has been produced within that period that appears to me a finer and more poetical creation than that building of Barry's. Take the "Idylls of the King," if you like—that great and beautiful poem of our great poet Tennyson. I do not think the "Idylls of the King" puts Tennyson intellectually on higher ground than the Houses of Parliament put Barry. Take any popular work of fiction of the present day, and I believe Barry is far above them. We shall never say that the successful and clever author of "Adam Bede" or of "Nicholas Nickleby," has produced in these works anything so intellectual or so great as that noble and beautiful building. Take successful pictures—and no one admires the beautiful art of painting more than I do. We have some very eminent artists now living in this country; but, taking their individual works, I am prepared to challenge comparison with any one of them—at least, as a great effort—an effort

likely to command the respect and admiration of thousands, I may say millions, of our posterity, with the Palace of Westminster. A sort of comparison of this kind enables us to come to some more distinct understanding of the real platform upon which a great architect is entitled to stand. It appears to me that Barry's Palace puts him upon the same platform as his "Ivanhoe" did Sir Walter Scott, or the "Excursion" put Wordsworth. I do not know that within the last twenty-five years, taking it for all in all, taking the beautiful exterior, and the still more exquisite interior, so complete, so harmonious, so perfect in all its parts—there is any one more entitled to the respect of his countrymen for having produced a grand creation. Sir Charles Barry, you all well remember, was not simply a Gothic architect, although he selected that rich and beautiful style of architecture for the Houses of Parliament. He has adorned London with hardly less beautiful buildings in a totally different description of architecture—the Italian or Palladian. Witness his Travellers' Club and his Reform Club. Palladian or Italian architecture may be said to have dated its origin from about the beginning of the sixteenth century. At that time commercial enterprise and popular freedom were making considerable strides, and feudalism and ecclesiasticism were giving way a little before them, and with these the Gothic architecture receded considerably from the high position which it had taken; and for commercial purposes and the purposes of a great nation rising into wealth and prosperity, it was found that in many instances the Palladian, or Italian style, was more suitable and more appropriate. Hence, we find that during the whole of the sixteenth, and a large portion of the seventeenth century, that style was in very general acceptance and use. Various modifications, both of the Gothic and of the pure Roman or Italian have ensued; and we perhaps may now say, generally, talking of the various styles—which has been a great subject of discussion recently in the architectural world—that it seems to be pretty well admitted that for ecclesiastical or baronial buildings, Gothic, upon the whole, is the best; for civil or municipal buildings, the Italian or Palladian; and for family mansions, the Tudor. You are aware that in the competition for the Houses of Parliament, the competitors were restricted to two styles—the Gothic and the Elizabethan. Barry wisely, I think, chose the Gothic, because there can be no doubt that it is a more forcible and a grander style of architecture than the Elizabethan. However, the second prize in the competition was given for a very beautiful Elizabethan design. In the recent competition for the new Government Offices in London, which has excited so much attention, there has been no restriction of style—all styles have been thrown open to the competitors; but we are aware that there seems to be a division in the Cabinet on the subject, some of its members being clear that the style ought to be the horizontal—either Italian or Grecian; others being equally clear, for the sake of uniformity with the Houses of Parliament, and upon the ground of the merit of the style itself, that it ought to be Gothic. In the meantime, I understand, it is a Gothic design that has obtained the first prize. But whether that design is to be ultimately executed remains at this moment, I believe, a little doubtful. Now, whilst architecture, viewed in this way, is the main instrument by which populous cities are reared beautiful and grand, and striking to the eye, and delightful to live in, and delightful to gaze at, we must not forget that architecture has also no less important, though, perhaps, not such conspicuous, duties to perform. Architecture has to make cities also, and the dwelling-places of man comfortable, healthy, salubrious, and safe. Architecture and all sanitary requisites go hand in hand. It was well said by Mr. Chadwick, at the recent meeting of the Social Science Association here, that the physician now, instead of sending his recipe to the apothecary, might with greater propriety send it to the architect. For if the architect, at least, is left to his own way—if he is not trammelled by his employer, and tied down to do certain things which he would far rather not do—if he is allowed the freedom which every independent architect ought to endeavour to obtain, I say that he, in many circumstances, becomes responsible not only for the beauty and the grandeur, but the comfort and the health of cities. Therefore, whether we look at those great prizes in the intellectual world of architecture, which occur only occasionally, but to which a man of genius will ever look as affording the means for handing down his name and doing the greatest and the highest things that can be done in the art,—

whether we look to that or to the simpler and daily avocations of ordinary architecture, we cannot but feel that the profession of architecture is at once a most noble and a most useful one; and happy, say I, is it for any city in which an intelligent body of men, such as I now see before me, take a deep and daily interest in such a subject. The duties of the architect are not confined simply to the building—to the mere use and superintendence of the mode of the use of the stone and the lime. There are a number of subsidiary matters, all of which go to the comfort or the beauty of a building, and in all of which the architect is entitled to have a voice, nay, a predominant voice. I heard to-night, with great pleasure, from the report of your proceedings of last session, that you have looked with no small interest upon the decoration of our beautiful old cathedral, and that you, as you were not only entitled, but as you were bound to do, have watched anxiously what has been doing there in the matter of painted glass. I think, in the first place, that the public of Glasgow are greatly indebted to those public-minded citizens who originated the idea of restoring the old glories of painted glass to that fine old building, because there can be no doubt that, especially in a fine ecclesiastical building, the interior very finely coloured produces a richness, a beauty, a grandeur of light and shadow, a solemnity, a religious awe and effect which almost no other adjunct will give. I regret that a difference of opinion has arisen as to the mode in which the windows were to be executed and obtained. I think that, as usual, where a difference of opinion gets up, and where, perhaps, some little anxiety and heat has been shown on both sides, there has, perhaps, been a little exaggeration on both sides. On the one side it has been maintained that it was impossible to get proper windows for our cathedral from the exertions of native artists, and that the only safe place to go to for those windows was Munich, a city of the arts, and a city in which the art of painting glass has been much cultivated; and the committee, having finally resolved to go there, have also adopted the opinion that it is necessary to be uniform in the cathedral; and to preserve, therefore, uniformity, they seem now to think that they can go, or should go, nowhere else. It is also maintained, upon that side of the question, that the two windows which have been obtained from Munich, are so infinitely superior to anything that could have been got in this country, that they prove the propriety of their resolution to go there. Upon the other side of the question it has been stated, and certainly well stated, by many intelligent men, that we have sufficient art within the confines of our own country to have justified our committee in appealing to it; and that there are both glass-stainers, as artisans and manipulators in glass, who can well transfer those designs on to the proper material, and that there are artists as high as any that Munich possesses, capable of giving suitable and appropriate designs to those windows. And this party, who so think, are inclined to say that the Munich style of painted windows is not the best—that it is conventional, that it is of a peculiar character, that it is not so rich or strong in colour or in tone as other styles, and that the truth of this is proved by the two specimens which have been already put up in the cathedral. Now, it is not for me to pronounce any decision between these two contending parties. It would be the height of arrogance in me to attempt to do so. I believe that Munich is capable of sending out some most excellent specimens of painted glass; I believe that Munich is entitled to the honour of being permitted to send windows to our cathedral, and that those windows, whether they entirely come up to all that could be wished of them, whether they may not be to a certain extent feeble in tone and in colour, yet possess great artistic excellencies and beauty. But, whilst I believe this, I also believe that Munich is not the only place in the world where painted glass can be got, and the most thoroughly believe that it is not, upon the whole, judging by the specimens which we have already seen in this city, the very best school of painted glass at this moment. If any one take the trouble of going into our crypt, where we have windows from Munich, from Brussels, from Dresden, I think no one accustomed to the effect of colour, looking at the richness and purity of tone or colour, and looking at the effect which this rich and deep tone produces within an interior, but will acknowledge that, in the crypt at least, the Dresden windows are decidedly superior to those from Munich. But I go further, and I have no hesitation whatsoever in stating my belief that we have artists in this

country capable of producing at least as fine windows as those which we have got. I do not object to that intelligent committee having given certain orders to the artists in Munich, but I doubt that they are altogether right in holding that it is absolutely necessary that because they have got two or three, and are going to get one or two more from Munich, the whole windows in the cathedral should come from Munich. I know that they stand up for what they call uniformity of style, and the probable introduction of discord if they put in windows which cannot be considered to be precisely in the same style as that which has been adopted in Munich. Now, I differ with great diffidence, in the feeling as to that. I do not think that a monotony of style in a great building like our cathedral is at all necessary, or desirable. I do not think there will be any discord, any disagreeable harshness, in having, in certain of those windows, fine rich glass from Dresden; nor do I think there would be anything discreditible, but something very creditable to this country, if we had two or three beautiful windows by our native artists, such windows as we can see in Gloucester Cathedral, such a window as I know is to be put up in St. Paul's, commissioned from native artists alone. Whilst, therefore, I think we are much indebted to that most intelligent Committee for what they have done, and whilst, if their arrangements are complete, I do not think that it would perhaps be safe or right to attempt at this stage to interfere with them, still that is not to prevent intelligent men who think upon the subject—it is not to prevent artists who visit Glasgow, of the highest fame, with some of whom I have visited the cathedral—it is not to prevent professors from London, men of accredited reputation, from making their observations and their fair criticisms upon the Munich glass. We are not to be tied down to the implicit faith that Munich, and Munich alone, can produce painted glass for the Glasgow Cathedral. I hold that dogma to be a fallacy, whilst I give all due credit to the talent and power of some of the Munich artists who do spend their lives in producing windows. This is one of the subsidiary subjects deeply connected with architecture. There are many others, such as the decoration of the interior of the buildings, and other matters not immediately connected with building, such as our drains and sewers, all of which are subjects interesting to architects, and with which they peculiarly are bound to be familiar.

The Rev. Mr. Batchelor, Mr. R. Somers, Mr. John Honeyman, jun., and others addressed the meeting.

#### EXHIBITION BUILDING OF THE BOARD OF ARTS AND MANUFACTURES OF LOWER CANADA.

The brief accounts of this structure, as the Crystal Palace, which have appeared in some of the English papers, and our own reference to it, have not satisfied some who are concerned in its erection, and we have in consequence received a few additional particulars from Montreal. In form the building is that of a cross, the main body consisting of a nave and aisles, 184 feet in length by a total width of 80 feet, and a height from the street level to the underside of the circular roof of 80 feet, or equal to that of the transepts of the '51 Exhibition. The transepts, with their aisles, (one bay only of which is at present completed on each side), are 60 feet wide, with a present length across the entire building of 124 feet.

The two principal fronts have columns, girders, and outer circles and ornaments of the large fanlights, of iron: the windows, ventilators, blinds, &c., are of ornamental woodwork. The side walls above the stone base course are built of red brick, with white pressed brick dressings to the windows, panels, and piers. There is a stone basement, 9 feet high, under the entire building.

In the interior are two tiers of galleries, each 20 feet wide, running round the building over the aisles, the lowest one being at a level of 20 feet above the ground-floor. The internal columns and girders, with their mode of junction, &c., are somewhat similar to those in the Sydenham Palace. The roofs are of wood, covered for the present with patent felt and composition; but they will eventually have an outer covering of tin. This description of roof was determined on in preference to one of glass, in consequence of the great changes in the climate from Midsummer's heat to winter's intense cold, rendering it very difficult,—in fact, in a building of this magnitude quite impossible,—to keep it sufficiently cool in summer and warm in winter, were it otherwise constructed.

As a proof of the energy with which this building was carried on, we may mention that, from the time that the first pile was driven (upwards of one-half of the entire foundation had to be piled in consequence of the soft state of the ground on a portion of the site), until its inauguration by H. R. H. the Prince of Wales, a period of only sixteen weeks elapsed. The style of the building as to its construction, and the description of the iron work, both in the castings and the fitting together, being entirely new to the contractors engaged upon the several portions of the building, render this, even under favourable circumstances, a very short period to erect so large an edifice in a new country. Mr. J. W. Hopkins is the architect, and Mr. D. McNevin the builder.

#### PROGRESS.

We really live in marvelous times when science, with giant strides, is surprising the most sanguine. Amongst the new wonders, we have accounts from Austria of the invention of a printing-machine of extraordinary quality, dispensing, it is said, with the use of all assistance, save that of mechanical apparatus. No persons are required to feed it with paper, or to remove the printed sheets, both processes being accomplished through the instrumentality of the machine itself. The paper for this purpose is supplied in rolls or webs, many hundred yards in length. The machine first cuts a sheet of the requisite size, then prints, and finally throws it off—a newspaper ready for the reader, and in Austria, too! All that manual labour in this case is required to do is to bring forward fresh webs of paper, and to take away the printed sheets. Thus, in the Vienna State Printing-office ten presses are attended by one man only. The same office is said to have started a capital invention for the manufacture of paper itself from straw.

The electric telegraph is progressing in usefulness, is ever developing new power, and will, ere long, be an important element in the management of business, and also be a means of carrying out other objects.

Professor Wheatstone's instruments (as is generally known), consist of two kinds. The one is described as the Automatic Telegraph, and the other as the Universal Telegraph. The latter is the most useful for distances of from one to three miles. It is so easy of manipulation that any one who can spell can dispense intelligence. On a

small circular dial are the letters of the alphabet and the numerals, one to nine, with a cypher. As these letters and figures are touched, in the same manner as the keys of a pianoforte, the same letters or figures are indicated at the place to which the communication is to be made. Another dial, with a pointer, which points to letters and figures exactly the same as the other dial, is fixed close by for communication. It is thus plain that any one, even of the most ordinary intellect, and without practice, can hold communication with another by this simple means; and so portable are these instruments, that as one man carries them another can push the truck which contains the reel of wire. By their means communications were made throughout the French army at the battle of Solferino. There seems to be nothing to prevent the application of this principle, at a moderate cost, to dwellings, to the same extent as gas and water are now laid on (this we have before hinted at), and by proper arrangements at the different stations of the Metropolitan Telegraph, which stations may soon be as numerous as the post-offices now are. When Mr. Jones, or Mr. Brown, has had the electric telegraph laid on, he will be placed in communication, at a lightning rate, with the whole of the metropolis, and, for an extra payment, with the chief part of Europe. It may, however, be that in course of time facilities will be thus afforded for the conveyance of messages throughout the entire empire. It is curious to speculate on the changes which may be made by this means in the usages of society. For instance, if the weather is unfavourable or other circumstances occur, ladies of fashion may sit in their bonnet, and perform all the necessary small gossip of a morning call with friends, despatching fifty polite messages and receiving the answers from places at a considerable distance within an hour, their maids delivering the same by touching that marvelous dial which in days of yore would have been considered a supernatural agency, and then awaiting the reply. In fact, the telegraph may be made to write its own messages and replies, and thus save further trouble. We can fancy in those days to come, in the houses of our merchants, artists, and others, in London and elsewhere, the

electric signal being given, little children spelling the letters indicated by the distinct but rapid pointing on the dial which brings news from all directions, and hastening to inform their parents or guardians that Aunt So-and-so, or Mrs. Blank, or it may be their brother Tom at Oxford, or Uncle Jack at Aberdeen, is talking to them.

The swiftest of the express locomotive trains, or all the means of Mr. Rowland Hill, are as nothing in comparison with the speed at which thoughts can thus be exchanged.

From the Houses of Parliament a line of the description alluded to already communicates with the Queen's Printers in Fleet-street, by which Members, without the intervention of a third person, can readily send any messages.

To ministers of state, to those engaged in departments of great companies, or connected with the press, this species of telegraphy will ere long be as familiar as the morning newspaper; and that, too, may then be cut without hands from the Vienna paper-web, printed off also without human intervention, and wrapped up and addressed by the American newspaper-addressing machine, of which we some time since gave an account.

An instance is mentioned in *Chambers's Journal* of a nobleman who resides five miles from Dundee now habitually sending orders to his tradesmen in the town by domestic telegraph.

What a wonderful power the special telegraphic system must give to the police, and how useful it must be to the fire-brigades of the metropolis. The Americans already have something of the kind. In coal and other mines, in the carrying forward of military operations, in the management of large manufactories, and in a hundred other ways, its operation will be most valuable.

At Chatham, twenty-five fuses were fired by telegraphic influence at two miles' distance. How suggestive this circumstance is of many applications, such as the blasting-works of coal pits and quarries, already in partial use. With management it might be made the means of simultaneously lighting all the gas-lamps in a town, as long ago suggested. This, however, may not be for long needed, for who can say how soon the electric lights may as effectually supersede gas as that invention did the oil lamps of Queen Anne and George III.'s days? As it is, the gas-jets in an assembly-room in Edinburgh have been lit simultaneously by electricity.

It seems but the other day that we saw the first beginning of photography. We remember the speculative observations which were made respecting it, while the great mass of the people were incredulous. Year after year this art-science has progressed. From time to time the public have been astonished by fresh developments. Portraits of a power and excellence which rival, nay, far excel, the best efforts of the most distinguished miniature painters are produced by means of photography. Tinted in oils or water-colours by artists of ability, coins, shells, and other objects of natural history, &c., can be most perfectly copied by this means; and it appears that by the sun's rays, chemical appliances, and scientific arrangements combined, photography will soon be made useful for book and other illustrations, for the last news respecting photography is, as we only the other day first informed the British public, that a method has been found of multiplying complete and beautiful photographs with a speed vastly greater than that by which engravings can be printed even by the steam press.

We have already noticed a process by which artistic subjects, already engraved and printed, as well as letter-press can be reproduced in any number from the printed surface. Of the expansion or enlargement, and contraction or diminution of prints and letter-press we also lately gave an account.

The sewing machine is getting into extensive use in the making of clothes, boots and shoes, and other things,—in America, more so than in England. Some idea of the appropriations of this instrument may be gathered from the following particulars from a recent article in the *Times*. It seems that a discussion has taken place in the United States as to the right of Mr. Howe, the inventor of the sewing-machine, to a renewal of his patent. A renewed term of seven years has been granted. In the argument before the States' Commissioners of Patents it was shown that the value of the sewing done in the United States which is capable of being done by the sewing-machine is at least 58,000,000 dols. per annum, and that Howe's machine even if applied to the work in the exact form in which he first introduced it, would save to the public 34,000,000 dols. per annum. Look-

ing at the exact results achieved, it was pointed out that the sewing-machine had already entered into and revolutionized more than thirty-seven distinct departments of manufactures, besides enlarging many, and also creating new ones.

In the city of New York it is asserted that the annual saving is 1,500,000 dols. on men and boys' clothing, 92,000 dols. in hats and caps, and 170,000 dols. in shirt-fronts; while, in Massachusetts, in the manufacture of boots and shoes the labour value of its performance is 1,500,000 dols.

When we turn to the condition of agriculture,—its steam ploughs, steam thrashing-machines, and improved methods of management, we find that there is only a comparatively small beginning made and much still to do. It is shown that by proper management and well-directed labour even without any special or new appliances, the ground in the neighbourhood of the metropolis might be made to produce five times the present average quantity of produce. It is evident, therefore, that a great deal has yet to be done in this direction. In spite of the chemical knowledge which has been brought to bear on this subject, in parts of England, some not far distant from London, the same methods are in use as were employed two centuries ago. Nevertheless, steam is making considerable progress, too, in agricultural manufactures, here and there throughout the country.

In the improvement of varieties of crops much has been done, but still more remains to be done. There seems to be here a boundless field for culture. The grains and roots, as well as the sheep and cattle, of recent years are, many of them, enormous in size compared with those of past years, and there really would appear to be scarcely any limits in this as well as other directions connected with agriculture. We do believe that vegetable and animal life can be either enlarged or diminished almost to any extent by patient and long-continued culture and selection,—that sheep could be enlarged to the size of cattle on the one hand, or dwindled to the size of lapdogs on the other, by breeding and selection. How can the "old oaks and pines" of the Chinese and Japanese, dwindled to a few inches in height, have been produced but by long-continued selection of the smallest trees and the smallest seeds, reiterated over and over, till the dwindling process was accomplished? And so with the enlargement of vegetable and animal produce: how have the enormous swine and other animals of the modern farm been produced but by some such system of breeding and selection? Here, we say, there is a vast field for improvement, even independent altogether of steam, though that will soon be making rapid and extensive strides in agriculture as in other manufactures, and in commerce and social intercourse.

#### LIVERPOOL FREE PUBLIC LIBRARY AND MUSEUM.

THE new structure for a public library and museum, built and presented to Liverpool by an individual citizen, was opened on Thursday last. We have on various occasions spoken of the building during its progress, but the following connected particulars, from the local *Journal* and elsewhere, will be interesting at this moment. The first stone, let us say, was laid in April, 1857. The building is on the north side of Shaw's brow, very near to St. George's Hall: it extends in front about 222 feet, and in extreme depth about 161 feet, and occupies an area entirely covered, of about 3,770 square yards. The front and the returns, to the extent of about 45 feet at each end, are executed in stone, chiefly from quarries near Wretham, and in part, where that stone could not be obtained of sufficient dimensions, or where not of sufficient hardness, from the Darley Dale quarries or from Yorkshire, the remainder of the sides or ends, and the back part, or north front, being faced with straw-coloured bricks from near Tamworth, with stone dressings.

The south façade is broken up into five parts, baving in the centre a hexastyle portico of the Corinthian order, with four columns in the rear, and the centre part deeply recessed. The recessed parts of the front contain each five windows, over which are sunk panels with large carved wreaths on raised blocks. The two wings have on the face four pilasters of like order with the portico, the two centre ones projecting before the line of the angle ones about 2 feet, and between the centre pilasters are niches, with pediment caps and carved trusses, and above are sunk panels and carved wreaths. The flanks to the extent of the stonework contain the windows which, at the east end, light the students' reading-room, and at the west end the corresponding room in

the Museum. The columns are 33 feet high: the basement is 9 feet high; and the entire height, from the surface of the ground to the top of the entablature, is about 51 feet, exclusive of an attic or parapet round the building, 7 feet 6 inches high, for the purpose of screening the roofs, which would be otherwise overlooked from the higher level of London-road. There is also a lofty attic above the portico, returned on each side for the purpose of screening the roof of the central hall, otherwise overlooked from the higher ground.

The portico is approached at each end by steps, enclosed in screen walls, with iron gates, and the remainder of the front is enclosed from the street by a stone balustrade having iron gates to the side entrances.

The general entrance to the building is from the portico, into an entrance-hall, 31 feet by 23 feet, having a flat panelled ceiling. Turning to the right is the entrance to the reading-room and library, and to the left a similar entrance to the museum-rooms. Each of the entrances and the central hall are approached by four steps, the general level of the principal floor of the building being 2 feet above the level of the entrance-hall, and 2 feet 6 inches above the level of the portico floor.

Facing the entrance, and beyond the entrance-hall, from which it is separated by a screen, consisting of two Doric columns, flanked by two pilasters, is the central hall. This apartment is 90 feet long, 53 feet wide, and 46 feet high. It is surrounded by a gallery, supported upon an arcade, the gallery being 10 feet wide. Above this gallery the roof is supported by Yorkshire stone columns of the Ionic order, twenty in number, the shaft of each column being in one stone. Between the columns the gallery is protected by a stone balustrade, and from these columns, surmounted by their proper entablature, spring the groined arches which support the ceiling, the centre portion of which is divided into compartments by enriched bands opposite each column, three of those compartments having horizontal lights, and the others being filled in with enriched panelling and flowers. In addition to the horizontal lights before mentioned, the hall is lighted on each side by seven circular-headed windows, and by windows in the external walls at the ends of the hall, which are seen partially through the semicircular arches over the entablature surmounting the end columns.

Looking through the end of the arcade and a screen of two Doric columns, with their flanking pilasters, is the principal staircase, which is 31½ feet by 30 feet. This staircase consists of a central flight of steps, with a continuous landing extending the full width of the staircase, and two return flights of steps. These steps and landings are from the Craig Leith quarries, near Edinburgh. The staircase is protected by Yorkshire stone dado, having moulded plinths, cappings, and pedestals; and the walls round the landings and the sides of the upper flights of steps are cased with Yorkshire stone, with moulded plinth and capping.

The upper part of the staircase is surrounded with pilasters and pedestals to correspond with those in the central hall, and the ceiling is divided by enriched bands into nine compartments, two of which admit the light from skylights, and the remainder are panelled.

The room at the south end of the upper part of the hall on the level of the gallery is finished in like manner with the upper part of the staircase; and the upper part of this room and the staircase being each only separated from the central hall by two columns, the vista is complete from the front to the back wall of the building, about 152 feet.

The central hall is intended for the reception of works of art, such as sculpture, on the lower or ground-floor; the walls of the gallery, the upper part of staircase, and the upper room at the south end, being intended for the reception of pictures, &c. Generally, the portion of the building eastward of the central hall contains the Free Public Library, and that to the westward of the central hall is appropriated to museum purposes.

Descending again to the entrance-hall, and standing at the entrance doorway, the entrance to the reading-room is on the right hand through a small vestibule, whence the reader also obtains access to the lavatories, &c. The reading-room is 110 feet long and 50 feet wide. The south end, forming part of the main building, is separated from the remainder by a screen of two Doric columns, with their attic. This portion is lighted by the five windows in the eastern recess of the south front. The remainder of the room is lighted by two skylights, and by windows in an attic, raised upon segment and panelled arches across

and on each side of this portion of the room. These arcades spring from four piers, intended to enclose shafts to be used in the warming and ventilating of the building. To these shafts, and to corresponding shafts in the angles of the room, are attached Doric pilasters, the whole surmounted by a Doric entablature. Adjoining the large reading room, and in the south-east angle of the building, is the students' reading-room, 40 feet 6 inches by 28 feet; and on the east side of the reading-room is the reference library, 75 feet by 27 feet, which is now being fitted up with bookcases, and having also a gallery round it for bookcases. The cases in this room, and those intended to be fixed round the students' reading-room, will contain, say 30,000 volumes, being about the present extent of the library. Northward of the reading-room, and divided from it by a staircase and passage, is the committee-room, and also three class-rooms, the staircase being intended for access to the upper rooms of the library and to the lecture-room, hereafter described.

Upon the upper story of the building, on the library side, are three rooms intended to be used when required for library purposes. Their dimensions are as follows:—One 50 feet by 27 feet, one 40 feet 6 inches by 28 feet, and one 75 feet by 27 feet. These are all lighted from the roofs, and will, when filled, afford, with the lower rooms, space for about 100,000 volumes. They communicate at one end with the staircase just mentioned, and at the other, by means of a small ante-room, with the upper room at the south end of the central hall.

Over the committee-room is a lecture-room, 28 feet by 25 feet; and over the class-room a theatre for lectures, seated with circular seats, capable of affording accommodation for upwards of 340 persons. This theatre is approached from the north-east angle of the gallery in the central hall, and from the staircase in the north-east wing; so that, by means of the latter, it may be used in the evenings without necessitating the lighting of the hall when not required for other purposes.

The basement of this eastern portion of the building is in part to be used in connection with the working of the library. The portion under the reference library is intended as rooms for the reception of books purchased, and for the binding and classification of them. The parts under the committee-room and class-rooms, though not at present completed, or intended so to be, can at any time, if required, be, at a slight expense, rendered serviceable. A portion under the south end of the reading-room is intended for water-closets and lavatories for the use of the readers. Like conveniences will be found on either side of the principal staircase, entering from the central hall.

Having completed the circuit of the portion appropriated to library purposes, we proceed to the museum, and, again descending to the entrance-hall, on the left hand from the outer doorway looking northwards, is the entrance to the museum-rooms, on the principal story of which there are five, two of them each 50 feet by 27 feet; two of them each 40 feet 6 inches by 28 feet; and one 70 feet by 27 feet. Upon the left hand side of the vestibule to these rooms is a small room for the reception of cloaks, umbrellas, and for the parcels of excursionists, &c. Leaving these rooms, and entering by the north-west corner into the central hall, the principal staircase will take the visitor to the upper museum-rooms, also five in number, and of like dimensions with the lower ones, all lighted from the roof.

The entire cost of the erection of the building, the lighting, warming, and ventilating, is borne by Mr. Brown, and also the cost of the fittings; and the total expense, including the extension, will not be far short of 40,000.

When the building was first designed, it was intended to place it upon the incline of the then Shaw's Brow; but serious objections to such a course having arisen, the council determined to raise it up to its present level, and for that purpose authorized the construction of the present raised platform or terraced approach, by which means the building has been lifted up about 12 feet, and the portico floor is now on the level of the northern entrances to St. George's Hall. This necessitated the construction of a platform or foundation to the same extent for the building, the cost of which has been also borne by the corporation. The site of the building having been purchased in part out of the surplus funds of the corporation, and in part out of money raised on the security of the museum-rates, the total cost incurred by the corporation and by the Museum Committee for the site, and for the necessary works for raising the building to its present level, will be about 25,000. The designs for the build-

ing have been furnished by the surveyor of the corporation, and the works have been and are being carried out under his directions, Messrs. Holme & Nicol being the contractors, and Mr. Jacob Crieie, the clerk of the works; the sub-contractors being, for the masons' work, Mr. Hugh Yates; for the plasterers' and slaters' work, Mr. John Bromley; for the plumbers' and painters' work, Mr. Thomas Holt; for the glazing, Messrs. Moss & Co.; and for the iron work, Messrs. Weber & Co.

#### DOMESTIC ARCHITECTURE OF SOMERSET IN THE MIDDLE AGES.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

At the congress of this Society, held at the end of last month, Mr. J. H. Parker, being called on, said Somerset was the richest county in England in specimens of the Domestic architecture of the Middle Ages. He was not aware that there was any house in the county of the twelfth century, though there were a few in some parts of England; but of the thirteenth century there was the finest house in England, or perhaps in Europe—the Bishop's Palace at Wells, which was built by Bishop Jocelyn in the early part of that century. In the fourteenth century it was found not sufficiently large to suit the occasion of the bishops of those days, and another palace, he might almost say, was built by the side of the entrance to the courtyard. The building of the fourteenth century was in ruins. It seemed to have been merely occupied by state apartments, not used as a regular dwelling; and the house that still remained always had been, as at present, the dwelling of the bishops. It should be taken into consideration also, that it was part of a batch of buildings, and that the palace, the cathedral and chapter-house, and the close, formed one magnificent conception, which gave an idea of the noble architecture of the Middle Ages, such as was seldom seen anywhere else; indeed, he knew of no place equal to Wells in this particular. Mr. Dickinson had informed him that the houses of the canons were not in the close. He thought that must have been a subsequent arrangement arising from the requirement of increased accommodation. There were many houses in the county of the fourteenth century,—one at Meare, which was visited last year, and a very interesting and beautiful specimen it was. It was a very common practice in the Middle Ages to have the lower story stone floored, so that the collars and store-rooms were fireproof, and the adjoining parts were used as cloisters. That was the case with castles, abbeys, and monasteries. There was a house of the fourteenth century at Martock, in which the arrangements were somewhat singular. It was situated near the church. In that immediate neighbourhood there was Clevedon Court, a house of the time of Edward III., and he was proud to say, in a nearly perfect state; for, though it had been altered, and that to a great extent, the original house still existed. It was built in the shape of the letter H, the hall forming the connecting portion, and various buildings the two other parts. The offices were external. It was a common practice of the period, and appeared a very sensible practice, to have the kitchen out of doors, communicating with the house, but detached from it. There was thus less of the smell of dinner, which was very inconvenient in some houses. The servants had their hall, in which there were three doors—one leading to the pantry, another to the lutey, and the third to the kitchen. In many houses the great hall was upstairs, and the kitchen on the ground-floor; the lord's apartments were at one end of the hall, and those of the servants at the other. The lower rooms were called the cellar or parlours. It seemed strange to confound these two names; but in the Middle Ages a cellar did not always mean a place of deposit; it was a sort of lower chamber, above which there was an upper one, occupied by the lord and his family, and affording a look-out on the lawn. At Clevedon this situation was, however, from the "lady's bower." There were two doors, over each of which was a portullis, and below the roof were windlasses to raise the portullis. The house was slightly fortified. There was a round tower and embattled wall, but from its situation it could not be intended as a place of any great strength. The fortifications were most probably intended to keep out the highwaymen who infested the country. Of the fifteenth century there were a great number of houses in the county, of which it was needless for him to give any description. He was sorry to say that some of them were being destroyed. At Kingston Seymour there was a

very nice house of this date that had been destroyed. The houses of the sixteenth century were innumerable. These houses were all well worth preserving and examining, for no two of them were alike: the arrangements varied according to the caprice or wants of the inhabitants. While some had been destroyed, he had great pleasure in observing that many were extremely well kept up, and others were being built with as great spirit and liberality as were displayed by our ancestors. At Butleigh there was an example where the expenditure had been as liberal as in the middle ages. Our architects were not quite up to the mark in houses. They had made immense strides in regard to churches, which were as well built now as in the Middle Ages; and there was one in the neighbourhood of that town which was as perfect as if it had been built in the thirteenth century. But the architects do not understand the mode of building a Medieval house. A Medieval house might be made as comfortable as any other, and need not cost more; but, generally speaking, those that were built now were not so convenient or so good-looking as those of an older date. However, there was an improvement; and he hoped that as much progress would be made in the next ten years as there had been in churches in the last ten.

#### HARVESTING IN WET SEASONS.

THIS season of 1860 has been throughout a time of severe trial for farmers; yet many of them may still be found so obstinately wedded to the old school routine of farming, that they refuse to adopt any novel preservative and remedial processes, although these may have been fully tested by more practical men, belonging to what may be termed the new school. The ripening of corn by the sun's rays may be the better process and bestow a superior flavour; but experience has shown us the ripening of much of the fruit grown in this country after being plucked, and of probably the greater proportion of that exported to England, as for example oranges, grapes, &c., the oranges being actually packed for exportation while in a green state. An author of some note in all relating to agricultural matters, many years back stated that when corn, &c., had attained its full development of *earing*, and its further growth was evidently at an end, no time should be lost in garnering in the precious produce, the staple necessary of life to millions of our population. In Russia wet harvests are frequent, and the agriculturist gathers in his crop before the weather wet or dry. There they employ a very rude process of drying it, first piling huge bundles together in masses similar to our haystacks; in these are placed dried clay pipes, of about a foot in diameter, in such a uniform disposition as to enable them to convey hot air through them, produced by the combustion of wood or other suitable material: this proceeds from a stove placed at a sufficient distance to ensure safety, and demands care to avoid destruction by fire. Even this rude method might be used with advantage, especially by small farmers whose resources and means are limited. But for farmers of the higher class, owning their hundreds or thousands of acres, a *modus operandi* of a superior type and consistent with the magnitude of operations would be desirable if not necessary.

To this end it is now suggested that buildings should be erected having the special object in view of being used in wet seasons for drying the corn. Such erections might be constructed so as to serve the purposes of the ordinary barn-house before and after the time of harvest, and when required for drying the grain or any other produce; indeed, the firm buildings already standing might be readily adapted and altered for the purpose. In these, stoves conveying hot air or water should be carried throughout the buildings; the heating apparatus being fixed upon the ground-floor and the electric produced rising through the floor above it, which must be perforated with numerous holes for the purpose if it be a wooden one, but it would probably be far better to construct such flooring of an open wire-work or grating. The wet corn or other produce, &c., littered over it would only require to be frequently turned. A quicker system of drying has been proposed by artificial currents of air, but we believe that the hot air process now suggested would ripen the produce better, and give to it a more natural flavour than if it were subjected to the cold blast. The valuable properties of the *chloride of calcium* were pointed out by a scientific journal in 1857, but without receiving that attention it probably merited. That mineral is a very rapid absorbent of moisture: by its

employment corn and other matters might be dried by a process free from any objection on the possible ground of danger from fire. The only point for consideration is that of cost; and this it is believed may soon be disposed of: hitherto, this ebolicum has been little used, but a reliable authority has stated that it could be manufactured on a large scale at a moderate price, and there is reason to believe it might eventually become a valuable auxiliary with agriculturists.

Due provision should be made for the contingency of a wet harvest time. To this end, it would simply repay the expense of outlay were farmers to erect on their farmsteads buildings expressly for the purpose of drying all kinds of agricultural produce as they in turn become full-grown and ready for an artificial ripening. Mr. W. W. Wynne, Mr. Wakley, and others have recently borne testimony to the possibility of evaporating the water from corn or any other produce by the employment of hot air, and by the means of comparatively simple mechanical arrangements; a correspondent of our own, shows a very early use made by him of hot air for the purpose; but the system proposed in this paper being of a simple and inexpensive character, and having none of those difficulties to which machinery is ever liable, such as getting out of repair and breaking down (often at a critical moment),—as also requiring great care, intelligence, and steady persistence on the part of farm servants,—is, perhaps, better calculated for general use by agriculturists.

#### INFORMATION FROM ABROAD.

THE municipal administration of Paris, on the 21st ult. deposited in the 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, and 20th arrondissements, a project for enlarging and regulating the Rue Militaire. This, which acts as means of communication between the new *barrières* of Paris, must now replace the *Chemin de Ronde*, formerly connecting the old *barrières*, and the circular boulevard necessary for so active a traffic. So, the Council have resolved to transform the above thoroughfare into a large avenue, planted with trees, that it may unite together all the existing thoroughfares radiating from Paris towards the new *enceinte*, and may serve as a healthful promenade to the inhabitants of the new circle.

The Minister of Public Works is authorized, in the name of the state, to allow a subvention of 600,000 francs for the execution of a railway from Strasbourg to Barr, to Metz and to Wasselonne, by Molsheim; and subvention of 240,000 francs for the execution of a railway from Haguenau to Neiderbronn, with a branch to the Reischoffen factory.

An agricultural Institute has been just founded on the largest scale, by the Belgian Government. This establishment, situated at Gembloux, in proximity with Brussels and Namur, in the midst of the best cultivated lands of Belgium, combines theory with practice. It includes—two farms, gardens, and land cultivated for the special purpose of instruction; a sugar factory, and a distillery; stables, with proper means of utilizing the manure; access to the "Haras" of Government (horse-breeding stables), which are close by. The pupils are internal, but a certain number of externals may be authorized. They must be sixteen years of age at least, and must pass an examination to prove that they are possessed with sufficient information to profit by the course they are to undergo. Application to be made to the Minister of the Interior, Brussels, before the 15th October, 1860. Charge for in-door students, 700 francs, all included; out-door, 300 francs. Opening of classes, November, 1860.

The works undertaken in the Bois du Vésinet proceeded actively. The area of this wood, which is in a fair way of becoming a delightful promenade, like the Bois de Boulogne and the Bois de Vincennes, is no less than 450 hectares (1,101 acres British), of which 100 hectares (247 acres) have been reserved for roadways, lakes, and rivers. Up to the present, three lakes and 4 kilometres of river add to the embellishment of this new park, which receives its supply of water from the Seine, opposite Port-Marly, by two steam-engines, of 60-horse power each. When completed, this spot of ground for the recreation of Paris folk will contain five lakes (the largest being 4,000 square metres), and 7 kilometres of rivers. Moreover, small animals have been carried on, for a total length of 50 kilometres, so as to afford abundant supply of water for the rising colony. A handsome church is to be erected in the square of the town, around which a considerable number of

elegant villas have sprung up. The works received the benediction of the Bishop of Versailles with great ceremony, attended by the Minister of State and the "Maison" of the Emperor.

The transformation of the Champs Elysées is not confined to the widening out of the beside spaces and throwing them open, so as to render it an unrivalled promenade. More is projected to be done, and an inquiry has been opened at the *Mairie* of the eighth arrondissement for opening a new thoroughfare, 36 metres wide, between the "Rond-point des Champs Elysées" and the Rue du Faubourg Saint Honoré, in line with the prolongation of the Avenue d'Antin.

The works of the square before the Conservatoire des Arts et Métiers, between the Rue Saint Martin and the Boulevard de Sebastopol, are carried out, as usual, most rapidly.

#### DRINKING-FOUNTAIN MOVEMENT.

A FOUNTAIN in the Early English style has been erected in Sheffield, opposite to the Midland Station, at the junction of Spital-hill and Saville-street, at the cost of Mr. J. H. Sales. The base is a square structure, built of rubbed Darley Dale stone, ornamented with mouldings and a carved band, and upon it stand four pillars of polished granite, finished with capitals and bases cast in bronze. These have been modelled by Mr. Green, of Sheffield, and have been cast by Messrs. Yates, Haywood, & Co., Rotherham. Above the pillars is a superstructure, consisting of a canopy, arched on the four sides, groined, and with lead mouldings and carved foliage. Its height is upwards of 12 feet, and the breadth of its base 5 feet. The cost will be 200l. Mr. John Frith, of Sheffield, is the architect, and the work has been executed by Mr. Ald. Mycock.

#### WANT OF A MUSEUM AND LIBRARY FOR THE EASTERN PART OF LONDON.

An effort is being made by a number of gentlemen who sympathise with the working classes of the east of London, to provide a public museum, combining a library, reading, and lecture rooms, for the eastern districts of the metropolis. The working men of the neighbourhood bearing of this, and understanding that a select committee of the house of Commons had recommended the formation of branch museums in the crowded districts of the metropolis, have formed a society, called "The East London Museum and Library Working Men's Association," and have forwarded a petition to Parliament, signed by 10,500 working men, praying them to grant their assistance towards establishing a museum for the east of London. The secretaries, addressing us on the subject, say:—"We invite your attention to the actual condition of our rolling artisans, weavers, mechanics, labourers, &c., of the east of London. We long for improvement; but, alas! what have we after our daily toil? Little else than the public-house, the cheap theatre, low concert-rooms, or to stroll the public streets. Thousands of our young people (the hope of our country) are being ruined by these means, and poverty and vice habits fostered, which must degrade and impoverish those who are thus led. A committee of working men are now actively employed in endeavouring to establish a museum, library, reading-rooms, lecture hall (on a large scale), to be opened from ten till four o'clock as an ordinary museum, and from six till ten o'clock (free) for reading, lectures, classes, and study. We have sent a petition to Parliament signed, in sixteen evenings, by 10,630 *bona fide* working men. We hope to raise from the working classes themselves 5,000l. towards this object, and, by public meetings, advertisements, &c., to secure the cordial assistance of those who obtain their wealth by the toil of the working man."

Looking to the interests of the thousands of Whitechapel, Spitalfields, Bethnal-green, Shore-ditch, Limehouse, Poplar, Shadwell, and their suburbs, we entreat assistance for them. Here is a good practical work that wants doing and surely aid will not be wanting. There is no reason why the east should be left unprovided with intellectual resources any more than the west. The officers of the South Kensington Museum are understood to be perfectly willing to co-operate in the provision of a museum for the district in question. Objects would be lent and given if a proper building were provided. The means of healthful and instructive enjoyment should be widely afforded. Let us add that Mr. Smither, of 1, Well-street, St. George's-in-the-East, who acts as treasurer, would receive any communication on the subject that might be addressed to him.





PROPOSED TERRACE IN HARROW, MIDDLESEX.—MR. T. HARRIS, ARCHITECT.

J. HARRIS

*[The text on this page is extremely faint and illegible. It appears to be a book review or a list of references, but the specific content cannot be transcribed.]*

DESIGN FOR A TERRACE OF HOUSES IN HARROW, MIDDLESEX.

"VICTORIAN ARCHITECTURE."

The difficulty experienced in obtaining residences at Harrow-on-the-Hill, with its foundation school and other attractions, has led to the formation of a Tontine Association; and we learn that,—

"The intention is to lay out and plant ornamental grounds, and to build twenty-three substantial houses, of attractive architecture elevation and design, and with all modern improvements calculated to promote health, comfort, and convenience. For this purpose the association is in 1,000 shares (or nominations), of 50l. each, by which to raise 50,000, as the capital."

A terrace of houses to be erected by the Association has been designed by Mr. Thomas Harris, architect; and we give a representation of this, not because of any special interest in the undertaking, but as serving to illustrate the author's views as set forth in a pamphlet recently published.

The terrace comprises ten dwelling-houses, the centre portion being devoted to lecture and reading rooms, and observatory. The building is five stories high, and each house is to contain on the basement a spacious kitchen, 10 feet high, with necessary offices and service-rooms attached; on the ground-floor, which is 11 feet high, a dining-room (22 feet by 16), a study, principal and servants' staircases, &c.; also terraces formed at the rear over the servants' offices, with steps leading to the garden; on the one pair, which is 12 feet high, a spacious drawing-room and a lady's boudoir; on the two pair, two bedrooms and dressing-rooms; on the third pair, a bed, dressing, and bath room; and two attics in the roof.

All the houses are provided with the same accommodation, but the plan of each is varied to meet different tastes. Throughout, internally and externally, it is intended, as far as possible, to exhibit the details of construction ornamentally.

It is designed to preserve the natural character of all the internal woodwork by varnish or polish, and no paint will be permitted.

The author claims to have aimed at uniformity of principle instead of uniformity of parts. There is throughout an entire absence of cornices or similar projections, effect being sought by recessed and coloured brick combined with stone.

We will let Mr. Harris state in his own words some of his principles, and our readers who wish to see further may consult the pamphlet:—

"In applying stone, the main horizontal joints should be parallel, in courses of irregular widths, the vertical joints occasionally assuming the direction of a natural fracture. In domestic architecture, the largest stones are used to span the openings, in one or more stones, which, for the most part, should be square-headed, or at slightly arched. Random work should only be used as a filling-in in the upper part of the structure, or where strength is not wished to be conveyed. Mouldings should be sparingly introduced, and when employed with carving, admit of deep undercutting; but relief angles must be avoided as much as possible. In representing every variety of natural foliage (in reference to animals) should be freely introduced, but must be kept, for the most part, in bold and effective masses, affording scope for the carver to show his power, not frittered away over the composition, as frequently is the case. A word of manufacture and an honest public character. The effect may also be heightened in such works by the introduction of varied-tinted stones as bands and relieving arches; and, where expense is not spared, marble may be used for small columns, or inserted in panels, slightly recessed from the general surface for their protection, but always sparingly used, and set in as gems. No case should any artificial materials, such as ornamental tiles or cements, be employed in a pure stone building; but the composition should be kept sharp, bold, and impressive, and not laboured. All the ornamentation ought to be cut from the solid, and kept within the surface, and unnecessary projections avoided as much as possible. The effect of a stone building will be greatly enhanced by the association of wrought metals and the more durable Brickwork, from the variety of good coloured bricks available, presents a larger scope for originality of design than any other material; and, from its general use, account of its strength and durability, must necessarily occupy a prominent place in a new style. In applying

The programme issued says,—"A few words in explanation of the plan are given. Suppose each of the nominators subscribes 50l. on his own, or on such life as he elects; this raises a capital of 5,000l., and capital contributed is expended in building five houses; the profits of rents of these houses being divided amongst the whole 100 lives at the commencement. As each life pays, the capital of 50l. on that life survives to the rest, rather the advantage of it, as the whole income derives from the five houses divided amongst the survivors, so on till all die but five. When that period arrives, each of the five survivors becomes owner of a house, and the Tontine is closed; or, in other words, the 50l. may be used to purchase an increasing annuity for the life of the nominee, and the absolute ownership of a house by each of the five survivors superadded."

National Architecture. A few words to show that the National Architecture of the nineteenth century is attainable." London: Bell & Co. 1860.

brick, the various colours should be treated constructionally, not that of repeated and meaningless scoring and banding of the surface, or those unconstructive and fantastic patchworks of device, but an expressive, harmonious, and constructive application of the materials and colours. For instance, red, implying strength, should be used at the base, for constructive bands and relieving arches, and in every position where solidity or strength is desired to be conveyed; but in no case where light is required to be rendered, as, for instance, the reverse of windows, white bricks being most consistent with that object. Yellow bricks or common stocks (in inexpensive works) being a quiet medium, should be used to form the groundwork, bands of tiles being introduced where great strength is required. Blue or black bricks should be sparingly used, and require great discretion when employed, being apt to give the work a heavy, unnatural appearance. Cut-splays and notchings sharply executed will be found most appropriate to the character of the material, but rounded edges and simple mouldings may be sparingly introduced, but with caution.

"Woodwork—in all cases the natural face of the wood should be exposed wherever practicable, so as to exhibit its constructive character. When used by the carpenter for bonds, or in any position implying particular strength, it should have plain wrought faces with notchings, chamfers, beads, &c., wrought on the edges. Mouldings should be very sparingly used, care being taken to preserve the character and office of the material. But when used by the joiner, a large field for design is presented, every variety of mouldings may be introduced wrought with planes, or in more expensive works, by hand. Perforated wood, and carving in endless variety is admissible, except in hard woods, very little undercutting being practicable in exposed positions, from the aptitude to fracture. In all cases woodwork must show careful execution, and the character and office of the material must be strictly preserved, and never in internal works destroyed by painting; but in the commoner kinds, stained a tint to harmonize with the intended decorations, and be varnished or polished as their texture require. Most woods exposed to the weather require to be protected by paint; but in that case the character must be preserved by appropriate colours or grainings.

Plaster and Cement work should be mostly of uniform surface, with mouldings of simple form, and enrichments consisting of conventionalized natural forms and geometric patterns in low relief, not stuck on or projecting, but incised, so as to give a distinctive character, and not to clash with carving or iron works. Circular facings and roundings are very appropriate features. Cement externally is only admissible as a remedial work, to protect old works past retaining in their original material, in which case the most suitable ornament is encaustic tiles, or materials of a like nature, set in flush with the surface. Plastic materials should not be jointed, or made in any way to represent stone, in internal works, where expense is not a consideration, the surface of plaster-work may be polished."

RAMBLING; WINCHELSEA AND RYE, SUSSEX.

PERCHED on two bold eminences in the southeast corner of Sussex, and distant about three miles the one from the other, stand the picturesque towns of Winchelsea and Rye.

Placed as sentinels to keep guard over the smiling bay that once glittered at their feet, but perchance too proudly trusting in the natural and artificial strength of their position, they, in times long past, allowed themselves to be surprised by their enemies, ravaged, burned, and destroyed, and now we see them, shrunk away from their former grandeur into almost utter insignificance; even the very sea, their once friend and servant, has deserted them, and—retreating from their borders—has left behind only flat, marshy wastes, where once his bright waves brought plenty and luxury to their very doors.

Winchelsea was invaded and burned by the French in 1360, and by the Spaniards in 1389; Rye suffered the like fate from the French in the years 1377 and 1447.

Samuel Jeake, long an inhabitant, and supposed to have been a native of Rye, in his posthumous history of that town—which is still the great authority in all matters connected with it—derives the name from the old British word "Rhy," signifying a "ford;" and strength is given to the supposition by the fact, that "on the opposite side of the river Rother to the east, lies Gullford, formerly called Guldoford, which name implies that a ford existed near that spot in old times. Samuel Jeake died about 1650, before his book was printed, which was not till 1723.

In the conflagration of 1377 Rye Church perished, and was shortly afterwards rebuilt; but the destruction could not have been total; for much of the original edifice still exists. The fine north door, with its round arch and billet-mouldings; the Norman arching on the west walls of the transepts, and arch to the north aisle; with many other little bits scattered about, point to a much earlier date of construction than the reign of Richard II.

The rebuilding was conducted on a large scale. The church has a spacious chancel, with large chapel north and south. The northernmost one is used as a repository for lumber, amongst which a pillory, in perfect preservation, stands a silent, yet suggestive, memorial of the past.

The windows on the north wall of this chapel are lofty and elegant lancets in couples, with-

out a connecting hood-moulding; they are all bricked up. On the opposite wall, spacious Early English arches, now also closed up, formerly gave communication with the chancel; in which, in the thickness of the pier of the chancel arch, the hollowed space for the staircase to the roof-loft is still visible; but whitewash and devastation have done their utmost to obliterate the past. The bays carved oak screen, closed up and whitewashed, is made to serve as an end to the deserted north chapel; the south is used as the National school-room.

The chancel has a handsome Perpendicular east window, repaired; and on the floor a late brass, seventeenth century, attests that "Here lyeth the bodie of Thomas Hamon." The altar table is a handsome carved mahogany sideboard-looking thing, totally inappropriate, but of fine workmanship, and said to be the gift of Queen Elizabeth, and to have been taken from the Spanish Armada. The Tudor rose, intermingled with well-executed scroll-work, foliage, and ears of corn, to say nothing of its apparent date, contradicts the Armada origin. The font is copied from one of the Norman period at Newenden, in Kent, and has only three sides carved; the exemplar was, perhaps, fixed against a wall, but here the copy stands free. The nave of the church has five large bays, the arches decorated with a beautiful dog-tooth moulding, but, unfortunately, in many places damaged; the chancel has three bays, and a low tower stands at the crux. This tower had at one time a lofty spire, for in a petition to the king, in 1701, to have their church repaired, the inhabitants of Rye say, "The steeple of the said church was heretofore used as a famous seamark." The tower contains eight bells, "one of which," says Horsfield, "is curiously charged with figures, and on the top an inscription thus:—'O mater Dei, memento mei,' and at the bottom, 'Petrus Chineus me fecit, 1566;'" but it is to be feared they have been, or at any rate some of them, recast, for the sexton, an intelligent man, says they bear the date 1776, and the name of Mears. The stairs leading to the bell-tower have been repaired with portions of the chancel screen; one step has a beautiful little bit of carved oak tracery running under it to cover a bole, and a whitewashed "poppy-head" stands in an angle, to serve as a baluster.

On the outside the church is still more deplorably disfigured. A finely ornamented raking moulding, that must have formed an acute arch over the south door; a pretty little turret, with a lancet-shaped niche in the angle; and a magnificent flying buttress—one of a pair—pierced with fabicated openings, to let the blue sky smile through; such are the relics that tell of the bygone beauty of Rye church.

Close by stands Ypres Castle, now the gaol. It was built in the twelfth century by William de Ypre, Earl of Kent. It is a square building, with four round towers at the angles; below it is the battery.

One of the original three gates of Rye, one only remains, the Land-gate, called by the townspeople "the Tower-gate." This also has round towers, and very perfect machicolations. In going to it, a small ornamented Gothic building enclosed in a wall is passed. The present names of the streets are very suggestive: Watchbell-street, Mermaid-street, Gun-garden, and Conduit-bill; while those of the shopholders tell of their foreign origin: Bonn, Gason (oddly enough, on contiguous houses, and reading much like "Bon garçon"), and Dumb; to which may be added that of Fatima, a dark-eyed girl who kindly constituted herself guide to the weary travellers when, in the murky evening and the dimly-lighted streets, they feared to miss their way.

In 1572, Rye afforded an asylum to the persecuted Huguenots, and ten years later it contained 1,534 French Protestants; so that the poor town which the French had so repeatedly endeavoured to destroy, made them a noble return in their extremity.

Near the river Rother, in a field not far from Rye, a Danish ship was discovered in 1822. Many relics of its ancient navigators were found within: a half-finished sundial, still containing the "last;" a pomard; several glazed tiles; some fire-bricks; two earthen jars, a stone mug, and a curious board, perforated with holes, supposed to have been used as a sort of calendar. This ship is thought to be one of an expedition mentioned in the Saxon Chronicle of 893, as having landed in Kent, "at the end of the vast wood that we call 'Andred.'"

A short railway-ride, of about five minutes' duration, takes the traveller to the station of Winchelsea, which is popped down in the marshes just nowhere. There are no conveyances of any

sort, but as there are ordinarily no passengers, their absence is not of much consequence.

The adventurous few who would see Winchelsea must walk up to it; and on a sunny day that is not much hardship. The road winding like a long bright-coloured serpent across the marshy level, its track marked out by stunted pollards, has a singular effect; so quiet the plain around, so silent the town-crowned hill in front, approaching it seems like walking in a dream, or like entering the charmed city of which one reads in fairy tales. Suddenly rising from the surrounding level is seen the rock on which Winchelsea is built; the present Winchelsea: the old town lies below, near Camber Castle, and was finally submerged in the year 1287. In 1250, thirty-seven years previously, the devastation had commenced, and the inhabitants then petitioned the King, Edward I., to grant them a fresh site on which to erect a new town, the present Winchelsea. Its Latin name is said to have been *Frigimarevici*, which in Saxon reads *Wind—ehils—sea*; "and well," says Jaako, "might the old town deserve that name, standing in a low plain open both to the winds and sea." Like its neighbour Rye, it has suffered much, as has been said, from the incursions of the French and Spaniards; the last attack by the French was in 1449. Formerly, the principal trade of the town was in French wines, and, consequently, nearly all the houses have spacious cellars beneath them in which to store them; but all this has long since passed away. John Evelyn, writing in 1652, says—"The sea, which formerly rendered it a rich and commodious port, has now forsaken it." Strange to say, the corporate seal of the town bears a monkish distich, which at this time reads like a prophecy; after calling upon the inhabitants to do honour to their patron saints, Giles and Thomas, it continues—"lest, occupying like birds a lofty position, you should be abandoned by the river, the source of your wealth."

Proceeding to Winchelsea by rail, the road leads up the steep side of the hill, and is embowered in trees. The first object of interest that attracts attention, is the old Land-gate, rebuilt in 1404 or 1405, and bearing the inscription, in Old English characters, of the (supposed) mayor's name, J. Hald, and, above, a shield with a squirrel's *esjant*. Passing through this gateway, and turning to the right, a marvellous picture presents itself. Two exquisite arches, shown of their tracery, but filled in with azure other, in lieu of glass: two symmetrical gables, and a third crowned with an execrable clock-tower, which beneficent Nature is fast screening from sight.—the low sun giving depth of colour to the myriad-leaved ivy that literally covers the building; and the full blue Italian-looking sky above and around,—form it: and those who have thus first beheld Winchelsea Church will surely never forget it.

The present edifice, though but the chance of the original building, is very spacious, and of grand proportions. It was commenced about 1288, and dedicated to St. Thomas the Martyr. The style is Early Decorated. There are lofty clustered columns, with small intermediary shafts and connecting bands of Sussex marble: and large window arches, filled in with tracery, somewhat Continental in its character, and having a traceried panel on each side, which give them increased richness. The hood-mould of the inner, or escotillon arch, extends past the small marble column at the edge of the window jamb, and is terminated with another small column, so as to include a space of the wall on each side of the window, and form a panel, at the top of which a traceried head is introduced. These windows; magnificent sedilia, formed of acute arches, wrought into lacelike tracery with finials above, and foliated and cusped below, the wall at the back covered with hold, rich diapering; the piscina, with its carved basin and shelf; and the superb monuments in the north and south aisle, crowd together such wealth of beauty as to be positively oppressive.

The south aisle, appropriated by Mr. Durrant Cooper to the Alard Chantry, forms a side chapel, with piscina. The monuments it is useless to attempt to describe in a short notice like the present. They are magnificent, and must be seen to be appreciated. One of them has been cast in plaster for the Crystal Palace. They are said to have been all bricked up for many years, which would account for the comparatively small amount of mutilation they have suffered; nevertheless, the figures from the niches, the cusplings of the foliations, and many other crowning touches, are missing. The back of the principal monuments is diapered like the sedilia, and the whole work is so exactly similar in feeling and execution, that it must have been completed about the same time. The hold ense in the

flowing lines of the carved foliage is very admirable. The figures, life size, are of Purbeck marble. Mr. Durrant Cooper says the Alard Chantry "was founded in 1312, by Stephen Alard, son of Nicholas Alard and Isabel his wife, and, in 1321, captain and admiral of the Cinque Ports, and of the king's western fleet." The wall of the vestry is built up just in the centre of one of the monuments, and conceals half of the figure, a female, from sight. Another monument is enclosed in the vestry, and can only be seen by standing on a chair and peering over the wooden partition, or by walking across the graves outside and looking in through the window. The effect of the grand old tomb shut up alone, so silent and solitary, with the calm light of the setting sun sleeping on its carved stonework, is very impressive.

The present font is a modern abomination; the old one is stowed away with other rubbish; but from what little could be seen and felt of it, it appears to have been adorned with a delicate tracery of interlaced Gothic arches.

On the floor of the principal chancel is a large stoupe slab, containing the matrix of what must have been a most elegant brass, a foliated cross with a small figure in the centre. The inscription bordering the slab is in Norman French,—"*Reynaud Alard, Qi mouret le 15 d'April l'an M.CCC.III. gist ici. Dieu de s'ame et merci. Qi por sa alme priera, L jours de pardon avera.*" The stone was moved to its present position in 1809, probably when the font was fixed, and when taken up there were found beneath it a common glass bottle and the bones.

Within the last nine or ten years some judicious alterations have been made in the interior of the church, under the care of the Messrs. Smith, of Rye. The flat plaster ceiling has been removed, and the open wooden roof displayed; the whitewash scraped from the monuments, the walls, and from some of the Purbeck columns, which last have been repolished. The floor of what is now the chancel has been relaid with glazed tiles by Minton, imitated from some few found in the church; and the altar-table enclosed with a low, semi-octagon screen, of pierced stone, in quatre-fols, surmounted by a narrow slab of polished Sussex marble: the gates are of the same materials, but are hung so true upon their hinges that,—although of course exceedingly heavy—they swing with as much ease as if made of wood. All the stone carving of the restorations is attributed to James Holt, son of the carver, who has worked with a most loving spirit, contenting himself with strictly imitating what he saw left behind by the master-workers who had preceded him. Even to a fraction of a leaf he has religiously preserved it, matching on his modern portion with all the skill of which he was capable; and though he has not always been able to attain to the same feeling of beautiful repose which pervades the old work, nor to such exact delicacy of execution, still great praise is due to him for the evident endeavour.

On the green sward outside, the walls of the old transepts can easily be traced. The nave is said to have extended to the wall of the present churchyard, and the ash-tree standing there was planted on the extreme site of its west end. Under this tree John Wesley preached his last sermon in the open air, October, 1799. He died early in the following year. The bell-tower of the church was standing in 1790; it was then pulled down, the foundations of the aisles were dug up, and all the stones sold to repair Rye harbour.

The exterior of the chancel is almost entirely clothed with ivy; but the noble transept windows, the slight, elegant buttresses of the chancel, and portions of its delicate, lace-like parapet, are still visible, and prove it to have been worthy of the beautiful interior we have been contemplating.

Enclosed in private grounds that adjoin the churchyard stand the ruins of the Grey Friars' Church; but they can be viewed only on a Monday.

The Court-house has some interesting little niches on what is now the outer wall; and in the wall of the house opposite, where the key of the church is kept, several carved stones have been built in; but no information could be obtained respecting them, and the person who had lived there twenty-two years had never even seen them till they were thus pointed out. From between the paving-stones laid down in front of the indoor, roots of grass spring thickly up, in spite of the endeavours of a youth with a large elapso-knife to eradicate them. *Sic transit!*

Passing out of Winchelsea through the Strand-gate,—still in pretty good preservation, and having the slide through which its portcullis was

raised almost perfect,—the pedestrian who would see Camber Castle must turn off to the right from the Rye-road and strike across the grass, following a very narrow, indistinct foot-track. The massive tower looks very solemn and impressive standing quite alone on the vast marshy desert, especially when seen at sunset, the slowly advancing gloaming creeping steadily on, enveloping all the distance in its mysterious shroud,—Winchelsea's pointed gables sharply cutting the reddish western sky,—in front, nought but the wide spreading flat, stretching right away to the foot of the steep hill on which Rye stands, her lights brightly twinkling afar off, and massive Camber Castle in the middle distance.

The castle was built by Henry VIII. in 1539, and 1540, as a defence to the coast against the threatened invasion of the Roman Catholic potentates. It is of brick cased with stone, and is thought to be erected on the site and with the materials of a more ancient fortification. It consists of a large circular centre tower or keep, with smaller towers, also circular, at the four angles of the surrounding wall. Covered passages, now underground, form a communication all round the keep, and, apparently, with the outer towers. The whole building is said to have been inclosed by a low battery, pierced with openings for firing through, but nothing of that is now to be seen above the sward.

Queen Elizabeth visited Winchelsea in 1573. In 1584 an order of council directed the repair of the castles and forts on the sea-coast, and in it "Cambre" Castle is mentioned as requiring £141. 13s. 4d.

Among the papers in the Town Hall of Rye are several letters from the Queen, directed to the Mayor of Winchelsea and Rye, and her Captain of Camber Castle.



#### CHURCH-BUILDING NEWS.

**Lincoln.**—The important work of restoring and cleansing the grand west front of Lincoln Cathedral has been brought to a close for the present season. It is anticipated, according to the local *Chronicle*, that five years will elapse before the task will be finished. A large portion of the lead roofing of the nave has been removed, and is being replaced with new.

**Yarmouth.**—St. Andrew's (Wherryman's) Church, Yarmouth, has been consecrated. The edifice is in the Early English style. It will accommodate 400 adults, besides children. The organ, which, for its size, is of a fine tone, was the gift of Miss Burdett Coutts. The stone pulpit, carved, is the gift of another lady, as also is the lectern. The architect was Mr. C. E. Giles, of London; and Mr. Stanley, of Yarmouth, contracted for the building at 1,050*l.* There are additional buildings yet to be erected, schools, &c., and more ground is required, to meet the cost of which 1,000*l.* more will be necessary.

**Bowdon (Cheshire).**—The parish church has been restored. Speaking generally, the characteristics of the old church have been preserved. The new building is of the Perpendicular style of the fifteenth century. North and south transepts, each 13 feet 9 inches by 20 feet, are added, as is also a north porch: an additional length of 21 feet is also given to the chancel. The tower has been rebuilt, and the total height is 95 feet apart from the pinnacles. The length of the church, from the inner line of the tower to the chancel window, is 130 feet: the nave is 20 feet 1 inch wide; the arched walls marking the side aisles, 2 feet 6 inches thick; the north aisle 19 feet wide, and the south, 17 feet 10 inches. The height of nave and aisles has been increased several feet. The nave had an old tie-beam roof: the timbers from it have been converted into those for a hammer-beam arched principal roof, with tracery filling the spandrels, and also with pendants, stone corbels, &c. The ceiling is panelled, with bosses at the intersections, and closely boarded. The chancel roof has arched principals, with king-posts, &c. The north aisle roof, which was restored some forty years ago, has been retained. The total number of sittings is 1,164, of which 100 are set apart for children. The exterior is constructed of Runcorn red sandstone; the interior work of stone from Lymm. Instead of pews, open seats have been substituted. The church is lighted with gasaliers. The whole of the windows are ornamented with stained glass; and in the chancel there is a memorial stained-glass window, representing the Crucifixion, erected by Alderman Neild to the memory of his deceased wife. This and the other stained-glass windows are by Mr. Chatterluck, of London. A

stained-glass window in the south of the chancel is also a memorial erection by Mr. Nicholls, of Altrincham. Two large windows in the transepts are to be thus decorated. The tower window is the memorial gift of Mr. Clegg. The ordinary windows have diapered quarries and stained ornamental margins, and were manufactured by Messrs. Edmundson & Son, of Manchester. The restoration has been carried out from the designs of Mr. W. H. Brakspear, of London, architect; and the general contract has been executed by Mr. Samuel Delves, of Altrincham. The entire restoration is said to have cost £2,000.

**Swanwick (Derbyshire).**—The church of Swanwick has been consecrated. The edifice is situated on half an acre of ground at the angle of the roads leading from Derby to Alfreton and from Swanwick to Greenhill-lane. It is of the Decorated Gothic style, and consists of nave, 61 feet long by 24 feet wide; a chancel, 99 feet long and 19 feet wide, with north and south aisles, of about the same length as the nave, and 13 feet wide. The nave is divided into four bays, on each side supported by octagonal columns with equilateral pointed arches. The chancel arch is 40 feet in height. At the east end of the chancel, and occupying nearly the whole of the wall, is a three-light window, and on the north and south sides are two-light windows. At the west end and over the chancel arch is a triangular window filled with tracery. The sides of the church are lighted by four windows on each side of the aisles, and one four-light window over the principal entrance at the west end, all of varied design and tracery. The whole of the roofs are of stained deal open framing, with ironwork shown in relief with light line and gill. Upon the outside, above the west window, is a small Decorated stone turret, with the cornice preventing the erection of a tower or spire. The sittings are open, made of pitch pine, stained and varnished, and will accommodate about 450 persons, about 100 being set apart for the school children. The floor, together with the aisles, is boarded. The church will be lighted by gas-pendants, descending from the centre of the principals, and terminating in gilt stars, the shafts being of a bright blue. The acoustic properties of the building are said to be satisfactory. The church is built of stone from Amber-lane quarries, above, and the works have been executed by Mr. Josh. Evans, builder, at a cost, including the fence walls, of 2,300*l.*, from the designs, selected from four invited competitors, of Mr. Benjamin Wilson, architect, Derby; and the whole of the works have been executed under that gentleman's superintendence. By the great fall of the ground from west to east, a large room was secured underneath the chancel, having boarded floor and three large windows filled with tracery. The church is dedicated to St. Andrew.

**Knowle (Warwickshire).**—The parish church of Knowle, which had been closed since Easter for the purpose of restoring the interior, has been reopened. The old high-backed pews are replaced by open seats with stall ends, in Riga oak, many of them carved from designs by Mr. Nevill, of Coventry. The walls have been scraped and cleaned, and the carved screen repaired. The floor has been paved with Milton tiles, and other improvements have also been effected. By the new arrangement, 180 sittings for the poor are obtained. The cost of the alteration is about 1,000*l.*

**Hulme.**—St. Philip's new church has been opened. It is built of Peol stone, in the Geometric style, from designs by Messrs. Sheppard & Brown, architects, Manchester. It consists of a nave with side aisles, and a chancel with a north side aisle. On the south side of the chancel are the organ chamber and vestry. The tower, with a spire, stands at the corner, and fronts both Chester and Newcastle-street, and by its breadth the north aisle of the nave is shorter than that of the south side. A porch entrance gives ingress from Newcastle-street; while, from Chester-street, the entrance is through the lower part of the tower. The chancel aisle is also entered from Chester-street. The total length of the chancel, laterally, is 117 feet 10 inches; the width, 10 feet 2 inches. From the floor to the ridge of the roof of the nave the height is 54 feet. The tower, with its spire, is 155 feet 3 inches high. The whole of the seats are open in a double sense, to sit all, and unumbered with doors; while space in the nave are partitioned off like arm-chairs, to prevent crowding. There is accommodation for 670 adults. The principal front of the church is that in Chester-street. It is divided into five bays, with a three-light pointed tracery window in each, while five similar windows, rather

smaller, are placed in the clerestory above. The chancel aisle is in two bays, each of which contains a four-light pointed tracery window. There is a four-light pointed tracery window in the end of the nave, next to Newcastle-street; and over the altar, in the chancel, a pointed tracery five-light window. The tracery of the windows is varied. The tower is a conspicuous object, being built in four stages, the two upper ones areaded and pinnacled, with pointed belfry windows; and each angle is finished by enriched pinnacles. The spire is in three heights of incarnes. The tower contains a peal of eight bells, cast by Messrs. Taylor & Son, of Loughborough. The stained-glass windows are the production of Messrs. R. B. Edmundson & Son, of Manchester. The aisles are separated from the nave by six pointed arches on the south side and five on the north side. The chancel has an arcade of two pointed arches on the south side, separating it from the aisle, and one on the north side for the organ chamber. The chancel, nave, and aisles are paved with Messrs. Maw & Co.'s red and black ornamental tiles. The roof is open timbered, stained and varnished, to correspond with the seats. The roof is covered with Westmoreland slates. An illuminated clock is placed in the tower. The organ, constructed by Messrs. Eccleston & Bowes, of Manchester, is nearly finished. The cost of the church is about 8,000*l.*, exclusive of the land. Messrs. Ellis & Hinchliff executed the brick and masons' work; Messrs. Bowden, Edwards, & Forster, the joiners' work; and Messrs. Thompson & Co., of Birmingham, put up the gas fittings, which are of Gothic design. The church is heated by hot air, on the plan of Messrs. Haden, of Trowbridge. A parsonage-house is being built on the south side of the chancel, fronting Newcastle-street. It is in the Elizabethan style. The cost of the parsonage will be about 1,700*l.* The schools cost about 3,000*l.*

**Blackburn.**—The first stone of a new church at Bottom gate has been laid. The design, furnished by Mr. Paley, of Lancaster, contemplates sittings for 766 persons on the ground-floor, including children, and the estimated cost of erection is 3,000*l.* A suite of schools also is contemplated.

**Charnock Richard (Lancashire).**—A church has recently been erected at Charnock Richard, mainly through the instrumentality of Mr. James Darlington, and on 21st September it was consecrated. The church is capable of accommodating about 450, and is situated a little off the high road from Wigan to Preston, and about four miles from Chorley, the nearest market-town. It is built of freestone. The architecture is Pointed Gothic. Mr. Darlington has provided for the whole cost of its erection and endowment, excepting a grant of 200*l.* from the Manchester Diocesan Society, and 150*l.* from the Incorporated Society.

**Shipley.**—The Congregationalists of the parish of Claverley have purchased a plot of land at the Hill End, Shipley, for the purpose of building a chapel thereon. The site is being prepared for the building, which will be 38 feet long, and 22 feet in width, and a vestry will be attached. It will likewise have a bell turret and bell. Accommodation will be provided in the chapel for about 160 persons, and the roof will be open timbered. Mr. G. Bidlake is the architect, and Mr. Burkitt the contractor. The latter has undertaken to execute the work at a cost of 310*l.*

**Barmby Dun.**—The *Doncaster Gazette* states that the chancel, tower, and nave of Barmby Dun Church will undergo a restoration. The cost of the chancel repairs will be sustained by Mr. Newsome, of Barmby Dun, the patron of the living. The arch is to be taken down to the foundation and rebuilt, and a new altar and rails will be introduced, and other minor additions, so as to render this part of the edifice in harmony with its sacred character. The church is to be entirely re-roofed; and the tower floor, which is slightly higher than the rest, will be lowered.

SCHOOL-BUILDING NEWS.

**Morton (Gloucestershire).**—The school, including master's house, in this village, has just been completed. The builder was Mr. Thomas Eyles, of Old Sodbury; and the architect, Mr. Philip Boyce.

**Disis (Norfolk).**—A mixed school is about to be erected at Disis Haywood, a hamlet of Disis, from the designs of Mr. R. M. Phipson, architect. The walls will be built of rubble, with stone windows and quoins. The style will be Early Decorated, partaking somewhat of the character of a small collegiate chapel, as one of the objects for which it will be built is to enable the Rev. C. R. Man-

ning, the rector, to hold service in it on Sunday evenings, as the inhabitants of this part of the parish are upwards of two miles from the church.

**Holbrook (Stafford).**—Through the efforts of the rector, the Rev. C. F. Child, and of the Rev. J. B. Wilkinson, who once held the living, two new schools have during the present year been erected in this village. One is a small mixed school, with class-room and porch, and is situated at the extreme end of the parish. It is so planned as to be convenient for service, which is conducted by one of the curates every Sunday evening. The exterior is red brick, the bond being Flemish, and every header a grey brick. The other school is being built in the centre of the parish, and consists of a boys', girls', and infants' school, with class-rooms attached to each, and a comfortable master's residence. Upwards of 200 children can with convenience be taught in this school. The style is Early Gothic, with bands of red, grey, and white brickwork, the vousoirs of the arches being relieved in the same manner. The schools have open trussed rafter roofs, and are covered with green and purple slates, in bands. The Rev. J. B. Wilkinson gave the site, including upwards of two acres of play-ground attached. The cost of the small school was 250*l.*, and the large one about 1,100*l.* Both were erected from the designs of Mr. R. W. Phipson, the builder of the former being Mr. Cornish, of Ipswich; and of the latter, Mr. Hunt, of Preston, Staffol.

STAINED GLASS.

**St. Paul's, Shipley.**—About two years ago more than one half of the east window of this church, a window of large dimensions, was filled with stained glass; and the original design has just been completed by the filling in of the remaining lights. The subject of the window is a series of full-length figures of the twelve apostles, with our Lord and St. Paul occupying the central lights, the whole number of principal lights being fourteen. Each apostle is represented as bearing his appropriate symbol. The whole of the figures are placed within enriched canopies, and are draped in diapered garments of varied colours. Beneath the upper division of the apostles is a series of medallions, representing scenes in our Lord's history;—the Angel appearing to Mary; the Birth of Christ; the Presentation in the Temple; the Flight into Egypt; Jesus in the midst of the Doctors; the Burial of Jesus. Above and below five of these medallions are legends, setting forth the donors, and the persons to whose memories they, along with the lights above, have been erected. The tracery in the head of the window is filled with the evangelistic symbols, the Resurrection, the Ascension, the Pelican with its Young, the Lamb and ribbons. The treatment of the glass is in the Perpendicular style. It is the work of Mr. F. Barnett, late of York, and now of Edinburgh. The entire cost is said to have been about 300*l.*

PROVINCIAL NEWS.

**Cambridge.**—The materials of the houses and other buildings, required to be taken down before the works for the new Townhall can be proceeded with, have been sold in lots, as follows:—

- 1. Mr. Lyon, chemist .....£181
- 2. Mr. Harvey, builder ..... 42
- 3. Mr. James Fletcher, bricklayer... 39
- 4. .... 39
- 5. Mr. Harvey ..... 37

Making a total of .....£285

The purchasers, according to the *Cambridge Chronicle*, have had notice to proceed to take the buildings down as speedily as possible.

**Liverpool and Birkenhead.**—The Liverpool Town Council has again postponed the consideration of the town improvement scheme, involving an outlay of 300,000*l.* At the last monthly meeting of the Council, one or two other matters of interest were discussed. A report was presented by a sub-committee with reference to the formation of street railways in the town. It was recommended that rails should be laid down on the plan of Mr. Newlands, the borough engineer, at the expense of the Council; that the use of the rails should be thrown open to the public; and that application should be made to Parliament for power to control the traffic on the proposed lines. The report was adopted. The foundation-stone of new iron works has been laid on the margin of the Great Flint, Birkenhead. The establishment, which is intended to be a very complete one, is to be called the Britannia Ironworks. At the usual weekly meeting of the Mersey Dock Board,

the proceedings of the works committee comprised the recommendation to erect staircases, with pipes and hydrants, at each end of the warehouses at Stanley Dock, at a cost of about 1,000*l.*; and to accept the tender of Messrs. Jones & Jump for roof and sliding doors to the Victoria Shed, Birkenhead, at a cost of 7,000*l.* The committee had ordered the engineer to survey the ground and prepare a plan for the erection of a shed near the Haskisson and Canada Docks, for the use of labourers employed at the timber yards. Mr. Brocklebank said it was impossible to put tanks on the tops of the warehouses; but the committee had under consideration the propriety of placing tanks over each staircase, and which tanks would hold 10,000 gallons of water each, and cost 450*l.* a piece. By putting a staircase at each end of the warehouse it would enable persons, in case of fire, to get to each floor, which was not the case before; so that, a fire taking place in any floor of the warehouse, persons would be at once able to communicate with the hydrants on the staircases.

**Manchester.**—It appears from official tables prepared by Mr. Francis, the city surveyor, that in the township of Manchester, during the year ending June 24, 1860, there were 2½ streets completed, their length being 1,554 yards, the surface paved and flagged being 11,697 yards, while 1,255 yards of main sewers, and 527 yards of cross sewers and eyes were put down; the cost of all these works (2,775*l.*) having been defrayed by the owners of property. Since 1830, there have been executed, at owners' cost, in 1,066 streets, measuring 60 miles 218 yards,—57 miles 153 yards of main, and 21 miles 1,589 yards of cross sewers; the total surface paved and flagged being 197 acres 4,350 yards. Courts and passages in the township to the number of 367 (45 during the past year) have had 9 miles 904 yards of main, and 6 miles 1,615 yards of cross sewers put down; the surface flagged and paved being 7 acres 233 yards. These works have, of course, been done at the expense of owners, as have also 13 miles 60 yards of private drains; the former being executed since 1830, the latter since 1849. The main sewers made at the cost of the township fund since 1830 are more than 22 miles long, and the cross sewers amount to 74 miles. 12,299 syphon traps have been laid in streets, courts, yards, and houses, the number last year being 971. Since 1830 the sewerage constructed measures 137½ miles (in the township alone), nearly 80 miles of that length being main, and 49 miles cross sewers and eyes. The total cost of paving and sewerage during the 30 years has been 311,623*l.*; the area of the work being 960,100 yards.

**Shotley Bridge.**—The contracts for the Town Hall have been let to Mr. Hessel, of South Shields, for the mason work, and Messrs. Muse & Co., of Shotley Bridge, for the remainder of the work, except the slating, which has been let to Mr. Robert Preston, of Sunderland. Messrs. Oliver & Lamb are the architects.

#### THE ELECTRIC LIGHT.

THE tall pyramidal scaffoldings erected at different points within Paris for the triangulation of this capital with its recent additions, having been found to oscillate to and fro from the constant traffic through the streets by day, it has been at length resolved to proceed with the triangulation at night, by means of the electric light; and experiments are to be made with the light itself, in order to discover some convenient means of applying it to the lighting of streets.—Professor Way, says the *Critic*, has discovered an electric light far superior to any yet known. It is produced by the action of a voltaic battery on a moving column of mercury. The mercury is contained in a crystal globe, of the size of an orange, and is sent from a very minute hole, under the form of a thin metallic thread; it is received in a small cup, whence it falls into a basin below, to be again conveyed to the globe above. No sooner are the wires of the battery in contact with the thread of mercury, than a vivid light is produced, which disappears as soon as the contact is interrupted. During this process no evaporation of the mercury is observable.—The old oil lights which have been in use so many years on the Portland lighthouses will shortly be discontinued, says the *Southern Times*, the electric light being its substitute, the Board of Trade considering the Portland lights of so much consequence to ships going down or coming up Channel, these having to pass in close proximity to that dangerous place the Portland Race. By referring to page 318 of the *Builder*, of May 19th, the reader will find a description of the electric light, from the pen of Dr. Faraday.—There will shortly be established at the Bill of Portland a

station for the purpose of telegraphing to ships, and *vice versa*, on their way up and down Channel. The electric wire will be laid from the station to join the Channel Islands Telegraph. The *Southern Times* says it will be a great boon to the owners of ships homeward bound, as they will receive intelligence of the arrival of their vessels much sooner than they have hitherto done?

#### THE RESTORATION OF MONUMENTS.

**Sir.**—Touching the remarks made at the Northampton Architectural Society's meeting on the 11th ult. by Sir Henry Dryden, on Restoration, he could not have weakened his objections more than by instancing the Elgin Marbles; as, firstly, their present isolated position precludes the necessity of restoring them; and secondly, if *in situ*, and restoration were required, I contend that the hardness of the material would, of itself, preclude, under ordinary hands, the possibility of converting these exquisite marbles "into little more than old lime." The same cry was raised in the case of the Templars, of Parbeck marble, but which I found in almost every instance far too hard a material to tamper with or re-surface; and in the numerous restorations of ancient statuary existing in the Italian museums, the additions are generally clearly marked, but upon which the most able sculptors were engaged. I contend that restorations of monuments (including the Royal Tombs, for which funds have been voted) in judicious hands are imperatively called for, notwithstanding the virulent tirades of such objectors as Sir Henry Dryden and others I could name.

EDWARD RICHARDSON.

#### RAILWAY EXTRAVAGANCE.

THE NORTH-WESTERN RAILWAY COMPANY.

**Sir.**—They are pulling to pieces the really pretty little [70 feet span, 30 feet wide] suspension bridge across the Paddington Canal and over the West London Railway Gallery under the Canal, at Wormwood Scrubs; and they seem to be making preparation for replacing it by one of their vilely ugly cast-iron beam-troughs; thus adding insult to injury. Can you not learn what pretext they have for this? Is it merely another freak of this ill-advised board? The only pretence that I can imagine for the change is, that the Canal Company is now so humbled that it submits to a headway of 8 or 9 feet instead of the 13 feet that the original engineer was compelled to give. But if it be even so, and they want to diminish the rise for the carriage-road from the level of the Scrubs, the roadway of the bridge might have been lowered by doing little more than lengthening the suspending rods, and thereby letting the floor down the difference. Pray ask the malfactors what they are about, and why. They have given a specimen of their beam-trough, or what they stupidly call "girder-bridge," in the means by which the West London Railway is for the future to pass up and down from the London and North-Western Railway north of the Canal and the Scrubs. It may be worth noticing, too, in the history of railways, that the inclination, or "grade," as the Yankees call it, of the new embankment to that trough bridge over the Canal cannot be much less steep than one in fifty or sixty at the utmost, whereas the late Stephenson's *circa* 1838, — formally reported to the board of the then Birmingham, Bristol, and Thames Junction — now the West London — that the gradient of 1 in 120 from road in the Uxbridge-road up to the crossing of the Great Western could never be worked by the locomotive engine! The suspension bridge and its conjuncts are shown in Weale's "Public Works of Great Britain, 1838," and there is in the George III. Museum at King's College a model of the group, by Salter, made at the time it was built, 1839.

SHAREHOLDER.

#### CONTROLLING CLOCKS BY GALVANIC CURRENTS.

"THE electric clock is now an old invention, but has not come into use." Such is the remark appended by you to a letter on the subject of electric clocks in your number of September the 22nd. Allow me to remark that working and regulating clocks by electricity is like most other inventions—progressive, and there have been abundant reasons for early attempts being failures, and for their having been abandoned. But there is now a method of controlling clocks by electricity which has been in use for four years, and which has not failed. The best description of it is in a

paper which was written by Mr. Hartnup, the astronomer, and director of the Liverpool Observatory, and was read at the Dublin meeting of the British Association.

I may add that the system has been extended in Liverpool; other public clocks there are regulated, and a time-ball is dropped, by its means. It is in use in the Royal Observatory, Greenwich; that of the Cape of Good Hope, and in other places; but especially I would call attention to the clock on the roof of the Magnetic Telegraph Company's Offices, Threadneedle-street, and to a small clock in their public room, which are controlled upon the same principle. The officers of that establishment will be happy to show the clocks to any person really interested in the matter, and I can engage that any clock, old or new, large or small, shall be kept in time with any other clock within the smallest possible fraction of a second.

R. L. JONES.

\*\* The method which was devised by Mr. Jones himself is thus described in Mr. Hartnup's paper—

"The clock in its present state, with the improvements which have been made, differs in respect from an ordinary old turret clock, except that the pendulum-hub is a hollow electro-magnetic coil, which passes around permanent magnets at each oscillation. At each transmission of a current from our normal clock at the Observatory, the coil itself becomes a magnet, and the attraction, or repulsion, between it and the permanent magnets, prevents the pendulum from oscillating, except in strict conformity with the pendulum at the Observatory."

#### SUBWAYS FOR GAS AND WATER MAINS. REGENT STREET, &c.

In an article under this head inserted in the *Builder* of last week, it is stated that the loss of gas in the passage from the works to the various points of consumption was 22 per cent. on the entire manufacture. The authority for the statement is an admission made by the chairman of the Chartered Gas Company on the occasion of a conference with the St. James's Vestry on the 13th ult., and hence its accuracy is undoubted, so far at least as relates to that particular company's works, and probably near the truth as respects other manufactories.

Professor Spencer's report to the New River Water-works Company, on the corrosion of iron mains from the effects of gas leakage, reveals an important matter on this subject, and really serious as affecting the public. Basing his calculations on a gas waste of 20 per cent. (a standard somewhat below the fact, as seen by the above admission), after making a fair allowance for probable waste from other causes than that of leakage,—such, for instance, as defective meterage, condensation, &c.,—he estimates the actual amount of loss from leakage through the joints of the gas mains at 630,000,000 cubic feet per annum, all of which is absorbed into the earth, imparting to the subsoil of the streets the blackened appearance and odour so familiar to the in-dwellers of the metropolis.

As respects the more immediate object of his employment in this instance, viz., the cause of the premature decay of the iron mains that takes place in some of the denser parts of the metropolis, Professor Spencer—by careful observation, and a series of experiments conducted through a period of three years—arrives at the conclusion that such decay is caused by the gas that is always escaping from the joints of the gas mains, not directly by the action of the gas itself—for alone this is harmless in this way on the iron—but by an acid alkaline fluid, a sort of distillation, as it were, from the gas-charged earth, by means of moisture from the rain-fall; which fluid, coming in contact with the metal of the pipes, produces profuse corrosion, having the effect of converting the iron, in a shorter or longer period, into a sort of plumbo. Numerous specimens of decayed pipeage turned up during the progress of the inquiry, showing the action of this destructive agent, so rapid in certain spots where more than usual gas escape had been going on, as to effect that transition in the short space of from seven to ten years; the ordinary serviceable duration of iron similarly employed in earth in its natural state being about a century.

As respects the injuries sustained by the public from the chronic escape of gas, Professor Spencer affirms, first, that the gas-saturated earth, in combination with certain other chemical properties which the London street subsoil imbibes from other causes, gives out a sulphurous gaseous matter, which, inhaled, is highly prejudicial to health; and it is observed that, when it is taken

into account that each cubic foot of this enormous quantity of gas, which is continuously passing into the street ether, contains something like one-fifth of a grain of sulphur of carbon, and one-twentieth of a grain of ammonia, it becomes surprising that the effects, bad as they are, are not more sensibly felt. 2ndly. That the gas-mains and water-mains usually lying side by side, the escaped gas from the former will frequently enter the water-mains at their joints; and at times, when the water but partially fills the pipes, a large quantity of gas in this way gets admitted, and, mingling with the water, imparts to it that nauseous quality so frequently complained of. And hence, too, the cause of the not unfrequent occurrence of partial explosions by the ignition of gas from the presence of a lighted candle on the opening of the water-tap. 3rdly. That the mud banks, the sewage deposits on the tidal banks of the Thames within London, derive their peculiar fetid and blackened character from the action of gas leakage on the oxide of the corroded street mains, which finds its way by numerous channels into the sewers, and is thence carried to the river, where, retained in the sewage mud, it becomes the direct agent of the too well-known noxious odour the Thames water evolves in the summer months of June and July, when the temperature ranges above 70 degrees Fahrenheit.

The properly constructed accessible *sub-way*, for the "common" conveyance of the mains through at least the greater trunk lines of the metropolis, offers the medium of extensive mitigation of all these evils, since the facility for a system of daily inspection and immediate repair would admit of the maintenance of the mains gas-tight and water-tight, as in ordinary house fittings.

F. C.

ST. HELEN'S, LANCASHIRE.

THREE fountains are now erected in this town; two by Mr. Charles Bishop, flint-glass manufacturer; and one by Mr. John Ansdell, solicitor, both of St. Helen's. Very little taste has been exhibited in making the designs; one being an upright cast-iron plate, resembling a head-stone, relieved, but not improved, by a lion's head in the centre, vomiting the water people are to drink; another is a cast-iron basin, resting on a pedestal of the same material, with a jet *deux* in the centre; the third is partly composed of granite, partly surrounded by a brick wall, on which is placed a very heavy stone coping, which gives it a more expensive than elegant appearance.

St. Helen's is about to distinguish itself in another branch of sanitary reform, viz., by the construction of baths; Mr. G. A. Kurtz, manufacturing chemist, having taken the initiative in this very desirable undertaking, by the purchase of about 1,500 superficial yards of land close to the works. One swimming-bath, covering an area of about 180 superficial yards, with a suitable number of private baths, is to be proceeded with immediately; the remaining portion of the land to be similarly appropriated, as the demand for baths increases.

In few towns of the same population are baths so very much needed as in St. Helen's, three-fourths of the working population being engaged in works of a dusty nature, viz., chemical works, coal-mines, glass-works, copper-works, foundries, &c. Co-operative stores and shop, with residence for the superintendent of baths, are to be erected on the land fronting the baths.

The drawings have been prepared by Mr. Owen Duffy, the manager of Mr. Kurtz's works.

A Roman Catholic church is also in course of erection, on land given by the trustees of the late Mr. W. P. Cothran. The building will be Gothic: its length inside will be 104 feet; narrowest width, 60 feet; and will cost upwards of 10,000. The quoins, window-frames, and dressed work, are of red sandstone: the stone for walling is from Rainford, about four miles from St. Helen's. The architect is Mr. Scoles, of London; contractor, Mr. John Middlehurst, of St. Helen's. M. J.

GAS.—The *Wenchesbury Record* says:—"Mr. Hewitt, of Worcester, the architect of the works now in progress in this town for the 'Patent Inexpensive Hosiery Company,' has made an offer to the Gas Company to supply them with gas and deliver it into their mains at 3s. 6d. per 1,000 ft. Mr. Hewitt, we believe, is now engaged in the construction of gas works and in laying down mains for Malvern Link; he is, therefore, perfectly competent to fulfil his offer, which of course would not have been made had he been sure of realizing a fair profit by it."

RECENT PATENTS CONNECTED WITH BUILDING.

STOVES.—*W. Woodcock*, Beshorough-gardens, Pimlico. Dated 17th February, 1860.—The patentee claims the combination of an open fireplace with its open bright hearth, and having a descending flue and perforated back, with a close stove or pipe furnished with ribs, and enclosed in an air chamber, as described.

WINDOW SASHES, &c.—*J. Brown*, Norwich, Norfolk. Dated 20th March, 1860.—The beads or moulded stops connected with the sill and the top of the outer casing are bevelled, as also the lower rail of the bottom sash and the top rail of the upper sash. The bottom rail of the lower meeting rails and styles of the same, are all formed with a groove or grooves for the reception of a stuffing or packing of cloth or other suitable textile fabric or leather. The sashes should fit loosely except at the wedged portions of the bottom rail of the lower and top rail of the upper sash, so as to guard the packing from great friction. When, however, the two sashes are fastened by a screw, bolt, or other sash fastening, the packing surfaces are brought into contact with the respective parts opposed to them, and an air, dust, and water tight window sash is the result. For doors and French casements the patentee forms the related portions of the junks and inner heads on the same for hanging, with a water groove to the outer head. He forms a water bar and iron plate as projecting surfaces on the doors or casements, and he makes the grooves for the reception of the packing on the outer side of the bottom rails next to the water bar, as well as on the sides and head of the frame or jambs. The invention is applicable to old as well as to new sashes, frames, and doors, and the packing may be inserted in grooves made in the sashes, frames, and doors, or they may be inserted in beads or strips of wood which may be slidden in grooves formed for their reception in the sashes, frames, and doors.

WINDOW SASHES.—*W. E. Newton*, Chancery-lane, London. A communication. Dated 5th March, 1860.—This invention consists in arranging the sash on a slide or slides, which move up and down in suitable grooves in the frame, and to which slides the sash is attached by means of pivots, in such a manner that they can be turned clearly round, or nearly so, and that the outside of the sash can be conveniently reached. At the same time both sashes are allowed to be turned edgewise, whereby nearly the whole space of the frame is thrown open to admit of taking in and out such articles as cannot conveniently be brought up and down through the house, and also to admit fresh air, and cause a thorough ventilation.

MOWINGS FOR WINDOW BLINDS.—*J. M. and W. C. Bryden*, Edinburgh. Dated 29th February, 1860.—These improvements have reference to the details by which the lowering or descent is regulated by Venetian blinds, or of other blinds which lower by their own weight, or by the action of springs. The movement by which the pawl or ratchet catch holding the roller is released, is made to press a link or frictional appliance against the roller, and this regulates the descent. In one modification of the apparatus, the ratchet wheel is carried by one end of a lever, to the other end of which a cord is attached, the downward pull of this cord releasing the catch. The lever is formed with an inclined projection, which, on the lever being pulled down, presses a friction or brake-piece against the roller, or against the metal cap fixed upon its end.

Books Received.

*On the Eucæstic and Zopissa of the Ancients in general, and on its (sic) Application to Architecture and Shipbuilding in particular.*

UNDER this title a pamphlet has been recently published by Mr. Szerelmy, whose operations on some parts of the Houses of Parliament have been noticed by us. As Mr. Szerelmy possessed the confidence of the late Sir Charles Barry, and his method is alluded to favourably by Professor Faraday and Sir R. Murchison, we are bound to suppose that it is of some value; but we think we have a right to expect that one who claims our confidence in such a matter, and with such support, should not, when he addresses us, imitate the style and manner of a quack doctor, as seems to be the case in the pamphlet before us. Of fourteen pages forming the pamphlet, we find one half devoted to an account from which it appears

that neither the author nor any one else knows anything about eucæstic, and then he jumps at once to the conclusion that a composition to which the writer has given the name *Zopissa* (an unknown preparation of the ancients), is "the best preservative for buildings of every kind which are exposed to humidity whatever be the cause." From the rest of the pamphlet it is intended that we shall deduce that this same *Zopissa* is to supersede all paint, tar, red lead, tallow, oil, and copper sheeting, and be applied to every part of every construction inside and out, whether house, palace, or ship, bridge, railway, water-tank, or gas-pipe.

We shall be very glad to find, as regards stone, that the practice of Mr. Szerelmy, in preserving it from decay, is something better than the idea he entertains as to the causes of decay. With regard to the latter we are informed, that by exposure stone becomes less dense, and, being less dense, becomes more absorbent. We are also told that in London the atmosphere is saturated to excess with sulphuric acid, and the action of change of temperature is to increase the natural tendency of the particles of stone to separate or disintegrate by this alternate expansion and contraction.

We need scarcely refer to chemical authorities to expose the absurdities quoted above; but, when we find an experience of twenty-five years referred to, I think we have a right to ask for some proof. We find none whatever mentioned in the pamphlet beyond a statement that the preparation has been used on several public buildings, most of which are quite modern, while some are not yet completed.

Mr. Szerelmy has, we know, patented certain inventions for preserving stone and coating metals, but not only are these different from each other, but he has expressly declared that the method he adopts for the stonework of the Houses of Parliament is not patented. It is also certain that the methods adopted there have involved the necessity of frequent repetition; and, from recent observation, we are scarcely made certain that the desired object is accomplished.

The subject is one of great importance. It is clear that something must be done to preserve the decaying stone of many of our public buildings, and we ought by all means to try and obtain the best method, whatever that may be. But we should either be able to place reasonable confidence in the science of the inventor of a secret process, or we should demand proof of success. In the case before us the former is so manifestly doubtful, that we must look narrowly at the nature of the proof by actual experience.

If Mr. Szerelmy can convince us that he has for the last twenty-five years, or even half that time, been in possession of a method of preserving stone, and has actually applied it fairly in some place where it has stood the test of exposure to English weather for several winters, let him point to the specimen, and prove his case. We shall all be only too willing to listen to and employ him, and we will promise to say nothing about his chemistry. But if during all this time he has only been trying a series of experiments connected with some vague and fancied recovery of a preparation used by the ancients, the public money ought not to be fooled away in keeping up a system of deception supported by pretended erudition.

Miscellaneous.

MELTON MOWBRAY SURVEYORSHIP.—On Wednesday, the 10th, Mr. John Watson, M.L.B.A., was elected surveyor to the Local Board of Melton Mowbray.

ARCHITECTURE IN HIGH PLACES.—One of the young princes of the House of Orleans has entered his name as a pupil in the fine art course of lectures on Architecture, at University College, London. It would be well if he saw like earnestness to become acquainted with our art among our own scions of royalty and nobility. We might then hope for architecture as it ought to be.

SCAFFOLDING.—Mr. C. Thomas has put together a scaffold of some magnitude, to be used for decorations at Eastnor Castle, near Malvern, for Earl Somers. It is fastened together with bolts and screws, similar to bed-screws, and works on castors; its construction is so simple, that three men would lower the whole in one day. The standards drop into two wrought-iron sockets, and rest on a cast-iron bracket; they are then bolted together by a screw bolt and plate-nut, the material being so very light that the solidity of the scaffold, when put together, was more than he anticipated.

**ELECTRO-TELEGRAPHIC PROGRESS.**—Dr. L. Bradley, of New York, has invented a plan, says the *London American*, by which he can transmit 15,000 words per hour, using the signs constituting the Morse alphabet: this is at the rate of four words per second, the highest number reached by the ordinary method of operating being only thirty-three words per minute. He has discovered a relay magnet capable of acting at the rate of 10,000 words per hour.

**FARMS.**—The farm occupied by Mr. Proctor, at Walls-court, near Bristol, has become well known to the agricultural public in consequence of the high degree of fertility to which it has been raised by the present occupant; and the readers of the *Builder* will probably remember the plans and views which have already been given in our pages. We regret to hear that the illness of Mr. Proctor renders it compulsory that he should immediately give up the occupation of this estate, and that he will have to pass into other hands one of the most luxuriant grass farms in the West of England. The selection of a successor will devolve upon the agent of the Duke of Beaufort, who will doubtless look rather to character and merit than to other claims.

**CAUTION TO WORKMEN.**—James Jennings, Bernard Kelly, and David McDermott, riveters, recently in the employment of Messrs. Palmer, Brothers, of Jarrow, were brought before the South Shields magistrates, on Tuesday, having been apprehended at Hartlepool on a warrant, charged with leaving their employment without giving a week's notice. It seems that there had been a strike at Hartlepool, and the men had come across and found employment at Messrs. Palmer's. The strike, however, had been subsequently arranged, and, lest their places in the shop where they were originally employed should be filled up, they had gone off from Jarrow without giving the usual notice; indeed, without staying to receive the money they had worked for. They were sent fourteen days each to goal, and the money owing them was ordered to be applied to the expense of their apprehension and costs of the court.

**ROYAL ENGLISH OPERA, COVENT GARDEN.**—Mr. Wallace's "Lurline," as produced by Miss Pym and Mr. Harrison, has taken its place as one of the best works of the English school. The scenery has been strengthened since last season, and there is a change in the cast, not in all respects for the better. Mr. Wharton and Miss Leffler are, nevertheless, both promising accessions. Miss Leffler, who comes to us with the name of an old servant of the public, has been drilled both in the Academy and Mr. Leslie's choir: she must, nevertheless, consider that her musical and dramatic education are but beginning,—strive to feel what she sings and express what she feels,—and a good future is before her. Miss Pym is singing very finely. "Dinorah" was given on Thursday evening, and the "Frovatore" is on the bills; but if Mr. Harrison would hold his own against opposition he must try for something fresh, and doubtless will do so.

**METROPOLITAN TRAMWAYS: MARYLEBONE.**—The experiment at Westminster is to be seconded by one in Marylebone, the vestry having agreed with their committee's recommendation to allow Mr. Train to lay his tramways down on a route indicated, on his undertaking to remove them and relay the street should the vestry require him to do so. Since this permission has been granted a further proposal has been made by Mr. Train for laying down his tramways through or across a number of streets, including Edgware-road, Oxford-street, Regent-street, and many others. These new proposals have been referred by the vestry to the same committee who reported favourably on the preceding proposal. The General Omnibus Company attempted to obtain a delay of a fortnight before the first proposal was agreed to, but failed; and, considering the monopolizing disposition and the past history of this company, such a result is not to be regretted. The tramways to be laid down will be too broad for general use by ordinary omnibuses, cabs, or waggon, but, except to this extent, the lay down will have no monopoly of their use, so that the General Omnibus Company or any other may build omnibuses wide enough for the tramways and run them upon the lines laid down. Moreover, should the system prove a nuisance in crowded streets, the whole can and will be cleared away in a very short time, and it remains to be seen, however, whether such tramways will not diminish instead of increase the nuisance of street-crowding and obstruction. One large omnibus where two smaller ones now run is likely, one would think, to be less of a nuisance than the two which it will replace.

**MAGAZINE, WOOLWICH.**—Mr. W. Higgs denies that a magazine under construction in Woolwich Marsh has settled. Our informant repeats his statement, and sends us the *Wolverhampton Chronicle* of October 3rd, containing a paragraph to the same effect. We are quite willing, however, to take Mr. Higgs's assurance.

**SHAKESPEARE MEMORIAL IN MELBOURNE.**—The Shakspeare Memorial Committee have resolved to place the selection of the design for the memorial proposed to be erected in Melbourne in the hands of a committee of taste, composed of Messrs. Thomas Carlyle and John Ruskin, and Sir Charles Eastlake, and through them to invite six of the most eminent English sculptors to send in designs. All artists in Victoria will receive a similar invitation. With the committee of taste a business committee will be associated.—*Melbourne Argus.*

TENDERS

For additions to warehouse, Cannon-street, for Messrs. Morgan. Mr. T. C. Clarke, architect:—  
Foster ..... £1,430 0 0  
Putnam & Fisherburgam ..... 1,240 0 0  
Lawrence & Sons ..... 1,180 0 0

For the East London Catholic Cemetery, Low Leyton, Essex. Messrs. Bulson & Nicholls, architects:—  
Smith ..... £5,155 10 0  
Bird ..... 5,145 0 0  
Rivett ..... 4,905 0 0  
Coxell ..... 4,735 0 0  
Hill (accepted) ..... 4,608 0 0

For a parsonage-house, at Agar town, King's-cross; Mr. S. S. Tendon, architect. Quantities supplied by Mr. Giffen:

Brown & Robinson ..... £2,150 0 0  
Myers ..... 2,150 0 0  
Mansfield & Son ..... 2,100 0 0  
Ferry ..... 1,675 0 0  
Child, Son, & Martin ..... 1,025 0 0

For the erection of a villa residence, in the Bath-road, Reading, for Mr. G. Harris, Messrs. Cooper & Goulding, architects, Reading. Quantities supplied by the architects:—

Jackson ..... £2,400 0 0  
Woodroffe ..... 2,400 0 0  
Ogden & Child ..... 2,100 0 0  
Matthews ..... 2,027 0 0  
Wells ..... 1,980 0 0

For works required to be done on the estate of "The Northampton Town and County Freehold Land Society," Kingsthorpe-road, Northampton; Mr. A. Milne, architect:—

**Roadmaking, Culterberg, &c.**  
Ireson ..... £890 0 0  
Cosford (accepted) ..... 890 0 0

**York Paving, &c.**  
Cosford ..... £880 0 0  
Ireson (accepted) ..... 875 0 0

**Dwarf Walls, Coping, &c.**  
Birchall & Son ..... £568 6 0  
Ireson ..... 472 0 0  
Cosford (accepted) ..... 464 0 0

**Stoneasons' Work.**  
Slaymaker ..... £1,460 18 11  
Birchall & Son ..... 1,240 0 0  
Ireson ..... 1,050 0 0  
Cosford (accepted) ..... 945 0 0

For the completion of three pairs of villas, at Dovercourt, near Harwich, the property of Messrs. Henry Lee & Son; Mr. W. Moxon, London, surveyor to the estate:—  
Hun ..... £2,521 0 0  
Newton ..... 2,458 0 0  
Newrick & Morley ..... 2,340 0 0  
Wilding ..... 2,303 0 0  
Orpitt ..... 2,255 0 0  
Ladd ..... 2,167 0 0  
Ply & Kerrot ..... 1,955 0 0

For works at Kettering Cemetery; Mr. R. W. Johnson, architect:—  
**For Chapels, Tower and Spire, and Entrance Lodge.**  
Boddington ..... £2,375 0 0  
Henson ..... 1,610 0 0

**For Fence Wall, Iron Pulteney, Entrance Gates, &c.**  
Boddington ..... £495 0 0  
Henson ..... 477 0 0

**For Draining Works, Making Roads, &c.**  
Sharon ..... £630 0 0  
Beate ..... 525 13 0  
Freeman ..... 422 10 0  
Strickston ..... 410 10 0  
Boddington ..... 365 0 0

For alterations and additions to two houses, Sydenham, for Mr. J. Curtis; Mr. C. H. Badger, architect:—  
Little ..... £240 0 0  
Amer ..... 169 0 0  
Adams ..... 155 0 0  
Barnet ..... 149 0 0  
Pearson ..... 135 0 0  
Pawsey ..... 135 0 0  
Hooker (accepted) ..... 114 0 0

For rebuilding house and shop, No. 29, Bishopsgate-street Without, for Mr. William Mann; Mr. William Ellis, architect. Quantities supplied:—  
Wilson ..... £2,475 0 0  
Piper & Son ..... 2,454 0 0  
Hack & Son ..... 2,421 0 0  
Ashby & Son ..... 2,413 0 0  
Jeffrey ..... 2,359 0 0  
Watts ..... 2,330 0 0  
Wood ..... 2,300 0 0  
Brass ..... 2,279 0 0

For enlarging Brook-street Chapel, Tottenham; Mr. D. Campbell, architect:—  
Lawrence ..... £76 10 0  
Humphreys ..... £300 0 0  
Clarke (accepted) ..... 250 0 0  
Williams (not properly filled in).

For building a Baptist Chapel and School, &c., at Lower Edmonton; Mr. D. Campbell, architect:—  
Chapel. Fences. Schools and Vestries.  
Harridge ..... £755 0 0 ..... £47 10 0  
Lawrence ..... 755 10 0 ..... 45 0 0  
Williams (accepted) 749 0 0 ..... 13 0 0 ..... £238 0 0

TO CORRESPONDENTS.

P. B.—D. & W.—R. C.—J. M.—"Get Fortuna Domus."—W. W. T.—A. M. & S. W. Inquire (the proper allowance must of course be made for the deviation of the compass).—Nonsensical queries (apply to the Public Architectural Works, or Skinner & Co. Stockton-on-Tees).—J. A. C. P. can be published with his name; not without.—T. D. D.—A. Bunker (Broadstairs, &c. styled, in Street; Harriet Keyne).—W. T. G.—W. D. Manley (*vous ne pouvez pas satisfaire votre correspondance*).—Volunteer Clerk of Works (we are sorry to decline supplying to such inquiries. Answer, however, would depend on circumstances not stated).—J. H. (although you have many years before the public both here and abroad).—J. M. H.—W. E. (yes).—F. G.—Mr. H.—A.—W.—R.

**NOTICE.**—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and not to the "Publisher." Post-office Orders and Remittances should be made payable to Mr. Morris T. Coleman.

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# The Builder.

VOL. XVIII.—No. 925.

Renovations and Spoliations in Hexham Abbey Church.



NE of the monks of Hexham Abbey, writing the Saxon history of the church, said there was nothing to compare to it on this side of the Alps. It was the fifth church that was built of stone in England, and was curiously and cunningly contrived throughout its foundations, with subterranean chapels and winding galleries. The statement of the incomparable excellence of the building might be ascribed to monkish exaggeration, but for the description of the peculiarities of the foundations proving to be correct. To this day the Saxon crypt, as built by the founder, Wilfred, in the seventh century, is one of the marvels of the county.

It differs from Norman and later crypts, inasmuch as it consists of several oratories and small chapels, branching out from one of large dimensions, in which there are the marks of an altar at the east end, a stone bracket, and three niches in the walls. Three winding passages in different directions form approaches to these lonely and dark cells. Another piece of corroborative evidence has been fortunately preserved in the Saxon Frid-stool, or seat of Sanctuary, from which to pluck a fugitive was to incur excommunication; and the presence of riches and honours in Saxon times was brought even more vividly to conviction, when the sexton, in 1853, dug up a large bronze vessel full of some thousands of Saxon Stycas, bearing dates of the eighth and ninth centuries.

The Saxon founder of Hexham Abbey, Wilfred, was created bishop, but was not permitted by the monarchs of those days to perform the duties of his office in peace. When his power was at its height, when he was served from vessels of gold, when the sons of princes and nobles were honoured by his notice and instructions, an attempt was made to wrest part of his episcopal privileges from him. Finding all appeal useless, he proceeded to Rome to lay his case before the pontifical chair. The pope decided in his favour; as he did a second time, a few years afterwards, when Wilfred again journeyed to Rome for redress. It was probably his familiarity with the arts in vogue beyond the Alps, that led to the splendour that was exhibited in the adornment of Hexham Church; a surmise borne out by the old chroniclers, who affirm that the artists employed upon the structure came from Rome.

After the lapse of a century and a half, the bishopric was merged, with that of Lindisfarne, into the see of Durham. Thus denuded of some part of its importance, it fell a prey to the rapacity of the Danes, who were, in the Saxon times, the scourge that the Scots were to the northern ecclesiastical edifices in the Middle Ages—they destroyed both church and monastery. Scornful of the memory of the Venerable Bede, who was first ordained deacon, and afterwards invested with the full order of priesthood within these walls,—unmindful of the memory of Aeca, the second bishop, to whom one of the extant epistles of Bede is addressed, and who enriched the monastery with a noble library, and with relics of the Apostles and Martyrs, collected at great cost, and who was, besides, "a heavenly singer," and one of the earliest encouragers of church

music,—regardless of the sanctity of St. Cuthbert, who was, some time, bishop of Hexham,—careless of the many miracles that were reported to be performed at the different shrines, the structure was razed to the ground.

For two centuries the site remained a heap of ruins piled upon the subterranean chambers that thus escaped destruction. Then, when the Early English style was just beginning to prevail in its purest severity, the present building was erected, with all excellence of workmanship, in the form of a true cross; nave and choir being both 100 feet long, measuring from the point of intersection with the transepts. The tower, up to the parapets, was 100 feet high; and a hundred lancet windows lighted the edifice. The transepts measure 157 feet, and are 66 feet high. The details present the same consummate elegance, lightness, and variety, the same arcadings of lancets alternating with panels, enriched with clustered columns, the same ornamental carvings in the spandrels, as are found at the nine altars in Durham Cathedral, and in the priory churches of Brinkburn, Lanercost, and Tynemouth. The triforium is surmounted by an unusually rich and imposing clerestory of arcades resting upon arcades of clustered columns, through which runs a continuous passage round the choir and transepts. Eight bells still hang in the tower, attuned to the nicest harmony, bearing dates and legends.

The second destruction of Hexham was effected by the Scots, who, in their ravaging marches between Carlisle and Newcastle, always found Hexham Abbey a well-stored halting-place midway. In 1296, they pillaged the monastery and set fire to the church, which last proceeding resulted in the utter annihilation of the nave—a loss that has never been restored. From that time the church has consisted of the choir and transepts only. The Scots, under King David, again visited Hexham, a few days before the battle of Neville's Cross. They failed not to leave a trail of desolation behind them as on every previous occasion. The battle of Hexham, between the White and Red Roses, which proved so fatal to the Lancastrian cause; and the romantic episode of Queen Margaret's flight with her youthful son, and guidance through the forests, and seclusion in caves by a loyal robber, are also circumstances which have invested Hexham with more than common interest.

In the period when the Perpendicular style prevailed a re-arrangement of the church was effected,—not a restoration; for, instead of rebuilding the burnt nave, a large Lady Chapel was thrown out from the east end. Between two of the arches of the choir a shrine to the memory of a member of the great Northumbrian family of Ogle—Robert Ogle—was erected, and a stone oratory was subsequently placed between corresponding arches on the opposite side, as a shrine for Prior Richard. A rood-screen, richly panelled, carved, and decorated with "the Dance of Death," and oak stalls, were among the minor features of these improvements. Throughout all these changes the Saxon stone Frid-stool, or Frithstool, was punctiliously kept near the altar, and, although in later times it has been occasionally shifted, still it has never been removed from the choir, until the alterations that have just been made; not even when, by a mutual arrangement, the inhabitants agreed to abandon the parish church, which was in great decay, and to maintain the abbey church in its place. Despite the usual rough usage consequent upon the introduction of large galleries, sash windows, and high pews, the features of the choir were not so much disturbed and spoliated by this parochial arrangement as they have been recently.

The restoration has been in contemplation for some years, and has now been carried out. The re-opening ceremony took place on the 10th instant, when the newly installed Bishop of Durham was the preacher. The first step towards its execution consisted in the purchase of several old houses that were built against the Lady chapel, and in their demolition. This proceeding disclosed the fact that the walls of this Perpendicular part of the building had been so cut into by the erection of these houses that it was considered advisable to take down

and erase all existence of this chapel. The scheme of restoration then resolved itself into the rebuilding of the east end. A plan at first, however, was prepared by a London architect, and approved, and contracts entered into, which converted the splendid ancient choir into a neat modern parish church, and has unfortunately resulted in the loss of the two shrines that occupied two such important places before. So little provision was made for their preservation that the beautiful Perpendicular wood screen-work of the Ogle shrine is broken up and scattered, and the altar picture is now in the possession of the joiner, being claimed by him as part of the *old materials* he was entitled to *per contract*. It is a choice specimen of fifteenth century painting upon panel, and represents, on a surface about 8 feet by 4 feet, in three compartments, the Virgin and Child, surrounded by a glory; our Saviour rising from the tomb, surrounded by clouds and stars; and St. John, also surrounded by a glory; the nimbi and ornaments being curiously raised in wax from the surface.

The stone shrine, reputed to be that of Prior Richard de Hexham, the historian of the abbey, has also been removed and re-set up, awkwardly, in the north transept; and at length, the Saxon stone Frid-stool, for so many centuries jealously kept near the altar, is removed to an unconsidered and unprotected place in the same transept. The ancient oak stalls have been plucked from their places by the rood-loft, and set up without their book-boards against the walls of the aisles; all to admit of the crowding of the new plain benches round the communion-table.

We are informed that a Newcastle architect is responsible for the new east end. We much regret that instead of taking as the theme for his composition the matchless design and details of the choir, or the very beautiful arrangement of the two rows of triple lancets, with panels between each lancet, existing in the north transept, as the basis for this restoration, he has inserted six unnecessarily wide lancets, with a profusion of clustered columns between each, unlike any thing in the church, composed from remains at Whitby with carvings from Stone Church, in Kent, and elsewhere.

The absence of proper historic and archaeological feeling in the working committee is apparent from the fact, among others, that no competent person has been placed, locally, in charge of the restoration. This absence of supervision has enabled the contractors to use considerable license. On the day we visited the church they were forming a large warm-air drain, 6 feet wide and 6 feet deep, and 120 feet long, through the length of the north transept; that is to say, making a cutting through layers upon layers of coffins and skeletons,—the burials of generations,—the fragments of which were being wheeled out openly to the church-yard; and to form a cover for this drain the contractors were using up fragments of Norman coffin-lids with zig-zag ornaments, and entire gravestones of more modern date, because the *scrtion thought the churchyard too full of them and wanted them put out of his way*. Many sculptured stones were lying about the churchyard, of a very interesting description from their early character and comprehensiveness, of which it would be a great pity to lose sight. For the sake of future reference, and to enable the public to keep an eye upon them, we here catalogue two large stone coffin-lids, with early floriated crosses, complete; six large stone coffin-lids, complete, with the simple legends—here Latin and there English—deeply incised in large Early English capitals, respectively thus:—

- \* JOHANNIS MALHERBE JACET HIC. \*
- \* HENRICUS DE WALTONA. \*
- \* ROBERT DE GISBURNE. \*
- \* ROBERTUS DE BEUDEDLDT. \*
- \* ROBERT DE KIRKBRIDE. \*
- \* HIC JACET RAD DE TALKAN CANOIC. \*
- \* JONES DE DALTONA. \*
- \* HIC JACET MATILDA UXOR LIFFI MENCENARN. \*

It is to be regretted that a person of antiquarian information, who, if we may judge from the carefully-written "Guide to the

Church," is not wanting, has not been deputed to watch proceedings of so much importance to historians and archaeologists. The lord of the manor and lay rector has given liberal aid to the extent of 5,000*l.* or more, towards the removal of the parasitical buildings and the renovation of the Abbey Church, which, we must repeat, might have been treated with more reverence for its historic antecedents.

There is a proposal to divide the diocese of Durham and form a bishopric of Northumberland, to which, it is said, the Ecclesiastical Commissioners are favourably inclined. Hexham having already been an episcopal seat, might properly take precedence of Newcastle, Alnwick, Morpeth, or other competing towns, and claim restitution of its privileges as a see. Consider, then, the magnitude of the opportunity that has been lost. If the money just expended upon unfitting the edifice for this probability had been employed upon seating the large area under the tower and transepts, the Abbey Church would have presented every condition requisite for the various solemnities and ordinances connected with episcopal duties. As it is, this space remains a vacant vestibule to the crowded choir. If it had been taken into consideration we should not have to deplore the transformation of the venerable choir into a closely-packed parish church, and the removal of historic memorials,—the Saxon Frid-stool, the Ogle and Prior Richard's shrines, and the canons' oaken stalls.

#### ON THE PROGRESS AND PRESENT ASPECT OF THE MOVEMENT FOR IMPROVING THE DWELLINGS OF THE LABOURING CLASSES.

The paper on this subject, briefly alluded to in our report of the Glasgow meeting for the Promotion of Social Science (October 6th), was drawn up for the Association by Mr. Henry Roberts, F.S.A., at the special request of the Standing Committee of the Social Economy Section. From the desire of serving a cause which is so much our own, we shall notice this paper more at length.

Forming a continuation of another paper, which was read by Mr. Roberts at the Liverpool meeting of the National Association, and which is given *in extenso* in the Transactions for 1858, this report, in connection with it, presents an historical sketch of the rise and progress of the movement to the present time; it notices all the legislative enactments bearing on the subject; the efforts of public bodies or associations, and of many individuals, as well as the extension of the movement in other countries. Regarded as a simple record, it will be useful for future reference; whilst, on one important point, that of financial returns, which were dwelt on at considerable length, the figures given will tend to remove misapprehensions, and to aid the cause by indicating the class of buildings, which experience has proved to be most remunerative. Moreover, in his introductory remarks, the writer said, that "as a faithful discharge of the duty which devolved on him would require, in some instances, the notice of discouraging circumstances, his aim would be to gather from them such practical lessons as may hereafter be of service in the management of other similar undertakings."

The only direct legislative measures to be recorded since 1858 have reference to Scotland and Ireland. The former is intended to facilitate the building of cottages on entailed estates, by enabling the proprietors to charge on the estate three-fourths the amount expended on such substantially built cottages. The measures relating to Ireland are also to facilitate the building of cottages; and under certain conditions, money granted by Government for the improvement of landed property may be so applied. Some amendment Acts with reference to England were pointed out, as granting powers which may possibly facilitate the compulsory improvement of low-classed dwellings; and it was remarked that, excepting within the City of London, and in the case of common lodging-houses, no power as yet has been granted which will effectually check that worst of all unwholesome influences—the evil of over-crowding.

Mr. Roberts stated that an effort had been made by the council of the National Association to secure, in connection with the Bill for taking the census, a return of reliable statistics as to the number of dwellings of various classes throughout the kingdom; of such information as led in 1851 to the fact being ascertained that in Ireland

there were then 135,589 *single-roomed* mud cabins, of which the proportions were given in each county. But notwithstanding that the unobjectionable character of the inquiry, and the ease with which it could be made, were fully admitted to a deputation which waited on the authorities at the Home Office, the application proved fruitless.

It was remarked that the bringing before the public such facts as that of the large number of single-roomed mud-cabins in Ireland, and the leaving them open to such searching comments as those of the Registrar-General, must arouse the attention of proprietors, and from a sense of shame and self-interest, if not from more worthy motives, lead many to improve the cottages on their estates. The hills relating to cottages in Ireland are evidence of this result; whilst the necessity for the desired general investigation may be proved by numerous confessions on the part of great proprietors, some of which, by his Grace the Duke of Buccleugh, were given, and summed up thus: "He had found on his own property in England cottages quite as bad as those in Scotland."

The vote in the last session of Parliament, of 30,000*l.* for providing suitable accommodation for married soldiers, recognizes the necessity for this much-required amelioration in barrack life.

After alluding to the benefits likely to result from the affording facilities for the adoption of well-arranged and economically-designed plans for labourers' dwellings, which may be useful, not only to landed proprietors, but also to the members of benefit building societies, reference was made to the importance of imparting, in connection with mechanics' institutions, sound views on the essentials of a healthy and convenient dwelling, as well as a knowledge of the modern domestic appliances conducive thereto. Reference was also made to the field occupied by the Ladies' Association for the Diffusion of Sanitary Knowledge, in the circulating information and the exercise of influence, by means of publications suited to various classes of society.

The great importance of the financial returns, and of strict accuracy in the accounts kept by societies engaged in providing improved dwellings for the working classes had led, at the late meeting of the International Statistical Congress, to a resolution recommending the general adoption of such a uniform system of accounts as will facilitate their examination, and the comparing, in this respect, the results obtained by different societies.

Various societies engaged in improving the dwellings of the labouring classes were then referred to, commencing with the Metropolis, in reference to which the writer said that the two leading and earliest-formed associations have not, since 1858, increased the number of their tenants nor their expenditure to any considerable extent; but as their financial results for some time have, during the past three or four years, had a discouraging effect on the movement, it may be of service to examine the cause. Numerous figures were given to render these financial results perfectly clear and unquestionable; but an abridgment is all we think necessary to show what the facts are.

The Metropolitan Association for Improving the Dwellings of the Industrious Classes has done nothing recently besides rebuilding eighteen of their old cottages, which accommodate thirty-three families. The arrangement adopted in fifteen of them is similar to some in the first range of model buildings at Bagnigge Wells, built by the Labourers' Friend Society, which provide for two families in each house, with entrances for the occupants of the first floor distinct from those of the ground floor. In the society's annual report for 1859, it is remarked, in reference to those dwellings, "although the cost of buildings of this description is less per room than the lofty blocks, where the dwellings are arranged in flats, this advantage is very materially lessened, if not altogether lost in the metropolis, on account of the high value of land, and the consequent high ground-rents which must be charged on the cottage buildings."

This Association within the fifteen years nearly expired since its buildings were commenced, has expended 89,613*l.* 14*s.* 10*d.* on ten district ranges of dwellings, which accommodate 114 families and 326 single men. The net returns for the last year from their *new* houses, occupied by families, is about 3*l.* per cent., and an expenditure of about 3,000*l.* on *old* dwellings, occupied by nineteen families, has yielded only 2*l.* per cent.

From two lodging-houses for single men, one a *new* building for 254 inmates, which cost 13,772*l.* 7*s.* 3*d.*, the net return was only

161*l.* 14*s.* 6*d.* The other, an *old* leasehold building with accommodation for 128, and on which 1,422*l.* 7*s.* 7*d.* was expended, there has been a clear loss of 139*l.* 19*s.* 7*d.*, besides interest on the outlay.

Owing to these last-named unfavourable results, the net return on the total outlay of the Association has been reduced to 3*l.* per cent., from which the office expenses of general management, and interest on preliminary expenses have to be deducted before the payment of a dividend to the shareholders. It is, however, satisfactory to notice an increase in the net returns for the last two, as compared with the previous years.

The Society for Improving the Condition of the Labouring Classes, or Labourers' Friend Society, after being actively engaged in the work from 1844, had, at the close of 1852, expended 35,187*l.* 13*s.* 3*d.* in the establishment of models for the improvement of labourers' dwellings, which in four distinct piles of *new* buildings, accommodate ninety-seven families in separate tenements, provide ninety-four rooms for single women, and lodging for 104 single men, as well as a public wash-house and baths. Besides which, lodgings for 158 single men are supplied in three distinct houses, formed out of renovated *old* buildings.

The average net return from these establishments, after deducting all current expenses and repairs, was, in 1852, 4 per cent. on the outlay, whilst some of them yielded a much higher rate. The houses for fifty-four families, in Streatham-street, yielded 5 per cent., and the renovated men's lodging-house in Charles-street, as much as 15 per cent., whilst the Thanksgiving-buildings in Portpool-lane, a very mixed and avowedly experimental establishment, returned not more than 2*l.* per cent. on the outlay.

The last annual Report of this Society, shows a considerable diminution in the average net return on the cost of the buildings possessed by the society at the close of 1859, being then only 2*l.* per cent. on the outlay.

The obvious tendency of such a retrograde movement, in regard to financial results, is to discourage similar efforts; it may, therefore, be useful to point out that this unsatisfactory issue has not arisen from any falling off in the occupation, or in the gross receipts at the houses; but in some degree from an increase in the current expenses, as well as the sale of one range of dwellings, and mainly from the small return on the outlay of 7,226*l.* 1*s.* 4*d.* in renovating three old courts, where, notwithstanding that the gross receipts for the year 1859, amounted to 1,619*l.* 9*s.* 3*d.*, the deductions for rent, taxes, current expenses, and repairs, were 1,574*l.* 9*s.* 1*d.*; leaving a net return of only 92*l.* 0*s.* 2*d.*, or 1*l.* per cent. on the outlay.

Mr. Roberts noticed that in the society's report for 1858, the following *allusion* was made to what had been done at the three old courts in question: "This work has been as economically as it has been thoroughly effected, and they wish their subscribers to know that they have adopted a plan wholly foreign to, and in fact the very converse of, the system formerly pursued by the society." "They have employed their own work-people, and purchased all their own materials." The change of system, he remarked, was made during his absence on the Continent, from 1853. That pursued prior thereto, when he acted as honorary architect to the society, was invariably to contract by competition.

The financial results of this experiment were dwelt upon chiefly on account of the hearing they have on the practicability of effecting, without further legislative enactment, any thing like a reformation in the domestic condition of tens of thousands of our population, who dwell, as was once said by the Earl of Shaftesbury, where "there is no such thing as a home, and the man who has a wife and children is not the head of a family, but the chief pig in a pig-stye."

After alluding to discussions in the public journals some years since on the question of building new houses, or renovating old ones, the writer said that in a letter to the *Times* he had then stated the result of his experience, and pointed out the difficulties in the metropolis arising out of the high price asked for old houses when they are *inquired after*, and referred to the opinion which he gave nearly eight years since on an examination of one of the three old courts in question.

\* The advantage of a fireproof construction was recently shown by the occurrence of a fire in one of the rooms of this building, occupied by an aged man, which was entirely confined to the woodwork about it, and easily extinguished.

Of the other societies in the metropolis, it would be satisfactory if he could report the same pecuniary results which have enabled the Strand Building Company to pay for the past half-year a dividend at the rate of 44 per cent. to their shareholders. The want of it has apparently prevented any increase in their numbers or any extension in their operations, although the growing necessity for them must be obvious from the constant increase in the population, as well as the want of any obligatory provision for those who are unhouse-d in consequence of the clearance of old dwellings in effecting public and other improvements. Whether the facilities for obtaining healthy dwellings out of town, by the introduction of railways to the very centre of the metropolis, will be such as to counterbalance the greatly-increased disadvantages under which they must labour in consequence of the further extensive destruction of low-classed property, is very problematical. As yet they have not thus been much used.

The operations of private individuals in the metropolis have, in regard to pecuniary results, proved more satisfactory and encouraging than those of associations. Reference was made particularly to those of Mr. Hilliard, a barrister, of Gray's-inn, in rebuilding near the Sadwell station, on the Blackwall Railway, an entire street of houses on the general plan of H.R.H. the Prince Consort's Exhibition houses, which provides for 112 families in blocks of four tenements each, and cost 487. per block, the total outlay being about 12,614. On the authority of the owner, it was stated that "they pay upwards of six, in fact nearly seven, per cent. as a net return on the investment, and are almost constantly let, and appreciated by the tenants." Each family has three rooms, and a wash-house or scullery.

A tabular statement was given to show the cost and rental, as well as the number of families provided for, and the current expenses, at each of the five piles of improved houses constructed by Mr. Newson, the builder, of Grosvenor-mews. Two of these blocks of houses are situated in Grosvenor-mews, parish of St. George, Hanover-square; one in Bull Head-court, King-street, Snow-hill; another is the Bull Inn Chambers, Holborn; and the fifth a small house in Grosvenor-market. The whole accommodate 125 families, and the total outlay, including builders' profit, was 12,200. The gross receipts were stated at 1,560., and the total outgoings, including ground-rent, repairs, and collecting, amounted to 829l. 11s. 3d., leaving a net return of about 5½ per cent. on the outlay, exclusive of any deduction for the redemption of leases. All of these buildings are arranged with open galleries, resembling in that respect the Streatham-street model houses, which renders them exempt from house-duties. Whilst in some details, it was remarked, that the arrangement of the houses might be improved, they present a very striking contrast to the dwellings mostly occupied by the working classes in London. Indeed, a greater boon could scarcely be conferred on large masses of the lower orders than a transformation in their dwellings similar to that effected by Mr. Newson in Bull Head-court, Smithfield, which in its former state must have been an embodiment of filth and wretchedness. Surely the construction of such houses as these ought to be encouraged by parochial authorities, as one of the surest means of diminishing the charges on a parish which ordinarily arise out of the sickness of the poor.

Messrs. Pickford & Co., the well-known carriers, established in 1854, at Camden Town, a lodging-house for the unmarried men in their employ, which accommodates sixty inmates. It was built originally for a public house, and on the refusal of a license was taken by them and fitted up at a total outlay of 452l. 8s. 2d. The return from a charge of 2s. 6d. per week, defrays all expenses and repairs as well as the interest on outlay, whilst the establishment of the house is stated by Messrs. Pickford to have led to a great improvement in the men as regards orderly conduct, cleanliness, &c.

Of the societies, about twenty in number, which have been established in various parts of England, besides those in the metropolis, Mr. Roberts said that the Windsor Royal Society has now 9,000. invested in newly-built cottages and two lodging-houses, the net return from which yield a dividend of 4 per cent. The Society at Ramsgate has divided 4 per cent. for the present year, which is an improvement on the last. That at Brighton is also improving financially, and its success as an independent enterprise was announced by the directors in June last with a dividend of 15s. per share. Its paid-up capital is about 6,000. The Red Hill and Reigate Cottage Improvement

Society has added twelve more to the nineteen cottages with which its operations commenced, having been encouraged to do so by the eagerness with which the first were occupied. The contract for those of the second series was at the rate of 120l. 7s. 1d. per cottage. A dividend of 5 per cent. has been paid to the shareholders, and 65l. 16s. 3d. added to the reserve fund. The Hastings Cottage Improvement Society, the capital of which now amounts to 10,400., has purchased and put into good condition fourteen ranges of old houses, in which there are dwellings for ninety-five families, and two lodging-houses. A dividend of 6 per cent. has been paid, and the reserve fund nearly reaches 200l. The only society established within the two past years, mentioned as having come to his knowledge, is that at Hertford, "for building and improving the dwellings of the working classes;" from which, it was remarked, much benefit may be anticipated to the neighbourhood, if the sound views enunciated by some of the managers be carried into practical operation.

As an instance of the recognition by those who have working people in their regular and exclusive employ, of an obligation to see that they are properly housed, the building by the Great Northern Railway Company of 160 cottages at their station called New England, near Peterborough, was mentioned, although this had avowedly been done from necessity. The average cost per house had been about 140l., and the return is about 6 per cent., from which the amount of repairs and depreciation have to be deducted. Without entirely approving the internal arrangement of some of these cottages, it may be said that the directors have rightly judged that the comfort and respectability of their men is of more importance to the company than the exact per-centage return.

Another field of action was alluded to, as greatly tending to the domiciliary improvement of the very poorest class in the metropolis. It is the Female Domestic Mission, which within the two past years has so extended its operations as now to count 130 agents, who are employed in a combined effort to promote the physical, the moral, and the spiritual well-being of the very lowest and most wretched of the population. As Bible collectors, they carry with them, and urge the adoption of, those sacred truths which are alike profitable to the body and to the soul; the further duty of each of these women, acting under the direction of a lady superintendent, is to inculcate, and by various ways to aid in the adoption of, those habits which, with the vast majority, are diametrically opposed to their prevalent customs and practices.

In connection with this work, the writer alluded to three recent publications, as giving many instructive illustrations of the domiciliary condition of the poor in the metropolis. Two of them are by ladies, "Ragged Homes, and how to Mend them," and "The Missing Link;" the other, known to our readers, "Town Swamps and Social Bridges."

In reference to the progress of this movement on the Continent, it was maintained that, however disproportionate the number of improved, or so-called model houses, are in London to the existing necessity, the disparaging comparison, in this respect, between our own metropolis and that of France, which had been made in a late number of the *Quarterly Review*, is not borne out by the facts, although in that country a large Government subvention had been granted. The *Cité Ouvrière*, at Mulhouse, was named as the most complete undertaking of the kind in France, where 480 houses have now been built by an association of manufacturers, and two-thirds of them sold to the occupants, whilst 90 more are in the course of construction; there being space for 800 in the whole.

The Berlin General Building Society, at its last meeting, presided over by his Royal Highness the Prince Frederick William, reported a paid-up capital equal to 34,655. sterling, and that it had dwellings for 219 families, with 31 workshops. The shareholders receive a dividend of 4 per cent., and the available addition to the reserve fund last year was about 3,195. sterling; one-half of which was, however, repaid to the tenants. A smaller society, called the "Alexandra Stiftung," by desire of one of its donors, the late Emperor of Russia, has a capital of about 21,338. sterling, arising from donations, and from loans at 4 per cent.

The most zealous promoter of a society lately formed at Frankfurt, Dr. Varrantrapp, has recently sought, through a personal examination, to profit by the experience gained in England, where this movement originated, adding thus another to

many previous instances in which the practical results arrived at with us have been studied for the benefit of other countries; and showing that, whether they be successful or discouraging, those results may have an influence far beyond the particular undertaking wherein they occur.

*Examples of Efforts in Scotland to provide Improved Dwellings for the Working Classes.*

A supplementary paper under the above title, which was read by Mr. Roberts, gave a general view of what has been done in Edinburgh, dwelling particularly on the first constructed range of model houses. It noticed also the model lodging-houses established in Dundee and Aberdeen, but assumed that local contributors would supply full information with regard to what has been done in Glasgow, and in the rural districts of Scotland. In reference to the latter field for exertion, it was remarked, that the society in Edinburgh for "Promoting Improvement in the Dwellings and Domestic Condition of Agricultural Labourers in Scotland," appears to merit more extensive support than it has hitherto received.

The "Miring Model Buildings, near Leith Walk, the first range of improved family houses for the working classes in Edinburgh, were commenced in 1850, by an association of gentlemen, amongst whom may be named the late Professor Alison, David Muir, esq. (late Lord Advocate), Robert Chambers, esq., and F. Brown Dongles, esq. (now Lord Provost). They consist of forty-four dwellings, in three blocks, two stories high, with double fronts or access on both sides, the tenements on the upper floor being approached from the opposite side to that on which the ground-floor tenements are entered. Two of the blocks are parallel, and the third flanks one end of the other two, ample space being left between them. A foot-path runs along each row of houses on both sides; every tenement has a front door of its own, and is self-contained. Each house has a small garden, or drying plot, opposite to its own entrance door. The number of apartments varies. No house has fewer than two; some have three, and the size of the rooms varies. Each house has, moreover, a scullery or washing-closet, and also (what is very rare in workmen's houses in Scotland), a water-closet. The houses are fitted up with gas as well as water, and they have permanent grates. The greatest economy consistent with fitness and durability, was maintained in the construction, so that the total cost of the forty-four houses, including drains, &c., was only 4,052l. 15s. 9d., being on an average about 92. per house, with scarcely any extras, greatly to the credit of the architect, Mr. Patrick Wilson. The annual rent of the whole is 303l. 19s., varying from 5l. 5s. per house, up to 9l. 15s., one half of them not exceeding 6l. 6s. per house. Higher rents might have been charged had not the committee desired to benefit a class of persons who could not afford to pay more. After deducting all expenses, fee duty, 22l. 11s. 10½d.; insurance, 5l. 12s. 6d.; rates and taxes, 13l. 11s. 2½d.; repairs, 13l. 1s. 7d. (the tenants being bound to keep their houses in good repair); management, 21l. 6s. 3d., and paying a dividend of 5 per cent. less income-tax, amounting to 196l. 16s. 6d., a balance of 30l. 13s. 1d. was last year added to the sinking fund, from which sundry expenses, such as painting and papering, are defrayed. This fund now amounts to about 150l.

The results of this scheme have been most encouraging. In general the demand for the houses has been at least six times equal to the supply. The rents are paid with great regularity, and the total sum lost through defaulters from the commencement, is under 5l. The Rev. W. G. Blaikie, one of the committee of management, bears a high testimony to the character of the occupants, whilst he contrasts his own sensations when visiting, as a clergyman, in places where it is a calamity to have the "smell of smell."

After combating the charge that "the most necessitous of the working classes are not benefited by such efforts as that described," and showing that it is the want of an adequate supply of such houses, which, in most of our thickly populated towns, forces so many working people into those miserable dwellings where they gradually sink in the scale of physical and moral position,—the writer remarked that his recent sojourn for a few days in the capital of Scotland, a city unrivalled for picturesque beauty, and remarkable for the classic elegance of so many of its modern buildings, had revealed to him what he had not seen in former visits, a degree and extent of wretchedness which has endeared more painful feelings than all that he had witnessed of a similar character during a long residence on the Continent. Even amidst the

misery and degradation which may be seen in the back slums of Paris, Genoa, Rome, and Naples, the vice of drunkenness rarely obtrudes itself, and is certainly, but in a very slight degree, as it is with us to a very considerable extent, both a cause and a consequence of the miserable state of the deus which so many human beings call their homes. Such a state of things is a reproach to our country, and to our Protestant Christianity, whilst it proves that those who have had the power to effect the needed change in regard to the dwellings of the working population have long forgotten their responsibility to Him who has said, "Thou shalt love thy neighbour as thyself," as well as ignored the lower motives which are dictated by self-interest and patriotism.

An act of Parliament was then noticed applicable only to Scotland, which was passed in 1855, whereby duly constituted improvement associations are empowered to obtain possession of buildings "faulty in their original construction, or fallen into a state of dilapidation, or being in a condition which may cause disease to the inhabitants, or the neighbourhood;" and it was added that the results of inquiries lead to the belief that the existence of such a power is not generally known.

The example given at the Pilrig buildings was repeated under the same architect, and on a plan similar, as to its leading features, in a range of thirty houses called Chalmers-buildings, belonging to Mr. Matheson; and in addition to these two ranges of improved family dwellings for working people the writer mentioned having seen in Edinburgh and its suburbs, eight other distinct blocks of houses for families either completed and occupied, or now in progress; three belonging to associations, and five to individuals, one of whom is a lady of property.

The first constructed of these are the Ashley-buildings, to the north of the Canongate, near to John Knox's house. There are thirty-nine tenements, approached by three staircases, and mostly let at a rent of 8*l.* per annum. In Blair-street a large building, formerly the office of the Queen's printers, has been subdivided into thirty-three tenements and fitted up with suitable conveniences at a cost of about 1,700*l.* The houses are all let, the loss from bad tenants does not exceed 5 per cent, and on the whole there is a fair return. To the south of the railway and east of the North-bridge, whence it appears to advantage, is a neat pile of brick houses recently built by Mr. Milne, a brass founder. They accommodate twenty-one families, whose apartments, consisting of two rooms each, with suitable fittings, are approached by an open staircase and an external gallery. In some of its features this pile of building resembles the Prince Consort's Exhibition model houses.

In a south-western suburb, at Rosebank, a range of thirty-six houses has been built by Mr. James Gowan, a railway contractor. They are disposed in three rows, with gardens and distinct access to the upper floor tenements; in that respect resembling the Pilrig buildings, but with projecting external stone staircases, which are no improvement. These houses are two highly rented to be within the means of ordinary working people. Close to them an association has very recently constructed an extensive range of ninety-six houses, called Rosemont Buildings. They are disposed on three stories, with open galleries towards an internal quadrangle, which they surround. In each corner is a stone fire-proof staircase, with a wash-house, &c. The quadrangle is arranged for a drying ground, subdivided into four compartments, and having a fountain in the centre. The rents vary from 6*l.* 10*s.* to 10*l.* 10*s.* per annum, according to the extent of accommodation, which mostly consist of three rooms with closets, &c. The total outlay is expected to be about 11,000*l.*

In Hamilton-place, Stockbridge, a range of houses, called Patriot Hall, is near completion. It will accommodate forty-two families, and is being built at the expense of Mr. Chyne, of Lisnore, in Argyleshire. These, as well as the last-named houses, are of red brick with white dressings. They are three stories in height, including the ground floor, and towards the front form the three sides of a quadrangle. There are three enclosed projecting stone staircases; one in the centre is the approach to two open galleries, extending on each side and giving access to twenty of the first and second floor tenements, all of which have an entrance lobby, a large living-room, with spacious recess for a bed; two bedrooms in the back (one of them full small), and a well-arranged water-closet, but no scullery; and a sink in the living-room, ample closet and separate washing accommodation are to be provided.

All the rooms are 9 feet high. The cost of the whole range of houses will be about 4,500*l.*, and the rents are to be about 10*l.* per annum. The general arrangement of these buildings, and their substantial yet economical construction, recommend them to notice; but, unquestionably, the impure stream which runs at their back should, for the health of the tenants, be either permanently cleansed or covered over.

Near to Holyrood Palace, at Abbey-hill, an extensive range of work-people's houses, designated Dr. Bigg's Buildings, has been constructed by Mr. Robert Cranston. They are five stories high, and, with an addition now in progress, will accommodate sixty families. There are three internal staircases, from which four sets of apartments open on each floor. They consist of two rooms only, are defective in some important conveniences, and the passages are very narrow. The rents are from 7*l.* to 7*l.* 10*s.* with extras. Near the end of Arthur-street, south of Holyrood Palace, a range of neat stone dwellings, called Dumbiedike House, is now in the course of construction by Mr. Hume, formerly a plumber. Three internal stone staircases give access to thirteen sets of work-people's houses. There are four rooms, including a scullery and a distinct water-closet to each tenement. In all essentials the accommodation is ample and well worthy of notice.

The fearfully wretched condition of the low-classed lodging-houses in Edinburgh long since led to the establishment of an association for their improvement. The first of their houses was opened at the West Port in 1844; that in Cowgate in 1847, and the Merchant-street house in 1849; the two former being for men, and the latter for married people with their young children, and for single women. The average accommodation in each of these establishments, which are known as the Victoria Lodging-houses, is for about seventy persons. The first-named yielded for twelve years an annual surplus of 327*l.* 2*s.*, after deducting interest on the outlay in fitting up, and the current expenses, taxes, &c. The second yielded for nine years an annual surplus of 83*l.*; and at the last-named there was, for seven years, an annual deficiency of 21*l.* 7*s.* Mr. Roberts said that he could with pleasure testify to the cleanliness and order exhibited in these houses at the present time, particularly in the Merchant-street house, which, in this respect, is quite a pattern for imitation. In the Grass Market another house has been fitted up for three classes of lodgers, by Dr. R. Foulis, a member of the same association.

The model lodging-houses at Dundee, which were referred to in a letter from Lord Kinnaird, quoted by Mr. Roberts in his paper of 1858, he now reported on, particularly as to their financial results. The Victoria Lodging-house for men, during the last year, supplied 28,251 nights' lodgings, and its financial prosperity is clearly shown by the balance of 224*l.* 14*s.* 3*d.*, shown in January, 1858, in favour of the house, after the first outlay had been paid; and the profits for the last two years have together exceeded 100*l.* It having been found desirable at different periods since the general enforcement of the Lodging-house Regulation Act to close two of the lodging-houses belonging to the association, the debt which had accrued on their account is nearly met by the profits of the Victoria House. In the large establishment for women in King-street, which accommodates nearly 300, the inmates at one time numbered 245, but, owing to the commercial crisis, there had been a temporary reduction to 180; and last year the number was only 191. Notwithstanding this, the receipts exceeded the expenditure by 14*l.* 8*s.* 2*d.*, and the cost of fitting and furnishing the house, which was 729*l.* 13*s.* 4*d.*, had, in January last, been reduced to 629*l.* 16*s.* 8*d.*, by the excess of receipts beyond the expenditure.

The model lodging-house opened by an association at Aberdeen, in 1849, was formed out of two old adjoining buildings, altered and fitted up for seventy-five inmates, at a cost of about 2500*l.* One of the houses is appropriated to married persons, and to unmarried females; the other to males, including sailors occasionally. The amount received annually for the last five years has averaged 193*l.* 10*s.*, and the expenses, including rent and repairs, have been about 173*l.* The profit in hand is now about 1000*l.*

The financial results which have enabled these associations either to repay out of profit the whole of their outlay, or to reduce it considerably, after paying interest on the capital, is a proof of good management, and may afford to some other societies an instructive lesson.

The writer, in conclusion, argued from the

testimony so universally borne to the very great improvement in ordinary lodging-houses since the establishment of model houses, and more especially since the enforcement of the Act for regulating common lodging-houses, that however difficult it may be, and requiring much consideration, the Legislature ought to enforce on the owners of all houses in towns, let to families in tenements at low rents their being in a healthy condition, and that there is no other means by which the much-needed improvement of the lowest class of such dwellings can be effected on a scale at all commensurate to the existing circumstances. He added that this is not an opinion hastily expressed, but the deliberate conviction resulting from more than fifteen years' observation and experience in the endeavour to advance that object.

#### HOSPITAL CONSTRUCTION.

The following is Dr. Combe's reply:—

Having read with much interest, attention, and, let me hope, profit, the remarks and criticisms in your leading article on Hospital Construction (*ante*, p. 649), there are two points on which it seems to me incumbent on me to ask the favour of being permitted to say a word or two; on one, because it involves a question of fact,—on the other, because you impute to me something very like ignorance on a subject with which I ought, at least, to be well acquainted.

Incidentally to the question of cost per bed, I had intimated the very latest projected hospital, and had remarked that the ground being comparatively worthless for building purposes, owing to the nature of the subsoil, the sum paid for the site of the intended hospital near Shooter's-hill can have made no great inroad on the total vote for it. As the sum paid is 3,700*l.* for more than eleven acres within eight miles of London and close to Blackheath, where house rent is so high, my remark seems to be justified. But you have been assured that the site "has not a clay sub-soil, but is geologically known as the Woolwich Pebble Bed, a mixture of shingle and loam resting on clay." Now, without entering into a description of the geological formation of the neighbourhood, or of the exact disposition of the so-called Woolwich Pebble Bed, the real fact of the matter, as affecting the one spot—Kidbrooke-common,—is that, last winter, it was treated at several points by professional borers, who found no thickness of loam and shingle greater than 3 feet, and then clay, all clay, and nothing but clay, to a depth of 50 feet, which was as far as they went. The hospital will, therefore, stand on a great bed of clay. But you say that, "to obviate any risk even of subsoil damp, the floors will be isolated by a basement above the level of the ground." Doubtless this will be done; but that is not the point. Why, if a clay soil causes a damp local climate, as we are taught to believe, and as the commonest observation shows to be the case, the hospital will be surrounded with a damp local climate. On the left of Kidbrooke-common is the slope which reaches from the Eltham-road to Severndroog Castle. In that direction there is nothing but clay till you reach the crown of Shooter's-hill. On the right there is clay, extending, in the direction of Blackheath, to the "Arnold's Farm Brick-field," and beyond it; in front there is the clay country which dips towards Footscray and Chislehurst; immediately in front there is a vast grate-way, the soil of which is all clay; in the rear there is clay until about the middle of Woolwich-common. I am only concerned, at present, with my own defence,—not with the question of the suitability of this site; otherwise there might be a good deal to say.

Let us pass to the other matter. You say that "Dr. Combe appears scarcely to have apprehended the idea of a general hospital," and that "there are general hospitals at this moment with fewer sick under one roof than Dr. Combe proposes to put in his." With respect to this latter paragraph, my allusion was pointedly made to Miss Nightingale's proposal to establish general hospitals, under the influence of a totally new "idea," whenever "larger numbers of troops than one regiment are collected."—(Report, "Army Sanitary Commission," ans. 10,041, p. 384.) The "idea" of a general hospital is such a very simple one, that I venture to profess that I do apprehend it. I think that I know what was meant by Pringle's general hospitals at Peckenheim and Newid, by the general hospital at Lisbon, by Mr. Guthrie's hospital at Toulouse, even by the hospital at Fort Pitt. But there is one "idea" which I am not ashamed to confess that I do not understand, which, having tried to do so for

more than two years, I am altogether at a loss to understand. That is the sort of general hospital proposed in the evidence referred to, and of which it is plain that you are speaking. I read that evidence with ever-increasing wonder, that such a blot should occur in a body of statements and opinions which indicate such extraordinary powers of observation, and such extraordinary good sense. I would be beyond measure surprised that the objections to such a scheme should have escaped so penetrating an eye, if I did not find these very objections most admirably stated in another part of the same evidence. You are mistaken in supposing that the new regulations provide for such a state of completion. The symmetry of that admirably arranged and most methodical code is not marred by such an attempt. I do believe that if the author of the proposal had to arrange for its being carried out, even her great powers of organization would fill her. A well-built and well-furnished hospital is a good thing, but there are some things that are better even than that,—order and method intelligently defined, a clearly established incidence of responsibility, unity of authority. There is a principle which is attacked by the proposal, and which it is incumbent on all practitioners of medicine,—I say nothing of those who profess but do not practise the art,—to defend,—the principle of absolute freedom from external professional interference in particulars. It can need but little acquaintance with certain elementary principles to be able to foresee the exact point at which the system, if ever attempted, will break down, and the manner in which it will break down.

When you state such excellent objections to a hall with a glass roof, I bow at once to your professional opinion. In the same way you must give some little weight to my professional opinion when I say that, if you wish to moderate the light for the exclusive use of an eye case, you must either put your patient into a small ward, or put a screen round his head, which is the smallest and worst sort of small ward. Mark, I say *if*. In point of fact, it is very rarely that such a step is required. But, thank Heaven, doctors differ, and we must provide for their differences of opinion.

For the rest, I am confident enough to be willing to leave my plan for a cheap but efficient regimental hospital, side by side with your objection to it. I believe that the system of parallel blocks does not admit of a sufficiency of what the old writers call "currency of air." I believe that before long that difficulty will be perceived, and that it will be overcome. I would be sorry to say that I have done so, because I do not think that I have done so, but I have tried. When the difficulty is recognized and surmounted, and when the *Builder* adopts the improvement, as you will do some day, I shall write to remind you of this poor project of mine, which you have been so good as to publish.

M. COMBE.

We are quite as anxious as Dr. Combe can be that the site chosen for the new hospital should be the best possible, and give him credit for his anxiety in that respect, the more so as he early pointed out in our pages other sites.

In his previous paper he described the site as clay. We believe it to be pebbles and loam, resting on a clay. The sanitary difference is that a clay surface is soft and sloppy in wet weather, while the Kidbrooke-common surface is porous and firm.

Dr. Combe's objection to general hospitals, if at all valid, would lead to a recurrence of all the calamities of the Scutari hospitals. A certain number of general hospitals are to be established to train officers for general hospital service during war, and Woolwich will probably be one of them. The necessity is paramount. And for Dr. Combe to cite any medical inconvenience against such necessity is simply to incur the risk of calamity for a mere professional pettefoglio. The heads of Dr. Combe's own department differ entirely from him on this very point.

The answer to the objection that arrangement in parallel blocks does not admit of sufficient circulation of air is met by the simple fact that, wherever this principle has been properly applied, the external ventilation has been quite sufficient.

Dr. Combe will understand that we regard him as an ally, not an opponent; and in that relationship talk the matter over with him.

STAIRCASES SUPPRESSED.—The hotel about to be constructed by Percire, opposite the new Opera House, Paris, it is said, will be the largest in existence. The staircase is to be entirely suppressed, and the inmates, goods, and luggage are to be raised and lowered by machinery.

MURRAY'S "BERKS, BUCKS, AND OXFORDSHIRE."

MR. MURRAY'S last hand-book for home travellers,\* is especially good in its first section, which relates to Berkshire. To the county of Buckingham, much less space has been given; but in that, many particulars will be found of places interesting to the architect, and not always accessible, as Eton and Stowe. The bulk of the third section is devoted to Oxford and Blenheim, of which the accounts are ably and succinctly given. The notice of the former place would have been more serviceable, accompanied by a better plan: that given is incomplete, and, indeed, in most respects inaccurate. In the first section, the plan of Windsor Castle might, with slight trouble, have been much improved. In the map of the three counties, the principal antiquities and battle-fields, with great advantage, are indicated: but the name of the Thames, we observe, is given to the branch of the stream, properly called the Isis. There is no plan of Eton College in the book, and none of St. George's Chapel, in detail. The deficiency in this respect, greater than in some of the Continental hand-books, however, being duly noted by us,—and simply because, as we have urged on previous occasions, geological and statistical maps, as well as plans of important buildings, would be of chief service to the objects of a hand-book,—we are glad to be able to say that the present volume has been put together in such a manner that it is entertaining and instructive for fireside reading, as it is indispensable to tourists. The historic and anecdotal features of interest in the several places have been thoroughly well worked.

Each section has prefixed to the Routes, in a small compass, much necessary information on points such as those of the boundaries and divisions of the county; the rivers and canals; the climate, agriculture, and manufactures; the antiquities; and the country-seats. The objects on both sides of the Thames, from Goring to Maidenhead, are included under Berkshire.

Berkshire, "the royal county," has not been so well described before the publication of this volume. Amongst the objects of interest at Windsor that are not generally shown, may be mentioned Canaletto's views of Venice and Rome (admirable works they are); the pictures by Zuccarelli, in which some of the chief buildings in London are introduced; three volumes of drawings, by Leonardo da Vinci; drawings by Michelangelo, Raffaele, and others; and the two volumes with portraits by Holbein. Coleshill House, by Inigo Jones; a summer-house at Beckett, by the same architect, and the house at Ashdown Park, by his nephew Webb, are in the same county. The route from Newbury to Lambourn is "exceedingly interesting to the architect." But the objects are too numerous in every direction, for us to do much more than refer the reader to the volume.

At Eton College, in Buckinghamshire, many curious paintings were discovered in restoring the chapel, some of which were erased, and the others covered with the new whitewashing, contrary to the recommendation of the Prince Consort. At Stowe,—

"A work to wonder at . . ."

the objects of interest to architects in the gardens, if not in the interior of the mansion, are still numerous. In Buckinghamshire is Olney, the home of the poet Cowper.

In the account of Oxford due attention is given to the important fact of the prevalence of Gothic details at the University, even down to the time of James II. This character of art obtains in the "Schools," of which Thomas Holt, who died in the early part of the seventeenth century, was the architect. The beautiful staircase, with fan-groining, of Christ Church Hall, is as late as 1640. A play was acted at Christ Church, before Charles I., in 1635, which was remarkable for its scenes and stage machinery; and these, the writer in the Handbook says, "were the earliest of the kind made in England, and are mentioned by Antony Wood, 'in order that posterity might know that what is now seen in the play-houses is due to the invention of Oxford scholars.'" This statement, however, is erroneous. Saying nothing of what the ancients had in the way of movable scenery, and the "properties" used in the "Mysteries" of the Middle Ages, we have shown

\* "A Handbook for Travellers in Berks, Bucks, and Oxfordshire; including a particular Description of the University and City of Oxford, and the Descent of the Thames to Maidenhead and Windsor: with a Travelling Map and Plans." 12mo, pp. vi. 211. London: John Murray, 1860.

in our "Sketch of the History of Scene Painting" that Baltazar Peruzzi, who died in 1536, practised scene-painting, leaving, as we know, beautiful specimens behind him, and that Inigo Jones in 1604-5, produced scenes and stage-machinery before King James I. and his queen, and in the autumn of that year, in this very hall of Christ Church, Inigo being paid 50*l.* for his pains. The statement in the notice of All Souls', that Wren's designs for St. Paul's thereat, are 300 in number, those who read our recent notice of them will be aware is not strictly accurate. And an erroneous impression may be produced from repetition of such a statement as that the Sheldonian Theatre is a happy imitation of the theatre of Marcellus at Rome, that is without mention of the fact that the sort of imitation in question is really very different from what the ordinary reader understands by "imitation." The new museum does not get entire praise from the writer in the Handbook.

Relative to the works at Blenheim, commenced June 18th, 1705, and the "malicious thwarting" of the architect, who was "even refused admittance to see his own work by an order from the hand of Atossa herself," it is said:—

"In 1710 the duchess stopped the works, and desired the workmen to pay no attention to the architect's orders."

To what extent the duchess herself thus spoiled Blenheim "in her own way," as Vanbrugh said she would with the money left her by the duke, cannot be decided; but the circumstances should be remembered in any estimate of the skill of the architect, who, moreover, was defrauded in money. In 1704, quoting from the Handbook, the duchess had written on a bill for 100*l.*—"Is not that 7*½*d. per bushel a very high price when they had the advantage of making it in the park? Besides, in many things of that nature, false measure has been proved." So that she watched matters closely.

We are well disposed to endorse the assertion that the collection of paintings at Blenheim, "both in extent and selectness, is one of the finest in Britain." The works by Rubens are marvellous; and the views of the building and park, as that from Rosamond's Well, with the noble bridge in the foreground, every architect should go to see. Wangen has said:—"If nothing were to be seen in England but Blenheim, with its park and treasures of art, there would be no reason to repent the journey to this country." Starting early from London, it is quite possible to get time for the walk from the Maidenhead Station, and arrive by eleven o'clock, at which hour, on any day but Saturday or Sunday, the palace is shown for a small fee; and afterwards the traveller can be refreshed at the Bear at Woodstock, where he will find, besides an obliging landlady, an early drawing (a view of the said hotel), signed "T. Allason," and some other curiosities, and a general contrast to the inns at Oxford, of which last the compiler of this excellent Handbook correctly says—"All bad, dirty, comfortable, and very high in charges."

DESIGN IN GLASS WINDOWS.

A RECENT number of the *Builder* contains a notice of a memorial window to the memory of the late Dr. Ions, the organist of St. Nicholas's Church, Newcastle-on-Tyne. In the account of this window it is stated that the top is enriched with tracery, and the first figure in stained glass represents the Lamb and Banner, the two immediately below representing St. George and the Dragon, and St. Michael. There are also angels carrying emblems of the passions, foliage, &c. There are sixteen prophets, the evangelists, incidents connected with the crucifixion of our Saviour, a representation of the Last Supper, &c. No mention is, however, made of matters which would seem to connect the design of the window with the profession of the talented musician in whose memory and honour this monument is placed. Doubtless in the position in which this window is fixed, the emblems, figures, and pictures are very fit; but in a monument intended to preserve the memory of an individual, surely the general design should in some way bear upon the circumstances and peculiarities of the person whose fame it is intended to preserve.

In the crypt of St. Paul's Cathedral, near the grave of Sir Christopher Wren, there is a monument in white marble, which has considerable artistic merit. This is to the memory of the daughter of Sir Christopher Wren, who was herself a skilful architect, but was more famous for

ber musical ability. In bas relief on a large portion of this is a figure of St. Cecilia, seated at the organ. In the background and in other parts are groups of angels. This introduction is appropriate, and also devotional.

In a monumental window to the memory of a distinguished musician placed in a cathedral or church, passages might be taken from the life of King David, or illustrations of the glorious heavenly choir which are referred to in several portions of the Scriptures.

A fitting subject for such a purpose as this might be chosen, if well and artistically treated, from the following passage—"By the rivers of Babylon there we sat down, yea, we wept, when we remembered Zion. We hanged our harps upon the willows in the midst thereof," &c.

In memory of a person who during life had been distinguished for charitable or worthy actions, the story of the Good Samaritan might be pictorially given with good and proper effect, and passages from the history of Moses might be given in this way in connection with an eminent statesman. We have looked at many examples, and find in various cases, that even where the colouring is brilliant, there is a sad want of point and sentiment.

In a memorial window to a young female child, we have noticed a blaze of colour, figures of the prophets Ezekiel and Daniel, the figures of several saints, heraldic emblemmations, and flowers and plants simply placed for show. How much better it would have been to have given prominence to a figure of Christ blessing little children, or as the Good Shepherd, with a lamb in his arms. Lilies, white roses, primroses, and other tender flowers, should be made the foundation of the ornamentation.

In such a case this general colour should be pale and pure, the sky of a delicate ethereal tint, and the trees as they bud in the early spring time. Generally, as it seems to us, there is want of variety in the broad arrangement of the colour of the designs made for this important portion of church decoration; nor is sufficient care taken in arranging the colour and effect in a manner suitable to the position in which the glass has to be placed. The best examples of old Flemish stained glass are well worthy of study in this respect. The clear pearly tints, light and silvery, which foil the deep and richer colours, are pleasant to the eye when it has been fatigued by the masses of crimson, dark-blue, purple, and other heavy colours, which are so much used by the English glass painters of these days. In the Flemish glass there are portions left entirely or very nearly colourless, and a quantity of straw colour, gray, and black, which produce a delicate harmony.

Admiring much the colour of some of the best examples of coloured glass which have been left in this country (in York Cathedral, for instance), it must, nevertheless, be said that, in many of the details, there is not shown the skill in drawing which is necessary to give satisfaction in our times. We look at the grotesque and unnatural figures in illuminated manuscripts, and the coarse woodcuts in books of more modern days, with the intention, but the want of power of hand to give expression to their meaning. We see figures with the heads and limbs curiously distorted, and contortions of the most singular description. In the best of the modern book illustrations the contrast is great, and the improvement satisfactory. With the advance of skill in pictorial art it does not seem to have been in all cases applied to glass painting, and we have lately seen examples exhibiting the stiffness and imperfection of the old work, which were only so executed formerly in consequence of the artists not being able to do better.

When we notice the beautiful outlines by Flaxman, some of the elegant compositions of Stoddart, and many of the works of more recent execution, it seems clear that a great deal more is required in the application of power and high-class design to glass painting. Since the Mediaeval days in which this work so much flourished, there have lived Michelangelo, Raffaele, Rubens, and other great masters; the science of perspective has become generally understood; and the principles of composition, light and shade, and colouring, have been reduced to a more perfect system; so that we would not now like to have our eyes offended by figures outrageously wrong in drawing and proportion, with unmeaning expression, and in other ways faulty. Why, then, should we continue in painted glass that which would not be in other branches tolerated?

Admitting that it is necessary to adapt the design of the stained glass to the forms of the Gothic tracery, and that to a certain extent a

conventional style is demanded—that the subjects delineated on the apertures of buildings should not convey a similar feeling to those hung on walls or painted in panels,—there is nothing to prevent the successful application of the best and most artistic arrangements, the most correct and pure outline, and that expression of countenance which will have its effect on the spectator. It is, unfortunately, in some quarters, still thought that not only the windows, but also the paintings used for the purposes of decoration, and the sculpture, in Gothic churches, should, as a matter of course, be rude in form and execution. This is a wrong idea. Some of the sculpture of the Middle Ages has much excellence, but generally, particularly in the figures, there are the same imperfections as are to be found in the delineations above referred to: the old workers of the best order, in cutting foliage, were careful students of nature, adapting it with marvellous freedom to geometrical arrangements. In order to make church decoration what it ought to be, we want a Flaxman to design the heads and statues; a religious, poetic, and artistic mind to suggest the designs of windows and other pictorial matters. The services of the most eminent artists should be called to this work: we should not—Chinese-wise—imitate visible defects, but use the means which are dictated by the advanced improvement and intelligence of our age. In conclusion, it may be remarked that the faces painted and drawn on the glass are often faulty, and show the need of the employment of more skilled artists in this department.

AN ARTIST.

#### STAINED GLASS.

A WINDOW is wanted as a memorial of Dr. Sharpe in the new church at Doncaster, for which purpose nearly 1,100*l.* have been subscribed. The committee are not agreed as to the best mode of obtaining what they want—a fine work;—and when we last heard of the matter had arrived at no resolution beyond requesting the architect of the church to name a subject for the memorial window. We fully appreciate their difficulty.

A glass-painter acknowledging our endeavours to make known what is doing on the subject, writes:—"We have no excuse now for the omission of good glass in our works, the manufacture of the material having improved immensely; but, really, it is most difficult to decide the best style of drawing. A. says one thing, B. another, C. something else, and all set themselves up as critics and judges. You will indeed do good service to the art, if through the medium of the *Builder* this point can be fairly and properly discussed and settled."

*Earl Somers on Glass-painting.*—Lord Somers, himself an artist, has written a letter on the painted window recently put up in the east end of Worcester Cathedral, in the course of which he says,—"I have seen your new window in the cathedral, and have examined it with a great deal of pleasure. The brown unfinished panes below detract from the intended effect, and are very injurious to it; nevertheless the work is on the whole a very satisfactory one, and should leave little ground for unfavourable criticism. The general treatment appears to me to be correct, avoiding a too natural representation, by the means of figures in relief, and yet not running into the opposite extreme of being too formal or archaic in style. At the first glance the eye is struck by the predominance of blue, but I cannot say that on further consideration this continues to be felt as a defect. After looking at it for some time in a changing light I felt satisfied with the tone, and think the colours well varied, rich, and harmonious. In the ancient glass the figure of the Saviour after the Resurrection is invariably represented as robed in white; the robe, in this instance crimson, is conventionally incorrect. There is also too much of the prevailing blue in the ground of this picture. If the colours in the quatrefoil above the chief compartment were repeated in this one, they would make the balance of colour more complete. These seem to me to be errors; but I would repeat that I consider you are most fortunate in now possessing in your church a beautiful decoration, in which, after two careful examinations, no more striking errors could be pointed out. It is my impression that this predominance of ultramarine blue is most usually found in the windows of French cathedrals, which are contemporaneous with the Early English Lancet style. Does this accord with your experience?" The cost of the six lights already filled in, together with wire guard, is stated at 724*l.* 16*s.*

#### LIVERPOOL ARCHITECTURAL SOCIETY. DIPLOMA QUESTION.

THE second meeting of the session was held on the 17th inst., Mr. James M. Hay, the president of the society, in the chair. A drawing of the front elevation of the new Free Library, executed by Mr. Heffer, was on view. The chairman said that two designs from student members would be taken into consideration at the next meeting. The principal business was the discussion of several propositions, contained in a circular received from the secretary of the Royal Institute of British Architects, in which it was stated that it has now become an established rule, both with the Government authorities and with the heads of the learned professions, that candidates entering into any branch of the public service should undergo an examination to test their capabilities, and recommending that architects in future should undergo a voluntary examination in mathematics, land surveying, mensuration, geology, ordinary construction and materials, styles of architecture, history of architecture, jurisprudence, the Building Act, sanitary requirements, the theory of the beautiful, languages, &c. That two guineas be paid for the elementary examination, and three guineas for the higher examination. Mr. Boulton, in the course of a lengthy speech, said he was sorry that the Liverpool Architectural Society was rather behindhand in this matter, as it ought to have been the first to set an example; but they had let Newcastle and other places step before them. He had no objection to a voluntary examination, and should be most happy to award all the honours due to those who gained them; but the tug of war would be when the examination, instead of being voluntary, became compulsory. He was of opinion that architects should go through some ordeal before they were allowed to practise; and, ultimately, he hoped that, before an architect could commence in his profession, he would have to receive a diploma of his fitness, the same as the doctor or the lawyer. The speaker dwelt on the annoyance that architects were subjected to at the hands of local boards of health on account of the enactments of building regulations; and in consequence it was important that architects should study among other things the by-laws of the different local boards, for he knew of one house that was in four jurisdictions. Mr. Weightman, in the course of some remarks, referred to the fact that the different Building Acts now in force rendered it extremely awkward for the architect who removed from one place to another. He thought that one Act ought to regulate all places, so that the annoyance of being plagued with a lot of petty regulations might be avoided. Mr. F. Howard objected to architects being fettered with such an examination, and Mr. Iniggins was of a similar opinion. After a long discussion, in which Mr. Andeley, Mr. Callaghan, and Mr. Goodall also took part, it was eventually agreed that the whole of the propositions should be considered and discussed at the next ordinary meeting of the society.

#### THE GAS LIGHTING OF THE BRITISH MUSEUM.

IN looking round with the memory of a number of years, observing persons cannot but notice how many of those with whom they have been acquainted, have died between the ages of forty and fifty years, many at about forty-four or forty-five years of age,—a period when they ought to have been in the prime and strength of manhood and intellect, ground to death in the unnatural mill of modern business. We could readily mention the names of many persons who have passed away at about this age, worn out by the continued over-exertion which is now enforced. It is satisfactory to see that arrangements are being made, so that shopkeepers' assistants will not be obliged to remain behind the counter from seven o'clock in the morning until nine, ten, and even eleven at night. It is, however, a matter of very great moment that, as spare time is given to our young men, we should afford opportunities for them profitably to dispose of it. For this purpose we want places of recreation and amusement, which are accessible, in a central position in the metropolis. Undoubtedly, one of the most convenient places for this purpose is the British Museum, a place which, in the winter evenings, might be made attractive and useful to many thousands. The reports show that in the present arrangements, notwithstanding the increase of the population, the annual number of visitors to the British Museum is declining. This may be partly accounted for by the circumstance that, during the hours at which the Museum is open,

the great masses of the male part of the fixed population of the metropolis is too busily engaged in their various avocations to visit this or any other similar place. To a working man the first cost is, say 6s. 6d. for his day's work; and, if he take his family from a distance, he must be very careful to make half a sovereign pay the expenses. This is a sum which people of much greater affluence would consider extravagant. The bulk of those who are there to be found on ordinary occasions are persons from the provinces, and foreigners. There are a number of women with children, who seemingly belong to the more respectable of the working classes; there are also many belonging to the middle and upper classes of society. The great masses of the working part of this vast community are but very little represented.

The building of the Museum, the various collections, the staff of officials, is an enormous cost; and it has been calculated that the interest of the sum invested in this national educational establishment, and the other expenses, amount to several shillings for each visitor. At holiday-times the British Museum becomes crowded with persons who are evidently engaged in employments at other times (shopkeepers, mechanics, and others). The great numbers who flock here on days of leisure show that the wonders of the Museum are extensively appreciated.

The only means of extending the usefulness of this collection is to take advantage of the evening leisure of the multitude, to whom the instruction of such an establishment is so necessary. This can readily be effected by the introduction of gas-lighting, as has been done with excellent effect at Brompton. That this can be accomplished without danger or damage has clearly been shown, and the matter only requires to be vigorously tackled with.

But without taking into thought this part of the question, it is worth while to inquire in what manner the number of daily visitors may be increased. The Museum is now open to the general public on Mondays, Wednesdays, and Fridays,—three working days of the week being ostensibly set apart for students; but if on these close days a person were to look in, he would find the place a comparative solitude. At the most there would be about a dozen students in the Gallery of Antiquities; and we have noticed quite as many working when the Museum has been open. In the other parts, amongst the Egyptian, Greek, Roman, and other ancient remains, attendants may be seen almost as still as the ancient statues. The footsteps echo curiously along the rooms; and the colossal fossils, the thousands of birds and beasts, and other objects, seem to be for half of the working days of the week comparatively useless.

It could not add to the expense to try what would be the effect of opening the Museum to the public every day; and also the result of those preparatory lectures on a large scale on natural history, which have been so much recommended by Professor Owen and other eminent authorities.

A. B.

#### THE EXHIBITION OF THE PAINTERS' COMPANY.

At the annual dinner held last week in their ancient Hall, repeated allusions were made to the recent efforts of the Painters' Company for the establishment of an annual exhibition of decorative painting. It appears that for many years a feeling has been gaining ground that this branch of every-day art is worthy of a place amongst those which are brought before the public of London in this way; and some months ago (as was fully recorded at the time in our pages), a collection of decorative work and imitations was brought together in the Hall of the Company, and exhibited to the public with great approbation. It is certainly due to such an endeavour that it should receive every encouragement.

Mr. Robert Kerr, as a guest, in responding to a toast, said he had heard with the very greatest satisfaction the allusions which had been made to the establishment by the Company of an exhibition of the branch of art from which they derived their name. Their art, although it might not compete in pretentiousness with the arts of painting, sculpture, and architecture, was a producer of those "things of beauty which are a joy for ever," to which none the less importance should be attached. Considered in the light of that simple beautifying of our domestic buildings which must render home more charming, the decorative arts were even perhaps of more importance to the general public than were those greater arts whose

productions were purchased at large cost, and shortly forgotten or neglected. Referring to the remarks of the worthy Master, as to the origination of such companies as that before him, he urged that although the motives which in the Middle Ages actuated their purpose had more or less passed away, yet the present age induced necessities of another kind, which in no inferior degree rendered the co-operative efforts of a Guild of the greatest service. The exhibition of decorative art which had been commenced in the past year was a thing to be welcomed and encouraged by every one who felt an interest in art at large. He hoped it would be energetically and perseveringly kept up. He considered the time had really come when such an exposition was an absolute necessity. Amongst so many other descriptions of artistic and similar endeavours, periodically brought before the public by illustration of this kind, their art ought no longer to be left unrepresented. As regarded their prospects of success, he would instance the case of the Architectural Exhibition. For generations the fine art of architecture had been annually presented to the public in the Royal Academy, by the setting apart of a small inferior room, in which, as scarcely anybody condescended to enter it, little else than nothing could be seen. The architectural profession had, therefore, established an exhibition of their own. And with what results? The most satisfactory, for it was already flourishing under active support and high patronage. The same would be the results of the laudable endeavour of the Painters' Company, if persevered in, as he hoped it would be. The architects, in their own exhibition to which he had referred, at present afforded what space they could for Decorative art; but, just as it had been desirable for the architects themselves to come forth from Trafalgar-square, so also would the decorators, by their present effort, find themselves equally able to stand alone.

The present Master of the Company is Mr. Henry Taylor, and the Wardens, Mr. David Laing and Mr. Morant.\*

#### WORKS IN FRANCE AND ALGIERS.

THE restoring and underpinning of the two pavilions of the Institute, whereof the foundations had sunk considerably, has been proceeded with most successfully and in a very interesting manner. Having freed the building from the weight of the enormous stone vases which surmounted it, the entablature was supported by a powerful framework of timbers; and, as soon as the staying was solidly effected, the two corner piers were removed immediately. The ground having been excavated to a good depth, a thick layer of concrete was placed, on which the new foundations rest. Every course is grouted with cement, so that it forms a compact mass. The corner piers being terminated, the intermediate ones will be subjected to the same process of renewal.

The deep excavations at present opened for the construction of a sewer in the recently formed portion of the Boulevard de Sebastopol, near the Luxembourg gardens, have led to the discovery of a great number of fragments of vases and other pottery apparently of a very remote date. Sauval informs us that when Jacques de Brosse, under the regency of Marie de Medicis, laid the foundations of the Luxembourg Palais, a bronze figure of Mercury was discovered, 5 or 6 inches in height. During the excavations of 1801, executed on that spot, many figures of divinities were brought to light, among which are a head of Cybele in bronze, instruments for sacrifices, &c. &c., also several objects which seemed to indicate that the present gardens of the Luxembourg were the site of a Roman camp.

When the Emperor and Empress of the French were at Algiers on the 18th September last, they laid the first stone of a magnificent boulevard, stretching along the sea coast, thus gifting the

\* Mr. Laing, writing as to the first exhibition, says, "If by possibility we can sustain the effort, I am sure it will be most beneficial to employers and employed; especially if we could concentrate, as it were, the whole trade, and bring it around one common focus: light must break forth. The savings of the men have been hitherto absorbed by the working machinery, and their Benefit Societies for sickness and burials been but very imperfectly administered. It is my hope that eventually all shall lodge their funds through our Guild, in the Bank of England, where they will be perfectly safe, and carefully distributed, and by this means a kindly feeling be brought about, such as will tend to the prevention of strikes, and a better feeling between master and man. The Hall has hitherto been only used, as our worthy Master stated, for one night in the year, until last year's exhibition. We are anxious to have it opened every night for drawing classes, except when the exhibition is on, or any extraordinary meeting of the profession has pre-occupied it."

city with a long wished-for promenade, likely to become an industrial artery of great importance. It is to be called *Le Boulevard de l'Impératrice*.

We have already in our pages mentioned the important works in course of execution on the left bank of the Seine, for the establishment of a large sewer, which is hereafter to be united with the great "collector" of Asnières, by means of a siphon under the river below the Pont de la Concorde. The conduit parallel to the river is completely finished from the latter place to the Quai Voltaire, and the circulation for vehicles re-established, it having been interrupted for some time past. Here the works will be suspended, to be resumed next season. In the Rue de Bac, the sewer in course of execution, starting from that of the quays, has arrived at the crossing of the Rue de l'Université.

The new square in front of the Conservatoire des Arts et Métiers, between the Rue Saint Martin and the Boulevard de Sebastopol, advances rapidly. Two basins are terminated, also the balustrade in Jura marble, which is to surmount it. Trees and shrubs are being planted, and there is every reason to suppose that this new promenade will be open to the public before the winter season. To the other squares and promenades in vogue in Paris may be added that of the Place Laborde, and several others, of which the plans are completed, so that every arrangement of new Paris will have a novel and delightful promenade.

Some modifications of detail have been deemed necessary to be applied to the Fontaine Saint Michel, of which we gave an engraving, page 609, on account of the severe ordeal of public criticism it has had to undergo. The pedestals on which the two griffins rest have been considerably raised, and the decorative effect on each side the inferior basin improved.

The restoring of the diocesan churches of Paris proceeds actively. One of the most curious monuments in this capital, the church of St. Etienne du Mont, the steeple and cross of which were renewed in 1856, from designs by Pérelle and Israel Sylvestre, is at present undergoing a series of important works of repair throughout. The rebuilding of this church, which at its origin in 1221 was only a chapel dedicated to St. Stephen (as Guillaume le Breton informs us) was executed under Francis I. in 1517.

As a substitute for the foot-bridge and the two swing bridges which were formerly on the canal at the Faubourg du Temple, a fine stone bridge is in construction resembling in section those recently erected at the Bois de Vincennes by the Eastern Railway Company of France. In order to lower the Roman cement from the place where it is worked up, to the masonry where it is to be set, a very ingenious system is economically adopted. As the slope down to the masonry is very rapid, two inclines have been laid of planks, on which the labourers descend and ascend by means of a cord attached to their waists, the heavier drawing up the lighter one round a gin, as in the case of tramways in slate and granite quarries, &c.

A most interesting ceremony took place at Chartres on the 17th inst., the 600th anniversary of the dedication of this admirable specimen of basilican architecture, in commemoration of the 17th October, 1260, when St. Louis, King of France, consecrated it. The restoring and re-opening of the crypts of the subterranean chapel have been completed, and the twelve new altars, closed up from divine service since 1789, were newly consecrated by twelve bishops.

#### IRELAND.

THE new church of St. Michael, Tipperary, is approaching completion, excepting the interior, which still remains unfinished. The building is Gothic, of an elaborate character, and has a tower and spire. The high and side altars are of Caen stone, with numerous sculptured figures, and were executed by Messrs. Hardman.

The church of Beltrulish, county Cavan, is to be enlarged, and various works executed at the churches of Kilglass, county Longford; Achill and Crossboyne, county Mayo; and St. Peter, Athlone, according to drawings by the architects to the Ecclesiastical Commissioners.

The War Department desire tenders for certain works in connection with the Military Cemetery, at Fermoy.

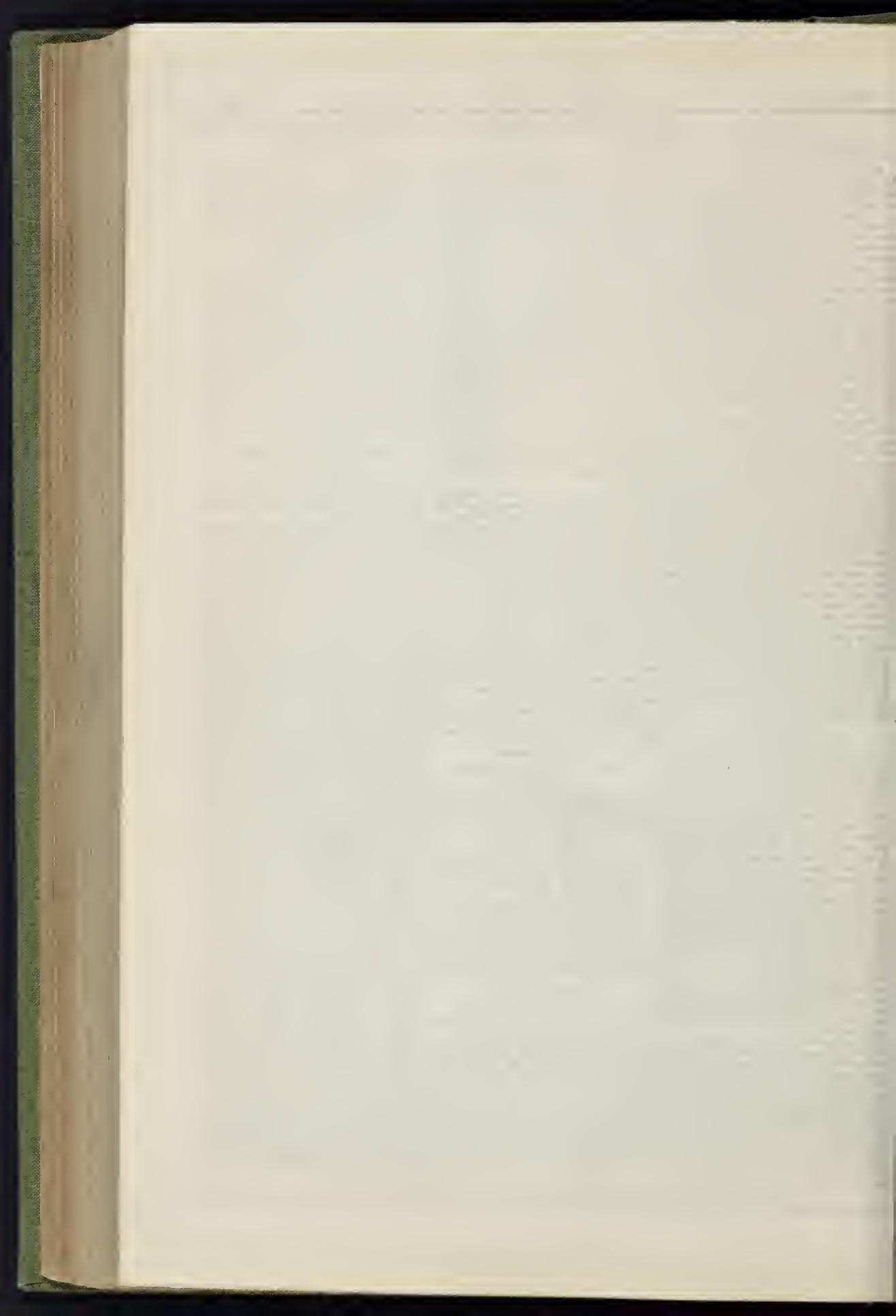
A new Protestant chapel is to be built at Richmond Lunatic Asylum, Dublin, Mr. Wilkinson, architect.

Kinsale bridge has been opened for traffic. The new Church of St. Mary, Guidore, has been con-





ST. STEPHEN'S CHURCH, SOUTH LAMBETH.—MR. JOHN BARNETT, ARCHITECT.



REIGATE.

A CORRESPONDENT who sends some descriptive notes on Reigate\* thus proceeds:—

Before many years every available spot will be taken up; for, though there is building land enough for hundreds of houses, and though "speculating builders" are not encouraged at Reigate, it is astonishing how fast the land is becoming occupied. It is much to be regretted that the workmanship is often questionable; but this is attributable to the spirit of meanness that seems to possess almost all classes of the building public of the present day, when everything is sacrificed to cheapness. The man who will undertake to execute the work for the smallest sum, though he may be as little troubled with capital as Adam, and as dishonest as Dick Turpin, is, in nine cases out of ten, entrusted with the work. It is not long since that a few respectable builders, noted for their integrity, were invited to tender for a Gothic villa, but unfortunately some unprincipled person, void of capital, was allowed to tender also. The consequence was that his tender was not more than half the amount of the lowest of the other builders, and he had scarcely laid the foundation ere he was gazetted.

These remarks are equally applicable to every other locality as well as that which I refer to; and I am strongly of opinion that some steps are necessary, for not only are architects dispensed with, but respectable builders ignored.

If the visitor to Reigate observe much to admire, he will find that it is no exception to the general rule, for it is not free from dark sides, though they are not so deep a dye as are to be found in many places. He will find that the humbler classes are not well looked after, as scores of the many building operatives employed in the place are compelled to walk miles to their homes, because cottages cannot be obtained for even enormous rents; and many of the cottages that are there are in a dilapidated condition. Moreover, they can fatten their pigs in their bedrooms if they choose, as they have no local board of health to fear. To the inhabitants the noted healthiness of the place, therefore, is not due.

I am gratified to learn that there is what is called a Mechanics' Institution, tolerably well frequented by those it is named after. It is much to be hoped that the committee will adopt such measures as will retain them; for it is a well-known fact that considerable reform is needed in the management of these institutions to make them attractive to that body of men.

EXCURSION RAILWAY TRIPS.

DAMP and unpleasant as the weather has been throughout the summer, great multitudes have used the cheap excursion trains; country people to visit the metropolis, and Londoners to pass at railway speed to pleasant and healthy places. For something between 25s. and 30s., the pent-up clerk, shopkeeper, or mechanic may travel to Glasgow, Edinburgh, and some other famous places far north: for that sum he may travel upwards of 800 miles, and have the opportunity of a week's pleasant ramble. For a less sum he may, weather permitting, roam for that time pleasantly along the Borders: he may view the stately abode of the Percys at Alnwick—the ruined picturesque castles along the coast. The antiquary may follow the Roman wall over heaths and moors to "merrie Carlisle": the disciple of Isaac Walton may enjoy fine scenery and throw his line in the Tweed or Coquet. On the Tyne, those inclined in that way may note marvellous scenes of industry—wonderful applications of mechanical powers. Twenty-five years ago, a journey outside the stage-coach from Newcastle-upon-Tyne to London, including fees to guards, coachmen, provisions on the road, &c., cost not much less than 5*l*.

For half-a-crown eight hours of enjoyment may be had at the sea-side at Brighton. For 4s. the seeker of health or pleasure may have the opportunity—conveyed in express train—of passing through Kent, that delightful garden of England, for this he may see the Sinkspear Cliff, the fane castle, and hold cliffs, of Dover; or he may stop and find amusement and instruction amongst the venerable walls at Canterbury, full of historical associations and fine pictures; or those inclined may stop at Ramsgate, or Margate, or other suitable spots: if he choose Tunbridge Wells, an agreeable walk or ride will bring him among the woods and groves of Penhurst, filled

with memories of the famous Sidneys, Rare Ben Jonson, Waller the poet, and other worthies of times gone by.

For 3s. 6d. one may have the opportunity of glancing at the wonders and beauties of Oxford; and, for a singularly small sum, he may have the opportunity of sailing round the Isle of Wight, and spending a few days amid the varied scenery of that delightful island. In other directions, there are facilities for transit which a few years ago would have scarcely been thought of; and, as we have hinted, those in the provinces are not without the opportunity of viewing the "lions" of London. It is a singular sight to see the monster trains arrive at the terminus,—to note the varied appearances of the travellers,—to hear, as the lundrels pass along, the variety of dialect: large, and steady-looking, are the men who come from the district of Birmingham. Still more sturdy and pushing are the men and women from Yorkshire; and loud the voice, and deep the guttural of those from broad Northumberland; and more mellifluous, but still characteristic, are the speeches of the "canny lads" from beyond the Tweed. From other parts the crowds pour in, who see the sights, and probably in many instances get useful hints for the improvement of their crafts, or at any rate acquire such knowledge as occasions many an agreeable thought, and affords the opportunity of interesting gossip at the winter fire-side. Vast are the advantages in several ways which result from these facilities of transit, and great the contrast with the means of travelling which preceded them.

Thirty or forty years ago, towns at twenty or thirty miles' distance were almost as much separated as London and Edinburgh now are. In those times, in consequence of the great expense of coach travelling, and before the use of steam-packets for the conveyance of passengers, the colliers and other trading vessels along the coast carried many persons to and from London. These voyages, notwithstanding the crowded and unwholesome condition of the cabins, were agreeable in fine weather, provided that time was not of consequence. It was not unusual for the voyage from the metropolis to the Tyne to take a fortnight or three weeks, in consequence of calm weather or contrary winds. Turner, the landscape painter, liked this manner of travelling; and it is probable that during these voyages he acquired some of that knowledge which enabled him to delineate the various peculiarities of the sea and sky.

It is possible now to travel across the broad Atlantic to the United States in a shorter time than it took to go between the Thames and the Tyne.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE opening meeting of the Royal Institute of British Architects will take place on Monday, November 5, when Mr. Sydney Smirke, R.A., will read a paper, entitled, "Recollections of Sicily."

THE ARCHITECTURAL ASSOCIATION.

THE *conversazione* and opening meeting will be held this Friday, 26th, in the galleries, Conduit-street.\*

A syllabus of papers and subjects for sketches for the ensuing session has been printed. The evenings of November 9th and 23rd will be devoted to "Consideration of the Subject of Architectural Examinations, and Report thereon." On December 7th a paper will be read by Mr. Blountfield, M.A., "On the Arrangement of Churches."

THE ARCHITECTURAL MUSEUM.

THE approaching lecture season at the Architectural Museum will include papers by Mr. J. H. Parker, on "The Architecture of the Eleventh Century;" Mr. Deputy Lott, on "The Architectural Antiquities of Guildhall;" Mr. S. C. Hall, on "The Art of Engraving and Printing Plates;" Mr. William White, on "Polychrome;" and Mr. John Bell, on "The Relationship of the Fine Arts."

Art-workmen should bear in mind that specimens intended for competition for the prizes for modelling, metal-work, wood-carving, coloured decoration, and cartoons for painted glass, should be sent to the Museum by the 1st of December next.

\* We are asked to state that—"Should any member of the Association not have received cards of invitation, they can be obtained by applying to the honorary secretary, Mr. Arthur Smith, at the meeting."

THE GREAT NORTHERN OUTFALL SEWER.

METROPOLITAN BOARD OF WORKS.

At the ordinary meeting of the Board of Works held last week, tenders were received for the execution of the great northern outfall sewer. The engineer's estimate was 635,000*l*., increased from his original estimate of 461,000*l*., in consequence of the great advance which has since taken place in the price of materials.

The tenders, when opened, were found to be as follows:—

Mr. G. Todd, Jan., Ranelagh Works, Chesham-walk, Chelsea .....	469,500
Mr. William Webster, Charlton-Wharf, Woolwich .....	690,000
Messrs. George Boulton & Co., Wakefield ..	666,666
Mr. Thomas Brassey, 4, Great George-street ..	661,215
Mr. Joseph Diggle, 1, Castle Terrace, Dover ..	650,600
Mr. Edward Thrust, John-street, Chelsea ..	650,000
Messrs. William Hill & Co., 203, Whitechapel-road .....	649,665
Mr. W. Dethick, 77, Great Cambridge-street, Hackney-road .....	645,000
Mr. W. Moxon, 25, Parliament-street .....	615,000
Mr. George Furness, 38, Great George-street .....	625,000

The tender of Mr. Furness was accepted, subject to the examination by the Main Drainage committee of the sufficiency of the surties, and the ability of Mr. Furness to carry out the work.

CHURCH SCHOOL AT REACH, CAMBRIDGESHIRE.

On Thursday, the 18th instant, a School Church was opened at Reach, a hamlet situated in the two parishes of Swaffham Prior and Burwell, Cambridgeshire.

This little place was of considerable importance before the Conquest, being situated at one end of that wonderful earthwork called the Devil's Dyke, which is continued hence several miles across the open of Newmarket-heath; but, though within sight almost of the University of Cambridge, and partly in the parish whence its chief revenues are derived, and though from it the grand lantern of Ely is distinctly visible, such has been the neglect with which this place has been treated, that no means of grace or education have been for centuries provided as far as the Established Church is concerned. A vast piece of ground, on which stands a ruined gable with some hints of tracery in its window jambs, shows that this was not always the case, and now, on this very waste spot,—given as a site by the vicar of Burwell (virtually by the University of Cambridge)—a fitting little edifice testifies to the reviving zeal of the Church, and the energy of the vicar of Swaffham Prior. This gable has been preserved as a monument, and forms a picturesque boundary at the eastern end. As the building has to serve the double purpose of a school on week days, and a church on Sundays, it required more care in the planning, and greater attention to the details than is usually given to a country school-house.

A parallel-gram, 50 feet by 20 feet, terminated by a central arch of wood tracery, and two small ones of clunch, with red brick vousoirs on isolated columns, beyond which is a small apse. In front of one of these small arches, is the desk; in the other the pulpit, which is also of clunch. Small transepts, 16 feet wide, contain respectively an infants' gallery, and the fixed desks, while a small vestry, and space for the harmonium, complete the arrangements.

At the west end are double doors, with an enclosed lobby for caps and bonnets. The fire-places are at the angles of the transepts, and, being four in number, are consequently small and unobtrusive. The windows are both single and in pairs, with pointed heads, except the west window, which is three-light under one arch, with a pierced cinquefoil over filled with stained glass. At the east end also, is a stained glass window, representing the Good Shepherd, by Messrs. Lavers & Barrad; but, except this, all the windows (by Rees & Baker) are in ornamental patterns of green and violet tinted glass. The walls are of clunch, a material peculiarly good in this neighbourhood, with red and white bricks in the vousoirs of arches, cornice weatherings of buttresses, &c. Casterton stone has been used for the columns, the east window, and part of bell-turret, which surmounts the west gable. This is prepared for a clock, so that in the end the whole building will be much more complete than the generality of village schools. Ventilation is provided for at the wall-plates, by several gratings inserted in the walls beneath the eaves,—opened or closed at pleasure from the inside,—while half the windows open as casements.

The total cost, including pulpit, bell, stoves, &c.,

\* Notices of Reigate will be found in previous volumes of the *Builder*, especially Vols. XIV. and XVI.

but exclusive of desks and benches, is under 600*l*. The architect is Mr. Charles Forster Hayward; and the builders are Messrs. Bell, of Cambridge.

It may be interesting to add that Swaffham Prior is commonly called Swaffham-two-churches, on account of there being two churches in the same churchyard. One of these is now a picturesque ruin, with the remains of a transitional Norman tower, commencing on a square base and becoming successively octagonal and polygonal, and formerly crowned with a low spire. The tower of the other church, which is the only portion of the old building remaining, is also a curious example of a Perpendicular octagonal belfry on a square base. All the churches in this neighbourhood, however, are worthy of a visit, and that at Burwell is particularly fine.

#### CHURCH-BUILDING NEWS.

**Stamford.**—The new reredos in St. Mary's Church, Stamford, says the *Lincolnshire Chronicle*, extends the whole width of the chancel, and consists of a series of Early English pointed trefoil-headed arches, springing from shafts of polished serpentine marble, on moulded abaster bases, standing upon a cill of Clapham stone, and representing an arcade of eight compartments. In the four centre compartments there are the Lord's Prayer, Ten Commandments, and Belief, illuminated in gold and colours; the whole is surmounted by a horizontal moulded cornice. The spandrels of the heads are filled with carvings, by Mr. R. Tinkler, jun., of natural foliage representing the vine, ivy, wheat, oak, maple, nut, and gernanium. The two ends contain carvings of butterflies. The capitals of the shafts are bell-shaped, having stems springing from the neck moulding, and finished with knobs of leaves and flowers. In the centre spandril there is the sacred monogram, "I. H. C." with a representation of the vine entwining each letter. The cornice, heads, capitals, tablets, and bases are worked out of alabaster procured from the quarries of Tuthury, Leicestershire. The space from the cill of the reredos to the floor is filled with Minton's chocolate-coloured encaustic tiles. The whole is the work of Mr. Tinkler. Further improvements in this church are required.

**Bassingham.**—The old church at Bassingham, which for years past has been falling into decay, has been reopened, after undergoing a restoration. The architect employed was Mr. J. H. Hakewill, architect to the Church-Building Society; and Mr. Huddleston, of Lincoln, builder, contracted for carrying out the work. The north arcade, which was partly Early English and partly Norman, has been taken down and reconstructed, the old Norman arch, which was in a good state of preservation, being again used. Two new arches have been placed at the side of the old one. The clerestory windows have been restored, and placed in the same position as they were before. The parapets on the nave and aisle have been taken down and restored, twelve new pinnacles being added to the nave, and placed on the old bases. A new chancel arch, with coping and cross on the apex, has been erected, and a new coping and cross have also been added to the chancel. The whole of the windows in the church have been taken out and restored, and glazed with cathedral glass. A new tower arch has been added. The oak roof of the nave, north and south aisles, and porch, have been taken off and restored. New oak doors have been added to the south and north entrances, and to the tower. The inside of the church has been fitted up with open benches. The whole of the fittings of the nave and aisles are of fir. The nave and aisles have been paved with 6-inch black and red Staffordshire bricks, and the chancel with Minton's 4-inch square brick. The building will be heated by one of Simpson & Co.'s apparatus. The total cost of the restoration is upwards of 1,200*l*.

**Farnsfield.**—The parish church of New St. Michael's, Farnsfield, has been consecrated by the Bishop of Lincoln. The edifice stands principally on the site of the old church, which was formerly of very limited dimensions, and has been entirely rebuilt, with the exception of the lower portion of the tower, and on a scale commensurate with the increased population of the parish. The new edifice is in the style of the fourteenth century, and consists of a nave, 60 feet by 21 feet; two aisles, with apsidal termination, 21 feet by 19 feet; and a porch and vestry. The tower, which now stands at the west end of the south aisle, is connected with the same by the opening of the arch. The upper, or belfry stage, has been raised; and in it are four traceried windows surmounted by gables,

from the intersection of which rises a plain slated spire to the height of 100 feet from the ground. The windows throughout the church are filled with tracery; and those in the clerestory are elevated by means of dormer gables, so as to appear externally over the ridge of the aisle roofs. These, with all the gables, are surmounted by crosses, of which, in stone and metal, there are upwards of twenty in number. The body of the church is filled with open benches; and in the chancel there is an organ recess, and seats and desks for the choir. The organ was provided by Messrs. Bevington, of London. The pulpit is of stone, and the prayer-desk and lectern of pierced and twisted ironwork. The architects of the building were Messrs. Hine & Evans, of Nottingham; and the builder, Mr. J. E. Hall, of Nottingham. Mr. Toft was clerk of the works.

**Ipswich.**—St. Clement's Church, Ipswich, has been reopened, after being enlarged and restored. The works were commenced in April, and include a new chancel and vestry; the site of the old vestry being now part of the church. These alterations, with a rearrangement of some of the old pews, give about 200 sittings. The roofs of the nave and aisles, which were much out of repair, some of the principal timbers being quite decayed, have been reconstructed and covered with slates instead of the old lead. The walls of the clerestory have been refaced with flintwork, and the old patterns of stone tracery over the surface restored; the stonework and glazing of the windows (twelve on each side) being new. The seats in the chancel are formed in open benches of oak, with tracery and poppy-heads; the altar-rail is oak, carved. The ceiling is boarded, and the roof constructed with solid arched principals of timber, resting on moulded corbels, the timber and boarding being stained and varnished. The east window, of five lights, is filled with stained glass, by Heaton & Butler; and below it is a new stone reredos. The work has been executed by Mr. H. B. Smith, builder, from the designs and under the superintendence of Mr. F. Barnes, architect, at the cost of about 1,400*l*.

#### ROMAN CATHOLIC CHURCH-BUILDING.

**Crawley.**—The chief stone of a new church has been laid here, in a meadow adjoining the village. The ground is given, and the building, costing upwards of 2,000*l*, is to be provided, by Mr. F. Blunt.

**Liverpool.**—The new church of Holy Cross, situated at the junction of Standish-street with Great Crosshall-street, has been opened for divine service. The edifice forms part of a pile of buildings erected from designs by Mr. Pugin, architect. They consist of a church capable of accommodating about 800 persons, and a presbytery, &c., affording accommodation for a numerous community of the priesthood. At present the only noticeable portion of the exterior of the church is the western front, which is in the Gothic style. The general design consists of a rose window set in revolve 5 feet deep, the sill terminating in a cornice, beneath which are four windows with lancet-headed lights, these being partly intersected by the double gables which cover the two principal entrances. These details are bounded by two buttresses, which rise to the height of 60 feet, and divide the front into three compartments, indicating the positions of the nave and aisles. The apex of the main western gable is surmounted by an open bell-turret of stone, about 45 feet in height. The ecclesiastical style of the church merges into the domestic architecture of the presbytery, though both are brought out in the same line. The interior of the church consists at present only of nave, north and south aisles, and small chancel, it is intended, we believe, to add either a chancel with the aisles or a chancel and transept, making the building cruciform. The confessionals are recessed into the thickness of the south aisle wall instead of protruding into the body of the church. The nave is 102 feet long, 70 feet high, about 30 feet wide, and is separated from the aisles by six Gothic arches on either side, resting upon columns of polished Drogheda marble, with foliated capitals, sculptured in Caen stone, each capital being of a different design. The church is lighted principally by the clerestory windows, of which there are six on each side; they are Gothic, of four lights, with cusped tracery. Aical corona of gaslights, supplied by Messrs. Hardman & Co., of Birmingham, are suspended from the apex of each of the nave arches. The church is fitted throughout with benches formed of ornamented standards of cast-iron, with polished pitch-pine seats and kneeling boards. The altars are but temporary

erections. The reredos is surmounted by a canopy and tabernacle work in Caen stone, polished red marble, and Derbyshire alabaster. This work was done by E. E. Gelfowski, a Pole, resident in Liverpool, by whom and under whose immediate superintendence the whole of the stone carving in the church has been executed. The presbytery entered from the church both at the eastern and western ends, and comprises a refectory, &c., or the basement, a library, parlour, and reception room on the first floor, and numerous bedrooms together with a cloister on each floor. The contract for the buildings, constructed externally of York stone hockers, with dressings of Runcorn stone, was taken for something over 5,000*l*, by Mr. Hugh Yates, of this town. The fittings, for which Mr. Baines was the contractor, are generally of polished pitch pine.

**Penrith.**—The Roman Catholic Church here dedicated to St. Catherine, has recently been enlarged. The dimensions of the church, as erected in 1850, were 18 feet by 40 feet. In 1860 the dimensions were more than doubled—the nave gaining an addition of 30 feet, with the apse, and the north and south transepts being 15 feet by 20 feet. The stylo of this latter addition is the Early English, besides the main altar enclosed by a screen within the apse. The south transept forms a "chapel of the Blessed Virgin;" and the north, a "chapel of St. Joseph." Above the main altar there is a triangular window fitted with Cherubim. The two windows have two lights each in the north and south side of the apse, containing monograms of the four Evangelists, and are filled up at their heads with emblems of the *Agnus Dei* and the Pelican. The two light windows above the "altar of the Blessed Virgin" in the south transept contain, one a figure of our Saviour, and the other that of Mary Magdalene. Between these lights is a figure of the Virgin, executed and painted by artists in Munich. The stained glass above the "altar of St. Joseph" is plain, bearing monograms of Joseph and our Lord. Between these lights is a figure of Joseph. The three light windows in the south transept contain seven passages of the history of our Lord. The stained glass of this window has been executed by Mr. Scott, of Carlisle, and the glass of the other windows by Mr. Barnett, of Edinburgh. Above the screen is a large crucifix, and figures of the Virgin and St. John. The forty panels of the ceiling are filled with emblematical figures and monograms and inscriptions of our Lord, the Virgin Mary, the Apostles, Mary Magdalene, and of St. Catherine, the patroness. These have been designed and executed by Mr. John Sead, the architect.

**Guernsey.**—The tower of St. Joseph's Church, Guernsey, has been provided with a bell, the gift of a generous person, who has presented a large sum to clear off a debt on the church. It is in contemplation to erect a spire.

#### PROVINCIAL NEWS.

**Moulsham.**—The first stone has been laid of new schools about to be erected in connection with St. John's Church, Moulsham, at a cost of 1,500*l*, from plans furnished by Mr. Chancellor. The building will stand immediately contiguous to Moulsham church, with an elevation towards Moulsham-street. It will include a boys' school, 39 feet 6 inches long by 18 feet wide; a girls' school, 33 feet 6 inches long by 18 feet wide; and an infant school 34 feet long by 17 feet wide, each room being 12 feet high to the plate. The entrance to the boys' school is by a porch, with hat-room attached on the south side; that to the girls' school, which has also porch and homest-room, being on the north side. The interiors of the school-rooms are to be faced throughout with white brick with bands and patterns in red brick. The roofs are open timbered and boarded, and in the centre of the boys' school rises a bell-turret, which also serves the purpose of ventilation. The boys' school is the principal elevation towards the street—two three-light pointed windows, with double gable over, and the bell-turret rising between, forming the chief feature. The exterior is to be faced with yellow bricks, with bands and ornamental patterns in red and black bricks, and the roofs will be slated with blue and red Bangor slates in alternate bands.

**Bridgwater.**—We understand, says the *Taunton Courier*, that an enterprising inhabitant of Bridgwater has made an offer to the town-clerk, with a view to its being laid before the corporation, of his readiness to build a town-hall, in accordance with plans which have been submitted to the council, on the site of the old assize halls. The cost of the proposed building would be about 1,600*l*, and the condition attached to the offer is,

that a lease of the land be granted by the council for 75 years, at a nominal rent;—free use of the hall to be given to the corporation for borough purposes at all times.

**Newport.**—The structures designed for the new offices of Lord Tredegar and the Messrs. Bailey's bank, on the site whereon the monument of the late Sir Charles Morgan and the bank formerly stood, are approaching completion exteriorly, according to the *Hereford Times*, the building being completed and the roof laid on. The edifice is from the designs of Messrs. Habershon, of London, who are the architects to Lord Tredegar. The contractor is Mr. John Griffiths, and the clerk of works Mr. Dixon.

**Birkenhead.**—The gigantic dock at Birkenhead is approaching completion, and it is expected that the water will be let into it in the course of a fortnight's time. The total water space of the Great Float is 110 acres, and the lineal space round it is upwards of four miles. During its formation the contractors, Messrs. Thompson & Co. and Messrs. M' Cormick & Co., removed 2,000,000 cubic yards of timber. The depth of water will be about 9 feet below the old dock sill at Liverpool—amply sufficient for the requirements of the largest vessels.

**Leith.**—The foundation stone of a corn-market and general exchange for the town and port of Leith has been laid by the Duke of Athole, Grand Master Mason of Scotland, with high Masonic honours. Messrs. Poddie & Kinnear are the architects. The edifice will be erected upon a site at the angle of Constitution street and Baltic street, and will have a plain Roman frontage. The chief feature in the design is, of course, the corn-hall or exchange, which is a spacious apartment, lighted from the roof. The contracts amount to about 4,000.

**Jersey.**—The foundation-stone of the new hospital at St. Helier's, according to the *Jersey Times*, has been laid; and, after the ceremony, the contractors, Messrs. Le Cras & Le Gros, gave a banquet to their workmen, ninety in number, in the large room of their carpentry, in Sand-street; Mr. Thomas Gallichan presiding.

**THE STRIKE IN BRISTOL AND BATLI.**

**Bristol.**—We regret to learn that the hopes of arriving at a settlement of the dispute between the masters and operative masons of this city have been dispelled.

At a meeting of the Master Builders' Association, it was resolved,—

"That if the operative masons now on strike are desirous of having the present dispute referred to arbitration, a communication to that effect, addressed to the secretary, will be accepted by this Association; and that the members elected to arbitrate should consist of six master masons, and six operative masons, with a chairman mutually agreed on."

To this the secretary of the operatives replied,— "I am instructed to state that a deputation of six operative masons are elected for that purpose, to attend any time or place agreeable to your Association. I am further instructed to state, in reference to a 'chairman mutually agreed on,' that there is no necessity to call in a separate party for any such purpose, well knowing that the dispute entirely belongs to master and operative masons. The masons are, therefore, willing that a chairman be appointed from the twelve parties who meet to discuss the question at issue."

On which, October 17th, the Master Builders' Association resolved, as follows:—

"That this Association having made a second offer of arbitration to operative masons now on strike, and on purpose to meet the objections last urged by them; and having exhausted all means to bring about a fair and equitable solution of the present differences, regret that no other course is open to them but to adjourn the present meeting until this day month."

It was also unanimously resolved,—

"That the thanks of this meeting be presented to all those employers and architects who have kindly allowed their work to remain suspended; and trust they will still continue their support to the master builders, in resisting the unjust demands of the operative masons."

Since then the operatives have issued an address, wherein, justifying their refusal to the proposed appointment of a chairman, they say:—

"They know the relative position with themselves and their employers, and freely admit that the employer is open to make his own terms with the workmen, and to obtain their labour as cheap as he can, while the men are perfectly free to obtain a fair and honest remuneration for their services. *No third party has any right to step in and say that the employers should do this, or that the employed should do that.* Any such interference would be both unjust and prove fatal to the interests of all."

And they append the following resolution, terminating with an unwise threat:—

"That the resolutions of the Master Builders' Association are calculated to mislead the public mind, and also to induce employers not belonging to the Association; we therefore agree to resume labour at 4s. 6d. per day till Nov. 13, 1860, and from that date to Feb. 6, 1861, at 4s. per day, and at the latter date advance to 4s. 6d. per day,

with two hours less labour per week; and will treat upon these terms with individual employers, if the Master Builders' Association as a body do not accept such terms, upon a written agreement. These terms to apply to those honourable employers who have already consented to our previous demands. If these terms are not accepted on or before Saturday, the 27th inst., a further suspension of labour will continue till 4s. 6d. per day be acceded to— even throughout the winter season."

At Bath an arrangement has been made, we learn (a deputation from the employers having met a deputation from the workmen), satisfactory to both parties. The employers agree to make an immediate advance of 1s. per week on the present rate of wages; to give another 1s. from the 1st of March next; and a third 1s. from September next. The men are to leave work on Saturdays at five o'clock from the 1st of March, and at four o'clock from September next. For work executed at three miles from Bath, they will be paid 4d. per day above their ordinary wages, and 6d. per day for work done at a distance of six miles. When at work in the country at a less distance than three miles, they are to proceed thither in their employers' time, and to return in their own time. We understand that at the interview of the deputation the employers expressed their readiness to render the men every assistance in establishing reading-rooms and libraries.

**PHOTOGRAPHIC PROGRESS.**

M. WOTHLÉY, of Aix-la-Chapelle, a member of the French Academy of Sciences, has sent them in specimens of a new process for enlarging photographs, taken on collodion, either by solar or electric light. M. Wohléy states that he arrives at these results by a series of manipulations, constituting almost a new art. By means of a heliostat he directs a broad pencil of parallel rays upon the negative impression. The light, in passing through, forms a wide cone of diverging rays, which casts the enlarged image on a sheet of prepared paper. The impression thus obtained may be of almost any dimensions: M. Wohléy has produced some eight feet by five. The exposure to the light lasts about twenty-five minutes. For washing and fixing the impression he employs various dexterous manipulations, rendered necessary by the large surface operated on.

Some time since it was suggested, in the *Builder*, that by the successive enlargements of daguerrotypes or photographs of the moon, and the use of good microscopes to the enlarged copies, our knowledge of the intimate nature of the lunar surface might be enlarged. Now seems to be the time for such an investigation; unless, indeed, something still remains to be done in the attainment of what we may call an infinitesimally true ground for the photographic or daguerrotypy representation. Collodion yields by no means a delicate ground when examined with the microscope. Portraits thus look as if they were rough masks of unvarnished paper-masb. The metallic surface of the daguerrotype forms a truer ground-surface; but that depends on the imperfect process of polishing. Could such a surface as that of liquid metal or glass itself be made available it might do. Would not sheets of prepared gelatine be a hopeful subject for experiment in this direction?

Apropos of photographic progress, the Naples correspondent of the *Daily Telegraph* saw an Englishman quietly engaged, on the 10th of September, in photographing a part of the scene of action between the Neapolitans and Garibaldians, the artist being himself at the moment under a heavy fire: on inquiry it was found that Major Stuart Wortley was the amateur photographer.

**CONSTRUCTION OF FLAT ROOFS.**

In reference to some remarks which recently appeared in the *Builder*, relative to flat roofs, I beg to send a description of one, some of which have been fixed under my superintendence, and for which I can speak as to durability, soundness, and being perfectly stanch. Many of the roofs of houses in Spain, Gibraltar, Malta, and other hot climates, are so constructed, affording a promenade, fresh air, and view of the surrounding scenery to the occupants, in the cool of the evenings and at sunset, which in these parts is very beautiful. In some places where ground is scarce and dear, the roofs are fitted up with drying-posts, and form a good place for a laundry.

It often occurs that for porches and other places a flat roof becomes more a matter of necessity than choice, and for such I would recommend the following:—

Joists laid as for a floor, 12 inches from centre to centre: they may be fixed with the required fall (the same as for lead), or with wedge-shaped

pieces nailed on. On the joists a course of tiles, 12 inches long, laid and jointed with mortar (bricks 12 inches long and 6 inches wide, 1 1/2 inch thick, were used in the cases I refer to); over the tiles a course of Dutchess or other slates, bedded and jointed in pozzolana mortar; and, lastly, one or two courses of tiles, Marseilles or others, closely jointed and bedded in pozzolana. One course of tiles will do; but, in cases where the roof is much used for walking, two courses should be laid, and let into the parapet 2 inches. Round the walls there may be a skirting of cement or glazed tiles. The cost is about 8s. per foot superficial, exclusive of joists, for this roof.

The work should, of course, be performed at a season of the year when it would not be affected by frost. I have not seen this description of roof used at home; but, from what I have seen abroad, I think it could be adopted in England, and would be found cheaper than lead, and seldom require repair. It may be used in buildings with or without a parapet: in the latter case it should pass over the walls, and project 3 inches.

Gibraltar.

G. D.

**PAINTING STONE.**

STR.—You will, no doubt, be surprised to learn that men are now busy painting these fine cloagraned, free-stone columns in front of the Glasgow Exchange! So much for taste, and science, and the skill of our architects, and the benefit derived from holding meetings and talking of what was said in olden times and what is done now; and at one of which meetings you have the address delivered by our worthy learned sheriff in your last journal. But to what effect has either that meeting or the large meeting of the Social Science Association been to develop or cultivate a taste for stone architecture, of which we were justly proud, and would be still, if it were not made to look like stucco, as is the case now? You kindly took notice of a former note from me regarding those fine single stone pillars (painted) in the interior of the Exchange. As the rage is decidedly for painting stone buildings, there is a dread of our cathedral meeting the same fate some day; and this induces me again to solicit your influence in staying the practice of effacing these fine buildings. What is to be done? One may suggest, but who can prevent? STONE, NOT BRICK.

**SPECULATIVE BUILDING IN THE SUBURBS.**

We willingly insert the following:—

Sir,—Let me entreat you to visit and caution the public against the vile speculative houses being run up for sale in parts of Islington. To form the roads all sorts of refuse have been shot, from which every bit or morsel of brick is picked out and used for party walls and foundations. Did I say foundations? Well, let me explain. Between two scaffold-boards they place some brick rubbish, and a little lime and gravel to bind it, on which they build the house. Mind you, no trench is dug and filled up with concrete, but in this way the foundation is higher than the surrounding soil. Although sand is on the estate, the mortar is mixed up of road drift: discharging arches are the exception, not the rule; in fact, the whole of the system pursued is of the vilest character (except in one respect, which is,—I believe each house has its own separate drainage). Again, why are the chimney-bars so often absent? Why dufling building still goes on without let or hindrance astonishes many besides myself. If by exposure we can only get one brick better bonded and laid we may do some good. The price asked and rent obtained for these structures command, in many cases, good sound materials and skilled labour. But why trouble you again, who year after year have so bravely written upon the subject? for proof, see Vol. XVII., No. 834; but pray visit Kingsland, and afterwards Holloway.

I have often thought if a printed form of warranty or questions could be published for the use of house-buyers, to be signed by the builder or seller, we might compel district surveyors to be vigilant, and we might stop the doings of

"THE DUFLING BUILDER."

Our correspondent is wrong in supposing there is necessarily any want of vigilance on the part of the district surveyor. In the very cases to which he alludes, we know personally that the district surveyor has proceeded by all available means to prevent the shortcomings alluded to, but has small power to compel. Take the question of concrete, for example. The Act says "the foundation shall rest upon solid ground, or upon concrete, or upon other solid substructure." The

answer to any summons for irregularity in the case alluded to would be "the house does rest on concrete," and no police magistrate would convict. Unfortunately, moreover, in other cases where the Act seems to give power, some of the magistrates think it right to exercise their ingenuity to discover grounds for not enforcing it. Witness some recent preposterous decisions in respect of warehouses containing more than 216,000 cubic feet, undivided by a party wall. As to chimneys, these are constantly taken out after the surveyor has seen them put in, by which means more harm is done to the work than if they had not been used.

#### DAMP ON WALLS: A QUERY.

SIR,—On my return home one evening, at 11 o'clock, I found the walls of my drawing-room saturated with damp, the wall paper blistered, and drops of discoloured water trickling down and spoiling the decoration. The singular part of the affair was this, that the dampness appeared only on that portion of the walls (all round the room) that was on a level with the lights in the gas chandelier. These basking lights are six in number, arranged in a circle in the centre of a room 12 feet high, 22 feet long, and 14 feet broad. The damp on the walls was about a foot in breadth: above and below this band the wall was quite dry. The looking-glasses also had a hand of wet of the same breadth, and on the same level. We have lighted fires, and continued them since, but of no avail, as the damp remains constantly in the same place. This effect cannot possibly be produced by any action on the external surface of the walls.

If any of your practical readers can explain the cause, and suggest a remedy, they will greatly oblige.

The house has been built and tenanted for ten years, but was newly papered twelve months since, the wall having been previously painted and fatted.

A SUBSCRIBER FOR SEVEN YEARS.

\* \* Continue the fires.

#### "TOUITING SURVEYORS."

SIR,—Your journal, some few weeks back, held up to obloquy the nefarious practices of this class of men, who in truth have no right to the name of surveyor. I hope, for the sake of the legitimate portion of the profession, you will always find a space to show us in quack. It becomes a well-known truth to the architect (as well as to the respectable surveyor) that these worthies more frequently than do the efforts of an architect who may unfortunately have allowed them to take off quantities from his drawings; for, as they don't understand the business sufficiently to bear investigation, they generally add "so much" to make up for any error. The poor architect has nothing but odium thrown upon his fine talent, and labour; and the job, more frequently than not, is abandoned, and the architect left to seek for redress by an expensive action at law.

The local Kensington and Chelsea paper of last week has the following bearing on this subject:—

"PAROCHIAL BUILDINGS, EBBWY WHARF.  
EXTRAORDINARY STATEMENT.

Mr. Rickman's letter (the Board's surveyor) states that he considered for this building that 4,600 ft. was an ample sum, Mr. Woodruff's contract (as made out by —, —, & —), was 5,497 ft."

Mr. Rickman stated, in addition to the revelation in his letter, that there were 5,400 feet of flooring too much; indeed, there was more than enough to cover over the wharf ground, as well as the inside, but this was a mere *prima facie* glance at the exorbitant amount of the tenders, which convinced him they were beyond all reason.

Mr. Westerton stated that the estimates from the quantities were swarming with the most gross errors. There was, in the brickwork alone to the chimney-stacks, 12 rods of brickwork too much, and other matters in like proportion. So you will please to make this known to the profession in general.

OBSERVER.

#### THE "BUILDER'S" LAW NOTES.

**Infringement of Patent.**—An inventor, in his specification respecting a patent for the application of centrifugal force to certain portions of a machine for "roving" cotton, put in a general claim for the invention of such application of centrifugal force. He afterwards entered a disclaimer of all applications of the principle of centrifugal force except by certain means described in the specification. It appeared that another person had used a similar machine, in which centrifugal force was used in another manner. It was held by the House of Lords that the disclaimer limited the general claim and left the patent good to the extent reserved, but only to that extent. Lord Wensleydale laid it down that the opinion of scientific witnesses, as to whether there has been an infringement, though often received, is, strictly speaking, inadmissible, and, if objected to, ought to be rejected. If the question turn on the construction of the specification, it is a question of law for the judges; but where the question turns on the extent to which one machine imitates another in that which is the alleged invention, it is a matter for the jury.

**Joint-Stock Company.**—A shareholder in a joint-stock company which had been ordered to be wound up was subsequently discharged under the Insolvent Debtors' Acts without noticing the company in his schedule. A call was made in respect of debts incurred before his discharge, but not proved till after that event. In settling the

list of contributors the name of such shareholder was held to be correctly retained.—*Ex parte Parbury.*

**Working Mines near a Railway.**—A railway company was empowered by its special Act to take land, the minerals to be reserved to the vendors; but the working of them not to be detrimental to the railway. By one clause the owners of the minerals, on working them up to within twenty yards of the company's buildings, might require the company to purchase the minerals; or, on their refusal, he might work them, provided he did no avoidable damage. Under these circumstances some land was taken by the company. Under this land there was a coal mine which had not been worked for a long time, and which had been forty years under water. The shaft was far from the land over which the railway passed, and this land was supported partly by some pillars left in the mine and partly by the hydrostatic pressure of the water in the shaft. The company built a bridge of great weight and length over the purchased land. Twenty years after the completion of the bridge the descendant of the former owner of the land threatened to draw off the water and to work the mine. The company sought to restrain him by injunctions, and it was held that, though he might lawfully work the mine, he would be liable for any damage resulting from the removal of the soil under the railway; but that he would not be liable for any damage caused by the withdrawal of the hydrostatic pressure, for that he had a right to drain the shaft.—*North-Eastern Railway Company v. Elliott.*

#### RECENT PATENTS CONNECTED WITH BUILDING.

**VENTILATION.**—*W. Williams, Merthyr Tydvil.* Dated 29th February, 1860.—This invention consists in constructing cast-iron cylinders or exhausters, having a piston in each somewhat similar to the ordinary blowing cylinders in common use. Each cylinder has at the top and bottom thereof a suitable chamber or chambers fitted with air-valves, either of leather, vulcanised india-rubber, or other suitable material. In the upstroke of the piston the air which is drawn into each cylinder is on the return stroke driven therefrom through the outlet valves.

**BLOCKS OR BRICKS FOR BUILDING PURPOSES.**—*M. Cranford, Kinson Clay Pottery, near Poole.* Dated 27th March, 1860.—The patentee proposes to form the pieces of which a building is composed of any superficial shape or area that may be required, but in a tubular form, the thickness of the sides being proportioned to the pressure to be sustained, whereby the amount of surface bearing would be obtained with a great saving of the material employed; and instead of trusting, as at present, to that and the use of mortar to prevent any slipping of one piece over another, he makes openings in the inner sides of these tubular pieces, into which other pieces of any convenient size or shape may be inserted and arranged, always so as to intersect the junction of two or more of the external pieces, so that it will be impossible to move one of these from the other without taking out or breaking the inner tie or ties.

**PLASTIC MOULDED MATERIALS FOR BUILDING PURPOSES.**—*C. F. Bielefeld, Gower-street, London.* Dated 19th March, 1860.—This invention consists in combining fibrous materials with water-glass (solution of silica in alkali), lime, and clay. In making or preparing plastic compounds of the materials above mentioned, some one or more of the other materials hereafter mentioned are generally used, according to the nature of the compound desired to be produced. These other materials are ground glass, ground lava, or pumice-stone, or ground marble or quartz, or carbonate and sulphate of lime, oxide of zinc and other metals, magnesia, ochres, and other earths containing like properties. The coarser ground matters above mentioned give mass, and the oxides of zinc and other metals, ochres and other carths, modify or give colour, as well as mass, to the compounds of the other matters.

**PORTABLE BUILDINGS.**—*G. J. Calvert, York, and C. L. Light, Parliament-street, London.* Dated 22nd March, 1860.—The patentees first form foundation shoes, consisting of a screw having a gaining thread, or thread of variable angle, cast or wrought upon it, and above the screw a sole-plate or loose plate, which supports either an iron standard or a socket, and one or more pockets for receiving the horizontal beams and upright posts or standards of the building. They prefer to commence the thread at the point of the screw, where they make it very narrow, and to increase the breadth of it, and increase also the

angle which it makes with the axis of the screw as it rises from the point towards the sole or base plate, the greatest diameter of the screw being equal to two-thirds of the diameter of the base plate. The principal standards are supported directly by the screwed foundation shoes, and the intermediate standards are tenoned into mortises formed in horizontal beams, which extend from one foundation shoe to the next, and which are held at either end by the pockets before mentioned. Framed panels form the wall, and are dropped down from above between the standards, being held in position by tongues or fillets of hard wood or other suitable material. These framed panels are formed hollow, and are composed, by preference (although not necessarily) of Bielefeld's fibrous slab, which secures the interior of the building from extremities of temperature. The edges of the fibrous panels are received in rabbets formed in the wooden framing of the panel. The roofing is composed of grooved rafters, the grooves of which hold canvassed slabs of the aforesaid fibrous material, or a roofing of any other suitable material. The whole of the fibrous slabs are waterproofed with a suitable composition. Buildings constructed in the aforesaid manner are said to be exceedingly light and portable, and easily put together without the aid of skilled labour. The invention also consists in the employment of a gaining screw for fencing posts, gate-posts, and other purposes.

#### VENTILATION OF HOUSES.

SIR,—The importance of ventilation is now so generally understood, that those portions of your paper which relate to the supply of fresh air to houses, and the removal of impure air, are among the most interesting.

Arnott's valves were a very valuable discovery; but the objection to them is the frequent escape of smoke and dirt from the chimney. These drawbacks have caused many to discontinue the use of them. In new houses this nuisance can be avoided by building up a shaft or flue expressly intended for the escape of air only, by the side of the chimney flues. I don't know how often this is done, but it ought to be made compulsory in all new houses.

What is the best remedy in houses already built, and not provided with such flues? At present, the only plan which occurs to me is an opening in the centre of the ceiling, which might be concealed by an ornament, and air-bricks in the walls, allowing the air from the room to pass between the floors into the open air. Will this be attended with an inconvenient down-draught of cold air from without, which in a low room might prove unpleasant?

I shall be glad to see some remarks on this subject from one of your experienced contributors.

SALUS.

#### Books Received.

*All Round the World: an illustrated Record of Voyages, Travels, and Adventures, in all Parts of the Globe.* Edited by W. F. Ainsworth, F.R.G.S., &c. London: Marsh, Fleet-street. This new series promises well to form an entertaining and valuable work. It will not merely constitute a record of the experiences of a single voyager, traveller, or adventurer, but a compilation from all that is most interesting and curious in the narratives, already written, of the experiences of many voyagers, travellers, and adventurers, in all parts of the globe, selected and collated by an accomplished editor, Mr. W. F. Ainsworth, the well-known traveller. The work, it would appear, will be plentifully illustrated. The first part is devoted chiefly to the Holy Land. At the close of it, a section is begun on "Sicily as it is."

#### VARIORUM.

THE *Quarterly Review*, for October, contains several articles of considerable importance and interest. One of these is on "Competitive Examinations;" another on our "Iron Sides and Wooden Walls;" and a third, under the title of "Deaconesses," relates to the question of female employment. The article on "Competitive Examinations" is by no means favourable to this mode of appointment to offices in the civil service; and certainly a strong memory, or even a good education, does not necessarily imply the possession of temperance, justice, diligence, and all the public virtues. We should be inclined even to go a little farther, and to maintain that learning is the lowest and most superficial of the three great faculties—learning, talent, and genius—into which

Coleridge and others have, with pretty fair accuracy and comprehensiveness, divided the intellectual or scientific aspect of the threefold mind—scientific, sentient, and potential. A capability of responding with ready tact and memory to the questions of the examiners, therefore, can disclose but a very small clink of the "light within." Nevertheless the system has its advantages, rightly administered, and opens the door to unaided ability. The author of the article on our "Iron Sides and Wooden Walls" maintains the superiority of iron ships for the navy, and states that these only are capable of withstanding the vibration caused by the screw, which shakes wooden ships, he says, to pieces. There is one important point which ought not to be lost sight of, however: that is, the suddenness with which iron ships founder and sink: carefully constructed, and as carefully kept, compartments might do much to obviate this disadvantage. There are also articles of varied interest in the *Edinburgh Review*. "The Churches of the Holy Land" is an especially interesting and able one, in which the writer resists Mr. Ferguson's ingenious theory on the subject of the Holy Sepulchre, the history of which is practically in itself the history of the churches of the Holy Land. In reference to this perplexed question, there is one collateral point which ought, we think, to be well considered; namely, the fact that caves, rocky crypts, or cells, beneath temples were a feature in some Gentile religions: there were round temples, too, with such sacred caves beneath them; in which, moreover, as in most if not all others, mysteries of death and resurrection were enacted. Even the Mexican Aborigines, according to Mackey's Lexicon [article, "American Mysteries"], had a temple with cavernous excavations beneath, in which mysteries of "regeneration" through "the path of death" were practised; one horrible feature of which consisted in throwing down, into the presence of the aspirant to initiation, a sacrificed human victim still in the agonies of death, from the high altar of the temple into the cavern under the altar. Indeed, the Gentile rites in general comprised manifestations of death, real or simulated, with funeral rites and lamentations, followed up by resurrective representations and rejoicings. And that there are strictly Gentile, as well as Mahomedan, elements in the question at issue in respect to the Church of the Holy Sepulchre, which ought to be taken into account by all who discuss this question, there can be no doubt. Thus Eusebius, in his "Life of Constantine" states, in general terms, that wicked men had choked the holy sepulchre or cave with earth, covered it with a high mound afterwards paved, and built upon it a tomb for dead souls, in the shape of a temple of Aphrodité. Socrates also speaks of the Aphrodité over the sepulchre, and Dion Cassius attributes to Hadrian a temple of Jupiter built on the site of the Jewish temple itself. We merely wish here to indicate to others the point referred to—not to draw any inference from it on either side of the argument, far less to discuss its bearings on the whole question.—The number of deaths arising from the burning of ladies' dresses, especially since they became literally "swells" with steel hoops and crinolines, is really lamentable. The Registrar-General, writing on this subject in March last, says—"The fires of Smithfield, and the Suttee fires of India, have been extinguished; but the fires of our own hearths destroy hundreds, and deform thousands, of English women and children annually. Assuredly some remedy may be found. Why are combustible dresses carelessly worn? Eight persons should not be burnt to death in seven days (in London alone). Such deaths can scarcely be considered inevitable accidents." Her Majesty, it may be remembered, referred this subject, in November, 1858, to Professor Graham, the chemist, and Master of the Mint; and he appointed Messrs. Versmann & Oppenheim, to investigate the subject experimentally. The result was, the discovery of two chemical agents suitable as blaze-proofers, if we may so call them, for the combustible fabrics used for women's attire. One of these agents is sulphate of ammonia, which is now used in the manufacturing process of woven fabrics that require no ironing, such as book muslins, tarlatans, net and lace curtains, &c. The other is tungstate of soda, which is sold for domestic use under the name of "the ladies' preserver." Information as to the mode of using this useful agent can be had from a tract now before us, titled "Description of the Ladies' Life Preserver," &c., and issued by Messrs. Briggs & Co., at 20, Great Peter-street, Westminster.—A pamphlet titled "The Iron-band Gun, and its Applicability to various Military Field Purposes;"

by Sergeant-major John Jones, Royal Engineers (Fordham, Chatham, printer), gives an account of an article which appears to be of singular and varied use in military operations. The tedious multiplication of the basket-like gabions at the Crimea will be remembered. By the use of iron-band instead of wicker or bamboo, two men can now, it seems, make a gabion in less than five minutes; whereas the wicker gabion takes three men three hours. The bands are prepared with buttons and slots, and they are capable of being converted into suspension bridges, hospital beds, ambulance litters, network for military obstacles, and field stabling and butting. They are also light and portable, and can be packed in small compass, and must constitute a most important element in future field practice.—"Development of Christian Architecture in Italy," by Sebastian Okely, A.M. (Longman & Co.), is before us for early notice. We have also received G. Barclay's "Monograms," "The Wit and Wisdom of the Rev. Sidney Smith" (Longman & Co.); "The Progressive Screw as a Propeller in Navigation," by Julian John Révy, C.E. (Weale, Holborn); Stanford's "London Guide" (Charing-cross); "The Proceedings of the Liverpool Architectural and Archaeological Society," 1858, 1859; Fairbairn's "Crests of the Families of Great Britain and Ireland," edited by Joseph Maclaren (T. C. Jack, Edinburgh); "Observations on the Niagara Railway Suspension Bridge," by P. W. Barlow, F.R.S. (Weale); Longman's superb edition of Moore's "Lalla Rookh," with sixty-nine illustrations by John Tenniel, 1861; and some others.

Miscellanea.

**BUILDERS' BENEVOLENT INSTITUTION.**—The 13th anniversary dinner of this association took place at the London Tavern, Bishopsgate-street, on Thursday evening, as announced; Mr. George Plucknett, the president of the year, in the chair. The attendance was good, and the dinner passed off very satisfactorily: we shall report next week.

**AN ITALIAN EXHIBITION.**—A letter from Turin says:—"Florence is making preparation for a grand exhibition, which is to take place next summer, and which is to bear the name of the 'Italian Exhibition.' Florence gives 100,000*l.*; the Provincial Council of Florence 30,000*l.*; Milan, 20,000*l.*; Leghorn, 10,000*l.*; and Pisa, 7,000*l.*"

**THE STREET TRAMWAY PROJECT.**—Further proposals have been made to the Westminster district authorities. Mr. Train has made application to them to be allowed to extend his tramways to various streets under their jurisdiction, such as Oxford street, Regent-street, Piccadilly, Coventry-street, and Pall-mall. Mr. H. Greaves applied to be allowed to submit his plan for combining tramways with gas and other pipes, the pipes to form the sleepers under the rail or train. His gas-pipe sleepers are patented, and form, he says, one continuous structure, so that gas could not escape, and each would bear 30 or 40 tons weight. By laying such pipes, he urged, the breaking up of streets would be obviated, as also the contamination of the subsoil by gas escape. Both projects were referred to the Works Committee of the district for consideration. Mr. Train has also applied to the City Sewers Commission for permission to construct railways in some of the principal thoroughfares in the City. It was resolved that he should be invited to appear before the court, and answer questions as to his project. It is said that a gentleman in Manchester has taken out letters patent, for a plan of what he terms a "perambulating railway." The projector proposes to lay down his line perfectly level with the roadway, each rail not exceeding 3 inches in width; and in the centre he places a grooved rail in which is to run what he terms the perambulator, which is simply a wheel 9 inches in diameter, centred in a bar hinged to the fore axle of the vehicle, and spurred to it on both sides, so that when the wheel revolves in the groove the axle is always at right angles to the rails. This bar is suspended from the splinter bar by a strong elastic band, which holds the wheel about 4 or 5 inches clear of the road; and an upright rod, passing through the footboard, and acting on the perambulator, enables the driver, when he has fully adjusted his vehicle upon the rails, to depress, by the action of his foot, the wheel into the groove of the centre rail, and to retain it in position as long as he wishes to remain on the metals. It is stated that the patentee has obtained permission of the trustees of the Pendleton road, Manchester, to lay down such a length of line as will suffice to test its efficiency and utility.

**THE GLASS TRADE AT SUNDERLAND.**—The various glass and bottle manufactories at Sunderland, says the *Gateshead Observer*, are now in full operation, and several of the proprietors are extending their works. Messrs. J. Hartley & Co. amongst others are now building two additional cones for the manufacture of sheet glass.

**A NEW PLAN FOR THE IMPROVEMENT OF THE PORT OF BRISTOL.**—Mr. Masters, of Bristol, architect, has prepared plans which have been submitted to the members of the Town Council, as offering a means of meeting the desideratum of Port Improvement. Mr. Masters's design is to make, at the "horse-shoe" bend in the river, between Semallies and the Powder-house, a new and much straighter channel, and the curve, comprising the present course of the stream, which would be taken off, he would make the site of new docks, of considerable area, with the addition of a railway running to Bristol.

**EXCAVATING TUNNELS.**—Mr. Gilbert, Coleorton, has invented an apparatus to excavate sewers, tunnels, &c., and at the same time to allow the building of the required number of rings of brick-work, without the aid of timber to prevent the slip from above, no more ground being displaced than is necessary, these being done as well in running sand or new ground as in solid firm ground, and effected in the following manner, as described by him:—I propose employing a cutting shield, of the form of the upper part of the tunnel or sewer, and supporting it by suitable framing, upon which are powerful screw-jacks, hydraulic presses, or other suitable power for the purpose of driving said shield forward. The shield travels over rollers on the top of the frame, and can be made to travel in a straight line, rise, fall, or turn a course by means of such rollers. The bearing prop or framing at the back of the brickwork may be formed in the shape of an X; the lower part thereof serving as an entrance passage to a wagon-road, where such is required for clearing away dirt, or other purposes.

**BATHS AND WASH-HOUSES FOR THE CITY OF LONDON.**—The corporation has not one such institution under the shelter of its wings, and therein it lags behind the age in its ministrations to the poor domiciled in the City. It will be in vain to ignore the necessity for such institutions on the ground of decreasing population and the growth of banks and warehouses, because some large districts are wholly occupied with residents of the artisan and labouring classes. These are put to severe shifts if they have any desire to maintain their health and personal decency at a fair station: the wives have no grass-plots whereon to bleach their linen: kitchens and wash-houses are, to a great extent, converted into dwelling-rooms; and, though soap may be cheap and water plentiful, the day's wash has either to be done on the roof of the house, or on the pavement of the narrow street, while the clothes-lines are hung from window to window as decorations to the public way.—*City Press*.

**THE POLYTECHNIC INSTITUTION, REGENT-STREET.**—This well-known institution is about to make a fresh start for popular support under new managers. The building has undergone a renovation, and will shortly be open to the public. The entrance-hall has been rendered fire-proof, and additional means of ingress and egress provided. The lighting and ventilation, it is said, will be accomplished in a new manner, and a cheerful style of decoration has been adopted throughout the interior. The institution is not to be diverted from the laudable purposes for which it was originally established. Although the various alterations are not yet completed, they were sufficiently advanced last week to enable Mr. C. Dresser, the lecturer on botany at the South Kensington Museum, to deliver the introductory lecture to the course of study in that interesting science.

**DURHAM AND TYNE BRIDGE TRAMWAY ROAD.** The following tenders for the improvement of the road at Chester Dene have been sent in, according to the *Gateshead Observer*:—

John Kellett, builder, Crook .....	£4,637	0	0
William Graham, John Macnaught, & Matthew Howey Wells, contractors, Birtley .....	4,628	16	1
J. W. Bulmer, contractor, Sherburn House, Durham .....	3,951	0	0
Foster & Lawton, contractors, North Biddick Hall .....	3,800	0	0
Joseph Nicholson & Co., contractors, Sunderland .....	3,723	0	0
Edward & Charles Drier, builders, Bishop Auckland .....	3,700	5	10
Eden & Dickenson, contractors, Gateshead .....	3,374	15	3½
Harrison Hodgson, contractor, Durham .....	2,695	10	0

The committee have recommended for acceptance the tender of Mr. Harrison Hodgson.

**PNEUMATIC DESPATCH COMPANY.**—At a recent meeting of shareholders of the Pneumatic Despatch Company, held at Westminster, the chairman, Capt. Huish, in the course of the proceedings, said they were continuing experiments, not to ascertain the power of propulsion by exhaustion, but to ascertain the means by which they could produce a revenue at the lowest possible cost. The experiments had shown most satisfactory results, and would be completed in about a fortnight, when a tabulated statement would be furnished by the engineers to the board. The engineers had already informed him that, by the use of the fan, which was a most elaborate thing, but very economical, they could obtain a speed of thirty or forty miles at a very inexpensive cost. Until they received the report they would not do anything, but he believed it would be of such a nature as would justify the directors in commencing operations. The first pipe would be laid from St. Martin's-le-Grand to Bloomsbury for post-office purposes.

**WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.**—The annual meeting of this society has been held in the Lecture-room of the Natural History Society, at Worcester. The chair was taken by the Hon. Frederick Lygon, M.P. Mr. J. S. Walker, hon. secretary, read the seventh annual report. The committee expressed their regret that there had not been so many members added to the society as during former years, and that, on account of his removal to London, Mr. Theodore Galton had resigned his position as one of the honorary secretaries of the societies. They stated that the annual volumes of reports and papers published by the six associated societies had been distributed amongst the members. Under the head of "New Buildings and Restorations," a lengthy and critical account was given in the report of work done to religious and educational buildings in the district. The Rev. R. Cattley, the treasurer, read the financial statement. He said a large sum was due for arrears, chiefly from members residing at a considerable distance from the city. He recommended that as the addition of members was scarcely so great as the withdrawals, through removal and other causes, efforts should be made to induce persons to join the society. The Rev. H. G. Pepys read a paper by the Rev. E. Trollope, on Monastic Gatehouses and Walls, the author of the treatise being unable to attend. On the day after the meeting, the members proceeded on their annual excursion to visit and inspect some of the churches in the diocese. The churches selected for that purpose this year were Stoke Prior, Bromsgrove, Headless Cross, Redditch, and Beoley, but the last was not visited.

**SCIENCE AND ART DEPARTMENT PRIZES AT GLASGOW.**—The Queen's honorary prizes awarded to the students of the chemistry class lately formed in connection with the Science and Art Department, in the Secular School, Carlton-place, Glasgow, were distributed recently on commencing the second course of instruction. Mr. James McClelland presided. A large number of persons interested in the institution were present. The chairman stated that at the metropolitan examinations Mr. Mayer had succeeded in gaining a certificate in chemistry, after being severely examined by Professor Hoffman during two days; and that he was the only candidate from the north of the border. Mr. Mayer then established, with the sanction of the Department and the promoters of the school, a special class for the study of chemistry, apart from the regular school studies. Six out of twelve of the students of this class had gained Queen's prizes, nine of the twelve having previously passed their examination. The chairman then said that these prizes would be distributed after the delivery of an introductory lecture by Mr. Mayer. The lecturer then proceeded to show that the study of abstract scientific truths is essential to industrial progress, as had been beautifully demonstrated by what might be regarded as the crowning event of Sir Humphrey Davy's career as an eminent student of science,—the invention of the safety lamp. This invention was not a mere lucky hit, but the result of the strictest scientific induction; and the instrument itself had been of incalculable service in the preservation of human life,—what the inventor desired it to be. To prove his position, the lecturer performed a variety of instructive experiments, showing how explosions of fire-damp are caused in coal mines, and how they may be prevented by the use of the safety lamp. The descent of a miniature coal mine with a Davy lamp, into an inflammable gaseous mixture, without causing an explosion, was exhibited.

**THE NEW HORTICULTURAL GARDENS, SOUTH KENSINGTON.**—The works are making rapid progress, and the boundary line of the gardens is shown on all sides by the rising arcades. The arches of the north arcades on the west side are nearly all turned. The north arcades are in Portland stone, with a rusticated red-brick pilaster, which is placed between small Doric stone columns. The foundations of the conservatory, which is on the north level, are now laid. The moulded brick pillars on the middle level are several feet above the ground, on both sides, and the brick piers on the south, or lower level, are nearly at their full height. It is expected that the new council-room for the Horticultural Society will be ready to be occupied in a few weeks. The pavement and heating apparatus are now in execution. The ornamental front of this structure, towards Exhibition-road, is not yet commenced. All the heavy earthworks and various levels of the gardens will be completed, it is said, next week, when the planting will begin. The Horticultural Society have announced that their first flower-show is to take place next May, when the arcades will be sufficiently completed.

**CHAPEL OF ST. APOLLINE, GUERNSEY.**—The chapel of St. Apolline is situated in the west of Guernsey, close by the sea-coast, and is of great antiquity. Mr. Dally, in his "Guide" to the Channel Islands, remarks that it is the only one standing of the many similar ecclesiastical structures in use prior to the erection of the parish churches. The interior consists of a plain chamber, about 27 feet long by 14 feet 9 inches wide. The chapel has two segmental doorways and three small openings; while it is covered with a pointed and ponderous vaulted roof. The sides of the roof and walls are adorned with fresco paintings; several figures of saints being visible on the north wall and one, a bishop, on the east wall. Nothing is known of the date when the building was erected, but it is considered to be the oldest in Guernsey. Some suppose it to have been erected in the middle of the tenth century, by the monks, who, it is reported, arrived in the island at that time. There is now in the possession of a gentleman in the island a silver-gilt chalice belonging to this chapel, round which are the words "Sancte Paulæ ora pro nobis," from which it may be inferred that the name of St. Apolline,—unknown to fame,—is substituted for that of St. Paul. But this chapel is in a very unsatisfactory state of preservation, for we regret to say it is used as a barn. Certainly such an edifice, which is, perhaps, the oldest we have standing, ought not to be allowed to fall to decay. It has been proposed to repair this chapel, and thus render it fit for public worship, small as it is, there being no church close to it.—M.

TENDERS

For repairs and laying 2,200 feet of 3-inch rubbed York paving, at the Butchers' Charitable Institution, Walham-green; Mr. Henry McCalla, architect:—  
 London Building Company.....£310 0 0  
 Bingham, Brothers..... 230 0 0  
 Porter..... 295 0 0  
 Bishop..... 215 19 0  
 Bryan..... 150 0 0

Tenders for alterations to No. 18, Store-street, Bedford-square. Mr. P. F. Holdsworth, architect. Quantities supplied by Messrs. Laisdown:—  
 Wicks.....£915 0 0  
 Battenbury..... 892 0 0  
 Keyes & Head..... 887 0 0  
 Jeffs..... 722 0 0  
 Tyler..... 775 0 0  
 Harvey..... 750 0 0

For new school, &c., Northampton; for Mr. Wainwright, Mr. E. F. Law, architect:—  
 Smith.....£280 0 0  
 Roberts..... 374 10 0  
 Jreson..... 365 0 0  
 Cosford (accepted)..... 359 0 0

For erecting a farm-house on the Branches-park Estate, Covingham, Suffolk; Messrs. Benest & Newson, Norwich, architects. Quantities supplied by Mr. E. E. Benest:—  
 Westley & Arber.....£1,200 0 0  
 Brooke & Wiseman..... 1,199 0 0  
 Lacey..... 965 0 0

For erecting bay window and making alterations to a house in St. Giles's-street, Norwich; for Mr. John Goddards, Norwich, architect. Quantities supplied by Mr. E. E. Benest:—  
 Ling.....£400 18 0  
 Brooke & Wiseman..... 381 12 0  
 Lacey..... 364 0 0  
 Moore..... 362 0 0  
 Spiaks & Burrell..... 359 0 0  
 Browne & Bailey..... 338 16 0  
 Bead..... 345 0 0  
 Chapman..... 309 11 5  
 Plummer & Bloom..... 281 0 0

For alterations and additions to the baths and wash-houses belonging to St. James's parish; Mr. Chas. Lee, architect:—  
 Myers.....£1,690 0 0  
 Patrick..... 4,547 0 0  
 McLennan & Bird..... 4,260 0 0  
 Adamson & Son..... 4,248 0 0  
 Humphreys & Lister..... 4,226 0 0  
 Walker..... 4,222 0 0  
 Palmer..... 3,826 0 0

For finishing two arcades, for Mr. R. Hallett; at Inck-burst-hill, Woodford; Mr. J. H. Rowley, architect:—  
 Masters.....£983 0 0  
 Humphrey..... 980 0 0  
 Cushing..... 973 0 0  
 Davey..... 893 0 0

For a house at Stoke Newington; Mr. Brooks, architect. Quantities supplied by Mr. J. Clever:—  
 Glenn.....£1,060 0 0  
 Hocken..... 1,010 0 0  
 Henshaw..... 992 0 0  
 Evans, Brothers..... 819 0 0  
 Brown..... 798 0 0

For a house at Muswell-hill, exclusive of painting, papering, &c.; Mr. George Treadwell, architect:—  
 Wilshire.....£919 0 0  
 Carter..... 896 0 0  
 Longmire & Borge..... 869 0 0  
 Henshaw..... 854 0 0  
 Glenn..... 800 0 0

For repairs and alterations to a dwelling-house and premises in Dulwich, for Mr. George Gowan; Mr. Hey, architect:—  
 If asphalt floor omitted, deduct  
 Macdichlan.....£1,061 0 0 £67 0 0  
 Downs (accepted)..... 896 0 0 58 0 0

For the erection of six cottages at Carverham, Oxon, for Mr. Talbot; Messrs. Coote & Coaling, architects, Reading. Quantities supplied by the architects:—  
 Nichols.....£1,200 0 0  
 Orton & Child..... 1,150 0 0  
 Reynolds..... 1,082 0 0  
 Sheppard (accepted)..... 926 0 0

For rebuilding Moulting Church, Pembroke-shire, including old materials; Mr. Withers, architect:—  
 James.....£571 13 0  
 Joseph..... 533 10 0  
 Morgan..... 519 0 0  
 Jenkins & Co..... 481 15 0

For new front and alterations at Godalming, for Messrs. Potter & Agate; Mr. Peak, architect, Guildford:—  
 Pollard.....£226 0 0  
 James Smith..... 220 0 0  
 James Mason & Son..... 130 0 0  
 Other (accepted)..... 95 15 0

For erecting a public house on the Lea-bridge road, Mr. Thomas J. Hill, architect. First contract:—  
 Harrison.....£285 0 0  
 Price (accepted)..... 775 0 0

For rebuilding house in Liverpool-road; Mr. Thomas J. Hill, architect:—  
 Tinewell.....£331 0 0  
 Haynes..... 327 0 0  
 Ramsay..... 288 7 6  
 Galsby..... 287 0 0

For the York and Ripon Diocesan Female Training Schools, to be erected at Ripon; Messrs. J. B. & W. Atkinson, architects, York. Quantities supplied by Mr. B. Wornald, of York:—

For the entire Works.  
 Gowing.....£5,909 0 0  
 TENDERS ACCEPTED.  
 Masonry and Brickwork.  
 Kettlewell.....£2,573 0 0  
 Carpenter and Joiner's Work.  
 Bellerby.....£1,797 0 0  
 Plastering.  
 Croft & Co.....£415 0 0  
 Plumbing and Glazing.  
 Varvill.....£300 0 0  
 Painting.  
 Pearson.....£86 10 0  
 Slatting.  
 Baynes.....£107 11 8  
 £5,371 4 8

\* \* The architects of the East London Catholic Cemetery are Messrs. Wilson & Nicholl.

TO CORRESPONDENTS.

G. D.—D. L.—Mr. R.—W. H.—C. P. H.—J. C.—F. & A.—Mr. J.—P. B.—H. J.—W.—Several similar arrangements have been patented.—A young Clerk of Works (must study many books to make himself "proficient in his duties," there is no out and dried prescription in 1 vol. octavo).—T. S. L. (we have always maintained that the drawings, under ordinary circumstances, belong to the architect).—P. W. B.—W. R.—H. L.—S. O. (the title adopted by those who prefer to work on the principles which prevailed before the era of Euclid).—M. C.—Mr. W.—Messrs. A.—A. S.—Y. E. C.—H. D.—J. S.—R. A.—J. W.—T. R. S.—F. R.—(lover of Cursey)—F. G.—M.

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# The Builder.

VOL. XVIII.—No. 926.

The Central Park, New York.

HE Prince of Wales, during his recent stay in New York city, the commercial capital of the United States, after visiting the New York University, the Astor Library, the Women's Library, and some other public buildings (it was on the 12th of last month), went to the Central Park, and assisted at the transplanting of an English oak and an American elm. Long may they flourish side by side, vigorous and sturdy mentees of the pleasant visit paid by England, and the hospitable and warm hearted reception accorded by America.

Considerable progress has been made with the Central Park. Our readers may remember that,

in 1858, thirty-three plans for forming the proposed new park were submitted in competition, and four premiums, consisting of 4000, 2000, 1500, and 1000, were awarded. The successful design was presented by Messrs. F. L. Olmsted and Calvert Vaux, and the works were at once commenced by the Commissioners having the matter in charge, Mr. Olmsted,—the author, among other works, of "Walks and Talks of an American Farmer in England,"—being appointed to the chief position and the resident charge of the work; and Mr. Vaux, some of whose designs have been illustrated in former numbers of the *Builder*, acting as consulting architect.

The plan which has been followed is, with a few modifications and additions, the same to which the first premium was awarded. The cost of land taken for the park, with the extensions in contemplation, will be rather more than 1,000,000. The expenditure at present made on it amounts to about 500,000, and the total sum authorized to be expended is about 800,000.

When the architects sent in their designs they pointed out that, up to that time, in planning public works for the city of New York, in no instance had adequate allowance been made for its increasing population and hitherto; not even in the case of the Croton aqueduct, otherwise so well considered. The City Hall, the best architectural work in the State, and built to last for centuries, does not at this time afford facilities for one-third of the business for which it was intended. The present Post-office, expensively fitted up a dozen years ago, no longer answers its purpose. The Custom-house, expressly designed for permanence, and constructed to that end at enormous expense, less than twenty years ago, is not half large enough to accommodate the present commerce of the city. The explanation of this apparently bad calculation is mainly given with the fact that, at every census since that of 1800, the city's rate of increase has been found to be overrunning the rate previously established. In the allotment of land for the new park it was determined that this mistake should not be made.

The park is about two miles and a half long, and half a mile wide, bounded on the sides by straight parallel "avenues," and at the ends

by streets crossing these at right angles. It is now enclosed by a rough, dry stone wall, 4 feet 6 inches high, in which there are gates at convenient intervals. The area enclosed is about seven hundred and sixty-eight acres, of which one hundred and thirty-six acres are occupied by the reservoirs of the Croton aqueduct, whence the city is supplied with water. Measures are in progress for adding a space of seventy-five acres, which will make the length of the park 13,516 feet, and its area eight hundred and forty-three acres.

The old reservoir covers thirty acres, and stands upon high ground in the centre of the park. The enhancement is faced exteriorly with dressed stone, and, except where obscured by the recent improvements, forms a conspicuous object in the view from nearly all points in the southern half of the park. The new reservoir, when completed, will cover one hundred and six acres; but these are too much elevated for the water within them to form a part of the landscapes.

The park is practically divided by the reservoirs into two portions, the northern or upper park containing 160 acres; the lower park, containing 331 acres; and the connecting ground, lying on both sides of the reservoirs, 135 acres. It will be further subdivided by four thoroughfares (a very necessary consideration, one crossing it between the reservoirs, one at each end of them, and the remaining one near the middle of the lower park. These thoroughfares are to be so constructed, by means of tunnels and other contrivances, as not to interrupt the landscape, or practically effect any division of the park. Roads and walks will cross them in such a manner that, when the trees and shrubbery by their side are somewhat grown, they will not be seen by the casual observer. They will be noticeable from no part of the park, except at their extremities, where they unite with the exterior streets, at a higher grade than the surface of the park; appearing as causeways, a few hundred feet in length, terminating upon a hill-side. The park not being directly accessible from these covered ways, it will be unnecessary to close them at night, when the public are shut out from the park itself. They will furnish the means of direct transit across the park for business purposes, without causing inconvenience to its visitors. Two of these roads are now nearly completed, and one already in use.

To clear the site it was necessary to knock down many wretched hovels. During the autumn of 1857 three hundred dwellings were removed or demolished by the Commissioners of the Central Park, together with several factories and numerous "swill-milk" and hog-feeding establishments. Large tracts, partially covered with stagnant water, were superficially drained, and 10,000 cart-loads of loose stones taken from the surface and conveyed to the borders of the park, furnishing materials for the construction, during the winter, of the present enclosing wall.

Even after the removal of the buildings, and the drainage of the pools, the lower park still presented a confused and unsightly appearance. Parts were rocky and parts a bog. With the exception of portions of the two swampy valleys and the two ten-acre tracts above mentioned, and about three acres on Sixty-sixth street, near Sixth avenue, there was not an acre in which the great underlying ledge of gneiss rock did not, in some form, thrust itself above the surface. Probably not a square rod could be found throughout which a crow-bar could be thrust its length into the ground without encountering rock.

The designers desired that the park should, as far as practicable, present to the eye a charming rural landscape, such as, unless produced by art, is never found within the limits of a large town; always remembering, however, that facilities and inducements for recreation and exercise are to be provided for a concourse of people, and that the object of the scenery to be created is only to further the attainment of this end in the most complete and satisfactory manner. No kind of sport is to be permitted which would be inconsistent with the general

method of amusement, and no species of exercise which must be enjoyed only by a single class in the community to the diminution of the enjoyment of others.

Casual observers have been apt to think the selection of the site an unfortunate one, its general ruggedness being rather forbidding than expressive either of dignity or grace. But this was due very much to the absence of soil and foliage. As these are supplied, the quality of picturesqueness becomes agreeably prominent. Grass and shrubbery can be formed anywhere; but rocks, and those salient forms of earth-surface which are only found in nature where rock exists, can never be imitated on a large scale with perfect success. Although, therefore, it will require a heavy expenditure to make the park complete, a good artistic effect may be looked for.

In one part is a broad hill-side, broken by ledges of rock and strewn with boulders. This, which is to be called the Ramble, furnishes an interesting picture viewed from almost any point, but particularly so from the end of the mall. On the descent from this to the pond an ornamental stone terrace is under construction. This, the principal architectural feature of the park, is shown, as if complete, in our view.\* At the highest and most remote part of the bill, as seen from this terrace, a small tower will be erected; and this will be the vista-point of the avenue of the mall. Looking northward from the terrace it will be the only artificial structure in sight (the reservoir being "planted out" and the rising ground on the right and left shutting off the city). The whole breadth of the park will be brought into this landscape, the foreground of which will be enriched with architectural decorations and a fountain; the middle distance, composed of rocks, with evergreens and dark shrubs interspersed among them, reflected in the pond; and the distance extended into intricate obscurity by carefully planting shrubs of lighter and more indistinct foliage among and above the gray rocks of the background.

The sunken and tunnelled street thoroughfares across the park were planned to remove what would otherwise have been a ceaseless annoyance. Extending the application of the same expedient, several miles of gravelled walks have been laid out, carried by arched passages under the drives when necessary, by means of which all parts of the lower Park may be traversed on foot, without encountering a single carriage or horseman. The rides are everywhere in like manner made independent of the drives, but horsemen can enter the carriage-roads if they choose.

It is intended to introduce an arboretum, in which, within a space of about sixty acres, will be arranged in as natural a manner as possible, consistently with convenience for study, specimens of every tree and shrub which can be grown upon the site in the open air. The hill-side and valley between the fifth avenue and the east drive of the upper park arc reserved for this purpose.

When the commissioners made their last report, at the beginning of the year, about 18,000 trees and shrubs had been planted; 3½ miles of road had been made; 5 miles were in progress; 7½ miles of paths were completed; 10½ miles of drains had been laid down; 10 bridges were finished, and 8 were progressing. Of one of the bridges—that over an arm of the lake near the Ramble—we give a view from a photograph, showing the character of the ground with which the architects have had to work.

It is provided by law that bequests may be made to the city for the improvement and ornamentation of the Central Park, or for the establishment or maintenance of museums, zoological gardens, &c., upon prescribed conditions.

The commission have already granted permission to place within the park a monumental statue, in marble or bronze, of the late Commodore Matthew C. Perry, the gift of one of its members. The commissioners say, "To its intimate commercial relations with all parts of the Union, the city owes its unprecedented advance, wealth, and population. It is fit that

\* See page 745.

the virtues of heroes and statesmen, whose fame is the common heritage of the country, should, in this crowning work of its metropolis, find appropriate commemoration."

It is interesting to observe the eagerness that exists in the public mind for the establishment, within the Central Park, of institutions that will afford the means of popular cultivation and innocent recreation. Observatories, museums of natural history, zoological and botanical gardens, and galleries of art, find offers of substantial aid for their foundation; and though the board doubt the propriety of appropriating the moneys placed at their disposal for these or any kindred purposes, they deem it right to aid by all means in inducing the foundation of them by others.

They propose to establish a system of licenses for franchises and privileges, that will yield a revenue to the park without in any respect obstructing or taxing its free enjoyment in all departments. Licenses for refreshment-rooms; for light and proper public vehicles to run on the park; for perambulators, or Bath-chairs, for invalids, to be allowed on the walks; and for boats on the lake, are all to be made to yield a revenue, and relieve the city of a part of the annual cost of maintaining the park.

In their report the commissioners give the following statement of the size of the most celebrated European parks:—

	Acres.
"London—All parks in and near London, including gardens, squares, and parade-grounds .....	6,000
Ditto. Hyde Park .....	380
" Kensington .....	227
" St. James's Park .....	87
" Green .....	56
" Regent's .....	572
Windsor—Great Park .....	3,500
" Little .....	900
Richmond .....	2,250
Dublin—Phoenix .....	2,000
Gardens at Versailles, about .....	3,000
Paris—Bois de Boulogne .....	2,158
Berlin—Tiergarten, about .....	200
Munich—Englischer garden, about ..	500
Vienna—Prater .....	1,500
Magdeburg—Park and garden .....	120
Birkenhead-park, near Liverpool .....	180

The central lake was completed in December last, with the exception of a small amount of work at the extreme northern point, and the water entering from the natural sources of supply was shut in by closing the gate at the dam. The arrangement of this lake is for a summer depth of 7 feet, and a winter depth (for the greater security of persons frequenting it for skating) of 4 feet.

The area covered by the summer level of the water is 20 acres, and by the winter level, 17 acres.

All the inlets for the drainage into the lake likely to bring impurities or turbid water are provided with filters.

Mr. W. H. Grant, we may add, is the superintending engineer; Mr. G. E. Waring the draining engineer.

Some dissatisfaction has been expressed in respect of the time occupied and the largeness of the works contemplated; and, even on this side of the Atlantic, we have received a letter of complaints on the subject. The New Yorkers, however, may console themselves with the reflection that it is much better to do a thing well than quickly. A noble park worthy of their handsome city is not to be produced now-a-days out of a stony tract by rubbing a lamp.

The New Yorkers are very fond of designating New York as the "Empire City;" and they may justly consider it such; since, in the vastness of population, the amount of money capital, the number of public and private institutions for learning and benevolence, the elegance of its buildings, interest in art and literature, display in private munificence, as well as its vice and virtues, it exceeds all the other cities in the states.

It is also the seat and centre of commercial and financial matters. Its railways extend in every direction, communicating with all parts of the Union, even to distances of thousands of miles, and its shipping extends to all parts of the world. Thus its citizens may justly be

proud, especially since, but a little more than a century ago, it was a wilderness trodden by the Indian.

Entering its harbour from the ocean, we pass Staten Island on the left, Long Island on the right, over a bay of some twelve miles in extent, and approach Castle Garden, the lowest extremity of the city. From this point, the Hudson river extends along the west side, while the East River separates it from Long Island and the ocean, and bounds the east side of the city. In each of these rivers, for nearly two miles along the city, the spars of the shipping rise like a leafless forest, including all kinds of craft, from the noble merchant ship, the ocean and river steamer, to the small ferry-boat and fishing-smack. Brooklyn, on the East River, and Jersey City on the Hudson River side, are opposite to this part of New York, and are small cities in themselves, although in all their business relations they are connected with New York.

Castle Garden is now beginning to assume some historical importance, from having been a fortification in its earlier days, and having done service in the defence of the city, and latterly, being the place of reception for visitors of note, closing up a long series of them with the last illustrious arrival—the Prince of Wales.

Leaving Castle Garden, the chief thoroughfare is Broadway—the Regent-street of New York. But how it should have acquired its reputation as a broad way is not now evident, since it is not so wide as Oxford-street. But we suspect the early Dutchmen who planned it thought it wondrously wide, since all the adjoining streets are very narrow. Half a mile from Castle Garden, passing out of Broadway, is Wall-street, the street of banks and banking-houses, and the centre of money speculations for America. This street is adorned by the Custom-house, a good example of Doric architecture, built with white marble; and the Merchants' Exchange, a large building of blue granite. Situated in Broadway, and facing Wall-street, is Trinity Church, a specimen of Gothic. Some half mile more and we reach the City Hall, and the little plot of ground around it, designated as the City Hall Park.

From this point we find a succession of spacious stores or warehouses; some built with white marble, others with red sandstone, but vying with each other for architectural display and convenience of interior arrangements. The vast St. Nicholas Hotel, of white marble, rises from amidst these shops; and near it is the Metropolitan Hotel, of red sandstone. Nearly a mile beyond, and we reach Fourteenth-street and Union-square—a fashionable neighbourhood,—and the Opera-house, just a little out of Broadway. Here, too, a bronze statue of Washington is placed. Numerous buildings devoted to various business purposes, a few churches, theatres, public picture galleries, fill up the remainder of this crowded and busy street. Dwelling-houses, various public buildings, and shops of lesser importance, occupy all the streets in adjoining directions until you reach the rivers on either side. About two miles away from the lower part of the City, the dwelling-houses become the chief attractions.

All this part of the city is newly planned, having wide avenues running north and south, and streets extending from river to river, east and west. Many of these dwelling-houses are elegant specimens of architecture: all are of stone or marble. The Fifth avenue, Fourteenth street, and many of the streets extending almost from the Hudson River, west of Broadway, and near Broadway on the east side, are filled with private residences; and, now that the Central Park is being finished and is becoming a place of attraction, fine residences are being built all around it.

Trunways and omnibuses make easy, rapid, and cheap communication to all parts of the city. Thus, with busy people everywhere, richly-dressed ladies, as well as the toiling poor crowding the chief thoroughfares, elegant carriages, gaily-painted omnibuses, drays, and all kinds of vehicles passing to and fro, military companies, in their gay uniforms, on parade, with their noisy bands of music,—with the brilliant show of goods in the shop windows,

and a bright, joyous sky overhead,—we find a city much more like Paris than London, and one which, considering all its circumstances, the New Yorkers may well be proud of.

#### OPENING MEETING OF THE ARCHITECTURAL ASSOCIATION.

The opening *conversations*, for the session 1860-61, was held on Friday evening, the 25th ult., at the house in Conduit-street.

There was a very numerous attendance of members and visitors, including many ladies. The rooms were tastefully arranged, some fine specimens of Italian tapestry of the sixteenth century, from designs by Julio Romano, being exhibited, in addition to architectural drawings and photographs.

The chair was taken by the president, Mr. Roger Smith; and among the gentlemen present were—Professor Donaldson, Mr. G. G. Scott, Mr. Hayter Lewis, Dr. Barlow, Mr. Morgan, &c.

Mr. Arthur Smith (honorary secretary) read letters from Professor Cockerell, Mr. Tite, M.P., Mr. Godwin, Mr. Kerr, and others, expressing their regret at not being able to attend.

Mr. Penfold read the report of the sub-committee (consisting of Messrs. Roger Smith, Mr. Thomas Allom, and Mr. Penfold) appointed to consider the drawings submitted in the class of design, and the essays on street architecture. I stated that seventy sketches had been sent in by eleven gentlemen. Many of these were of great merit, and the committee recommended that the prize should be awarded to Mr. W. T. Sams. The designs submitted by Messrs. Rogers, Lewis, and Teeves, also deserved especial commendation. The committee regretted that but one essay on street architecture had been sent in, and they recommended that the subject should be again submitted for competition next year.

Mr. Sams having received from the hands of the president his prize for the best design, accompanied by a few words of congratulation and encouragement,

Mr. Arthur Smith announced that the following gentlemen had been admitted members of the Association:—Messrs. W. A. Moy, Edmondson, jun., H. Claydon, R. G. Mather, Henry Rack, Alfred Sansome, Charles Humphreys, Payne, Thomas Brown, James Dudley, W. G. Habersham, T. D. Wakeford, Clutterbuck, Clarkson, J. W. Browne, and Ridge.

The President then delivered the following address:—

LADIES AND GENTLEMEN, AND OLD FRIENDS,—In conformity with a long-established rule, which imposes upon the president for the year of the Architectural Association the duty of opening the proceedings of its session by delivering an address, it now devolves upon me to bid you welcome, and to invite your attention to a few observations suggested by the occasion which has called us together.

I have much pleasure in being the mouthpiece of the committee to thank you for your presence here this evening; and I congratulate you heartily on the return of those opportunities for friendly intercourse and mutual help, heralded by the recurrence of this our opening meeting, and of those that are to follow.

On occasions when our friends, after any lengthened absence, the talk commonly turns first upon all that has befallen themselves and their acquaintances since they were last together, and then gradually glides into topics of more immediate and personal interest.

It seems, therefore, only natural that our reflections to-night should take a similar course, and that I should ask you first to follow me in making a few remarks on those occurrences and features of the past twelve months that are of general interest to our profession; and then to turn the current of your observations towards ourselves, on our actual position, and our prospects for the coming session. It is on the whole cheering to advert to the state of things and prospects a year back, and to compare them with the condition in which architecture seems to stand at this present day. At the opening of our last session, we were in the depressing influence of that forced stagnation under which all buildings had languished, and by which most had been arrested; and a repetition of the same evils was looked for by many of those best qualified to judge; while the threatening aspect of the political horizon seemed to bode ill for the fate of peace. Our profession, too, seemed to be in some danger of being split into two factions, so strongly were differences of opinion urged and maintained by the opposed advocates of the Medieval and the Classicist styles, provoked by events connected with the proposed creation of a Foreign Office.

To-day we are able to congratulate one another that the year is nearly out, and we have had neither a strike nor a war. There has been a great deal of quiet activity in spite of the very unseasonable weather we have had to encounter, and there has been no deadly feud in our body. On two occasions, on the hand of death has been among us, and united action has been desirable, the most harmonious unanimity has been exhibited, and there has been, I think, undoubted evidence of a good spirit pervading all ranks of the profession.

It is, no doubt, a consequence of the depressing influences I have alluded to, that there seems to be much less in the architectural productions of the past year to warrant special notice than some other individual years that might be referred to have accomplished.

We have not had any strikingly attractive competition nor many buildings that have risen very conspicuously



scribing; and they miss altogether the practice, the enjoyment, of *vis-à-vis* speaking and actual hearing, the opportunities for criticism, and, above all, the agreeable intimacies and pleasant life-long friendships that have been formed in this society, and are perhaps its true secret of power.

Of the arrangements that your committee have made for the session this day commenced, the printed syllabus already circulated will have given a good idea, but there are several particulars to which I desire for a moment to invite attention.

You will remember that the committee whom you elected at the close of the last session was composed of a large extent of new members, and that to them you entrusted the task of revising several portions of the rules. This committee has held numerous sittings during the recess, and has applied itself to the preparations for the session with a diligence and a spirit that I hope will meet, as they unquestionably merit, your approval. This reference to the committee induces me to call your attention to their exertions in procuring the good list of papers on our syllabus, and their efforts and success in bringing together, and fixing for inspection, the many drawings, books, and other objects of art that are scattered about the room; and particularly in fixing the three noble tapestries lent us for exhibition by the kindness of Mr. Cowan. These tapestries are worthy of your best attention: the centre one (the subject of which is *Æneas and Dido*) is by Pierino del Vaga, the most celebrated, except only Giulio Romano, of all the pupils of Raffaele; and the other two (representing *St. George* and *St. Andrew*) are of uncertain authorship, but undoubtedly of the school of Raffaele. They are all fine, but the Pierino del Vaga strikes me as equalling the very best works of that great artist, even the frescoes which he painted in his finest pictures. But this is a digression. To return to what the committee have been doing. Various modifications in the rules, which have been all considered in repeated committee meetings, and which I have had the special business meeting; and I trust that so many members as can be present at that meeting will attend to discuss them; while, with such a discussion impending, you will not expect me to say any more of what I have proposed. I ought, however, to tell you of one intention, which, as the carrying out of it will depend a good deal more on myself than on any one else, it is appropriate that I should bring before you, and that you should have resolved that it is expedient that for the future the chair shall be taken at our public meetings with exact punctuality at eight; and I have, therefore, to inform you that you are invited upon the subject, and that, if it is intended, except under special circumstances, not to prolong our meetings after ten o'clock.

The offer of prizes for the best set of sketches in the class of design having had a satisfactory result, as you have this evening an opportunity of witnessing, it is proposed to offer a similar prize this session; and, as the committee of the class of design have made some regulations of their own respecting drawings, and especially one relating to the size of drawings, a step which, according to our constitution, they are empowered to take; I have to request all intending competitors, to put themselves in communication with the secretary of the class.

Since these words were written, I have had the very great satisfaction of receiving, and being requested by Mr. Tite to communicate to you, a most generous offer of an annual prize, conveyed in a letter from him, which I will read to you. In the first letter from Mr. Tite, already read, he volunteered a donation to our library, and the moment it was suggested that, though we are not in possession of a library, a donation to be applied to the purpose of a prize or prizes would be most acceptable; he, with the utmost promptitude, sent by return of post the reply, received this afternoon, which I have now the pleasure of reading to you.

"I am much obliged to you for your note and its suggestions; and I beg you to announce to your committee that I shall be happy to place at their disposal 5*l.* per annum, to be distributed in prizes in books, or in any way best calculated to promote the very praiseworthy objects of your Association.

If you will kindly call upon me, I will endeavour to make arrangements for the regular payment, annually, of this sum, at the period of the year most convenient for your purposes;—and also to say a word on the objects to which the prize or prizes may be devoted."

It will be observed that it is not till we have seen Mr. Tite, that we shall be able to publish the mode in which he will approve of his generosity being applied; probably it may be devoted to one or two prizes already announced, the Association furnishing the other. The moment the question is settled, it shall, however, be publicly known; and, in the meantime, we owe the warmest acknowledgments for the offer, acknowledgments which you will be asked presently to pay in the form of a definite resolution.

Having had occasion to refer to the class of design, it may, perhaps, be desirable to explain, to those that do not belong to us, the nature of this highly-important part of our constitution. The class of design might, perhaps, be designated by a more expressive name, because it is neither a class of design, nor a class of book-keeping names, and an expected or enforced attendance; nor yet is it formed for the purpose of getting instruction from any one person. It is simply a meeting, on the Friday evenings intermediate between our regular meetings of our members as like to attend and bring with them a sketch illustrative of the subject previously decided upon, a list of which subjects for the week is contained on the syllabus in your hands. The sketches are handed round, and afford subject for comment from the members present and the president; and, after this is over, the rest of the time is spent as the members think most profitable.

For a long time it was (except when a paper of some description was prepared and read by a member) customary to decide on a subject for a design to be made there and then, in a short fixed time, and hence termed the *half-hour's sketch*. It is now, I believe, proposed to practise drawing architectural ornament from casts; but any other advantageous way of spending an hour may be selected by the gentlemen who attend, subject to the approval of the committee.

Now, this class of design is, I have no hesitation in saying, an institution of great value. It has produced many first-rate designers: it is spoken of in the highest terms by those who have at different times belonged to it; and it is entirely free to any members. You will be therefore glad to learn that this is continued unaltered.

We also continue to keep up the registry for draughtsmen out of employ, and for architects desiring assistants, and are always glad for our friends to avail

themselves of it, as well as of any of the other little privileges of membership, such as, for instance, the possibility of being admitted to see the models in the British Museum, and to some other public institutions; and we are determined to take the best means in our power to promote the personal acquaintance of members with one another, and with the members of the committee, convinced that in so doing we are carrying out the best aim of the Association; in fact, the original aim, for the whole of our history had its start in an observation made by the founder, Mr. Wilson, "What a pity it is that architectural draughtsmen do not know one another more!"

The offer made last year of a prize for an essay is this year renewed; and as the subject of the last year's competition (which was, however, no competition) is one of the best that could be devised, it is again proposed, in the hope that several of the members may be induced to write an essay on "Street Architecture."

To meet a wish that had been expressed by some of the members to have some papers read on subjects of elementary but fundamental importance, it has been arranged to devote four of our regular evenings to the discussion of the four simple but important subjects of "Foundations," "Masonry," "Brickwork," and "Carpentry," and on these occasions it is intended that the paper succinctly introducing the subject shall be supplemented by short statements of portions of the subject by other members, who will be requested beforehand to prepare for this engagement: it is hoped that peculiarly valuable results may be thus obtained; and although on these four evenings the price of the subject by other members, information will be sought to be secured with the greatest care, it is by no means intended to limit this preparation to those evenings. On the contrary, the committee earnestly desire, if possible, that the subject by other members should be prepared to discuss the subjects of the papers proposed to be read; and it is their intention to take some trouble to seek out and bring forward those members of their own profession who are best qualified to do so, who may be supposed to be peculiarly conversant with the subject of any paper about to be read; and I sincerely hope that members will find a pleasure and an advantage in such a course.

One other new feature, which it is right I should bring before your notice, is indicated on our syllabus: it is the arrangement by which a few of us have agreed to meet in the evening, on the subject of the subject by other members, on the evenings of ordinary meetings, to study the subject of botany as it bears upon architectural and decorative design, under the guidance of Mr. Binslin, one of our members.

Those of my hearers who are in the habit of designing ornament will not need to be informed of the advantage derivable from a familiarity with the forms and modes of growth of the vegetable world; and, in fact, all our members that many of you will feel disposed to embrace this opportunity of obtaining that familiarity, under competent guidance, and with the advantage of specimens, dried and fresh, and diagrams. Should it be found desirable to close this series of evenings before the end of the session, there is a dim idea of taking up either the subject of chemistry or that of geology, in the same way; and there is also some idea of the subject of mineralogy, or of facilities for instruction in architectural modelling, as suggested last year; but, as these ideas have not yet assumed the form of definite proposals, and may not for some time, I do not dwell upon them.

And now, after this enumeration of the intended engagements of the year, it remains only for me to invite you all to contribute,—our lady visitors, by kindly "excusing" on association evenings, and generally, who are a society of such of our members as are their friends; our members by attending regularly and taking part warmly in the proceedings; and our other visitors by either themselves joining us, or that by their presence they give us the largest portion of our time, and his best energies of mind and body, has a claim upon him that, at least, whatever else is neglected, should be done nobly and well. There may be some excuse for those toiling in a dull unlightened routine of monotonous labour to throw their freshest and best energies into the recreations or employments of their leisure hours; and yet, even in this case, it is an inversion of the laws of life. If one sees a man keeping accounts all day with no interest in his work, and little or no pride in doing it well, so that he do but escape the rebukes of his superiors, and then returning to his home to tell with heavy good-will and unselfish enjoyment, of his day's work, one cannot help feeling affected earnestness in his garden; one cannot help feeling how much more good he would have done to the general human family, and how much happier a life he would have led, had he turned a gardener instead of clerk at his outset in life, and left the counting-house to his leisure to those who really take a pride in the beauty of their writing and the accuracy of their calculations.

But, however this may be in some cases, there can be no excuse for half-heartedness in the pursuit of a profession like that of architecture; one which more than any other calls into equable use all the faculties of the mind, and does not neglect the body. At once sedentary and active, speculative and practical, and of a business-like, the architect must combine the most opposite qualities, can make use of the most varied tastes, and can turn to profit the most comprehensive information; nor should he deem anything whatever in the whole domains of science, art, or history, foreign to his studies.

With a scope before him far greater than the most exalted facilities, the most stirring energy, and the most prolonged life could fully give, the architect, as yet, the satisfaction to know that, by limiting his efforts to one or two things at a time, it is within his reach to attain a very high degree of perfection in some, and at least an acquaintance with most, of the studies or forms of skill germane to his profession. This consideration furnishes an incentive and an encouragement to study and to labour with diligence, for, although complete and universal success, even within the narrow limits of one profession, is unattainable to human power, it is quite impossible to say how near an approach to that perfection may be practicable.

In this struggle, and with these objects before us, we

feel we can help one another; and on that ground it is that this association was formed; and it is from a conviction that our friendly co-operation here has been of value to us, and will be of more value still, the more energetically we prosecute it, that we adhere to this association, and desire its advancement. Let us, then, continue, in mutual assistance, and maintain and redouble our individual and collective exertions.

Lastly, let us all bear in mind that to the keeping of each one of us committed a portion of the *honour* of the profession. Circumstances may put a *brilliant* career beyond the reach of some, of many, of all of us; but stillness one is possible to all of us, and nothing short of that is allowable to any of us.

In integrity and honour, then, let us be perfect,—in friendship undivided,—and in study and practice let us resolve each to know no limit short of his utmost and his best, taking as a maxim of practical life those inspired words, "Whatever thy hand findeth to do, do it with thy might."

At the conclusion, the President having invited discussion,

Mr. G. Gilbert Scott observed, that, in attending that evening, he had not come to speak but to listen; and that all he could do was to express his extreme gratification at the able address which he had just heard.

Professor Donaldson stated that he also had been afforded much pleasure by what he had witnessed that evening. The various topics to which the President had referred in his address were of deep interest and importance to the profession to which they all belonged. With regard to the Continental style referred to by the President, he (Professor Donaldson) ventured to hope that they would not be indebted altogether to foreigners for their designs, and that native talent would not be found wanting either in fancy, imagery, or conception. With regard to the question of competition, he was of opinion that nothing could be more ill-advised than to attempt to interfere with or disturb the integrity of the decisions arrived at by tribunals of selection. Any attempt of that kind would infallibly introduce a flood of favouritism, and true merit might be sacrificed to personal influence. In his opinion, the only safe course was to uphold the decisions of those to whom competing designs were submitted, unless it could be shown that bad faith were practised in which case, of course, any decision that might be arrived at would be illegal.

On the motion of Mr. Allom, seconded by Mr. Penfold, a vote of thanks was accorded to Mr. Tite, M.P., for his offer to place at the disposal of the committee the sum of 5*l.* annually, to form a prize for the best sketch or essay in the class of design.

The proceedings then terminated.

The class of design have met, when designs for a verandah were submitted.

The next meeting of the Association will be held on the evening of the 9th inst.

#### FROZEN MUSIC.

MADAME DE STAËL, in one of her brilliant conversations, speaking of the soul-feeling displayed in architecture, called that art "Frozen Music." Hence the derivation of the title of my theme. Our subject will be about poetry and the beautiful in connection with architecture; and we shall, I think, find that the subject is as grand as it is exhaustless; and we shall, I trust, by the time we have finished, have gathered together the idea that a "Frozen melody" is after all a very beautiful thing.

Dr. Cheever, in speaking of the cathedral of Milan, says:—"If you can conceive of a river of liquid white marble shot into the air to the height of some 500 feet, and then suddenly petrified while falling, you will come to some approximate imagination of the beauty and rareness of this magnificent vision. It seems like a petrified Oriental dream." And Wordsworth sung the same theme,—

"But fancy, with the spell of fire,  
Hath fled to Milan's loftiest spire,  
And there alights, 'mid that aerial host  
Of figures human and divine,  
While as the snows of Aegæine  
Indurate by frost.

Awe-stricken she beholds the array  
That guards the Temple night and day:  
Angels she sees that might from Heaven have flown;  
And virgin suits, who not in vain  
Have striven by purity to gain  
The beatific crown.

Far-stretching files, concentric rings,  
Each narrowing above each,—the wings,  
The uplifted pinnacles, the silent marble lips,  
The stary zone of over-voiced height,  
All steep'd in this portentous light,  
All suffering dim eclipses."

Now, it is some such emotions as these I wish to awaken, and if I fail, believe me the fault will not be in the subject, but in the writer.

People, for the most part, seem to think (or rather dream, for thought is almost out of the

question) of architecture as if it referred only to "bricks and mortar," "measuring and valuing," or abstruse mathematics:—

"Surely the time shall come,  
When this fine overplus of night,  
No longer sullen, slow and dumb,  
Shall leap to music and to light."

Our archaeological societies are, indeed, teaching us to look behind the broken column, and the ivy ruin, and there see the genius whose subtle divine conceptions emanated, and which could impress itself into a material form.

In the grand poem of architectural history reposes much that is beautiful and true and noble, in which the lofty mind of man, aspiring toward heaven, has left its noble impress,—in which we may obtain glimpses of hygone nations, whose histories are written with an indelible hand on the stones. What should we know of Nineveh, without the magnificent Assyrian marbles? What of the gigantic types of thought and being of Egypt, without the sublime temples of Carnac and Apollonopolis; or the dim colossal ruins of Thebes? What of Greece, without the exquisite conceptions of Pericles, Ictinus, and others? or of Rome, without the Colosseum, temples, and arches reared by its pride? How necessary is it, then, that we should be able to read our poem. How much greater the enjoyment of the mind is by such a knowledge, more especially in these railway-excursion-times. An ignorant or a forgetful traveler cannot possibly see aright but the superficial scene before him; he cannot look into it, and hear its great heart throbbing, nor catch the exquisite dulcet tones of its historic life and being; in fine, to quote the poet's satirical figure:—

"A primrose by the river's brim,  
Or at the cottage door,  
A yellow primrose is to him,  
And it is nothing more."

Goethe somewhere says, that "man is so inclined to give himself up to common pursuits, the mind becomes so easily dulled to impressions of the beautiful and perfect, that one should take all possible means to awaken one's perspective faculty to such objects; for no one can entirely dispense with these pleasures; and it is only the being unaccustomed to the enjoyment of anything good that causes men to find pleasure in tasteless and trivial objects which have no recommendation but that of novelty. One ought every day to hear a little music, to read a little poetry, to see a good picture, and, if it were possible, to say a few reasonable words."

The person who can read our frozen poetry peoples it with great forms, sees in it grand moral lights and shades, surrounded by the many coloured lights of the past as well as the light of to-day's sun. Let us then take courage, "with a heart for any fate," let us arise and be doing, remembering always the immortal destinies of man, and the hopes that are ever surging in his heart, and ever rising upward. Let us

"Build on in hope, with pillar, dome, and tower,  
Not for the present, but for a distant hour.  
Brief is the span of life: the builder eyes  
His deep-thought plan, and sees the walls arise;  
Anticipates the whole, and then expires  
Greatly accomplished. Yet his genius fires  
The lasting pile. Not men, but nations too  
By such day oblivion."

Thus it is evident the beauty of our poem concerns us all; for its knowledge enables us to see in our travels something more than beautiful scenery and odd-looking ruins; and which in this England of ours is especially valuable from the many relics of antiquity still left us, and in *summa excellentia* to see living poetry in "those wrecks of another world whose ashes still are warm,"—those fallen arches, and arch-crushed columns, and choked up vaults; or in those beautiful heaven-aspiring pinnacles and spires, that flash meteor-like in the sunlight, and which seem to give us glimpses of the glory never to be forgotten, telling us, like gleams on a sunset sea, what once hath been.

"The architect:  
Built his great heart into these sculptured stones,  
And with him tould his children; and their lives  
Were builded with his own into the sculptured walls.  
As offerings unto God."

An enlightened mind beholds all things in their true and natural light, and in return (for there is a reward attached) receives from them such lessons of the true and beautiful as they are intended to convey. Such a mind does not shut itself up in a narrow gloomy prison, till it thinks the walls of its own self the limits of the universe, and the reach of its own chain the very verge of all intelligence; but it walks abroad, eyes open, ears open, and soul open; and so the sunshine and balmy air pour in their flood of effulgence, ex-

panding and enlightening the darkest recesses. And so the mind, becoming thus the glad recipient of light and wisdom, develops new powers, and assumes a nearer similitude to the Eternal Mind in whose likeness it was made.

The great principles and ideas of our poem have their answering types in science, literature, religion, manners, government—everything. In it we may find the hidden harmonies of being; and, by learning to read it and understand it, we contribute to the solution of the great problem of the universe. Our poem consists of two parts, an inner and an outer; the universal and the local; the perennial and the fleeting. Its inner or spiritual essence comes from the truest soul of the author, and findeth ceaseless response in the human soul: coming from the heart, it must for ever go to the heart. The nature of our poem is indestructible, and destined to appear and reappear in every age. It is our part to woo the immortal spirits of the past as well as of the future; and breathe the celestial fire that is in us into the material necessities of the day.

What we can see of the remote past, through the deepening shades of time, is as of some great unknown sea, on which some solitary ship is afloat, whose course we can but dimly trace through the clouds which every way gather around her. There is somewhat of this shadowy dimness woven into the warp and woof of the first canto of our poem, but which nevertheless is highly interesting, for therein we read of the early struggles of our race. That we must have raiment to cover us, houses to shelter us, food to eat, is all very true; but one of old declared that the race cannot live by bread alone; and how true this is for all time I need not specify. It is certain that those necessities are not the end, the aim, the purpose of our race. Created intellectually in the image of the Eternal, there are of necessity affections, desires, aspirations, in the human breast, which nothing can satisfy but the true, the spiritual enjoyment of those things peculiar to our moral and intellectual nature; and these enjoyments are obtained by the free exercise of the faculties which the Eternal has implanted in us for the contemplation and discovery of all truth—the indulgence of the exalted emotions arising from the view of the physical and intellectual harmony of the universe. The privilege of revelling in the bright dreams of poetry and science, and basking in the rays of genius; communion with the noble living and the noble dead: such are some of the true, the spiritual, the undying things. Being gifted, then, with such powers as these, we are enabled to penetrate the deep mysteries of nature, and read the handwriting of the Infinite.

The immortal Schiller somewhere remarks that "it is not enough that all intellectual improvement deserves our regard only so far as it flows back upon the character: it must in a manner flow from the character, since the way to the head must be opened through the heart." If we desire to be noble, to be manly, to enjoy our high intellectual nature, we must, as Goethe says, "Live in the Whole, the Good, the True;" for certain it is that purity and nobleness of life is an inspiration to the intellect. We have a voice that questions all the past and anticipates all the future;—a faculty to reconstruct what it sees according to its own ideal, and thus creates new worlds all its own.

The circumstances by which humanity is surrounded, and by which it lives, moves, and has its being, socially and intellectually, are seemingly, perhaps, but not really, a set of dull mechanical contrivances: the destiny of the race is for a higher purpose than sensual existence: the soul-life is a thousandfold more important, and the laws that apply to our moral nature are immeasurably more important, more solemn, than can be any other considerations. Those laws surround our spirits like an invisible but adamant circle, not to fetter but to guard, to develop and guide. There are silver chords that connect the inner life with the outward: these for the noble, the good, are connecting links between earth and heaven—a sort of Jacob's ladder,—on which bold, pure thoughts, like angels, wander up and down. Those laws, too, are designed to assist an upward growth of the soul, and to minister to that glorious development of the beautiful, the true, and God-like, which must be the never-ceasing aim of our being in its everlasting progression.

That philosophy which began with Socrates and Plato has now spread itself abroad in the world, and is becoming transferred into our literature and art. Art, whose direct mission is the representation of the true, the beautiful, by forms that speak rather to the soul than to the senses, and that awaken deep and earnest thought by the

noblest and most glorious images, can never be separated from that philosophy. Mons. Cousin, in his lectures on the "Beautiful," says:—"Tell me what sentiment does not come within the province of the painter. He has entire nature at his disposal, the physical world and the moral world; a temple, a churchyard, a landscape, a sunset, the ocean, the great scenes of civil and religious life, all the beings of creation; above all, the figure of man and its expression—that living mirror of what passes into the soul."

Things inanimate are possessed of life: the old ruin and grey relic of antiquity, pleading haughtily for glories gone, speak in voices which most people hear not, heed not: they are like eternal lamps in the bright city of God. But

"Vauhis'd is the ancient splendour,  
And before my dreamy eye  
Were those mingling shapes and figures  
Like a faded tapestry."

We feel that Ruskin was right when, in his "Seven Lamps," he says, "How cold is all history, how lifeless all imagery, when compared to that which the living nation writes, and the uncorrupted marble bears! How many pages of doubtful record might we not often spare for a few stones left one upon another! The ambition of the old Babel builders was but directed for this world. There are but two strong conquerors of the forgetfulness of men—poetry and architecture; and the latter in some sort includes the former, and is mightier in reality. It is well to have not only what men have felt and thought, but what their hands have handled, and their strength wrought, and their eyes beheld." This is indeed the grand æsthetic principle of our frozen poetry, the concatenation of the world history written in imperishable characters on the uncorrupted marble, and revealing to us the idiosyncrasies of every nation. These all may behold, and seeing, learn if they will "the primal art of man."

Thus in all time, from the monolithic column to the trillions of Surim, from the Propylæa of Pericles to the gorgeous fantastic Alhambra, we may trace the same spirit of beauty, the same eternal æsthetic principles.

Let us in imagination go back for a moment to the origin of these principles, and we shall find they may be traced even to the expulsion of our progenitor from Paradise. Return to yourselves, if possible, the feelings of the founders of our race on seeing the fiery swords of Eden's guardian angels forbidding their return, and all about them the "wide, wide world," full of strange unvisited scenes. How different from what they had recently left. They had erewhile been accustomed to hear the voice of the Lord God walking in the cool of the day; but now they must hear it only occasionally, and that under the dim, shadowy starlight. Oh! with what a whirlwind would the thought of what a home they had lost rush into their minds? Everything had heretofore exquisitely syllabled beauty, and intellectual happy home; the nightingale's ravishing melody to the departing sun, and the lark's thrilling song to its rise; the company and high intellectual talk of angels; the beaming light, the refreshing night, the dulcet notes of its fourfold waters, the sighing of the winds amid the leafy bowers, conveying, as it were, Arabian music to their souls;—all, all told of the dignity of their race, and the beauty of their home. And now they were exposed to the vicissitudes of wind and rain, of sunshine and cold, the piercing blast as well as the refreshing breeze. Then did the knowledge they had newly and recently acquired—of good and evil,—arise with irresistible force in their souls,—they thought of what they had lost and what they had gained; and the distress of their souls made itself known by an outward sign—the manifestation of protective art; and now in this latter time, under the twilight and starlight of past ages, we hear the voice of man walking amid the works of his genius. As vapours from the ocean floating landward dissolve into rain, and are carried back to their original source by the agency of rivers, so thoughts and the semblances of things that fall upon the soul of man in showers, flow out again in the living streams of art and beauty, and lose themselves in their original source—the eternal.

Thus, then, our frozen poem may be called a revelation of nature—of God speaking through man. It pre-existed in nature and nature is reproduced in it. Our poem is created—fashioned by the natural movements of the soul of our race. Statues, paintings, churches, poems, are the shadows of the race,—shadows in marble, colours, stone, words. We feel and recognize their beauty, and in return they act and re-act on us, giving birth, oftentimes, to vague images and shapes of

beauty, which float through the soul, as yet indefinite, but made perfect when put forth in art.\*  
F. D.

#### INFORMATION FROM ABROAD.

THE new constructions of the Palais des Beaux Arts advance rapidly. They consist principally of two vast saloons, which are to be appropriated, one, on the ground-floor, to the exhibition of Roman productions of art; the other, on the first-floor, being for an examination-hall. A large arched doorway, opening on the Quai Malouais, at present being terminated, gives access to the institution. It is proposed, at some future period, to unite these new buildings with those of the ancient school by means of a spacious gallery, somewhat similar to that of the Sainte-Genevieve Library, to be reserved for the collection of casts now in the Louvre; while two lateral galleries of less dimensions are to be devoted to paintings.

In the Rue de Bac, starting from the quay, a spacious sewer is to be constructed, and the ground is opened for the purpose. It is to communicate with that recently constructed under the Quai d'Orsay, and which is continued along the Quai Voltaire. This last, parallel to the Seine, will eventually be placed in communication with the grand collector of Asnières by means of a siphon, under the river below the Pont de la Concord.

The *Revue des Alpes* states that a Druidical altar has been discovered at La Motte-d'Aveillans, near the thermal establishment of La Motte-Saint-Martin. This stone consists of a cylindrical block, ten metres in circumference and five metres high. The first cylinder is surmounted by another, only fifty centimetres in height, but of a diameter of three metres, and disposed in such a manner as to leave a free space in front, upon this species of table, and a somewhat deep hollow cut out of the stone, in which it may be the victims were sacrificed. At the base, on each side, there are protuberances resembling wheels, evidently carved for facility of transport of the block.

In Savoy, the following works have been decreed by the Emperor to be of public utility, and are to be carried into effect:—the establishment of a port at Thonon, on the Lake of Geneva; the improvement of the port of Evian, as also that of the navigation of the Dranse and its affluents.

#### THE DEMOLITION OF THE ANCIENT PERCY'S DINING-HALL AT ALNWICK CASTLE.

AN apologetic account of the destruction of this interesting piece of antiquity, "the ancient Percy's dining-hall," appears in the *Newcastle Journal* of the 27th ult. The facts are so unfairly glossed over, that in the interests of history and archeology we think it desirable to lay before our readers a contrasting statement to that of the writer of the account in question.

It will be fresh in the remembrance of our readers that, in our recent paper upon the works at Alnwick Castle, we recounted the acts of Vandalism committed there, in the entire destruction of the Percy dining-hall, and the Falconer's and Armorer's Tower, with the Norman curtain wall between them, for the sake of the Italian internal arrangements and decorations. The interest that the narration created caused extracts to be copied into almost every journal in the kingdom. We then merely glanced at the broad facts: we now give them in detail. The writer of the account in the *Newcastle Journal* states:—"It appears that though the ancient dining-hall of the first Lord Percy of Alnwick was retained by the first duke, it had been greatly altered. The original entrance, which was from the outside, was walled up, and a new one broken open. The ancient fireplace had been abandoned, and another formed. The same was the case with the windows. A room had originally existed over the hall, the fireplace of which remained in the wall. This floor was taken away. The alteration had been badly done. The old openings were blocked up with loose rubble, covered by a thin skin of masonry. The wooden lintels had decayed. The wall had been greatly weakened by the new openings. The new roof had been made of common plantation timber: it, too, had decayed, and, settling down, was pushing out the walls." In vivid contrast to this mild narration we have, fortunately, in the laborious volumes edited by the Rev. W. H. Hartshorne, entitled, "The Feudal and Military History of Northumberland," a glowing account of the ancient features of the Percy dining-hall, just previous to

their demolition. After describing the hall previously to the removal of the Georgian plaster decorations in the following terms:—"An improved degree of taste would reasonably have found fault with the thinness of the mouldings, or with the ill-understood profuseness of its decorations. But when criticism had exhausted itself on the minor ornaments of the room, its proportions still remained massalable. They were those laid down by the architect of the first Percy."—he goes on to describe the interesting features discovered on the removal of the plasterwork:—"This revealed a most curious specimen of domestic architecture during the Middle Ages, showing not only the exact dimensions of the former baronial hall of the first Percy, but the various arrangements that were adopted for luxury, for entertainments, and for convenience. At the south end of this grand banquetting-room were the marks of the dais or high table that stretched across it. Over the dais was the buffet for the display of crystal cups, silver flagons, and plate, with a lion's paw as the termination of a hood mould; and on one side a small water drain. A door and staircase communicated with the cellar below, and the hooks for suspending the tapestry on the walls remained in the old plaster."

The writer in the *Newcastle Journal* completes his apology thus:—"To have endangered human life in the attempt to save a semblance of antiquity would have been worse than folly." We happen to know that, whenever it was determined to preserve a semblance of antiquity, daring feats of masonry were performed and human life endangered. His Grace the Duke of Northumberland on one occasion desired that a certain portion of the curtain wall adjoining the new kitchens should be preserved, and an enormous mass of wretchedly-constructed Norman walling was underpinned 20 feet deep, to a considerable length, at great cost and imminent risk. This feat was accomplished and a "semblance" of antiquity preserved; and again, even in the Percy dining-hall in question, when it was resolved that the external wall of the large round tower of this hall did not interfere, as the remainder of the building did, with the new Italian form for the interior; at great risk and imminent danger the inner and most interesting part of the tower only was destroyed, and the outer "semblance of antiquity" preserved.\*

#### FINE ARTS IN AMERICA.

AMONG the many rapid strides which the city of New York has taken in the few past years, in the higher adornments of life, none are more noticeable than a growing taste for the fine arts, and the consequent development of artistic works in that flourishing capital. The character which the American people had, with some reason, acquired of being devoted exclusively to commercial and money-getting pursuits, is rapidly changing; and as Jonathan, when he undertakes a thing, generally does so in earnest, we anticipate the time when the United States will take a foremost rank in the encouragement of art.

A fresh impetus is about to be given to the encouragement of Transatlantic art by the erection of a new establishment, to be termed the "Institute of Fine Arts," in New York. The Dusseldorf collection, once the property of Mr. Boker, forms the nucleus of the enterprise. Mr. H. W. Derby, the proprietor of the Dusseldorf Gallery, as soon as it came into his possession, seeing that the present gallery was inadequate to his purpose, determined to devote his energies towards establishing the largest art-gallery hitherto attempted in that hemisphere; and for this purpose he selected an excellent site on Broadway, between Houston and Bleeker streets.

The new gallery, erected at a cost of about 12,000*l.*, is intended to be supplied with varying collections of productions of painting and sculpture, not only from native American artists but from those of England, France, Germany, &c. It is 34 feet in width by 200 feet in depth, extending through the entire length from Broadway to Mercer-street. It is divided into compartments, or separate exhibition-rooms, lighted with skylights. If not too late, we should suggest a revision of these; as, judging from a section before us, we should doubt a favourable result.

The facade is Italian in style, and involves the introduction of sculpture to some extent. The

\* *Caution to Tourists.*—It has been stated to us that the first commoner in England (the Speaker of the House of Commons) journeyed one day last week to Alnwick Castle, and sent in his card to the Duke of Northumberland. His Grace sent answer that he could not be seen. The Speaker politely returned a message that he had arrived on purpose to see the castle, and begged permission. His Grace sent back a direct refusal!

architect is Mr. J. R. Hamilton, to whom not long ago the first premium, 500 dollars, was awarded in the competition for the Rev. H. W. Beecher's church in Brooklyn.

It will of course be understood that the establishment of which we have spoken is a private undertaking with a mercantile end in view; but, as a sign of the times, it is interesting in a wider sense.

#### DESIRED ENLARGEMENT OF THE BRITISH MUSEUM.

AMONGST the plans submitted to the Parliamentary Committee on the British Museum, and illustrated in their recent Report, that by Mr. Oldfield, who is employed in the Archeological department of the Museum, appears to have been viewed with considerable favour. It is thus summarily described in the draft Report submitted by the chairman:—

"Mr. Oldfield's plan, also printed in the Appendix, *supra*, is:—The purchase of the seventeen houses in Charlotte-street, numbers 1-29, and the three contiguous houses numbered 1-3, in Bedford-square, with the respective gardens (being such a plot of ground as has been recommended for purchase by your committee, under the condition of this Report); 2d. The erection thereupon of new buildings exclusively for the department of Antiquities; 3d. The transfer of the galleries now occupied by that department on the upper floor to the departments of Natural History. The new buildings in this plan would contain about 51,000 square feet of floor space on the principal or ground-floor for the exhibition of sculptures, and nearly 21,000 square feet in the two upper stories, for smaller antiquities, and about 8,500 square feet of space required for other purposes than for scientific studies. His plan also proposes some alterations in some of the existing galleries, to increase or improve their accommodation, partly in the Archeological, and partly for the Scientific departments. The amount of space which, upon this scheme, might be transferred to Natural History, or obtained for it by modifications of the existing building, would amount to 25,000 square feet, and includes two additional private rooms for scientific studies, and four studies for officers or assistants. It is further suggested by Mr. Oldfield, though not as an essential part of his plan, that the mezzanine floor over the secretary's office might be transferred to the department immediately above, if occupied by the department of Natural History, an arrangement which would increase the total space obtained for that department to about 27,000 square feet, and would provide four additional rooms, instead of two, for the private use of scientific students.

The expense of the proposed buildings has been calculated by Mr. Oldfield mainly from the data furnished in connection with the plan of Mr. Smirke, and is approximately stated at 161,000*l.* for additional buildings, with a further sum for alteration of the present buildings, for which no exact data of calculation exist, but which is conjecturally placed at about 16,000*l.*"

The plan assumes that the Natural History collections will be retained in the Museum, but that the additional accommodation provided for them will be on the principle of *limited* exhibition recommended by the keepers of these collections and the bulk of the scientific witnesses, not on the principle of unlimited exhibition advocated by Professor Owen, and requiring, according to his calculations, five acres of new ground, at the least. It proposes, however, to separate entirely the galleries of Natural History from those of Antiquities, by giving up to natural history the whole upper floor of the existing building, and removing the antiquities which now occupy the west side of that floor to new buildings.

The plan next proposes to purchase ground on the west side of the Museum, chiefly in Charlotte-street, but partly in Bedford-square, at a cost of about 65,000*l.*, and to erect thereon galleries for antiquities, at an estimated cost of about 145,000*l.* The west side is preferred to the north, both from the greater probable cheapness of the ground, and its superior convenience for the Archeological department, which is located in the west wing of the Museum.

On the new ground Mr. Oldfield's plan proposes to erect four long suites of galleries, parallel with the present galleries of Antiquities, and communicating with them. The present galleries, by slight modification, would furnish four more suites. These eight parallel suites would be obtained, to be appropriated exclusively to ancient sculpture, arranged chronologically in four principal schools—the first two Egyptian, the second two Assyrian, the third two Greek, and the fourth two Græco-Roman and Roman.

The Assyrian, Greek, and Græco-Roman (with the Etruscan) galleries would be lighted wholly by skylights, and consist only of a principal or ground-floor, with a basement for workshops, storerooms, &c.

The Roman gallery, which adjoins Charlotte-street, would be lighted by windows on the west side. Above it would be two upper floors for small antiquities. The lower of these would contain the galleries of Etruscan small antiquities, painted Greek vases, terra cottas, bronzes, and glass. The upper would contain British and

\* To be continued.

Medieval antiquities, gems, medals, and coins (including a room for public exhibition of these last).

The only frontage of the new buildings would be to the west; but the architectural elevation is left by the suggester to more competent hands. His province is limited to arrangement. Having for some years been employed in this duty at the Museum, he has necessarily acquired a certain knowledge of the requirements of the archaeological collections, and has planned each gallery with reference to its intended contents, varying the dimensions, form, and lighting, according to the peculiar requirements of the several classes of sculpture or other objects, so as to exhibit each in a favourable manner.

PHYSICAL EDUCATION.

A CONVERSAZIONE was held on the 25th ult. at the house of Mr. de Laspeyres; Mr. Robert Dickson, M.D., in the chair. The object was to explain Mr. de Laspeyres's system as applied to physical education, embracing the development of the constitution of man, consisting of both mind and body, and not one of these alone. This was sought to be brought to bear on what is at present a subject of great national importance—the training of the recruits for the regular army and the public-spirited members of the rifle corps. Mr. de Laspeyres explained that his system had been adopted in Nassau, in Prussia, and in France, and he was anxious to render a similar service to the defensive forces of Great Britain.

In the course of the evening some practical illustrations were given by four young gentlemen, pupils of Mr. de Laspeyres, whose performances, though some had had only nine lessons, greatly surprised and pleased the company.

A vote of thanks to Mr. de Laspeyres for his exposition was proposed by Mr. Cruikshanks, and seconded by Major-General Boileau.

In putting this vote of thanks, Dr. Dickson observed, that civilization in its progress too often exalts the mind at the expense of the body; so that we see many of our rising young men "sicklied o'er with the pale cast of thought," instead of glowing with the health, and being buoyant with the vigour, of early manhood. Fortunately, a reaction is taking place; and, instead of close confinement to the study, the desk, or the counting-house, our youth are lured out into the open air, to absorb the life-giving beams of the sun, and drink in the health-inspiring breath of heaven. To this more wholesome devotion of a portion of their time various causes have contributed to allure them. At the head of this may be put the volunteer movement; and whether the members of the rifle corps shall ever be called out to active service or not, it cannot be doubted that great good will result to the individuals themselves. Nor can we doubt but that the patriotic spirit which has called them forth will so nerve their arm that they will never permit a foreign invader to possess one foot of the sacred soil of our native land; or, at least, no more than may be needed, in Christian charity, to yield him a grave. To give a sound and permanently beneficial direction to these exercises, our friend Mr. De Laspeyres has generously come forward, furnishing the skill which nearly forty years' experience has given him, to contribute to restore our young men to the standard of health and powers of endurance, and that state of pristine strength and vigour possessed by man—

"When wild in woods the noble savage ran."

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

A MEETING of the members of this Society was held on Thursday, 24th October, in the Library of Westminster Abbey. The chair was taken by the Very Rev. the Dean, one of the vice-presidents. Amongst other matters,

Mr. W. H. Hart read a paper descriptive of the library, and of some of the principal books contained in the collection. He stated that the present building was adapted to its purpose by the Lord Keeper Williams in the year 1622. Many of the works were gifts by Camden, and were signed by him. Not the least interesting in the collection was a series of narratives of local and historical value, being accounts of the coronation ceremonies of the sovereigns of England. In connection with this subject the visitor could not fail to be struck with the gradual filling off in the decorative art as applied to those records; the account of the coronation of Queen Victoria, for instance, being merely stitched together without care, and almost without decency. Mr. Hart re-

ferred to the organ in the cathedral. The original organ was, with many others, destroyed by the Parliamentary army. After the Restoration, organ-builders were in great request, and Bernard Smith was employed to build the organ for St. Paul's Cathedral, and also that now in use in the Temple Church. Bernard Smith was succeeded by his apprentice Schmieder (who subsequently became his son-in-law), and he it was who built the instrument in the Abbey Church of St. Peter, Westminster.

Mr. Joseph Burt made some observations on certain early documents found in the ancient treasury beneath the library. These records were brought to light some few years ago by Mr. Scott, the architect to the cathedral, who found a quantity of muniments beneath the rubble in a narrow passage, which had formerly been a portion of the treasury. The manuscripts included a letter of Thomas of Woodstock, date 1360, and a great number of documents connected with the Courts of Record at Westminster Hall.

At the conclusion of Mr. Burt's observations, the members proceeded to the interior of the abbey; and there, in the western nave, standing immediately above the grave of Robert Stephenson, Mr. Scott explained the principal architectural points of interest in the abbey, and exhibited diagrams, showing the original formation of the church, and also the portions which were gradually succeeded to the influence of time.

Mr. Henry Mogford subsequently commented on the monuments of a museum of sculpture.

Mr. John Hunter also read a paper in Henry the Seventh's Chapel on the institution of the Order of the Bath.

In the afternoon several of the members attended divine service; and, at the conclusion, the meeting was resumed in the Chapter-house, which was explained by Mr. Scott and Mr. Burt. From thence the members proceeded to the Jerusalem Chamber, where a paper was read by the Rev. Thomas Hugo descriptive of the building and its contents.

SCHOOLS OF ART.

The *Devonport School* is in a flourishing state under the mastership of Mr. Wardle. A successful meeting has just been held, at which the prizes were distributed, and many works of art exhibited. The attendance was very numerous, and a musical hand of the Royal Marines enlivened the exhibition. The mayor took the chair at the distribution of prizes and addressed the meeting, as did various other gentlemen. In the course of his address the mayor narrated a family anecdote of some interest. "Some forty-three or fifty years ago," he said, "a youth, poor, friendless, and unknown, accepted with gratitude a domicile in the house of an aunt of mine, in Curzon-street, May Fair, London: she, perceiving his youthful talents as a sculptor, invited him to reside in her house, appropriated to him a room for his hours, and introduced him to those who, she believed, would value his works and appreciate their merit. During his residence in that house he became attached to the daughter of the butler, whom he afterwards married. Time wore on: the innate talent of the man soon made it evident that he was possessed of no mean powers: orders quickly followed, and remuneration proportionately increased, till some years after, when my father had occasion to consult the then eminent sculptor regarding a monument which he wished to be erected to the memory of a deceased relative: no work would he undertake of which the cost was to be less than one thousand guineas;—and this was the late Sir Francis Chantrey, whose works many of you may know and all must admire." An address on art education, by Mr. R. Townsend, the president of the Devonport Mechanics' Institution, in the large hall of which the exhibition took place, was read by Mr. Norman, in which some of the advantages of art education, and its disadvantages of the want of it, were pointed out. Not very long ago, remarked Mr. Wilson, a brother civil engineer, of considerable ability, applied to me to recommend a good trustworthy mechanic to fill a situation of foreman of carpenters, wages 2/ 10s. per week, and the promise of future support if he acquitted himself in a satisfactory manner. I at once selected a carpenter from Keyham, who had for many years worked under my immediate eye. His character and practical knowledge of his trade were all that could be desired, but, on the question being put, "Can you draw a little, no matter how plain?" Alas! no: "he had never practised it." Consequently he is still earning his guinea a-week, instead of double that sum, which a slight acquaintance

with drawing would have undoubtedly secured to him probably for life. In August last a similar application was referred to me for advice, but for a higher position abroad, and on a work of much responsibility. The conditions were— to have a thorough knowledge of carpentry, be able to lay down a working drawing, and have a fair amount of arithmetic and mechanics. Salary according to ability, that is, from 5*l.* to 6*l.* per week; four years' employment guaranteed; expenses of man and family paid out and home. Well, up to this moment I have not been successful in finding a carpenter to fill the post. Were it not occupying your time, I could recount twenty such unsatisfactory cases. Now, as a contrast, permit me to draw your attention to a fairer view of life's struggles. Look at this outline—an engraved section of Westminster Hall, measured on the spot, and drawn by a George Allan, originally a working mason at Sheerness, foreman at Woolwich, and principal foreman for Messrs. Gissel, contractors for Westminster Palace. Now this man has risen to a high position in his trade; and, notwithstanding the many difficulties that obstructed his career at the outset of life, never failed to cultivate drawing, geometry, and such other branches of art as limited time would allow. The result is, that he is now independent for the remainder of his life.

Mr. J. Wilson, Mr. W. Eastlake, of Plymouth, and others, also addressed the meeting.

The *Wolverhampton School* is to be closed! Sufficient funds to carry it on cannot be procured. No effort on the part of its friends has been wanting, but no exertion that they have been able to make has enabled them to overcome the apathy and indifference with which the continuance or the discontinuance of the Institution has been regarded. At a meeting of the council of the school, to decide the question of continuance or discontinuance, it has been resolved, "That, considering the present position of the School of Art, which, after reducing its expenditure to the minimum point, is still labouring under an annual deficiency of 50*l.*, and that the manufacturers and commercial classes generally having failed to render it any adequate support, it has become incumbent upon the council to close it with the present quarter, ending on the 15th November next, having previously tried every means to maintain it in a state of efficiency." The effort of the students to raise funds was all but abortive, only 35*l.* of donations, and 6*l.* annual subscriptions having been promised towards the future support of the school.

Miscellaneous.—The result of the drawing examinations held at Southampton, Romsey, and Ringwood, is as follows:—

	Second Grade.	Excellent.	Good.	First Grade.	Passed.	Fail.
Southampton . . .	106	21	24	118	31	30
Romsey . . . . .	18	2	5	20	6	6
Ringwood . . . . .	31	7	10	45	7	4
	155	30	39	163	44	40

The whole result is held to be very satisfactory, when it is recollected that "excellent" is a very high mark, and that, hitherto, "good" has received a prize. Arrangements are being made for an early distribution of the medals and prizes.

INDURATION OF STONE BY THE ANCIENTS.

SIR HENRY RAWLINSON, writing with reference to silicating stone, says,—

"The art of indurating stone by the application of a solution of silica to the surface was certainly known to the ancients, and the substance actually employed by them is still to be obtained in sufficient quantities to admit of minute chemical analysis. In a notice of the great cuneiform inscription of Darius Hystaspes on the rock of Behistun, which I published thirteen years ago ('Journal of the Royal Asiatic Society,' vol. X., part iii., page 193), I gave a remarkable instance of the successful use of liquid 'silica' by the ancient Persians. The passage is as follows:—

"It would be very hazardous to speculate on the means employed to engrave the work in an age when steel is supposed to have been unknown, but I cannot avoid noticing a very extraordinary device, which has been employed apparently to give a finish and durability to the work. It was evident to myself, and to those who in company with myself scrutinized the execution of the work, that after the engraving of the rock had been accomplished, a coating of silicious varnish had been laid on to give a clearness of outline to each individual letter, and to protect the surface against the action of the elements. This varnish is of infinitely greater hardness than the true stone rock beneath it. It has been washed down in



CENTRAL PARK, NEW YORK.—*Bridge for Carriage-drive over arm of Lake, near the Raabla.*  
MR. C. VAUX, ARCHITECT; MR. E. C. MILLER, ASSISTANT.

several places by the trickling of waters for three-and-twenty centuries, and it lies in flakes upon the footledge like thin layers of lava. It adheres in other portions of the tablet to the broken surface, and still shows with sufficient distinctness the forms of the characters, although the rock beneath is entirely honeycombed and destroyed. It is only, indeed, in the great fissures, caused by the outbursting of natural springs, and in the lower part of the tablet, where I suspect artificial mutilation, that the varnish has entirely disappeared.

I would only correct this description in so far as to suggest that the flakes of silicate which lie on the footledge are the original droppings of the varnish when it was first laid on in a liquid state, rather than the effect of the subsequent trickling of water over the surface of the rock. These flakes might be easily detached from the rock with a chisel and hammer, and their analysis would show if any other ingredient were employed in the composition than flint and caustic alkali. The substance looks like opaque glass, but has no perceptible effect on the colouring of the rock. It is certain, moreover, that it was absorbed into the stone, and prevented decomposition, so far as it penetrated. The sculpture, indeed, which extends over several hundreds of square feet, and which was executed about 500 B.C., is, although exposed to the full force of the prevailing storms from the south-east, for the most part in as good a state of preservation as if it had been engraved but yesterday."

If a commission be appointed to report on the silicate zopissa question, it would be worth their while to obtain specimens of the flint varnish of the ancients from Persia, and perhaps also from Egypt.

#### THE TENDER FOR THE WORKS FOR THE OUTFALL SEWER.

METROPOLITAN BOARD OF WORKS.

At the usual meeting of the Metropolitan Board of Works held on Friday, 26th Oct., Mr. J. Thwaites in the chair, the following report was presented from the Main Drainage Committee on the subject of Mr. Furness's tender for the Northern Outfall Main Sewer Works:—

"Your committee have to report that, pursuant to the resolution of the board of the 19th inst., they have made the necessary inquiries as to the competency of Mr. Furness to carry out the works for the Northern Outfall Sewer, and the responsibility of his sureties. The result

of such inquiries has satisfied your committee as to Mr. Furness's competence. With regard to the sureties, your committee have received letters from Sir Joseph Paxton, and Messrs. Smith & Knight, the contractors for a portion of the Metropolitan Railway, offering themselves as Mr. Furness's sureties for the due performance of the works: your committee entertain no doubt, and they recommend that the tender of Mr. Furness for the execution of the works for the Northern Outfall Sewer, with Sir Joseph Paxton and Messrs. Smith & Knight as his sureties for the due performance of the works, be accepted."

Mr. Doulton moved, and Mr. Moreland seconded a motion, that the recommendation of the committee be adopted, which was put and unanimously agreed to.

*Amendment of the Metropolis Local Management Act.*—Mr. Tito, M.P., gave notice that, this Friday, he would move that the Board do take steps for the purpose, in the next session of parliament, of obtaining an amendment of the Metropolis Local Management Act.

#### THE WEDGWOOD INSTITUTE, BURSLEM.

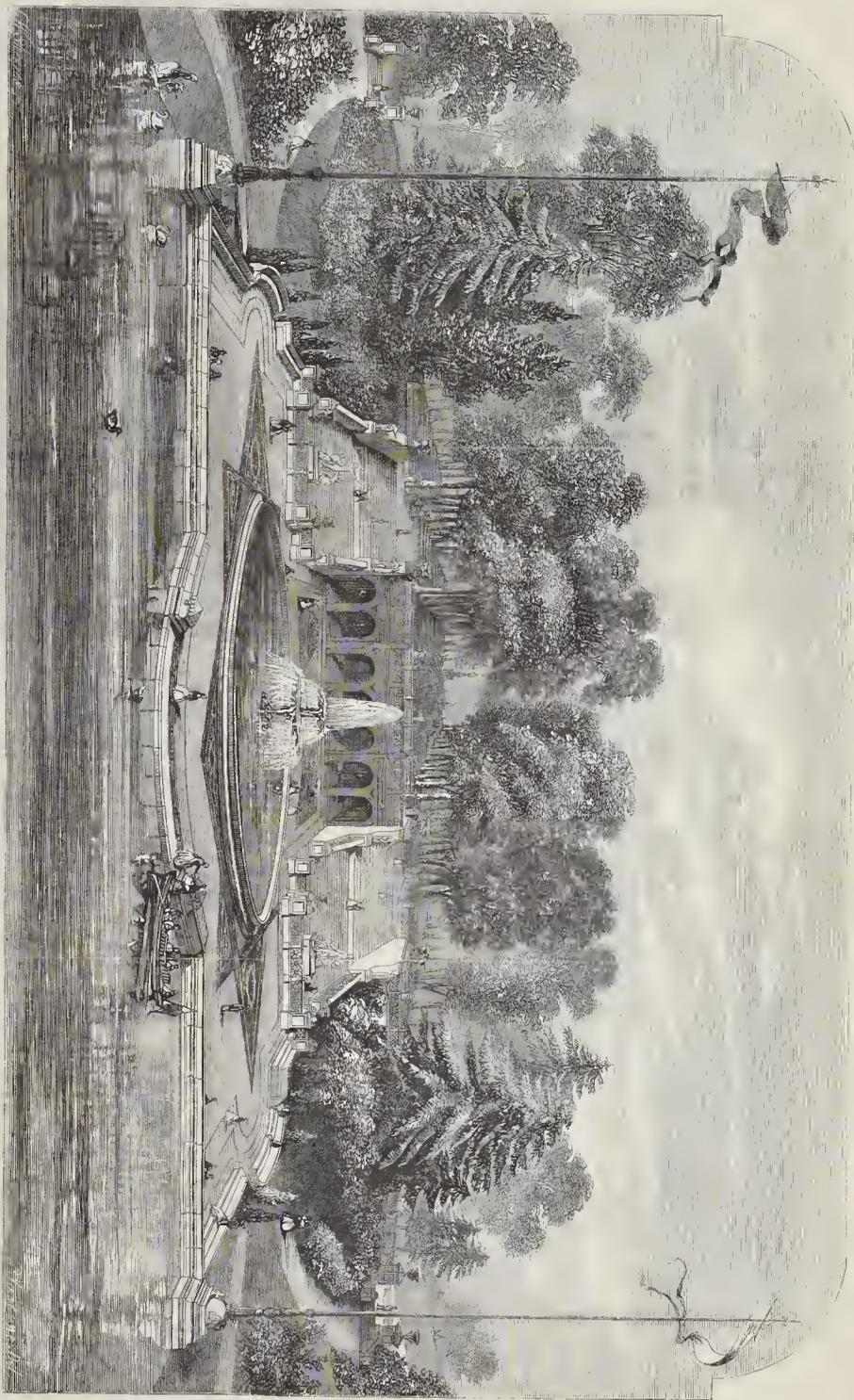
The committee for promoting the erection of this building met on Wednesday evening, to receive the report of the sub-committee; and after adopting that report, which acknowledged the very great merit in each of the plans, and expressed a strong preference for the one prepared by Mr. G. B. Nicholls, of West Bromwich, the committee unanimously resolved to select Mr. Nicholls's plan, as combining a greater number of points of appropriate adaptation than the others submitted, and he was therefore appointed as the architect to carry out his design.

#### MONUMENTAL.

A PUBLIC meeting has been held at the London Tavern, to originate a movement for the erection of a national monument commemorative of the services of the celebrated navigator, Captain Cook, Dr. Corner occupied the chair, and the meeting unanimously passed a resolution to the effect, that they heartily concurred in the efforts which were being made for the erection of a monument worthy of the virtues of the man, and that the subscriptions for that purpose be formed into a fund, to be called "Captain Cook's National Testimonial Fund." A com-

mittee was then formed to carry out the objects of the meeting.—Three sculptors were invited to send in designs or models for a memorial of the late Mr. Joseph Sturge, at Birmingham, the design to embrace a statue and fountain to cost 9000. Two of the three gentlemen accepted the invitation,—Mr. Hollins and Mr. John Thomas,—and their models have been received, and will be submitted to the committee forthwith. Mr. Hollins's design consists of a statue standing on a pedestal. On either side, but considerably less elevated, are pedestals supporting fountain statues—female figures emblematical of Peace and Temperance. The whole design rises from two granite steps. Mr. Hollins proposes to execute the design in best Portland stone, or the statue alone, without the subordinate figures, in Sicilian marble for the proposed sum. As an alternative, he suggests that the statue and the figures should be executed in marble, the cost to be 2,000. The height is said to be 16 feet. The design of Mr. Thomas is more elaborate. On the base project tazza-shaped basins, from which jets of water will arise. On each side are seated figures typical of the leading characteristics of Mr. Sturge, and between are the pedestal and statue. Underneath these figures are simple drinking-fountains, the water issuing from lilies and falling into a marble shell. In this design it is proposed that the subordinate figures should be executed in Portland stone, and the statue in Sicilian marble, for the stipulated sum of 9000. The height of this group is 24 feet, the size of the statue being the same as that of Attwood.—At a meeting in Hereford as to a monument to the late Mr. Wallace Hall, after various suggestions, it was eventually resolved, "that an obelisk be erected near the railway station, to commemorate the deceased and his extensive public services, and that a sum of 800. be expended for that purpose." Mr. Luckes undertook to advertise for plans and estimates in the *Builder*, the *Hereford Times*, the *Gloves' or Journal*, and *The Man of Ross newspapers*.

**SOOTH KENSINGTON MUSEUM.**—During the week ending 27th October, 12,216 persons have visited the Museum.



CENTRAL PARK, NEW YORK, U.S.—View of Terrace looking South from the Ramble.\*  
MR. C. VALLU, ARCHITECT; MR. J. W. MOULD, ASSISTANT.

\* See p. 697, ante.



**THE INSCRIPTIONS ON THE MONUMENT OF THE GREAT FIRE, FISH STREET HILL.**

As a matter of taste, it is more than doubtful if a column, in form and design originally intended for the support of the superstructure of buildings, should be raised into the air without apparent purpose, or to serve simply as the pedestal of a statue. To us those pillars, beautiful as they may be in proportion, and much as they may aid to the distant general effect of a city, seem, like the statue of the Duke of Wellington on the arch at Hyde Park-corner, sadly out of place. There are more fitting ways of forming lofty structures in honour of individuals or as records of important events. As regards the oldest of the pillar monuments, not only of the metropolis, but of the kingdom, there are certain commendable points worthy of note. Before alluding to them, it may be interesting to some to know that the column on Fish-street-hill is 202 feet high; the pedestal 40 feet high, and plinth 28 feet square; the shaft of the column is 120 feet high, and 15 feet in diameter. In the hollow is a staircase of black marble, consisting of 315 steps, which leads to a balcony within 32 feet of the top. The cubic measurement of the column is as follows:—

The solidity of the whole fabric from the bottom of the lowest plinth to the black marble under the eury, the cylinder of the staircase only deducted, and the stone for carving not allowed for .....	37,396
The black marble that covers the capital .....	287
Ditto .....	64
From this solidity deduct,—	37,747
For eight great niches .....	284
For three doors and passages .....	239
For three sides .....	486
For rough block .....	1,499
For rubble work .....	7,185
	9,740
	28,007
Deduct on account of carvings in the front, the four dragons and festoons .....	510
	27,497

On the west side the *basso relievo*, by Caius Gabriel Cibber, is well worthy of notice. It is picturesquely designed, and ably executed. The whole is allegorical of the rebuilding of the city. In one compartment the city appears in flames, the inhabitants, with outstretched arms, calling for succour; while a female, wearing a civic crown, and holding a sword, shows that the civic authority is still maintained. King Charles II. occupies a conspicuous situation, and is represented in a Roman habit: he is trampling under his feet Envy, which seeks to renew the calamity by blowing flames out of its mouth. Near the sovereign are three females, representing Liberty, Imagination, and Architecture. Time is offering consolation to the distressed, and Providence giving assurance of peace and plenty. There are also several other figures, representing Mars, Fortitude, &c.

The inscriptions written by Dr. Thomas Gah, afterwards Dean of York, are as such compositions should be graphic and explanatory, and would be read with interest by many a passenger. Unfortunately, however, they are in Latin, and illegible to the multitude. The translation of that on the north side is as follows:—

"In the year of Christ, 1666, the 2nd day of September, eastward from hence, at the distance of 282 feet, the height of this column, a terrible fire broke out about midnight, which, driven on by a strong wind, not only wasted the adjacent parts, but also very remote places with incredible noise and fury. It consumed eighty-nine churches, the City gates, Guildhall, many public structures, hospitals, schools, libraries, a vast number of stately edifices, 12,200 dwelling houses, and 420 streets. Of the twenty-six wards it utterly destroyed fifteen, and left eight others shattered and half burnt. The ruins of the City were 430 acres from the Tower by the Thames side to the Temple Church, and from the north-east along the City-wall to Holborn-bridge. To the estates and fortunes of the citizens it was merciless, but to their lives very favourable, that it might in all things resemble the conflagration of the world. The destruction was sudden, for in a small space of time the City was seen most flourishing, and reduced to nothing. Three days after, when this fire had built all human councils and endeavours, in the opinion of all, it stopped, as it were, by a command from Heaven, and was on every side extinguished. But papistical malice, which perpetrated such mischiefs, is not yet restrained."

On the south side is—  
 "Charles the Second, son of Charles the Martyr, King of Great Britain, France, and Ireland, Defender of the Faith, a most gracious prince, commiserating the deplorable state of things, whilst the ruins were yet smoking, provided for the comfort of his citizens, and the ornament of his city, remitted their taxes, and referred the petitions of the magistrats and inhabitants to the Parliament, who immediately passed an Act that public works should

be restored to greater beauty, with public money, to be raised by an imposition on coals; that churches and the cathedral of St. Paul should be rebuilt from their foundation, with all magnificence; that the bridges, gates, and prisons should be made new, the sewers cleansed, the streets made straight and regular, such as were steep levelled, and those too narrow made wider; and markets and shambles removed to separate places.

They also enacted that every house should be built with party-walls, and all in front raised to an equal height, and those walls all of square stone or brick, and that no man should delay building beyond the space of seven years."

On the east side is—  
 "This pillar was begun, Sir Richard Ford, Kt., being Lord Mayor of London, in the year 1671. Carried on to the majorities of Sir George Waterman, Kt. Sir George Hanson, Kt. Sir W. Hooker, Kt. Sir Robert Viner, Kt. Sir Joseph Sheldon, Kt. And finished in that of Sir Thomas Davies, in the year 1677."

Respecting another part of the inscription, which has little foundation, and has given much offence, we will say nothing.

**SCHOOL-BUILDING NEWS.**

*West Cores (Isle of Wight).*—The first stone of West Cores National Schools was laid on the 24th ult. Mr. Charles Turner, of Southampton, is the architect. The building now in course of erection is intended for an infant school, 60 feet by 20 feet, and about 23 feet high, affording accommodation for 150 children. By the general plan it is intended to erect three schools of the same dimensions, affording accommodation for 450 children; also residences for the master and mistress. Mr. George Wheeler is the contractor, and the clerk of works is Mr. W. T. Roberts.

*Bath.*—The structure erected in the Saw Close for the Bath Blue-Coat Schools has been opened with some ceremony. It contains two school-rooms,—one for boys, and one for girls,—with committee-rooms and offices, and a residence for the master and mistress. The architects were Messrs. Manners & Gill, and the contractor Mr. Mann. During the removal of the old building a portion of a Roman tessellated pavement was found near the foundations. This was removed under the direction of Mr. Mann, junior, and has been relaid, under his superintendence, in the entrance-hall of the master's private residence.

**PUBLIC BUILDINGS IN THE PROVINCES.**

*Regate.*—There is a movement here for the erection of a new public hall, at an estimated cost of 3,000*l.*, of which two-thirds have already been promised.

*Berkhamstead.*—The corn-market here, which for some years has been discontinued in consequence of the destruction of the old market-house by fire, has been re-opened in the new building which has been erected, containing a market-house for the sale of corn on the ground-floor, and two rooms over, one of which is to be used as a library, and the other for the accommodation of the members of the Mechanics' Institute. At the back there is a hall 52 feet by 32 feet, for holding meetings, balls, &c. The architect was Mr. E. B. Lamb, of London; and the builders were Messrs. Nash and Matthews.

*Bradford.*—Designs of buildings proposed to be erected (at a cost of 1,000*l.*) for the Bradford Volunteers have been on view in St. George's Hall, in this town. The buildings will include a large drill-room, 97 feet long by 60 feet broad, in the centre; a gymnasium, 44 feet long by 20 feet broad; and sergeants' orderly room, 20 feet by 15 feet, on the other side. A residence for the drill-sergeant will stand at one corner, in the rear of the building. The elevation, in the Italian style of architecture, presents a broad entrance, with folding-doors in the centre, and has a verandah, with seating beneath, running along its entire length. The designs are contributed by Messrs. Andrews & Delaunay.

*Blairstown.*—The foundation-stone of a new public hall, now in course of erection in the village of Blairstown, has been laid by the Duke of Atholl, as grand master of Freemasons in Scotland. The expense of the building, including cost of site, but excluding interior decorations, will be about 800*l.* The new hall is to be built at the west end of the present Townhall; is enclosed on every side by buildings; and presents no front to the street. The principal entrance is proposed to be through the present Townhall, and a passage is also made opening the new building about the centre, and crossing the street on the south. Its length and breadth will be 70 feet by 40 feet within walls; its height, 34 feet; and it will accommodate

800 individuals. The interior is to be finished in a very plain manner, the roof being an open timber one, and lighted along each side. Attached to the hall are two committee-rooms and two dressing-rooms. The architect is Mr. John Carver, of Meikle.

**STAINED GLASS.**

*Llangattoe (Crickhowell).*—Four painted-glass windows have recently been erected by Lady Bailey in memory of her late husband, Sir Joseph Bailey, bart., and of her daughter, Mrs. Spearman; two in the chancel of the parish church of Llangattoe, and two in the new church lately erected in Glan Usk-park. The two windows fixed in the chancel of Llangattoe Church were by Messrs. Clayton & Bell, London. The subjects are, the Crucifixion and the Resurrection. Underneath the Crucifixion, in a series of base panels, is a representation of the Lamb glorified by angels. In the tracery openings of the Crucifixion window are represented the four greater prophets; and in that of the Resurrection, the four Evangelists. The subjects of the two windows fixed in the church erected in Glan Usk-park are—first, our Lord blessing the little children, with an angel in the uppermost opening; second window, the three holy women at the Sepulchre receiving the angels' announcement of the Resurrection. A medallion of our Lord in glory is represented in the top opening. The style of the chancel windows in Llangattoe Church is the Perpendicular, and that of the Park Church windows is Middle Pointed.

**CHURCH-BUILDING NEWS.**

*Twinstead (Essex).*—The new church of St. John the Evangelist has been consecrated by the Bishop of Rochester. The church is in the style of the fourteenth century. The internal walls are all worked with black, white, and red bricks, into arcades, arches, and geometrical designs. The nave is bancelled with open seats, and is separated from the chancel by three arches with ornamental brass work, in the centre of which is fixed a large gilt cross. The pavement is of encaustic tiles, which in the chancel are of a blue tint. There is an altar screen of stone with carved angels with wings extended at the corners, divided into compartments painted and gilt in the Medieval style, with scenes in the life of the patron saint of the church. Above is a painted window with the Crucifixion in the centre light, and there are other windows of stained glass in the chancel. The roofs are stained. There is a small vestry, and organ chamber, a gable and bell, and ornamental crosses at the apex of the roof.

*Cople (Beds).*—The church of Cople has been re-opened, after a renovation of the interior. The whole area both of nave and chancel has been cleared out, and new floors laid. The blocks of sittings are arranged on a more convenient plan. The best of the old oak seats have been re-erected, but by far the greater portion are new, of pitch-pine or red-oak. Those in the nave, with the pulpit, are varnished, with a few mouldings pricked out with colours. The pavements are of Portland cement, with red tile borders and coloured mosaic patterns in the centre. The designs and specifications were furnished by the Rev. H. E. Haverall, vicar. The woodwork of the nave has been executed by Mr. G. Bryant, of Bedford; that of the chancel, including its new roof, by the workmen of the Duke of Bedford.

*Leafield (Oxfordshire).*—St. Michael's Church, Leafield, the first stone of which was laid by Lady Churchill on All Saints' Day, 1858, was consecrated on the 19th ult., by the Bishop of Oxford. The style of the new edifice is Early English, from the design of Mr. Scott. It consists of a nave, with north and south aisles; a chancel, also with aisles; and a vestry at the north-east corner, with a vault under for hot-air apparatus, supplied by Messrs. Hayden, of Trowbridge. There is a central octagonal tower, and spire, surmounted by a weather-vane, rising 145 feet 6 inches from the ground line. The tower is ornamented by four double lancet windows, with Milton stone shafts, moulded hases, and carved capitals; and the spire by four gabled single lancets, similarly decorated. The nave is divided from the aisles by an arcade of four bays on either side, supported by circular piers, with moulded bases and square capitals, from which the arches spring square, with labels over them, above which are inscriptions painted on zinc: the clerestory windows are square-headed triplets, with detached mullions, standing fair with the inside of the wall. The tower is supported by four piers, with carved capitals and moulded arches, which rise nearly to

\* The concluding part of the inscription savours too much of the prejudices of the times.

the bell floor. The whole of the roofs are of stained deal, open framing, plastered between the rafters, and covered with felt under the Stonesfield slate. The sittings are open, of pitch-pine, stained and varnished, and will accommodate about 500 persons, 250 free. The church is entered from the west by a recessed doorway, with a carved medallion in the tympanum, and on the south by a porch. It is built of local stone, the external face of the walls being hammer-dressed, and the internal finely chipped and pointed. The whole of the dressings are of Milton stone. The length of the nave is 66 feet by 21 feet 6 inches wide, and the chancel, including the choir and sanctuary, 41 feet by 16 wide; the height, from the floor to the ridge of the roof, 43 feet 6 inches: the total length of the church internally is 107 feet. The carving was executed by Mr. Irving, of Leicester. The builder is Mr. Thomas, of Abingdon; clerk of works, Mr. H. Roome.

**Christ Church (Hants).**—The restoration of the old priory church of Christchurch is making progress under the superintendence of Mr. Ferrey. The north porch has been completed, and its groining restored: a lozenge tiling, red and black, has been laid down, but the open ironwork gates remain to be added. The interior of the north transept, also the Norman arcade, and series of Decorated windows in the south aisle of the nave, and the window in the apsidal chapel of the south transept have been restored. The large east window of the north choir-aisle has been filled with stained glass by Messrs. Lavers & Barrand, the gift of Admiral Walcott, M.P. for the borough. It is now proposed to make use of the large triforium of the nave for congregational accommodation; to remove the flat ceiling of the lantern and expose the old timber roof, and, at the same time, open the roof of the south transept, and throw down the block of masonry which divides the latter from its chapels. 2,000*l.* have already been spent upon the works, but external help is desired for their completion, as the population is neither large nor affluent.

**Croscombe.**—The little parish church of Croscombe, near Wells, which has been for some time past closed for repairs and restoration, has been re-opened. The alterations consist principally in the removal of a gallery which formerly stood at the western end of the church. The organ has been removed to the north side of the chancel, and, in preparing a place for it, it was found necessary to make some alterations, which brought out an arch that had been previously filled up, the vestry being behind it. The removal of the gallery has exposed to view the western arch of the church, and a window has been placed above the entrance. This window is plain, but is to be replaced as soon as possible by stained glass. The belfry, which was on a level with the floor of the church, has been removed to the next floor above. The removal of the belfry and gallery has made the western entrance available for use. The high-backed pews and the carved wood screen and pulpit have been cleaned and varnished, as also has the carved wooden roof. The roof and the windows have been repaired. The designs for the alterations were furnished by Mr. C. Wainwright, of the firm of Wainwright & Heard, architects, of Shepton Mallet. The execution of the work was entrusted to Mr. Walter Rawlings, contractor, Darshill, near Shepton Mallet. The cost is about 100*l.*, besides 100*l.* for improvement of the organ.

**Bishop's Castle (Bridgnorth).**—St. John's Church having become deeply buried by the soil of the surrounding graveyard, the walls untrustworthy, and the accommodation for worship insufficient, it was considered desirable that something should be done to improve it. The parishioners accordingly borrowed 1,000*l.* from the Public Works Loan Commissioners, on security of the parish rate; and 1,000*l.* was raised in the parish from voluntary contributions: the Earl of Powis, patron and proprietor, contributed 1,000*l.*, and Beriah Botfield, esq., M.P., 500*l.* The Diocesan Church Building Society voted 350*l.*; the Incorporated Church Building Society, 250*l.*; and a remainder was given by friends. The new chancel contains sittings for 750 persons on the ground floor. It has been reopened for divine service.

**Wolstanton.**—The parish church of Wolstanton, one of the oldest, it is believed, in North Staffordshire, has been rebuilt and re-opened. The stone was brought from Alton, and corresponds with the former red sandstone of the church and the existing stone of the steeple. The church has been restored on its original foundations. The roofs have also been restored. The steeple has been added to the church internally by the throwing open of the tower arch. The exterior has

been repaired and pointed, the window tracery restored, the former parapet replaced by one in keeping with the rest of the church, having pinnacles at the corners, and the staircase carried up as a spirelet. The spire itself, which had been struck by lightning and was defective and unfinished at the top, has been taken down some distance, and then carried up higher, and surmounted, as well as the spirelet and pinnacles, with iron crosses and vanes. The moulded pillars and arches inside have been reproduced from the old ones, of which the stone was found to be too friable to re-work. The church is fitted up throughout with long pews, having standard and carved poppy-heads and low doors. It is paved with Minton's tiles, and the whole of the pillars, arches, windows, and doors internally are executed in clean stonework. The chancel arch has been widened several feet, still preserving the original mouldings, &c. The entire building is warmed by a hot-water apparatus furnished by Mr. Whitehead, of Preston, and gives the heat both through gratings in the floor and by pipes above it round the walls. The whole of the windows are filled with stained glass. The church, together with the fittings of the chancel, have been done from the designs and under the superintendence of Messrs. Ward & Son, architects, Hanley, in the style of the existing steeple and the original church, namely, Decorated Gothic, of the middle of the fourteenth century. The contractors were Messrs. Robinson & Son, of Hyde. Mr. W. M. Thomas was clerk of the works, and Mr. G. Gladwin executed the carving. The chancel was erected from the designs of Mr. Salvin, under the superintendence of Mr. Lewis, of Keele, Mr. Bryan, of Stoke, being the contractor. The work of rebuilding the church commenced in the month of January, 1859, and is just completed. The chancel is enriched with three painted windows, the gift of Mr. Edward Wood, as indeed are all the other windows in the church, with one exception. The large window at the east end is figurative of the Ascension of Christ, the two others in the chancel being designed as memorials. That to the memory of Mrs. Wood has two principal figures—one of John the Baptist, illustrative of the passage of Scripture, "After me cometh a man which is preferred before me," and the other of "St. Margaret," to whom the church is dedicated; the lower compartment being filled with representations of the Baptism of Christ and the Crucifixion. The other, to the memory of Mr. Wood's daughter, has two principal figures, expressive of the passages, "He shall gather the lambs in his arms," and "Behold I stand at the door and knock;" the lower portion representing the adoration of the shepherds, and the Saviour's command to Peter, "Feed my lambs." A window in the body of the church, the gift of Mrs. Stanier, illustrates the texts of Scripture, "I was an hungered and ye gave me meat," "I was naked and ye clothed me," "I was sick, and ye visited me;" "I was a stranger, and ye took me in." The total cost including the chancel will, it is supposed, be about 4,500*l.*, towards which, coupled with the painted windows, the stalls in the chancel, and many of the fittings and ornamentations of the interior, Mr. Wood has contributed more than one-half. The expenditure of Mr. R. Sneyd, who, in addition to rebuilding the chancel, has assisted the general building fund, must have exceeded 750*l.*

**Leicester.**—The restoration of St. Mary's Church, Leicester, is now completed. Within the last twelve months alterations, additions, and improvements have been made, at, if we are rightly informed, the sole cost of Mr. Nevinson. The works have been carried out, under the direction of Mr. Scott, by Mr. B. Broadbent. The north arcade of the nave is rebuilt, and moulded arches are substituted for the old dilapidated plain ones. There is also a new clerestory upon the model of the ancient one, taken from a portion of the old arcade found remaining at the west end, with lancet lights of the Early English period, and a carved new corbelled parapet. Carved oak doors, copies of the original Perpendicular doors, have been hung to the Norman doorway on the north side, and the west-end doorway, formerly blocked up, has been thrown open, and a new oak door inserted. Carved oak doors, similar to those at the northern entrance, are to be hung to the south doorway, and the porch doors are to be ornamented with foliated ironwork. The carvings have been executed by Mr. Hamilton, in the employ of Mr. Broadbent. The whole church has been lighted with ornamented gas pendants in brass, manufactured by Messrs. Skidmore, of Coventry. A reading-desk and pulpit, in carved oak, have been presented by Mr. Broadbent. The parishioners, it is

said, purpose filling in with stained glass one of the east windows in the chancel. The organ has now been erected by Messrs. Forster & Andrews, of Hull. The case is of carved oak, in keeping with the style of the church, and the cost, which will be defrayed by voluntary subscription, is between 500*l.* and 600*l.* It has three rows of keys, thirty-three registers, thirty notes of German pedals, and four composition pedals.

**Bamford (Derbyshire).**—The new church at Bamford, dedicated to St. John the Baptist, has been consecrated by the Bishop of Lichfield. The architect was Mr. Butterfield. The style of architecture is the Early English Decorated, and the edifice contains a chancel, nave, and north aisle. The floor is laid with encaustic tiles; the part within the chancel with tiles and Derbyshire marble, the steps being marble; and the wall at the back of the communion-table is also inlaid with marble. The windows are filled with stained glass. The seats are all free. The tower and spire are each 54 feet—together 108 feet high—and there are six bells of steel, cast by Naylor, Vickers, & Co., of Sheffield.

**Birmingham.**—St. Barnabas's Church, which has just been completed, and is situated in Rylandstreet North, has now been consecrated. The front of the building is surmounted by a Decorated spire. The church is fitted with low lead pews, and paved with Broseley quarries of red and black. A gallery runs round three sides of the building. The roof of the nave is high-pitched, boarded, and supported on laminated pinnacles. The building, including the gallery, will accommodate nearly 900 persons, the dimensions being, length, 80 feet; width, 44 feet 4 inches; height, 50 feet; and side walls, 20 feet. The cost of erection exceeds 3,000*l.* The architect was Mr. Bourne, of Dudley; and the builder, Mr. Melson, Birmingham.

**Sheffield.**—The chief stone of a new Unitarian chapel at Upperthorpe has been laid by Miss Urith Lydia Shore, of Meersbrook. The edifice is being built on a plot of ground adjoining the Crookes-road and will accommodate about 550 people. It will be a plain stone building, with gallery at one end for the use of the school children; and the cost will be about 1,400*l.* The architect is Mr. John Pirth; and the builder, Mr. Pearson.

**Scarborough.**—The threatened rupture amongst the projectors of the proposed new church on the South Cliff, rumours of which got abroad, has been settled by the selection of Mr. Bodley, of London, as architect. Mr. Bodley's plans were at first rejected by the committee, on the ground that they could not be carried out for the specified sum. In other respects they were preferred by the committee to those of other architects. It appears that Miss Mary Craven, who is the donor of 2,000*l.* to the church, desired the selection of Mr. Bodley; but the committee chose to act on their independent judgment. However, in order to secure the services of Mr. Bodley, the further sum of 1,000*l.* has been subscribed by Miss Ann Craven, which will enable the committee to carry out the architect's plans. Nevertheless, upwards of 2,000*l.* are yet required to liquidate fully the cost of the erection.

**Sunderland.**—The foundation-stone of "Salem Free Chapel," Pemberton-street, London, has been laid. The building will be 68 feet by 42 feet, and will be capable of accommodating 600 persons. It will be so constructed as to allow of the erection of a gallery at some future time. The material will be bricks with stone dressings. The interior will be fitted with a fan light, by which it will also be ventilated. The whole of the seats will be open benches and free. Behind the chapel will be a building 40 feet by 20 feet, of two stories, to be used as Sunday school-rooms, capable of accommodating about 400 scholars. The schools will be so adapted that they can be thrown into the chapel. The total cost will be near 1,000*l.* The architect is Mr. John Tillman, jun. The contractors for woodwork are Messrs. Rankin; mason work, Messrs. T. & A. Cook; painting, Mr. George Kirkup.

**Newcastle-upon-Tyne.**—The foundation-stone of a free Methodist Chapel has been laid in Copland-place, Shieldfield. The designs were prepared with the view of having a school-room underneath. The size of the building will be 61 feet by 34 feet, although the chapel itself will not exactly approach to these dimensions, the difference in size between it and the school-room being caused by vestries and class-rooms. The chapel will afford seats for 350 persons, and the school will accommodate 450 children. The architect is Mr. Hunter, and the builder Mr. Simpson, the estimated cost being 800*l.*

**Whitfield (Northumberland).**—The new parish

church of Whitfield has been consecrated. This church, which is substituted for the old parish church, which was inconveniently situated for the greater part of the parishioners, has been built at the sole cost of the Rev. J. A. and Mrs. Blackett Ord, the owners of the surrounding property, in memory of the late Wm. Ord, esq., M.P., of Whitfield. The style of the church is Early English: it is cruciform in plan, with central tower and spire, the latter rising to a height of 150 feet. It is simple in its arrangement and general outline, but is moulded and carved; and is finished inside with chiselled stone, no plaster being used in any part. In plan, the structure comprises south porch, nave, north and south transepts, and chancel and vestry. The nave is one bay longer than the north aisle, from which it is separated by three arches springing from clustered piers. The nave and aisle are each lighted by coupled lancets, and have slender shafts standing detached on the inner piece of wall, opposite each outside centre mullion: they support coupled arches above, which spring at each side from foliated corbels. At the west end of the nave are two long lancets, between which is a memorial niche with inscription. In the gable is a rose window of six lights. The chancel occupies a considerable portion of the area of the whole church. It is divided into three bays by the principals of the roof, and is lighted at the east end by triple lancets, on the north side by one, and on the south side by three lancets. These windows are ornamented with banded shafts; and are variously adorned with rows of nail-head and dog-tooth flowers, and the hood mouldings terminate in heads of saints, prophets, and martyrs, and with bosses of foliage. Below the east window is an arcade of seven trefoil arches, supported on detached shafts, with the spandrels and capitals carved with roses, passion, and other flowers. In this part of the church the floor is raised a considerable height above that of the nave. The roofs are of open construction. Under the tower the system of ornamentation has been designed to culminate. Externally the church is less ornamented than the interior. The roofs are of high pitch, and are covered with Westmoreland slates: they converge to the centre of the tower at the same level, and their gables are finished with floriated crosses. Two kinds of stone have been used in the construction of the building; that for the dressings being light in colour, and the walling something darker. The design for the church was furnished by Mr. A. B. Higham, of Newcastle, and the building has been erected under his superintendence.

**Blyth.**—The foundation stone of a new Roman Catholic church at Blyth was laid on the 10th ult. The building stands upon an open site close to the railway station, and consists of a nave measuring inside 115 feet long and 36 feet wide, terminated by an octagonal apse, the centre of which rises in a high-pitched gable, filled with a traceried window. There are north and south transepts, with large wheel windows in each; a porch, and a bell-turret. The roofs are open and high, after the manner of the French churches, and the style is Early Decorated. Mr. Archibald M. Dunn is the architect; Mr. James Howe, of Cowpen, the contractor.

#### BUILDERS' BENEVOLENT INSTITUTION.

On Thursday evening, the 25th ult., the thirtieth anniversary dinner of the above excellent Institution was celebrated at the London Tavern, Bishopsgate-street; Mr. George Plucknett, president, in the chair.

The chairman was supported by Alderman W. Cubitt (Lord Mayor elect), Alderman W. Lawrence, Mr. G. Smith, Mr. G. Spencer Smith, Mr. T. Piper, Mr. Dunning, Mr. T. Lucas, Mr. Rogers, Mr. O. Bell, Mr. W. G. Gardner, Mr. T. Cozens, Mr. G. Bird, Mr. Joseph Bird, Mr. Nesham, Mr. Barnett, Mr. H. A. Hunt, Mr. Kent, and about 200 other gentlemen.

The band of the Twentieth Middlesex Volunteer Rifles occupied the gallery, the chairman being captain in the regiment, and performed several pieces of music with good effect.

"Her Majesty the Queen" was drunk loyally.

"His Royal Highness Prince Albert and the other branches of the Royal Family" was the next toast proposed, accompanied by a speech setting forth the admirable qualities of the Prince Consort, in his desire for the advancement of science and art, as also his generous assistance in all matters likely to promote the moral and social welfare of her Majesty's subjects.

"The Army and Navy and Volunteers of England" was next given with marked compli-

ments to the Volunteer Rifle Corps, and brought up Mr. Lucas, who replied with much spirit.

The Chairman then proposed the toast of the evening, "Prosperity to the Builders' Benevolent Institution." He said that the Institution had taken its position as one of the philanthropic bodies of the country, and as such, from the good that it had performed, deserved the utmost support. He heartily hoped that, year by year, their field of action would become extended, and that their funds would be materially increased; for at the last election, he was grieved to say, eighteen poor applicants were turned away for want of means. There was another thing,—almshouses were much needed, the occupation of which would be a blessing to their poorer brethren. Funds were accumulating for that purpose; but they should not be content until such houses were completed. Since the establishment of the Institution great good had been done; but still there was much more to do; and, therefore, though in a very few words, he would appeal to them the more earnestly. He did not confine himself to the gentlemen connected with the building trades: he wished for a more extended sphere. There were very many benevolent persons who gave their assistance to such charities as the Builders' Benevolent Institution, and he was sure that there was not another institution of a similar character that was conducted with greater ability and economy.

The toast having been enthusiastically received, Mr. Thomas Piper proposed "The Health of the Chairman and President," and in doing so briefly referred to the strife with which they had been beset, but from which they were then happily free, merely for the purpose of showing the mischievous tendency produced by separating class from class, and contrasting what they were then engaged on, the cause of charity—the best for the community at large. It was a course that was the means of bringing together all classes. Their chairman was connected with the volunteers as Capt. Plucknett; and he craved in that no desire to be separated from those with whom he was associated day by day. It was an admirable movement. In the temples of Rome, if there had been some foundation of public liberty, they would not have been in the ruins to which they had fallen. With respect to the Builders' Benevolent Institution, he thought that material assistance might be rendered by the subscribers. There were 365 days in the year, and if each subscriber felt that he was pledged to produce one subscriber, he might during that period be successful. They could not be engaged in a higher, holier object, than in the relief of those suffering from adversity or depressed by sad affliction. Trouble fell upon us as the sparks flew upwards. It was necessary that we should remember and recognise the great principle of holy religion—love to all. Mr. Piper concluded with expressing a hope that the health of the chairman would be drunk with cordiality, with entire affection, and respect.

The toast having been duly honoured,

The Chairman returned thanks for the kindly feeling of the assembly; and next gave, "The Patrons of the Institution," coupling with that toast the name of Alderman William Cubitt, the Lord Mayor elect.

Alderman Cubitt, who was most warmly received, said—As one of the patrons of the Institution, which in number amounted to twenty-one (the title "Patron" was theirs, not his), he was very happy to see one-third of them now present, that being a proof that the interests of the Institution were thought of by them. They had heard from the chairman, his esteemed friend, and it was quite true, that the building business was exposed to great vicissitudes; various changes were continually taking place, and while in a state of prosperity they were liable to something occurring which would lead to adversity. He considered that if persons who had become thus unfortunate applied to their society, they should at once be assisted and not be allowed the disgrace of going for parish relief. This was the thirtieth anniversary of the existence of the Institution, and he thought that if it were better known, it would be far more liberally supported, and thus they would be able to meet the great claims upon them. During the following year, it occurred to him that if the society called upon the then Lord Mayor, he would preside at their festival, a general effort might be made, and no doubt something extra might be done. He would not further engross their attention, but returning thanks on the part of the twenty-one patrons, would hope well for the future.

Alderman William Lawrence said he was per-

mitted to propose the next toast, and, in doing so, had great pleasure in testifying to the benevolent purposes of aid to the distressed and afflicted with which that Institution had been established. He thought the Builders' Benevolent Institution was now looking up. The gentlemen assembled had come determined to support that to which they had given countenance. They recognized the necessity of their assistance. The building trade was one amongst others most liable to misfortune, which no foresight could prevent. They might be in a state of prosperity, and, from causes which might arise, they might fall into adversity. Such difficulties, in fact, might present themselves that it would be impossible to surmount them. This Institution, then, formed one of the means to aid in that cause, as well as to afford comfort in the decline of years, and he felt confident it was founded on a true principle. Whatever contingencies might arise, the building trade must go on. It was different from a fashionable trade, because fashion might be overthrown; with building, the mode, manner, and materials might be changed, but building must go on, and therefore he believed that that Institution must be a continuing one. He concluded by proposing the health of the Vice-Presidents and Trustees, which was duly responded to.

"The Health of Mr. Thos. Cozens," the founder of the Institution, was next proposed, and a high encomium passed upon him for his great perseverance and exertion in the establishment of the Institution.

The toast having been well responded to,

Mr. Cozens said he could hardly find words to thank them for the kind feeling of the meeting towards him. He alluded to the requirements of the institution, and referred to the eighteen poor applicants whom they had been compelled to send away at their last election, and exhorted all present to exert themselves in the welfare of the institution, in order that the necessities of their poorer brethren might be relieved. He knew of many cases that if not speedily relieved, according to their rules, the applicants would be shut out from the benefits of the Institution.

Mr. A. G. Harris, the secretary, next read over the list of donations, which included Mr. George Plucknett, 21l.; Alderman W. Cubitt, 10l. 10s.; Mr. Wm. Webb, 21l.; Mr. E. H. Toak, 10l. 10s.; Mr. W. J. Freeman, 10l. 10s.; Messrs. Lucas, Brothers, 10l. 10s.; Mr. Gardner, 5l. 5s.; Mr. Geo. Smith, 10l. 10s.; Mr. Spencer Smith, 5l. 5s.; Mr. W. C. Andrews, 5l. 8s.; Mr. C. Brown, 5l. 5s.; per Mr. Josh. Bird, 50l. 8s.; per Mr. W. Downs, 7l. 7s.; per Mr. C. Head, 9l. 18s.; per Mr. Geo. Head, 15l. 15s.; per Mr. W. Lavers, 11l. 11s.; per Mr. D. Nicholson, 25l. 7s.; per Mr. J. Outwaite, 15l. 15s.; per Mr. A. A. Robinson, 10l. 10s.; per Mr. T. Sterling, 18l. 6s. 6d.; Mr. Venables, 5l. 5s.; Mr. W. Morris, 5l. 5s.; Mr. F. P. Cockerell, 2l. 2s.; Mr. R. R. Arutz, 2l. 2s.; and per W. Harrap & Son, no less than 152l. 15s. 6d., including Messrs. Whitbread, 10l. 10s., and Mr. Styles, 10l. 10s. The total was about 530l.

On "The Health of the Treasurer, Mr. George Bird," being given—

Mr. George Bird thanked them very warmly, and said he felt their kindness greatly. He referred to the wants of the Institution, and said that, having been through the country, almost everywhere he saw buildings springing up, which was a sign to him that the building trade was flourishing, and as such was the case, he hoped that their Institution would become a recipient of some part of the fortunes they were making.

The Chairman then gave, "The Architects and Surveyors," speaking strongly of the builders' obligations to them, and coupling with the toast the name of Mr. Godwin.

Mr. Godwin, in his reply, urged, much as the Institution had done, that, considering the magnitude of the interests involved,—that our builders and contractors went forth to the east and to the west, executing works to bridge the world,—dealt in millions, and commanded armies of men,—it had not yet taken the position it might, and probably would take. He argued for it a fresh start next year under the presidency of Lord Mayor Cubitt.

"The Brighton Branch," "The Directors and Stewards," and some other toasts followed, and then the meeting broke up, determined to make the next year an epoch in the history of the Institution.

**GAS.**—The Louth Gas Company have declared a dividend of 10 per cent. The 6 per cent. guaranteed on the additional capital raised a few years since has also been paid. The same dividend was paid last year.

PROPOSED INSCRIPTION ON THE MONUMENT OF GEORGE STEPHENSON, AT NEWCASTLE-UPON-TYNE.

STR.—In the interest of truth I ask you to insert the following suggested inscription for the monument of George Stephenson.

This monument is erected to prove to the world that fortune and honour, and all earthly respects, are the fitting and inevitable recompense of him who, directing the energies of a comprehensive genius to the appropriation of other men's ideas and discoveries, dazzles the unthinking portion of mankind by an accumulation of reflected light, and ultimately succeeds in rearing a superstructure of fame upon a foundation of credulity.

As strictly demonstrative of the truth of this position, the following facts in connection with the development of the railway system are hereto appended in the order of their dates.

1. Horse tramways for the conveyance of coal and mineral produce have been practically known to the world for more than 100 years, and one of these ways was in use at Prior Park, near Bath, in the middle of the last century, for the daily carriage of stone from a neighbouring quarry.

2. In 1802 Trevithick and Vivian obtained a patent for their high-pressure locomotive engine, and in 1804 succeeded in drawing with one of these engines a load of ten tons of bar iron upon a tramway at Merthyr Tydvil, at the rate of nine miles in two hours. The steam-hoist was first introduced in the chimney of this locomotive.

3. In 1812, William Hedley, of the Wylam Colliery, demonstrated, upon a working scale, that the mere friction of the wheels of a heavy carriage upon the smooth rails of a tramway was sufficient to enable it to draw a train of loaded waggons; and, by the early part of 1813, he had constructed a steam locomotive upon this principle, which was then and there put into working use for drawing the coals from the pit's mouth to the river. The steam-hoist was also used in this engine, but with increased effect, by reason of the chimney and effluent orifice of the steam-pipe having been much contracted in size.

4. In 1814, George Stephenson, after repeatedly inspecting William Hedley's engine at Wylam, constructed an engine himself, at Killingworth Colliery, for Lord Ravensworth, which was employed in drawing coal-waggons as in the last-named instance.

5. In 1820, 1821, and 1822, William James, with the assistance of his eldest son, William Henry James, projected and completely surveyed the original Liverpool and Manchester Railway, for goods and passenger traffic, in which great public work he lost the whole of his large private fortune, with no other result to himself than to meet with the common fate of inventors and public benefactors; for, soon afterwards, and with scarcely the mention of his name, all the honour, prestige, and profits of the undertaking were carried off by George Stephenson, through the medium of powerful party intrigue and interested machinations.

6. On the 1st of September, 1821, William Henry James communicated to William Losh and George Stephenson his invention of the *introduction of tubes into locomotive boilers*, and for certain considerations gave them permission to use the same, as specified in an agreement of that date, signed by the several parties.

7. In 1829, the Messrs. Stephenson for the first time introduced *tubes* in the boiler of the Rocket engine, by which introduction they were enabled, not only to distance all competitors, and carry off the 500*l.* prize, in the celebrated contest of locomotives, which took place on a portion of the Liverpool and Manchester Railway in the same year, but to demonstrate to the world, once and for ever, the comparative annihilation of time and space in railway travelling, and the thorough practicability of passenger traffic by steam, at any required velocity.

8. In 1833, the Liverpool and Manchester Railway was completed, and formally opened to the public, and with a success which immediately led to the extension of the railway system over the whole civilized world, to the immense employment of labour and capital, the economy of transit, the multiplication of the conveniences of life, and the general equalization of the products of nature and the works of human industry.

9. In 1859, Samuel Smiles published his *Life of George Stephenson*, and, with the above-named facts before him, very properly declared that individual to be the inventor of the locomotive engine, and the originator of the railway system.

With due regard, therefore, to the history of

this great and magnificent invention, as here briefly detailed; and seeing how one man has therein dextrously covered himself with the whole fame and glory rightfully belonging to other labourers, as witnessed in the introduction of tramways, whose origin is almost lost in the lapse of 100 years; in the invention of the steam locomotive and blast, by Trevithick and Vivian; the principle of adhesive traction, by Hedley; the steam-generating tubes of the younger James, and the conception and original survey by his father of the first engine passenger railway ever opened to the world—the Liverpool and Manchester;—seeing these things, and as an encouragement to others to follow in the same laudable and successful career, the committee entrusted with the erection of this monument almost regret that it has been constructed of perishable stone, in place of more appropriate and enduring brass.

JUSTITIA.

DAMP ON WALLS.

FROM the particulars given by your correspondent last week, it is, I think, evident that the damp he complains of does not come from the outside of the wall. The cause is doubtless that usually occurring where gas is used without good ventilation—viz., the escaping hydrogen combining with the oxygen of the atmosphere and forming water. The hand of wet being on a level with the burners, shows the connection of cause and effect.

An opening in or near the ceiling for ventilation might do much to remedy the evil.

Works of art should not be left uncovered where gas is burnt, as the disposition to form moisture on smooth surfaces, combining with the dust of the apartment, forms a cake of dirt.

P. E. M.

THE SITE OF WOOLWICH HOSPITAL.

STR.—You say, in your comments on hospital construction last week, that Dr. Couche had pointed out in the *Builder* other sites for the Woolwich Hospital. I am able to state positively (I send you my name) that these were all noted at the time, but on an examination only one of them was available either for size or position, and that one could not be had for money.

AMICUS.

VENTILATION.

WITH reference to the suggestion of "Salus," as to forming an opening in the ceiling connected with an air-brick in the external wall, the contingency of direct down-draught may be prevented by fixing or suspending below the opening in the ceiling either a ledged woodslap or a zinc plate, leaving a clear space of 1 inch between the plaster and the zinc. The air will thus be spread along the upper portion of the room: a centre flower may be secured to the wood or the zinc, if in a decorated apartment. The spreader should be one-fourth larger than the opening above it, and the floor in the apartment over it should be made air-tight.

"Salus" might look at the remarks upon page 77 of your present volume.

THOMAS GOODCHILD, F.S.A.

I wish to suggest to your correspondent who seeks to ventilate a room a method which I have tried myself and found very successful.

If the chimney is square, a metal pipe can be easily fixed inside in a corner. The lower end should be open into the room near the ceiling; for the upper end an opening should be made in the side of the chimney as high as the leads on the top of the house, with a grating to keep out rubbish and birds. The opening into the room should be trumpet-shaped. The pipe should be made of copper, and of course thin enough to imbibe heat from the chimney. When there is a fire in the room and the chimney is warm, a pipe, 3 inches in diameter, will be found very efficacious; but I think that, even if the pipe be not warmed, it is of some use. Of course all the rooms through which the chimney passes may be ventilated by the same pipe, and the kitchen chimney would be useful, as it is always warm. If the chimney be round, perhaps there would be some difficulty in fixing the pipe and sweeping the chimney so as not to injure it; but I think, if the pipe were rather flattened, it would succeed.

M. G.

In your impression of last week there appeared a letter signed "Salus," asking for information about the ventilation of houses.

The writer, who he acknowledges the merit of Dr. Arnott's chimney-valves, says that the objec-

tion to them is, the "frequent admission of smoke and dirt from the chimney."

I beg that you will allow me to give my grateful testimony to the usefulness of these valves. I have had them for ten years, and have never, in any instance, been troubled with smoke or dirt from the chimney, the ceiling of my rooms being as free from smoke above the valves as at any other place.

In fitting up these valves, however, care must be taken to have them of a right construction, and to have the fire-grate below properly fitted in, so as to ensure a good draught up the chimney. The valves should also be taken out occasionally and have their bearings cleaned, while the soot that has lodged in the chimney opening may at the same time be swept away. This last operation has, in a room where in winter there is constantly a good fire, been only performed once during the last eighteen months.

The other means of ventilation suggested by your correspondent will, in most instances, result in the admission of air from without, and their action will not be certain or regular, the air sometimes coming in and sometimes going out by the openings being influenced by the direction of the wind, the opening and shutting of doors, &c. The air so admitted would also be mixed with the hot and impure air which constantly floats near the ceiling.

In the absence of any provision for the admission of air into houses, the window of an unoccupied apartment answers very well. I have one partly open night and day; and, as every one of my apartments is fitted with an "Arnott" chimney opening, the air so admitted flows constantly and almost imperceptibly through them all.

I conclude by wishing that the importance of ventilation were as generally understood as "Salus" assumes it to be.

W.

THE PUGIN TRAVELLING FUND.

As the Institute will now shortly be reopened and we shall once again assemble for the purpose of promoting the interests of our art, it is I think a fitting opportunity of reminding the profession generally, and the members of the Institute in particular, of the efforts which are being made, to provide for the rising men amongst us those opportunities of travel which, during the recess, so many of our professional brethren avail themselves of. I refer to the "Pugin Travelling Fund," by which it is intended to honour Pugin's memory and to advance the principles he so ably advocated and applied. As the Institute will be solicited to become trustees of the fund collected, all its members may naturally be expected to show an interest in its progress, not, perhaps, greater but of a closer nature, than our other professional brethren;—but surely a fund for endowing a travelling studentship, such as that proposed, should not only be most liberally supported by those in the practice of architecture, but by those in the study of it also. By the side of the many very handsome contributions which have been received from all quarters we hope to see subscriptions (we care not how small they be) come in from every architect's office in the kingdom.

A movement is already afoot amongst the art-workmen, whose shillings and half-crowns will have a peculiar value. The workmen are well aware of the benefits conferred on them by the stimulus which Pugin's enthusiasm gave to every branch of art handicraft; but equal benefits have, certainly, been shared by architectural students, for whose special advantage the "Travelling Fund" is intended. I hope, therefore, you will kindly call the attention of the profession throughout the kingdom to the claims which we consider we have upon their students and assistants. Without them a memorial to Pugin,—especially when it is a "Travelling Studentship,"—cannot be complete.

JOSEPH CLARKE, Hon. Sec.

THE WEST CENTRAL DAY INDUSTRIAL SCHOOL.

A MISSING RENOVATION.

STR.—Since you were good enough to insert my last note in your journal a most curious circumstance has occurred to us. Some charitable person (perhaps in consequence of your recommendation of our school) sent a letter (addressed to me) by a messenger to the Refugees in Great Queen-street. The messenger gave the letter to the master of that excellent institution, saying that it contained twenty-five guineas; but he, seeing that it was directed in my name, sent the messenger to Tichborne-court with it. I have made every possible inquiry, and have even advertised in the

Times for it, but without avail; and to this day I have heard no further tidings of the donor, messenger, or money. Whether the man was unable to find Tiebhorne-court or not I cannot tell; but he never came there. In fact, we have virtually lost 26l. 6s., which you may imagine is a very serious matter in the case of a young institution. I do trust, however, that, if you will give publicity to this note, possibly the account of the circumstance may meet the eye of the donor, who, perhaps, is wondering why he has received no acknowledgment of his munificent donation.

Allow me, in conclusion, to say that we are still very anxious to obtain more work for our boys. We have been engaged in fancy-box making, paper-hat making for grocers and the London and Westminster Bank, Bloomsbury branch, and also in the getting up of mouldings and rollers for maps and almanacs, &c. If any of your readers can assist us in obtaining an increased supply of work in any of these branches, we shall be extremely thankful, and they would have the pleasure of helping forward the very arduous work of preventing juvenile crime. At present we are obliged to keep our numbers very low, because of our limited means of giving them employment. If we can only increase these, we shall be able to take as many as the premises will conveniently hold. A visit to the school (Tiebhorne-court, near Great Turnstile, Holborn) will give a better idea of the plan of our working than any correspondence can do; and therefore I earnestly request that any of your readers who are willing to assist those who cannot assist themselves will be kind enough even to pay us a casual visit.

B. A. HEYWOOD.

ILLUSTRATED GIFT-BOOKS.

MESSRS. LONGMAN'S "LALLA ROOKH,"\*

As the immigration of swallows is viewed as the prelude to summer, though it is to be hoped there were none mendacious enough to take quite their ordinary flight this year, so we have unfailling and conspicuous harbingers,—albeit professed story-tellers,—to remind us that Christmas may be shortly expected in the gorgeously-arrayed emissaries that certain excellent publishers consider it a duty to send forth as ambassadors extraordinary from the lands of literature and art to the festive court of the snow-crowned monarch who is supposed to reign for a dozen days a year. How they struggle for supremacy of splendour! How they contend one with the other the most magnificently to represent their respective sovereign,—or one-pound-one! Some in crimson and gold, others in azure and gold, and a few in mauve or Magenta. Truly the livery of Paternoster-row is a gay one. But it is not only outward show, good reader, that is to recommend them to your notice. Mark you their titles; listen to their introductions; and, going further still, you will find them possessed with such learning, such wit, and such a power of pleasantly imparting counsel and pleasure, as to induce a wish to know them better.

The Messrs. Longman have been fortunate in their selection, both with regard to poet and artist. Of the poet nothing remains to be said, the book has taken its place; but to Mr. Tennyll, one of our most accomplished illustrators, more than usual acknowledgment is due, for the assiduity with which he has laboured to turn to the best account knowledge, the acquirement of which must have cost him considerable research,—to what purpose is sufficiently manifest in the additional value and interest that correctness of costume and architectural detail gives to his very admirable designs.

We will preface the little wo notice as exceptional, by pointing out that the more striking instances of success combine some of the highest attributes of art. Indeed, it rarely occurs to find so much academic knowledge with such power of expressing it invested in book illustrations, even in these days.

Moore's "Lalla Rookh" is pre-eminently adapted to receive any amount of pictorial embellishment. So minutely descriptive, so full of life and colour as it is, it affords a rare opportunity, of which, if the artist has not availed himself to the fullest possible extent, it may be, perhaps, from a notion that he was treading on dangerous ground. Strictly avoiding the anaeracronic element, which, to an allowable degree, tinctures portions of the poem, he has gone to the opposite extreme, and absolutely ignored its existence:

\* "Lalla Rookh," By Thomas Moore. With illustrations by John Tenniel; engraved by the Brothers Dalziel; and five ornamental pages by T. Sulman, jun., engraved by H. N. Woods. Longman, Green, Longman, & Roberts,

consequently, some of his pictures are out of tune with the verse they are intended to illustrate. For example, the illustration of the dance, so glowingly described by the author (p. 59), might almost appertain to a religious procession. The types of feminine attractiveness throughout the work, indeed, are seldom to be precisely identified with the description, graceful and charming as they often are. This failing only applies to the chief impersonations. Where more license is admissible, great advantage is taken of it; as witness (p. 50) the composition heading the second part of "The Veiled Prophet," in which national individuality is so happily conveyed.

"That wild Zelica, whose every glance Was thrilling fire, whose every thought a trance!" has not been handsomely treated; with two exquisite exceptions (p. 102 and p. 117)—her death scene,—which, for its delicacy, expressiveness, and beautiful drawing, excepting, perhaps, the horse, may be pronounced to be as nearly perfect as a book-illustration can be.

Altogether, there is very little to qualify the highest praise of the illustrations. Considered as a series, they are far beyond what we are in the habit of seeing; in the majority of which dexterity and prettiness alone are creditors for their charm; and there can be no doubt that this edition of "Lalla Rookh" will meet with the thorough appreciation it deserves from all who can distinguish real excellence from the merely pretentious claim to it.

With reference to such gift-books, *en masse*, welcome as they are, they are apt to raise the question as to how far a general elaboration of engraving benefits the draughtsman's production, as in many cases it may be readily perceived that the principal points of the drawing have lost their intended influence from the fact of their not being susceptible of a proportionate share of the labour lavished throughout. We merely propound this, however, for consideration, with a confession that we should like to see a more distinctive character imparted to the several volumes, and a hope that they may nevertheless form a lasting institution, however modified.

Books Received.

*A Complete Practical Guide to Her Majesty's Civil Service.* By a Certificated Candidate. London: James Blackwood, Paternoster-row. This volume contains, it is said, "in full the examination papers for every department used since the appointment of the commissioners; full details of the limits of age and qualification of candidates; hints to candidates for every office; and copious tables of the emoluments and superannuation allowances of every civil servant in Great Britain, Ireland, India, and the Colonies." The work, under present arrangements, cannot but be of great use to all seeking public employment in the civil service, either for themselves or others. The hints to candidates how to obtain a nomination, however, which, it is stated, is almost always procured through the mediation of Members of Parliament, will not be regarded by these gentlemen with much favour.

*The Statute Book for England: Collection of Public Statutes passed in 1859.* Edited by JAMES BIGG. London: Simpkin, Marshall, & Co. 1859. Specimen volume.

*Proposals for Reformation of Statute Book: ordered by House of Commons to be printed.* 1860.

The author of the specimen volume under notice made a proposal to the Government, that they should so far sanction and support his intention to issue a series of volumes containing the statutes of the realm in a consolidated and intelligible form, by guaranteeing the purchase of 2,500 copies, at a reduction of 40 per cent. from the publication price, which would amount to 2,340l. per annum; and he estimated that the whole work would be completed in eight years. He also asked that his edition might be made admissible in evidence. The Government authorities, however, have neither accepted nor declined Mr. Bigg's proposals; but meantime they appear to have themselves employed two other gentlemen to edit a new edition of the statutes.

The consolidation of the statutes into available compass is certainly most desirable; but, whether Mr. Bigg be the proper person to do the work or not, we are unable to say. Mr. Bigg appears to be a person whose turn of mind specially recommends him for such a work, while the volume he has already produced bids fair to supply a great public want.

Mr. Bigg has again requested a decision as to his proposals, which have been modified; and he now only asks the Government to aid him to compete with their edition by purchasing 1,000 copies annually.

*A Primer of the Art of Illumination, for the Use of Beginners.* By F. DELAMOTTE. London: K. & P. N. Spon. 1860.

*Outlines for Illuminating and Missal Painting.* Designed by CHARLES HENRY DRIVER, Architect. Drawn on stone by M. & N. HANHART. Winsor & Newton, Rathbone-place.

DEMAND leads to supply, and then the supply aids, up to a certain time, in increasing the demand. Mr. Delamotte, in his "Primer," has given some practical directions for the exercise of the art of illumination, and a list of specimens which are to be found in the British Museum. The illustrations which he gives include, with a number printed in their gold and colour, outlines only, of the same specimens, so that they may be traced and filled in with colour with the least possible exercise of mind or skill.

The set of *Outlines for Illuminating*, cleverly designed or compiled by Mr. Driver, are twelve in number, and include the Lord's Prayer, Collects, &c. The text is exceedingly well formed, and is literally black-letter, to the great credit of Messrs. Hanhart.

Miscellaneous.

THE PRINCESS'S THEATRE.—Mr. A. Harris has re-opened his theatre with a great success. Mr. Fechter, an English-born French actor, the original representative, in their original tongue, of the principal character in the Corsican Brothers, Pauline, and other dramas known to London playgoers, has, by a curious turn of the wheel, been brought to play them at the Princess's in their English dress. He wisely, however, opened in a piece not known here, a free adaptation, by Mr. Edmund Falconer, of Victor Hugo's, "Ruy Blas," and has established unmistakably the right to be considered an admirable actor of high melodrama, so to speak. The piece itself is very well put together, and most tastefully mounted; and Mr. Fechter is ably supported by Mr. Walter Lacy (who has not done anything so good for some time), and by Miss Heath, and the lessee. We must give praise, too, to Mr. James Hates, for his scenery, which is admirably painted, and preserves the traditions of the house in this respect. The scenes consist chiefly of apartments in the Palace of the Escorial, and are alike appropriate and beautiful.

ST. ALBAN'S ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.—A meeting of this society was held last week. Professor Donaldson presided. Mr. W. Pollard, of the *Herts Guardian*, read a paper "On certain Monastic and other Ruins in Lincolnshire." Mr. W. L. Donaldson, nephew of Professor Donaldson, read a paper "On the Life and Times of Offa, King of the Mercians."

NEW MARKET AND CORN-EXCHANGE FOR SHERBURY.—A more than usually large share of public attention, says the *Shrewsbury Chronicle*, is now being devoted to the subject of market accommodation in this town. Schemes for a market have been propounded by Mr. R. S. France and Mr. Ashdown. By the plan proposed by Mr. Ashdown, an available space of 4,365 yards is secured, being 428 yards more than that given by the Mardol site, as at first proposed. The estimated cost Mr. Ashdown places in round numbers at 23,000l., a sum lower by at least 10,000l. than the Mardol site was computed to cost. A third—or rather the first scheme—is that of Pride-hill. The cost of erecting a market there, containing some 2,800 yards, is calculated at from 15,000l. to 16,000l. It is proposed to take down the present butter-market, and the Drapers' Almshouses in St. Mary's-street, and the front to that street will be 140 feet. The Pride-hill front will be 95 feet. The rateable property to be taken down will not, it is estimated, reach 200l. The whole of the plans will shortly come before the local Improvement Commissioners for discussion. As to the proposal for erecting a corn-exchange, the present site is considered to be better than any other. By a moderate expenditure it is thought the present market-hall could be made available. Mr. Ashdown's proposition for having a corn-exchange near to the site of his suggested general market would cost some 7,000l. or 8,000l. The town-council, the *Chronicle* thinks, will not consent to destroy the features of the present market-hall, so as to meet the wishes of those who desire to turn it into a corn-exchange.

**THE NINE HOURS' MOVEMENT.**—The daily papers have published an "Address to the Community at large, and particularly to the Gentlemen of the Press and the Employers of Labour," by the building operatives, signed "George Potter," in which the writer says,—“The price of anything is 'just so much as it will bring.' We are the sellers of labour, and if we unite to claim, it is not pretended that the buyers do not seldom unite to refuse. We are not at variance with right political economy till we shall ask a price which shall limit the demand for it: it is open market, with the sellers agreed for an advance to the extent of 10 per cent., which we propose to take out 'in time.' Which of the many public writers and speakers who have been aghast, during the late lock-out, with the dreadful ignorance of political economy by the workmen, would have held the same language on hearing that the holders of any other commodity were standing out for an advance to a similar extent? Gentlemen, the question of supply and demand in any contest, can be solved only by the issue. Spare even your compassion till you find us in the wrong. We do not doubt we shall learn of you both new and good reasons why we deserve to be successful, when we shall in reality have become so. We are then certain of your praise.”

**ELECTRO-TELEGRAPHIC PROGRESS.**—M. Vêrard de Sainte-Anne, a short time ago, sent a paper to the Académie Française on a project for establishing a belt of electric telegraphs all round the world. From a table given by the author, it appears, according to *Galvani*, that the trade of England with the East amounts to 2,723,000,000f. per annum; that of France with the same, to 401,300,000f.; of Holland, to 295,222,000f.; of Russia, to 150,000,000f.; of North America, East and West, 3,061,680,000f. (?); of South America and the West Indies, 1,730,723,000f.; and so on. In the United States the network of telegraphic lines comprises a length of 70,000 kilometres, or 47,250 English miles; and when the New York and San Francisco line is completed—the line over Europe and Asia being supposed to exist—there would only be 3,500 leagues of cable to be sunk in order to enable Paris and London to receive intelligence from Canton in one hour and 50 minutes, from New York in two hours and 20 minutes, and from Valparaiso in three hours and a quarter. A considerable number of partial lines, which, according to the author, may easily be collected into one great whole, are already in existence, or about to be established. Thus, in Japan, the lines have been granted to a company, and one of them is in course of construction; New Zealand is already connected by a cable with Australia, Melbourne with Sydney, and Batavia with Singapore; and the whole continent of India, thanks to English enterprise, is now being intersected with telegraphic lines, connecting Calcutta with Madras, Benares, Lucknow, Agra, Delhi, Hyderabad, &c. Again, from Bombay, a line goes to Goa, and westwards to Kurraehce, whence it will soon reach Hyderabad.

**ACCIDENTS.**—While the navies engaged in making the line to Dover were at work at a bridge at Temple Ewell, the whole structure suddenly gave way with a crash. Three men were at work under it at the time, and they were all buried under the ruins and killed. At the inquest, Thomas Russell, one of the navies, said he heard the bridge fall just as he had got out of the cutting. He had seen the bricks as they now lie. Most of them seemed as clean of mortar as ever they were. Some have a little mortar, but many, he should think, could never have had a particle of mortar on them. The coroner asked Mr. Macdonald (Mr. Cranpton's agent), who was responsible for the building of the bridge? Mr. Macdonald said Messrs. Hawley, of Dover: they had the sub-contract for its erection, and they did not sub-let it to any one. The coroner said it would be necessary to have a professional opinion as to the erection of the bridge, and whether the proper materials had been used, and in the proper way; and, after a little discussion, the inquest was adjourned.

An accident has just occurred at Sheffield, in the Hanover Chapel, which shows how little will produce a panic, and endanger the lives of hundreds. The giving way of a little plaster beneath the gallery was the cause of the excitement in this case. A great rush was made to the doors, and the utmost confusion ensued. After a time many became reassured, and took their seats again, but a little more plaster fell, and the confusion became worse than ever, and several people were severely crushed in their attempt to escape from the expected fall of the chapel. The plaster, it is thought, had been too hastily dried by the gas which burnt near it.

**SMOKE FLUES.**—The "curious smoke-flues" mentioned in the *Builder* of September 23, are by no means uncommon. There are several at both Rochester and Heddingham Castles, and at Winwall, in an old house. Sometimes these holes have on the outside a sort of pseudo chimney, as at the Lavatory, Lincoln-gate: to these succeeded roof chimneys.—P. E. M.

**NEW WATER-ELEVATOR.**—Mr. Robert Nelson, an American, has invented a new water-elevator, in which the vacuum is produced by the combustion of volatile matters, among others, naphtha. The elevator consists of a large cylindrical reservoir, at the base of which the suction-pipe is placed. In the upper portion are several valves, communicating with a reservoir of naphtha and a little furnace placed between this latter and the cylinder. Upon closing this latter, it is sufficient to light the little fire, and allow the naphtha to fall upon it drop by drop: the vivid combustion that ensues, creating a vacuum, causes the water to rise rapidly in the cylinder, as much as 100 gallons at a time.

**THE TELEGRAPH IN THE OPERA.**—In the new French Opera-house about to be erected, says the *Constitutionnel*, the electric telegraph will, it is stated, play a very prominent part. An instantaneous line of communication is to be established between the cabinet of the Minister of State and that of the director of the theatre: a wire will also run from the box-office to the principal hotels, so that strangers will be able to engage places immediately on their arrival in Paris, and by the aid of the same electric power, the prompter will be enabled to give notice to the actors and actresses in their rooms when the curtain is about to rise.

**THE THAMES EMBANKMENT.**—The President of the Metropolitan Board of Works has received a communication from the Right Hon. William Cowper, the First Commissioner of Works, stating the views of the Government on the subject of the Thames embankment. A special meeting of a committee of the whole board was at once convened to consider the communication, and the course resolved to be pursued in reference thereto will, it is asserted, lead to the realization of this greatly desiderated work, in conjunction with the construction of the low level main sewer along the bank of the Thames, instead of bringing this great sewer along the Strand, Fleet-street, &c., as originally proposed.

**THE MILAN EXHIBITION OF PAINTINGS AND SCULPTURE.**—A long and interesting account of this exhibition appears in the *Morning Post* of 25th October, written by a correspondent at Milan. From this account it appears that landscape paintings are numerous, portraits few, and architectural drawings remarkably scarce. Sculpture forms a chief feature as respects number of works, Milan excepted being well known to possess a greater number of sculptures than any other Italian city, Rome included. About half of the best men of the Milan School of Sculpture, however, are missing from the present exhibition. The Cavonius School is on the decline, the new and pictorial school of Vela, the professor of sculpture at the Turin Academy, in the ascendant. The uniform contour of the whole exhibition, it is said, produces a kind of monotony which wearies the public, and the want of commissions gives it the character of an open market.

**STROKE INSTITUTE OF ARCHEOLOGY.**—The quarterly general meeting of the members and friends of this society was held at Woodbridge, and presided over by the Rev. Lord Arthur Herve, the president of the association. The members assembled at the lecture-hall, where the exhibition of antiquities, &c., was arranged. After an address from the president, a paper was read by Mr. Colchester, on the Archeology of the Glacial Drift, in which it was held (not for the first time) that the flint implements, found together with bones of extinct animals in divers localities, had been subject to re-arrangement by floods from the chalk lagoons, burying them 20 feet deep in the drift gravel. After the reading of this paper the company proceeded to Woodbridge Church, where Mr. Tymms, of Lowestoft, the secretary to the Institute, read a paper on the church. The abbey was next visited; then Seckford Hall; Mr. Tymms reading a paper on the hall; then Great Bealings Church and rectory, and Playford Hall; at which last a paper was read by the president on the families to whom Playford had belonged. Here the company, sixty in number, partook of a cold collation with Mr. Clarkson, and they afterwards visited Playford Church and the village of Grundisburgh and its church, as also Mr. Acton's collection of Roman and other antiquities, now for sale. The party then dispersed.

**LONGSTAFF AND PULLAN'S PATENT TRACTION ENGINE.**—The new patent traction engine of Messrs. Longstaff and Pullan made a trial trip recently, from the works of Messrs. Crosswell, Blackfriars-road, the engineers by whom it has been constructed, to Clapham-common and back, affording evidence of its value as a means of draught for heavy goods on common roads. In this engine, an attempt has been made to remove what has been regarded as a defect in other machines of the kind, which makes the boiler itself the support of the moving part of the machinery. It is represented as capable of ascending the sharpest gradients met with on common roads, upon which, it may be remarked, it scarcely leaves a trace of its passage. Messrs. Crosswell are constructing six of these engines for Spain, and the cost of each is about 900l.

**WHERE TO BUY A WATCH.**—“The practical utility of a good watch—the habits of regularity it generates, and the advantages of the punctuality it assists in securing—are facts proved beyond a doubt. The establishment, then, where at a reasonable charge these advantages can be obtained, must be worthy of attention. At Mr. Benson's, 33 and 34, Ludgate-hill, may be purchased the chronometer for sixty guineas, the mechanic's watch for two guineas, and the various other kinds of watches (duplex, lever, horizontal, or vertical) at various prices—all displaying the utmost finish and superiority of manufacture.”—*Daily Telegraph*. Benson's Illustrated Pamphlet, post free for two stamps, is descriptive of every construction of watch now made. Watches safe by post to all parts of the globe.—Advertisement.

**TENDERS**

For the erection of the new Dracny Premises, for Messrs. Weistred & Co., Broad-street, Reading; Mr. Wm. Brown, of Reading, architect. Quantities supplied by the architect:—

Newman & Mann	£2,575	0	0
Nacey & Co.	2,450	0	0
Brass & Co.	2,378	0	0
Asby & Horner	2,345	0	0
Biggs	2,344	0	0
Orton & Child	2,331	0	0
Wells	2,210	0	0
Hutton	2,203	0	0
Nichols	2,189	0	0
Atamson & Son	2,183	0	0
Matthews	2,173	0	0
Shepherd	2,118	0	0
Woods (accepted)	2,109	0	0

For taking down and rebuilding the "Sailors' Return," at Grays, Essex; Mr. W. C. Homer-ham, architect. Quantities supplied by Mr. J. A. Banker:—

Ward	£1,870	0
Powder	1,850	0

For new Church, Barton-on-Trent; Messrs. J. W. and J. Hay, architects:—

	For Church.	For Lecture-Room and Vestry.	Total.
Yeomans	£1,069	£130	£1,218
Deardis	950	124	1,074
Hunter & Bennett	953	130	1,083
Wilcman & Wigley, & Maddocks	819	133	952

\* Accepted.

For the erection of Four Six-roomed Dwelling-Houses, with cellars, &c., at Malvern Link, for Mr. W. Blizard, Mr. Edward C. Albutt, architect, Malvern Link:—

Smat	£599	0	0
Nott	608	5	0
Davis	605	0	0
Holt	617	10	0
Allen	645	0	0
Moore (accepted)	520	0	0

Accepted for Oil Mills and Machinery, for Messrs. Meek & Co., at Limehouse; Mr. James Edmonston, architect:—

*The Refinery.*

Case, Builder's Work	£711	0	0
Rolls, Iron Work	155	11	0
Rolls, Warming Apparatus	103	10	0

*Enlarging Seed Warehouse.*

Case, Builder's Work	£1,385	0	0
Rolls, Iron Work	300	6	0

Machinery to crush 100 tons of Seed per Week. Balfour, of Fife, with Waygood, machinery, without engine, boilers, and shafting, £1,993 0 0

Steam-engine, boilers, and shafting, will cost about 1,000l.

For alterations, additions, and repairs, to Frank's Hall, near Farningham, Kent, for Mr. Robert Bradford; Mr. R. L. Rommey, architect. Quantities supplied by Messrs. Welch & Atkinson:—

	House.	Stables.	Lodge.	Total.
l'Anson	£,772	1,798	426	8,996
Brown & Robinson	8,999	1,576	394	8,969
Myers	6,222	1,978	412	8,612
Keyes & Head	5,937	1,825	359	7,821
Mansfield	5,413	1,497	316	7,226

# The Builder.

VOL. XVIII.—No. 927.

The Nation's Progress in an Architectural Point of View.



AIRLY inaugurated now is the Architectural Session. The Royal Institute opened its doors, as will be seen elsewhere, last Monday evening; the Architectural Association had previously done so; the Architectural Museum is beginning to stir and will demand our early attention; while in Glasgow, Liverpool, Birmingham, and elsewhere, the Bodies have met and are preparing for action. There has been more than usual stir in architecture of late, and it will be well if in one quarter or another a retrospective glance be

taken at what has been achieved in that field during the last ten years. In the course of a long up-hill journey, it is sometimes desirable to pause and survey the difficulties that have been surmounted. The sight of the long track behind, already accomplished, gives fresh energy to pursue the route. We have got thus far, we reason, and the same vigour that has brought us to this stage will enable us to pursue our journey to the end. It has been a decade of great activity. The spirit of restoration has swept from Land's End to Berwick-upon-Tweed, resting there but to plume her wings for a further flight across the border. The sister arts and industry have followed in her wake; and ancient buildings have been renovated, and modern edifices erected on all sides. A combination of circumstances,—the public baths and wash-houses movement, the Extra-mural Burial Act, the great improvement in the national appreciation of the beautiful,—materially aided, we may be permitted to say, by the publication of illustrated periodicals of an art-teaching purpose; the agitation of the educational question;—a combination, we say, of these and other causes has given an impetus to the erection of public buildings that has no precedent. So much has been done, albeit so much remains to be accomplished, that we could scarcely realize the fact that the immense amount of work achieved is but the result of ten short years' labour, if we did not keep before our eyes the multitude of workers. Not only new churches, whose number at a moderate computation must considerably exceed a thousand, but new castles, new colleges, new schools, new town-halls, new vestry-halls, new literary institutions have arisen around us in incredible numbers. Countless new cemeteries dot the green landscape, as do numerous industrial schools, and asylums for lunatics, paupers, and invalids. All this speaks of vitality and of well-doing; as well as of "faith, hope, and charity." Britannia, in her time-honoured chariot, presses up the hill of progress through a country, which, if not flowing with milk and honey, is enriched with the wealth accruing to industrious effort and thought-directed labour. May her shadow never be less!

The battle of the styles has been fought in the progress-path. It is remarkable that the spectators of the great fight have not awaited the result. They have gone to their homes, and, in their private capacity of peaceable citizens, have facilitated the building of town-halls, mechanics' institutes, free libraries, and whatever else the spirit of the times required of them, unblinded by any opinions but their

own. Those inclined to the Classic styles will point to St. George's Hall, Liverpool; the sets of "Chambers" of the same city, the Townhall in Leeds, the warehouses of Manchester and Nottingham, railway stations in many parts of the kingdom, club-houses, residences such as Bridge-water House, and business-house premises in London; while, throughout the country, whether in the recesses of Northumberland, in the wolds of Yorkshire, in the labyrinths of streets in our cities, the public feeling, as evidenced by recent erections, such as All Souls', Halifax; All Saints', Margaret-street; and a host of other instances, is seen to be in favour of Gothic architecture, as a fit rendering of ecclesiastical expression. The Dissenters would appear to have the same feeling. Within the last ten years the Wesleyans have built Gothic chapels at Ilkerton, Lincoln, Liverpool, and many other places; the Independents at Liverpool, Weston-super-Mare, and, as reference to our Church-building news will show, in various other localities. Nor is Gothic without its important exemplars in other departments, giving notably a museum at Oxford.

The popular views respecting national education have called for the erection of numerous scholastic edifices: Wellington College, Kneller Hall, St. Aidan's College, Birkenhead; and Bishop Stortford, are among the most considerable of these; while St. Olave's, Southwark; Huddersfield, Swansea, Liverpool, and Tamworth, are in the long list of national and grammar schools. When we remind our readers that it would be difficult to take up any number of this journal in which there is not a notice of new schools being built, it will be seen that it would be a very serious undertaking to enumerate them all.

It has been urged that in this Victorian age we have no need of new castles, as some few may mistakenly think that our Volunteers are equally out of date. Nevertheless, we are favoured with both. This decade, of which we write, has seen new castles arise at Ruthin, at Cloughanodfoy, at Hornby, not to mention the restoration of several ancient strongholds, of which Alnwick is an example. Of "gentlemen's residences," Clifden, Tortworth Court, Somerleyton Hall, Blylaugh Hall, Mr. Hope's in Piccadilly, Mr. Holford's, in Park-lane, are the first that occur to us of a long list. Much, too, has been done in the way of improving labourers' cottages. In this respect the last ten years outdo all others. The Prince Consort's model cottages, as shown at the Great Exhibition, and illustrated in these pages, incited many to turn their attention to a matter but too little thought of, whether in Edwardian, Tudor, or Georgian times. An estate without a row of pretty cottages, with roses and creeping plants trained round the mullioned windows, will soon be rare, it may be hoped, though at present there are plenty of exceptions. Some ladies of rank and wealth hestow as much attention on their model villages as it was the fashion, in the *Spectator's* time, to lavish on China monsters and black pages. We need not say with how much more advantage.

We would confine these retrospective glances within architectural bounds; but we must mention—perhaps their gateways may be a sufficient link to our subject—the two new parks in the metropolis. Nearly two centuries intervened between the grants that gave us St. James's and the Regent's; and here, in ten short years, we have two for the metropolis, Aston for Birmingham, and others at Manchester, Halifax, and elsewhere. The drinking-fountains, with which most of our towns are now supplied, are entirely the fruits of the period we are reviewing. They ought to be better, but there they are. For the one "Man of Ross" of the last century we have a score in the present day, though they do not forget to mark the marble with their name. The transportation of the Marble Arch was an incident which, like that of the erection and removal of the Great Exhibition building, appears to be part of some Eastern fable rather than one of the prosaic proceedings of John Bull in the nineteenth century,—something posterity will regard as we view St. George's combat with the dragon, and deem half mythic,

half historie. Perhaps the removal of the Marble Arch will be considered a myth, expressing the shifting of some fiscal burden off one shoulder on to another; and any representation of the Great Exhibition building that may be handed down, a hieroglyph typifying the Volunteer review. The sites they once occupied are so utterly devoid of any token of their presence, that we can pardon the prospective unbeliever in their existence that we have imputed to posterity. Some statuary has been scattered about, in London and the provinces, and architects have been enabled to make more use of sculptors in their designs than heretofore, and it is to be hoped will do so still more.

Perhaps in no respect is our progress made more evident than in a comparison of our recent street architecture with the dreary profiles presented in almost interminable succession in Harley, Baker, and Wimpole streets. Our shop-fronts present occasional instances of the application of architectural skill of a high order. A style, to all intents and purposes new, growing out of the application of new materials and processes (such as we have often urged) to the existing mode of house-building, is making itself evident.

Amongst modern streets on an older type, Cannon-street will be specially noticed; and other parts of our merchant princes are scarcely less palatial. Then we have a new Covent-garden Theatre, with its Floral Hall; St. James's Hall; a noble reading-room at the British Museum; three new bridges over the Thames; a new market at Billingsgate; the Oxford-street bazaar; and innumerable banks, clubhouses, life, fire, and other offices of architectural consideration, all belonging to the last decade. The metropolis, of course, presents us with a larger cluster of new buildings than is to be found elsewhere; but the same vital principle is apparent all over the country, as well as in the sister kingdoms. To enumerate the new town-halls, such as those at Bideford and Cardiff, and some to which we have already referred, or the new baths, such as those erected by the Duke of Devonshire at Buxton, or those with washhouses in London, Newcastle, Birmingham, Maidstone, or Bilston; or to mention by name only the new asylums for the blind, for idiots, for lunatics; the reformatories, and the almshouses, would fill a column. Monster hotels form a fresh feature, and will be still further developed. The great accessions to our wealth in our museums we have already treated upon at large. It is sufficient for our present purpose to have sketched this panoramic outline of these things.

The advance of stained glass in the public estimation, though scarcely to that extent in excellence which could be desired, is another peculiarity of the time. Ten years ago a memorial window was looked upon as remarkable; but now the use of glass for that purpose is general. Hence our churches are becoming enriched with colours, though as yet not always harmoniously, instead of being defaced with cold, tasteless mural tablets.

Here we must withdraw the lingering glance we have thrown hae upon part of the road we have travelled, and again face, with fresh courage, the steep path before us. If so much has been accomplished in the last ten years, what may we not achieve in the next! We must not stand still:—"There is nothing so revolutionary, because there is nothing so unnatural and convulsive, as the strain to keep things fixed, when all the world is, by the very law of its creation, in eternal progress."

## OPENING MEETING OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first ordinary general meeting of the session 1860-61 was held on Monday evening last, at the House in Conduit-street. The chair was taken by the president, Professor Cockerell, and there was a numerous attendance of members.

The minutes of the last meeting having been read and confirmed,

Mr. T. Hayter Lewis (honorary secretary) read a letter, addressed to himself, by Mr. Titc, M.P., of which the following is a copy:—

"The illness of one member of my family has sent me hither (Brighton): the same cause will prevent my being

present on Monday, which I very greatly regret. I pray you to present those regrets and my compliments to your kind and learned lecturer, Mr. Sydney Smirke, to lament my inability to hear him, which I fully intended.

May I also ask you to say to the council, that I should be very grateful to them if they would undertake to arrange for the distribution of an annual prize of ten guineas, to be given in books or money as they may determine, for the best set of sketches or suggestions in the Italian style of architecture, adapted to modern wants, such as churches, townhalls, railway termini and stations, public offices, &c.?

I think the suggestions should not be less than two or more than three, and should be confined to the associates and students of the Institute.

Of course by Italian I mean the architecture of Palladio, Sansovino, Vignola, Fulgo Jones, Sir Christopher Wren, Perrault, &c. This is my hasty notice of what I wish, which may be somewhat modified and doubtlessly improved.

If the council think well of it, and as they are a chartered body, I should be disposed to make this prize permanent one, even after I am gone.

It may be modified, of course; but my object is to promote and encourage the study of this class of architecture. With compliments to the council,

W. TREV.

Mr. Penrose, having announced the receipt during the recess of a large number of donations of books and architectural publications to the library,

Professor Donaldson moved that a vote of thanks be given to the several donors, for the important and interesting additions which they had made to the library. Many of those donations were rare, valuable, and interesting; but another contribution had been made to the members of the Institute during the recess, which was not undeserving of mention: he referred to the printed volume of their Transactions, which was not only extremely interesting and important in itself, but reflected the highest honour upon the officers and members of the Institute who had devoted their time to its preparation. Few of those to whom the volume had been delivered could be aware of the labour, judgment, and discretion which had been brought to bear in its production. The illustrations were numerous and well executed, while the information conveyed in the letter-press was most useful to them all as architects, and would go far to make a return for the subscription paid to the Institute. Before dismissing the subject, however, he felt bound to say that, while he, in common with other members, was gratified at finding in the volume an eloquent and judicious memoir of Sir Charles Barry, he regretted that there was not also some notice of his funeral in Westminster Abbey. Such an important and interesting circumstance in the history of their profession ought, in his opinion, to have been recorded in these "Transactions." He also thought that the Institute was indebted to the authors of the papers contained in the volume; and without at all wishing to make an invidious distinction (for great care and application were required in the preparation of all), he felt that their thanks were especially due to one to whom they all looked up for his genius, taste, and the high position which he held in their body. He meant Mr. Scott, whose "Gleanings from Westminster Abbey" was one of the most delightful and instructive papers that had ever been submitted to their body. He might also be allowed to refer to the paper read by Mr. Edward Barry, "On the Construction of Covent-garden Theatre," which was conceived in such good taste, and which indicated the possession of not only a fine and original mind, but of a vigour and grasp of intellect, combined with eminent professional talent, that reflected honour upon the whole body of architects. Their thanks were also deservedly due to Mr. Digby Wyatt, for his well-written memoir of Sir Charles Barry, and for the admirable paper which he had contributed "On Illuminated Manuscripts, with reference to Architectural Design." When the Institute was able to publish such a volume as that which had just been completed, it furnished a proof that its objects were not without an aim, and that it performed its mission by raising the standard of professional knowledge and scientific acquirements.

Mr. G. G. Scott, in seconding the vote of thanks to the donors to the library, referred to the necessity of taking some means to increase their collection, so that they might not be dependent entirely upon the gifts of their friends. He feared it had become too much the habit to trust to donations alone, and that if they were to go through their library they would ascertain that it was still very defective. If, for instance, a member wished to refer to the higher class of architectural works, which were not usually to be found in private libraries, he suspected he would be doomed to disappointment. He was indeed to offer these remarks with the view of suggesting whether a standing committee, consist-

ing of two or three members of the council, might not be appointed to prepare a list of the works which were wanting, and to take some means to procure them. He feared that their money surplus just at present was small, and inadequate to the purpose; but still he thought they ought to make an effort to borrow the necessary funds, and repay it by instalments, so that their collection might be made something like an architect's library.

The President said he hoped the meeting would take this valuable suggestion into consideration, and that Mr. Scott would himself form one of the proposed committee, as no one could be more competent to advise upon the additions which ought to be made to their library.

Mr. Nelson said that such a committee had been appointed, but that in consequence of the state of the funds there had been no need of their services. The members must remember that the last year had, owing to the removal of the Institute from Grosvenor-street, been one of unusual expenditure, and that, although the funded property had not been touched upon, there were no surplus funds to devote to the library. He believed, however, that, in the course of the next year, there would be ample funds at the disposal of the Council for the improvement of the library.

Mr. Scott suggested whether, in order to avoid delay, a voluntary subscription might be set on foot.

Mr. T. H. Lewis observed that the contents of the library had been carefully gone over, that all the books had been numbered and indexed, and that he hoped a grant would be made in the course of the ensuing year for reprinting the catalogue. The last year had been necessarily one of heavy expenditure, but the Council had been fortunate enough to be able to meet it without trespassing on the funded property of the Institute. In the ensuing year, however, as nothing beyond the ordinary expenditure would have to be met, he hoped there would be a considerable sum in hand applicable to the extension of the library.

Mr. Charles Barry said that as they had been enabled to pull through a year of great expense without interfering with their funded capital, there was every prospect of their being in a position in the course of the new year to carry out the valuable suggestion of Mr. Scott, and that the same exertion, which had enabled them to meet the extraordinary expenditure of last year, would, he was persuaded, not be wanting to enable them to carry out so essential an undertaking as the improving and enriching of their library.

Professor Donaldson expressed his hope that the catalogue referred to by Mr. Lewis would not be published until they had procured the works suggested by Mr. Scott. He had always been in favour of the appointment of a library committee; and in his opinion the library ought to be an essential feature, and a main principle, of the Institute, he did not think there would be any harm in taking a few hundred pounds from the funded property to provide the necessary works. There could be no doubt that there were omissions in the library; but, for all that, he ventured to say, that there was not a better architectural library in Europe: it was worth some thousands of pounds. At the same time it was not becoming that it should be deficient in those very high class works to which gentlemen in the position of Mr. Scott and others might have occasion to refer. He was, therefore, in favour of carrying out the suggestion for its improvement as soon as possible.

The vote of thanks to the donors was then put, and carried *non. con.*

On the motion of Mr. Kerr, a special vote of thanks was also passed to Mr. Tate, for the liberal offer contained in his letter.

Mr. Godwin said that, appended to the circular convening the present meeting, there was a paragraph to the effect that, "in conformity with a resolution passed at the special general meeting, held on Monday, July 2nd, 1860, the consideration of the proposal of the council on the subject of architectural examinations will be resumed on the second Monday in November next, the 12th inst." He believed that replies had already been received from several provincial societies; but, as the Architectural Association had appointed the 9th and the 23rd of the present month to consider the subject, and as the Scottish Society had not yet considered it, and as the Institute desired to have the opinion of all their professional brethren, he took the liberty of moving that the consideration of the subject be deferred until Monday, the 10th of December.

The President.—You have heard the motion of

Mr. Godwin on the important, and, I may add, vital subject of architectural examinations, and is it your pleasure that the consideration of it be postponed until the 10th of next month?

The motion having been carried in the affirmative, the consideration of the subject was accordingly postponed.

Mr. Sydney Smirke, R.A., Fellow, then read a paper, entitled "Recollections of Sicily," which we give separately.

At the conclusion,

The President said,—I am sure you have all been delighted, especially you who may be old Sicilians, like myself, at the description which our friend, Mr. Smirke, has given of the wonderful island of Sicily. Mr. Smirke says he was there thirty years ago: why, that is nothing; for I was there myself forty-eight years ago. He has told us a great deal which has interested us; and I am sure, if he had entered into the more recouite matter connected with the personal incidents of his journey, he would have equally gratified us. The Sicilians, as you know, are not destitute of humour. You remember, no doubt, the case of a gentleman, of great wealth, named Gelon, of Agrigento, who on one occasion extended his hospitality to fifty knights, caught in a storm, who were half-famished and drenched to the skin. Having relieved their necessities, he furnished them all with dry cloaks, fed them well, and sent them on their journey. This gentleman subsequently became ambassador to a city called Leontina, and his fame having gone before him, the people crowded to the theatre to see him. When he made his appearance, every one rose to stare at him; and, as he was not so highly favoured by Nature as by Fortune, their disappointment was considerable. Gelon, perceiving their astonishment, and finding, to his annoyance, that they looked upon him with less respect on account of his undignified presence, exclaimed—"Gentlemen, don't be astonished at my appearance, for the city from which I am accredited reserves its fine-looking and handsome fellows for great and important cities, and to small, insignificant places, they send such fellows as myself." Mr. Smirke has referred to the application of pumice-stone in the construction of arches in Sicilian buildings; and as a practical member I think his suggestion for coke as a substitute is a valuable one, and I hope that experiments may be made to test its utility. I beg to move that a vote of thanks be accorded to Mr. Smirke for his interesting paper.

Professor Donaldson said he entirely approved of the suggestion with regard to coke, and hoped that the subject would be referred to the committee of construction, with a view to trying experiments. He had himself a lively recollection of his sojourn in Sicily. He had passed a fortnight under the walls of Syracuse in quarantine; and after his release he spent a month exploring its ruins, which he found to contain a mine of antiquarian wealth. Many of the tombs were still unopened, which no doubt contained vases and other ornaments of great value. The island of Sicily was alike wonderful for its natural productions and artificial wealth. The coins and remains of sculpture found in various parts of the island were alike beautiful, the architectural wealth of the land was enormous and almost inexhaustible, and it was impossible to go to the right or the left without discovering new beauties. There were also fine illustrations of Greek art; and the place was altogether such a treasure-house of ancient art, that he recommended some of their students to make it their residence for some months.

Mr. Mylne also bore witness to the great attractions of the island of Sicily in an antiquarian and architectural point of view; and, referring to the engravings to which Mr. Smirke had called attention in his paper, said that his grandfather had made the original drawings, with many others, 110 years ago, and that many of them were of very great merit, not only in an architectural but artistic sense.

The vote of thanks to Mr. Smirke having been carried by acclamation, a ballot was taken, and the following gentlemen were elected Fellows of the Institute: William Milford Tenon, Associate, of 42, Guildford-street, Russell-square; Edward Habershon, Associate, of 37, Bedford-place, Russell-square; Alfred Porter, Associate, of Fort-place, Bermondsey; and George Thomas Robinson, of Leamington.

The next meeting of the Institute will be held on the evening of Monday, the 19th inst., when a paper will be read on Architectural Drawing by Mr. W. Burges, Fellow.

## RECOLLECTIONS OF SICILY.\*

THERE is probably no part of Europe which, within such narrow limits, offers to the traveller so many objects of archaeological and artistic interest as Sicily, and yet it may be truly said that hardly any part of Europe is so little visited by the architectural or antiquarian tourist. The causes of their neglect may, perhaps, be found in the fact that the island lies out of the ordinary track of tourists: it offers but few of the facilities for internal travelling found in most other countries of Europe, and therefore cannot be traversed without a good deal of personal inconvenience. The inns are, for the most part, wretchedly bad, and very often altogether wanting. Bridges are few in number, and roads are often mere mule-tracks. Sometimes, indeed, the only road, if road it may be called, is the dry bed of a mountain stream.

Whatever may have been the causes, certain it is that Sicily has been very imperfectly explored by artists and archaeologists, although it is a land abundantly rich in the remains of every age of historical interest—Phœnician, Greek, Roman, Arabian, Norman, and Medieval.

I will not dwell on the strong claims this island has on the attention of the naturalist. It is here only, in Europe, that we find growing wild the papyrus and the palm, productions which seem to link it with the East, and aid the remains of Saracenic art in recalling to our memories the age of the Caliphs, whilst there are not wanting traces of architecture which forcibly remind us of the times of our first Henrys and Richards.

So multifarious, indeed, is the interest with which this sequestered island is invested, that I cannot but be surprised at the slender amount of knowledge usually possessed by some even of the best informed artists and antiquaries on the subject of Sicily.

I feel persuaded, therefore, that I shall be excused if I venture to occupy your attention for a short time, whilst I bring before your notice a condensed record of my recollections of a professional tour made in that country by me upwards of thirty years ago.

In most countries of Europe observations made from notes of so old a date would be obsolete or of little value, or, perhaps, wholly inapplicable to the present day; but I think I need entertain no such apprehension in this case. Until the memorable events of the last few months, Sicily has long been, as it were, a land of the dead for the purposes of the traveller or the student; neither its moral, political, nor physical improvement has been developed or attempted under its later dynasties, but both the place and its population have remained stagnant, neglected, overlooked, and asleep. Let me refer, for example, to that silent and dormant wilderness of antiquities which extends for miles over the site of the ancient Selinus, where some thirty or forty years ago two young English artists, Mr. Harris and Mr. Angell, turned up a few stones, and found on them fine specimens of archaic Greek sculpture. The attention was awakened of the sleeping antiquaries, who seemed never to have dreamt that such treasures existed beneath the dense mantle of cactus and myrtle trees that lay over the prostrate temples. Yet when I visited those ruins a few years afterwards, this discovery appeared to have led to but trifling further researches; the upturned metopes were deposited, it is true, in the nearest museum, but were still being gazed at with barren astonishment. They were talked about abundantly by that loquacious and inactive people, but the interesting discovery excited few efforts to explore the mine which the stranger had opened to their hands, and the listless antiquaries were again folding their arms, and composing themselves for another cycle of sleep.

There were, no doubt, a few individuals more enlightened than their fellows, who wrote their "Suggie," and "Trattati;" but, like earth-worms, they laboured sedulously only on the spot where they chanced to be born, with little consciousness of what was going on around them in the outer world.

Some idea may be formed of the contracted vision and tepid zeal of these local savans from the fact communicated to me on the spot, that a very eminent antiquary of Catania, who had written and published a treatise on archaeological subjects, had never in his life been at Syracuse; and that Pisani, a local savant, who wrote a work on the sculptures discovered by Harris and Angell,

had never himself visited the spot where they had been discovered. I would by no means include in this category such authors as Hittori, and Serradifallo, and our own writer, Gally Knight, whose finely-illustrated works are noble contributions to our art, and are ample expositions of the known remains; but even they have done little towards increasing the stores of antiquarian knowledge. The great cities of antiquity in Sicily owe their ruin not so much to gradual decay as to external violence—such as sieges, earthquakes, and volcanic eruptions. Sudden and general *bouleversements* of this nature overwhelming a whole city may be reasonably expected to have caused the interment of much that is valuable to the artist and the antiquary, without positively destroying it. Such proved actually to have been the case at Selinus, as I have just stated, and it cannot be doubted that much remains throughout Sicily to reward the labours of a diligent explorer. I will now request you to accompany me whilst I cursorily review some of the objects of professional interest that presented themselves to me on my tour.

My course commenced at the beautiful port and city of Messina, many of whose handsome buildings I found still bearing marks of the ravages of repeated earthquakes. There is, however, not much here to attract the attention or invite the study of the architectural student. The cathedral is not without considerable interest, presenting as it does specimens of almost every successive style, from Byzantine to Cinque-cento; whilst the pillars of the nave consist of shafts derived from the ruins of some far more ancient temple, affording an example of the practice once so prevalent throughout Italy of the adaptation of classical relics to Christian purposes. This practice, founded on expediency, and prevalent among the builders of the early churches, is analogous to that also prevalent in the early ages of Christianity, of attempting to reconcile Pagan doctrines and rites to the principles of Christian theology, for the purpose, it would seem, of making the work of conversion more easy for the missionary and more acceptable to the convert. Whether this was a justifiable instrument is open to doubt; but certainly it was carrying the doctrine of expediency very far when it was thought proper to dedicate churches to St. Mercurio and St. Venere.

In various parts of the city may be observed examples of late Gothic, somewhat purer, or at least somewhat more nearly allied to our own Northern Gothic, than is usually met with on the adjacent continent of Italy. I am but little acquainted with Spanish Gothic, but I am inclined to suspect that the later Gothic of Sicily will be found to resemble it in many respects. There is here an octagon tower, much shattered by earthquakes, and but little of it left to identify its age, which is traditionally reported to have been erected by our first Richard, and which bears his name.

A small Early Norman church, which I observed at the southern extremity of the city, called La Nunziataella, is remarkable for having on its door-jamb, inlaid in coloured marble or porphyry, part of an Arabic inscription, purporting to be in honour of Messala, a Saracen chief. These jamb had no doubt formed part of some previously-existing building, which the Moslem masons employed by their Norman conquerors were glad of the opportunity of reinstating. It struck me at once as much resembling the ornament designated by Dr. King, in "Monuments Antiquæ," the "scribed ornament," which may possibly be an Eastern tradition, testifying to the Oriental origin of some of the features of the Medieval architecture of Europe.

I purpose in these notes to confine myself almost exclusively to professional subjects, but I may say, in passing, that near Messina I observed a treadmill very similar to the machine which with us has obtained so unenviable a notoriety, but which here was worked in the open air by six no doubt perfectly honest women, for the purpose of pressing calico.

The next place I visited was Taormina, after passing the Gothic port of St. Alessis, which had been repaired by English engineers during the late war; passing also La Forsa, a small town, which although built high up on the side of a mountain, was described as grievously liable to be afflicted with malaria, and affording an instance of the apparently capricious but subtle and inscrutable character of that insidious scourge.

Taormina is placed on a most commanding eminence, and is said to have been the last city in Sicily to yield to the Arabian invaders. Here are very interesting remains of an hypothetical theatre, a naumachia, and a reservoir for water, resembling

the "Piscina Mirabilis" on the Neapolitan coast. Its groined vaulting rests on piers of brickwork, coated over with cement, 2½ inches thick; there are also many tombs of classical character. Among the ruins of the theatre I observed examples of the practice of the Roman masons of lining the surface of stone with extremely thin slabs—I might almost call them *films* of coloured marble. It is a nicey open to much question whether this practice comes under the denunciation of *shams* in architecture. The block of common limestone so lined presents the appearance of a marble, which it is not, and is therefore so far deceptively; yet in fact a charge of fraud seems scarcely tenable, seeing that the material used is really what it seems to be, although the quantity of the precious substance falls far short of its apparent bulk. I cannot leave Taormina without remarking how these vast and silent ruins testify to the vicissitudes to which the island has been subjected. Numerous and prosperous must have been the population of this city when one of its places of amusement alone was capable of receiving 30,000 spectators. A few straggling, dreary streets, exist to mark the site of this great centre of ancient civilization.

My next resting-place was Catania, a city which owes its modern and regular appearance to the frightful eruption and earthquake of 1693, which destroyed the old city, and devastated the surrounding country, causing extensive districts to be covered with volcanic scoria, which remain to this day piled up in amorphous masses, dark and arid, relieved by few indications of vegetation, except where the cactus has found a hold for its roots in the hollows and indentations of this wide waste of cinders. Beneath the surface on which the city is built lies another bed of volcanic ashes; and within this bed lie the remains of various fine Roman buildings, including a noble amphitheatre, itself built of blocks of lava, and vaulted with pumice-stone, the products of still remoter eruptions; so persistent has been the activity of these Etnæan fires.

The application of volcanic scoria or pumice to the construction of the vaulting of the corridors of this amphitheatre is worthy of observation, and bears witness to the constructive ability of the Roman builders; the springings and various main ribs are executed in very sound brickwork, while the interstices, spandrels, and other parts of the vaulting are wholly executed with this light, yet hard, material, in its rough state, but run in solidly with Pozzolana cement. That this mode of construction is substantial is evident from the permanence of the work in these ancient corridors. The dome of the Pantheon at Rome is executed in the same manner, and has stood the sieges, earthquakes, and all other causes of damage and decay for nearly 2,000 years.

Perhaps I may here be permitted to say that I think it worthy of inquiry whether a safe, permanent, perhaps even economical vaulting might not be similarly executed with *coke*, a material which has many of the properties of a volcanic scoria; is extremely light and yet so hard as to be able, like the diamond, to scratch glass.

Notwithstanding the labour of Prince Biscari much remains unexplored in this amphitheatre and still more of the adjoining Odeon, which was also entombed, like Heracleum, beneath the fiery shower. Far below the present surface and beneath the modern Duomo lie the remains of a magnificent building used during the occupation of the Romans as public baths. Glimpses of its ornamented halls are obtainable by descending to a considerable depth, with ladders and torches, into the excavated portions of the building.

There are also various other Roman antiquities of less importance, but now half-deserted spots; evidence, too, of the deplorable want of energy and enterprise in the Government and in the people, who can permit objects of so much interest and historical value to be unexplored under their very feet.

A spacious and handsome Benedictine monastery is one of the most conspicuous modern buildings of Catania. It existed before the great convulsion of 1693, and its exemption from the common calamity is attributed to the wonderful forbearance of the flood of lava which, after having destroyed in its course all around it, miraculously stopped abruptly short as it approached the sacred edifice.

The museum of Prince Biscari here is well known to most European antiquaries; it is rich in fictile works and bronzes, and contains some good sculpture, including a Torso of the highest character of Greek art. There is in the town also a small collection of natural history; and another similar collection is at the University; and a third,

\* By Mr. Sydney Smirke, R.A., as already mentioned.

consisting of objects of natural history and of works of mechanical art, contained in four or five good-sized rooms at the monastery to which I have just alluded.

The road from Catania westward lies over a tract of country once so fertile as to have become the fabled cradle of agriculture; but now, through neglected drainage, it is little better than an unproductive waste. A few miles inland is the Beviere, or Lago di Lentini, the drainage of which was one of the labours of Hercules, and one in which he certainly showed but little engineering skill, for the lake is to this day a frightful source of malaria.

The next place of interest, in my progress along the coast, was Syracuse, a city of highest historic interest, but presenting an extraordinary scene of decay and desolation. An inconsiderable seaport now, it was, 2,000 years ago, a great centre of luxury and civilization, the extent of which may be judged by the vast tract of country strewn with the fragments of buildings. The ride from one extremity of these heaps of ruins to the other, occupies some hours, and almost every step passes over some remnant of fallen grandeur. I shall not stop to enumerate the various objects of interest here. The theatres, tombs, temples, latomie, have all been described by travellers, although by no means illustrated, or, indeed, examined as carefully and thoroughly as they deserve; and there can be no doubt that an earnest, intelligent, and systematic exploration of that which lies beneath this wild scene of decay, overthrow, and dilapidation, would be abundantly productive.

The labour of riding and scrambling over these relics of antiquity was in my case agreeably relieved by a boat excursion up the Cynae, a small stream having its source in a lake of inconsiderable size, which produces the papyrus in great abundance. I was informed that this is the only habitat of that aquatic plant in Europe; at all events, its occurrence is of extreme rarity there. It is, indeed, a graceful, and even noble, reed-like plant, of which the value and importance have yielded, in modern estimation, to the superior claims of old rags.

In the ancient and entirely ruined part of the city, called Neapolis, are two ruined towers named the Epipole, parts of the ancient fortifications which are traceable over a great extent.

Shortly previous to my visit, several subterranean galleries had been discovered within these fortifications. The theory of the local antiquaries is, that they had been formed as sally-ports in case of a siege. The gallery I measured was 9 feet wide, and is covered by a flat segmental arch; a fact of some interest if the workmanship could be satisfactorily proved to belong to the Greek period, which appears, as well as the history of Syracuse, seem to favour.

In the more modern part of the city, called Ortigia, are some interesting remnants of Mediaeval date, for the most part widely differing from the type of northern Europe. The Duomo itself is an epitome of the vicissitudes to which the city has been subjected. The side walls consist of a range of Greek Doric columns portion, evidently, of some temple. The intercolumniations are walled up with more modern masonry. The principal front is a somewhat overloaded modern composition, whilst the ceiling within is undoubtedly Mediaeval.

I visited the museum here, which was small, consisting exclusively of miscellaneous antiquities found in the town and its neighbourhood. It contained a statue of Venus, life-size, found in the quarter of the ancient city called Aerudina, near the entrance into the Catacombs. I should here mention, that as the Port of Syracuse is more frequented by visitors, naval officers, and others, than probably any other ruined site in the island, a somewhat large and active traffic is carried on here in antiquities of very doubtful genuineness. Considerable bagfuls of Syracusean coins were freely offered to me by dealers of questionable character; and there are local potters who have acquired a dangerous dexterity in the manufacture of terra cottas.

I must not dwell on the latomie, the ancient stone quarries here, though presenting scenes highly picturesque and interesting; nor on the so-called Ear of Dionysius, about which so many fantastic, though by no means plausible, theories are propounded. Nor does my time admit of my entering upon any description of the numerous tombs of undoubted Classic age; nor on the famous fountain of Arethusa, whose poetical character is sadly at variance with its present degraded aspect: much of the dirty linen of the modern Syracusans seems to be cleaned in it.

I must, however, allow myself to note, that somewhat removed from the city is a small church, dedicated to St. Marcan, which is reputed to be one of the earliest Christian buildings in Europe. The crypt of this church, containing the sarcophagus of the saint, wears certainly an aspect of extreme antiquity. A seat in it, which is regarded with great reverence, as the first episcopal throne in existence, consists of an ancient Roman Ionic capital inverted, so as to make the volutes form, as it were, the elbows of the seat.

From Syracuse I was induced to deviate inland from the main road skirting the coast, by the accounts that had reached me from time to time of certain remarkable excavations then in progress by the Baron Jutica, on his own estates near Palazzuolo, about twenty-four miles from Syracuse.

After riding that distance, I had to pass the night at a Capuchin convent, for here a traveller who quits the main road soon finds himself without even the slender accommodation of a locanda.

Less than a mile from Palazzuolo were the excavations that I sought for. The hill of Acramonte, where they are situated, is the site of the ancient city of Aera. The baron considered, from the evidence afforded by the remains he had himself discovered, that on this spot originally stood a Phœnician city; that it had been successively inhabited by Greeks, Romans, Christians, and Saracens. There are here remains, only in part excavated, of a theatre and an odeon; the former similar to that at Syracuse, but smaller; there are also a naumachia, an amphitheatre, a forum, various temples, and numerous tombs.

These multifarious ruins lie like geological strata successively superimposed on each other. The lowest excavation, about 50 feet below the general surface, present remains of what the baron pronounced to be a kind of barracks with a prison attached. There are fifteen rooms leading into each other, and in one of these rooms is a shaft leading down into some deeper, and still unexplored, recesses.

Several pits, also, have been discovered into which various horizontal subterranean passages lead from the outer surface of the hill.

The purpose of these singular excavations is not obvious: the baron's opinion seemed to be that they were intended as vents for dangerous vapours pent up within the bowels of the earth in this volcanic district. There is, indeed, an extinct volcano at no great distance from this spot.

Some remarkable bas-reliefs are cut on the face of the rock at or near the foot of this hill of Acramonte. These Santoni, as they are locally called, are of very Archaic and almost Persepolitan character; but my view was too hasty and superficial to admit of my forming any opinion as to their precise age.

Baron Jutica's museum was rich in bronzes and terra cottas; some bearing Phœnician characters, others of decidedly Greek workmanship; others, again, Roman. These articles are as various in their nature as may be supposed, seeing that they are derived from the reliquæ of a great city. Many glass vessels were found of undisputed Phœnician workmanship; some of opaque glass, others coloured through their whole substance. Among many other curious objects was an armlet of iron plated with silver.

I proceeded afterwards to explore a remarkable necropolis at Ipsica, about five miles from Acramonte. It lies in a rocky valley, and consists of a multitude of caverns cut in the face of the rock, which being stratified in regular horizontal beds, offer great facilities for such excavations. Many of these caverns are catacombs lined with tombs, on some of which early Christian inscriptions, in Greek characters, are still traceable. There are, however, many caverns without any indication of interments having been made, and I found that the prevalent not improbable belief on the spot is, that this valley presents the remains of a troglodytic city, occupied by the earliest, perhaps Celtic, inhabitants of the island, and that it had been in after-times applied to the purposes of sepulture. It is worthy of remark, as perhaps confirmatory of this local opinion, that at Modica, a town scarcely a day's journey off, there are many separate habitations, and even streets, formed exactly as these caves at Ipsica are formed, by excavating the face of a cliff, or rather the escarpment of a stratified rock.

I should, however, state, as regards this valley of Ipsica, that the decided opinion of the baron was that the caves had been originally excavated by the early Christian population expressly for burial; that it was, in fact, a great Christian necropolis. It seems to me not improbable that these rocks may have been excavated and dwelt in by the

earliest occupants of the island, and that long afterwards the deserted caves may have been regarded as a fitting resting-place for the bones of the earliest Christians. Nothing, indeed, can be well imagined more secluded and desolate than this rocky valley, well illustrating the difference of feeling on the subject of sepulture between the Christians and the Pagans, who were wont to parade their tombs along the highways and by the roadsides.

From Comosso to Terranova the road lies over a richly-cultivated, but somewhat sandy and perfectly level plain, apparently redeemed from the sea; gradually upheaved, perhaps, by subterranean forces, such as have undoubtedly operated, and possibly may be still operating, in this volcanic region. From thence by Palma I reached Girgenti, adjacent to the ruins of Agriguntum.

I will not dwell in any detail on these highly-interesting ruins, for they have had a fair share of the attention of the architectural and antiquarian world. Wilkins has illustrated some of them; Hittorf and Serrodisfaleo have published careful illustrations of them; and I need not remind you that our own accomplished president gave much attention to them.\*

#### FROZEN MUSIC.†

BEAUTY and sublimity form a very large ingredient in our poem. What is beauty, and what is sublimity? Much has been said and written in answer to these questions. Coleridge defined the principle of beauty as "Multitude in unity." Schiller somewhere says, that "All the disputes which ever reigned in the philosophical world, upon the conception of beauty, have only this origin, that the inquiries commenced either not with a vigorous discrimination, or resulted in a combination not sufficiently perfect." Into these disputes we will not enter, but simply take Coleridge's definition of beauty and sublimity, as that which answers best to the ideal of æsthetic mind. "The Greek art," says he, "is beautiful. When I enter a Greek church my eye is charmed, and my mind elated. I feel proud and exalted that I am a man. But the Gothic art is sublime. On entering a cathedral, I am filled with devotion and with awe; I am lost to the actualities that surround me, and my whole being expands into the infinite: earth and air, nature and art, all swell up into eternity, and the only sensible impression left is,—that I am nothing." There can be no doubt that, notwithstanding the general resemblance, there is a distinction between the sublime and the beautiful; and nothing can, I think, be more happy than Coleridge's illustrations of it. Not only in the works of men's hands, but in all nature, there is less of the sublime than of the beautiful. It must be evident to all, that the cultivation of a taste for the beautiful and sublime must produce a most refining influence on the mind; kindling into a holy fire all our better feelings, exciting the delicate as well as the loftiest emotions of which the mind is capable, softening the heart, and purifying our aims and aspirations.—

— "Ingenuas didicisse fideliter artes  
Emollit mores, nec sinit esse feros."

The beauty of nature around us but stimulates our aspirations for a loftier, more ethereal beauty; and in our endeavours to fulfil this grand destiny, we strive after perfection itself; and yet the hand of man unconsciously inscribes upon all his works the sentence of imperfection, which the finger of the invisible hand wrote upon the walls of Belshazzar; but, notwithstanding this, the "primal art of man," next to nature, is capable of producing the loftiest emotions of the beautiful and the sublime.

There are, as we all know, periods in the history of nations, when the seeds of civilization have sprung up and blossomed, which are characterized by a visible progress in science, art, religion. There are two periods when the blossom expands into the full delicious fruit, which are characterized by the meridian splendour of civilization. There are likewise periods of decay, when all progress is stayed—when civilization declines—when science becomes a retrogression—when art is lost—when religion is well nigh forgotten; and there elapses a long decade of ignorance and barbarism before the dawning of the next cycle of civilization and progress. Such is the history which our frozen poem teaches us. Let us endeavour, then, to catch a few of its leading ideas. Very briefly have I drawn attention to the first canto,—the Expulsion from Eden and its consequences. Between this and the second canto a very long space

\* To be continued.

† See page 709, ante.

intervenes, about which we know next to nothing, and which ended in a dread catastrophe. After this our second Canto opens with the giant Babel builders, whose conceptions were so unspiritual, that they thought it possible to scale the very heavens. These artists were suddenly confounded, and a mighty hero lays the foundations of in the first empire, which anon becomes swallowed up in the mighty Assyrian vortex. Retrogression, decay, destruction, quickly and early followed each other, and darkness for ages covers all the scene:—

"The tents are all silent, the banners alone,  
The lances uplifted, the trumpet unblown;  
And the widows of Asshur are loud in their wail,  
And the hoofs are broke in the Temple of Baal,  
And the night of the Gentile, unsmote by the sword,  
Hath melted like snow in the glance of the Lord."

The sublime denunciations of Isaiah have been fulfilled, and desolation of desolation has taken the place of palaces, hanging gardens, and temples. It forcibly recalls to memory Ossian's sublime picture of desolation,—“I have seen the walls of Balclutha, but they were desolate: the flames had resounded in the halls, and the voice of the people is heard no more. The stream of Clutha was removed from its place by the fall of the walls. The whistle shook their lone heath: the moss whistled to the wind: the fox looked out from the windows; and the rank grass of the wall waved round his head. Desolate is the dwelling of Moria: silence is in the home of her fathers.” But now, in this latter day,—

"The ancient worlds their mysteries yield:  
The Chaldean sages' secrets are unsealed:  
The history of old time, that seem'd unchange,  
Proves in the last of days but yet begun;  
And prophecy awaits the child of Time,  
To give fresh beauty to its truths sublime."

And so ends our second canto. The third canto opens with luxuriant scenes on the banks of Nilus. Arts, science, literature, religion—each finds here a resting-place and a fostering nurse, and expands into sublimity. Carnae, Thebes, and Dendera, with undying astral sculptures and symbolic representative delineations of the creation, immortality, the deluge, the judgment, their own history, works, and religion, inscribed on the living stone, and

"Their's gnomons rising o'er the banks of Nile,  
Unchanging while he lies, serene and grand,  
Amid surrounding ruins,—mid the works  
Of man unparalled."

Egypt may with propriety be called the secular teacher of the old world. All the nations of antiquity seem to have drunk deep draughts from her strange fountains of symbolic myth. The Greeks and Romans received from this source the ideas which animated their highly-poetic mythology, and which expanded into the dramas of Æschylus, and the fancies of Homer and Virgil: the one sensual and grovelling; the other lofty, poetic, heavenly.

"Strange race of men! more anxious to prepare  
Their last abodes, and make them grand and fair,  
Than grace their living homes. Oe gloomy thought  
Their souls possess'd, one honour still they sought,—  
To be a splendor, and to bear in death  
Life's form and seeming—all things but its breath."

Their sculptured monuments tell us indeed of a people refined, poetic, and highly symbolic in their lofty ideal, yet practically sensual, corrupt, and debased, their highest aim, in dust embalmed, to dream in shrouded pomp eternal years away. Retrogression, decay, destruction, quickly and suddenly followed each other; and there, in the waste of sands and dust of ages, lies all that was grand of a noble though sensual people. The lotus, the palm, the papyrus, the date, and the reed, carved on the living stone, still startle the modern by their truthfulness and freshness. Babylon, Thebes, and Carnae must ever excite the wonder of mankind. The wonderful spirit, the truth and vigour, which animate the sculptures of these great nations, and the gorgeous colours which illumine them, are indeed indicative of a very advanced proficiency. And thus our third canto ends.

The whole of the fourth canto is dark and mysterious, and full of strange import. As in the last two cantos, so in this, symbolism is the great instructor and conveyancer of hidden truths. It treats of the ruined cities of Central America: Who were the people that built them? Where did they come from? Where are their descendants? And the answer is but the echo of our own questions. Architecture, painting, sculpture, poetry, and all the arts which embellish life, found here a safe resting-place, and flourished exceedingly: orators, statesmen, and warriors; beauty, ambition, and glory, here reigned gloriously, and have passed away, and no remnant of the race remains to tell whence they came, to whom they belonged, or what caused their destruction: not a tradition remains to tell of their

generation,—nothing but sculptures, vases, ruins. All is mystery—dark impenetrable mystery. In Egypt the colossal skeletons of gigantic temples stand in the unwatered sands, in all the nakedness of desolation. Here, an immense forest shrouds the ruins, hiding them from sight, heightening the impression and moral effect, and giving an intensity and almost wildness to the interest.

"The dense royal wood that hid the magic seat,—  
The lofty palms that creaked the winding street,—  
Man's hand hath felt; and now, in day's fair light,  
Xenon's broad ruins burst upon the sight;—  
City whose date and builders are unknown,  
Gracing the wild, mysterious and alone."

These cities of the West seem to have been nothing less in extent than those already spoken of in the East. Their pyramids inscribed with hieroglyphics, their vases, their terra-cotta relics, their sculptures, and their paintings, exhibit no similarity to Egyptian ruins.

"World! wrongly called the New: this elime was old  
When first the Spaniard came in search of gold.  
Are after age its shadowy wings had spread,  
And man was born and gather'd to the dead.  
Cities arose, ruled, dwindled to decay,  
Empires were form'd, then darkly went away:  
Race follow'd race, like cloud-shades o'er the field,  
The stranger still to strangers doom'd to yield;  
Till to invading Europe bow'd their pride,  
And pomp, art, power, with Montezuma died."

And thus ends our fourth canto.

I am sure the classic land of art, of song, of liberty, of philosophy, and of eloquence, must ever awaken our heat affections, familiarized as we are, from our school-days, with the literature, history, and social habits of the Greeks, who must ever rank foremost amongst the civilized races of the great human family. From them we have inherited the exact sciences, the laws of reasoning, philosophy, and æsthetics. We acknowledge their poetry and their sculpture, their architecture and their philosophy, as rarely equalled, never excelled. Abundant remains of astonishing beauty and magnitude still exist to illumine and illustrate their written history, and to furnish models and laws to modern Europe. We therein see, perhaps, for the first time, the varieties of taste and inventive design, subjected to definite rules of arrangement and relative proportions, and made to combine according to fixed laws. The subjection of the mind to the restraints of castes, formulas, and despotism, exercised a baneful influence on the arts and literature of Egypt; while Greece owed its elements of progress to the enfranchisement of the mind from all such restraints. In a word, Egypt devised the materials out of which Greece afterwards educed the laws and principles of beauty. Its Acropolis may still be said to crown the world of art and beauty, embellished as it is by the enchanting buildings of Mnesicles, Callicrates, and Ictinus, and adorned by those matchless creatures of genius—the ravishing sculptures of Phidias.

The Parthenon! There is right magic in the sound: its surpassing beauty, towering to the sublime, puts to silence all criticism by its incomparable impressions. That temple of temples, built by Ictinus, ordered by Pericles, adorned by Phidias, is a unique model of the beautiful, in the arts of architecture and sculpture; a sort of divine revelation of ideal beauty, petrified in marble—a frozen epic; perhaps the most perfect classic poem on the face of the earth. What loftiness was that which could conceive! what a race of artists who could decorate! what splendour and intelligence in a nation that could not only willingly part, but admire also! Such epochs can not often occur: the visits of such men are few and far between. The epic of Job, the song of songs, the music of Mozart, the poems of Milton and Homer, are not given twice to the earth, and so likewise this Parthenon. They prove to man what man can do.

The magnificent harmony of the forms of the Parthenon and the majestic elegance of its columns,—the admirable bas-reliefs, on its interior frieze, of the combats of the Centaurs with the Lapithe, and the opening in the centre through which the blue and resplendent sky diffused its serene and mystic light on the cornices and salient figures of the bas-reliefs, which seem as if they would move, come before us. And you feel that this is no illusion, but a painful truth, that the artist infused a portion of his own life—his own individuality into the forms of the beings he was creating. Can any deny that these men were poets, and their works immortal epics? The poet is he who creates ideas in bronze, wood, or stone, prose or rhyme: all such are poets. The poet stirs up what is imperishable in nature, and in the human heart: ages pass away, languages are worn out, but he lives for ever all entire. His destiny is less human, more divine. Alas! how different is

now the state of Greece, both intellectually, morally, artistically:—

"The solemn scene  
Blates the soul, while now the rising sun  
Flames on the ruins in the pure air."  
And thus ends our fifth canto.  
Our sixth canto treats of the Eternal City.  
"The Noble of nations! there she stands,  
Childless and crownless, in her voiceless woe;  
An empty urn within her wither'd hands,  
Whose holy dust was scatter'd long ago.  
The Scipio's tomb contains no ashes now:  
The very sepulchres lie tenantless  
Of their heroic dwellers: dost thou flow,  
Old Tiber, through a marble wilderness?  
Rise with thy yellow waves, and mantle her distress."

Originally can scarcely be said to have taken her abode here: as their religion so their fine arts, all were conquered from the peoples who originated them, and made subservient for the most part for state purposes, and not so much from innate love. This empire, having extended its existence near to our own times, is still a great and splendid vision. Engulfing as it did all pre-existing powers, all the known world, into its own vortex, and leaving everywhere the stamp of its superior organization and civilization, illustrated by colossalness, temples, baths, theatres, villas, laws, and roads, it naturally excites our liveliest interest, especially when, as in our own "brightest gem of the sea," we are surrounded on every hand with remembrances of their dominion. The fiercest spirits of the world were, by her, tamed into abject subjection: kings and princes, whose nod had been law; queens, whose charms captivated even their stern conquerors; noble matrons and drooping maidens, beautiful even in the intensity of their grief; artists, whose genius but fired the ambition of the proud conquerors; all were made subservient to the one idea,—the grandeur and the embellishment of the "Eternal City," the "City of the Sun," the "Queen of Cities." How well this was accomplished, the elegance, the magnificence, the colossal magnitude of her remains eloquently attest. Of all the fine arts that of architecture best suited the aspiring genius and greatness of this people, and this art was carried to its greatest pitch of sumptuousness, often, indeed, reaching the highest degree of sublimity. Even the jealous and fastidious Greek, familiar with higher art and with purer temples, owned the matchless splendour, and paid his involuntary tribute to the superior grandeur of this epitome of the universe and a home worthy of the gods. Strabo describes the magnificence of Rome as "of transcendent glory that surpassed all expectation, and rose far above all human competition."

Surrounded with temples, approached through triumphal arches and avenues of statues, overlooked by the proud magnificence of the imperial palace which crowned the Palatine Hill, and by the Capitol whereon Jupiter ruled all the minor gods,—intersected with squares, forums, lofty columns, theatres and splendid places, tombs, baths, fiery-like gardens, and a colosseum capable of seating a hundred thousand people,—the gigantic trace of a superhuman race, rivalling by its immense bulk the works of nature,—the Tiber will cease to flow between its banks of mud, and the Colosseum will stand and tower above its dried-up channel,—all these gave her a fair title to be called the "Epitome of the Universe," the "Eternal City." Once more and again retrogression and decay mark the close of our canto, and

"All that was  
Of them destruction is; and now, alas!  
Rome—Rome imperial, bows her to the storm,  
In the same dust and blackness, and we pass  
The skeleton of her titanic form,  
Wracks of another world, whose ashes still are warm."

But, unlike the other cantos, this one extends its song even to our own times. Rome did not pass into oblivion, but gave place to that new and unparalleled empire, half spiritual, half imperial, which at the present time rears its rickety head above the Seven Hills, and whose son is enthroned the spiritual ruler of Christendom, mighty to wield the keys of heaven and hell. But present Rome lacks indeed the stern manliness of other days, and the associations which awaken the generous sympathies of a people. Yet it is vital still a great and wonderful centre, around which the history of Europe revolves. Its present greatness dazzles the eye but does not win the heart.

"The double night of ages, and of her,  
Night's daughter, ignorance, hath wrapt and wraps  
All round us: we but feel our way to err:  
The ocean hath its chart, the stars their map,  
And knowledge spreads them on her ample lap;  
But Rome is as the desert, where we steer  
Stumbling o'er recollections: now we clap  
Our hands, and cry 'Eureka!' It is clear,  
When but some false mirage of ruins rises near."  
FRANCIS DRAKE.

\* To be continued.

## PHOTOGRAPHS.

*Victoria Cross Gallery.*—The photographs which Mr. Louis W. Desanges has published of his very remarkable set of pictures, illustrating noble actions that have won the Victoria Cross, though they scarcely do justice to the pictures themselves, form a very interesting collection. Mr. Desanges says in his preface,—"I have been my endeavour to render as literally as possible each scene and event as described by my gallant sitters, many details having been supplied to me by their friends and companions in arms. Thus assisted, I placed myself as a workman in their hands, so that whatever may be the demerit of the pictures as pictures, they have the positive value attached to national records of events that must live for ever in the history of our country's glories." The life and movement, and general air of reality, exhibited by the pictures fully confirm this statement. Amongst the photographs which are more particularly admirable and effective, we should place No. 33, Corporal Robert Shields seeking his wounded adjutant, Lieut. Dynely, under a heavy fire; No. 6, Lieut. Prendergast, Madras Engineers, charging at the action of "the Betwah;" No. 7, Col. Sir Chas. Russell dislodging the Russians from the Saub-hag Battery; and 24, Lieut. William Hope aiding Lieut. Hobson in the trenches, under a heavy fire from the Russian batteries. Some who are connected with the heroes commemorated may thank us for saying that these photographs may be obtained at 16, Stratford-place. They deserve to be in every house where noble deeds are honoured. Mr. Desanges has done a service to his country, which will be more highly appreciated one of these days than it is now.

*Mr. John Adams, Sculptor.*—Mr. John Adams, who, it will be remembered, obtained some time ago the medal of the Royal Academy, is working efficiently in Rome. We have before us photographs of two statues by him, "The Sacrifice of Abel," and "The Lady of the Lake," which give promise of more than usual excellence, and are indeed themselves achievements. Abel (from a Greek type, to which we leave etymologists to take objection) stands with upturned eyes by the side of his rude altar, his face displaying faith and fervent adoration. The second is a noble female figure, fully draped in the lower part, and with a thin, tight-fitting vest, her right hand resting on the upraised head of a dog by her side. We should prefer to call the group "Fidelity," but can fairly praise it, and that warmly, too, under the name given to it. We shall be disappointed if Mr. John Adams do not aid materially in maintaining the reputation of British sculptors.

## METROPOLITAN STATUES.

*Richard Cœur de Lion.*—The statue named Richard Cœur de Lion, exhibited by Baron Marochetti at the Great Exhibition of 1851, has been cast in bronze and set up in Old Palace-yard, Westminster, midway between the Peers' entrance to the Houses of Parliament and the end of Westminster Hall, and in a line with the centre of the great window in the Hall. It is placed on a pedestal of granite about 8 feet 6 inches high; in which two panels are left apparently to receive bronze relief. Fully appreciating the picturesque beauty of the group, we are amongst those who think it has been over-praised. The ugliness, if not error, apparent in the hind quarters of the horse, and the fatiguing attitude of the man, would of themselves prevent us from joining heartily in the songs of praise which the accomplished Baron appears able always to command, and usually with invidious and unjust reference to British sculptors.

*The Guards' Memorial, Pall-mall.*—The crowning figure, Honour distributing Wreaths, has been raised to its place, and we may now expect to see the monument speedily completed. The lower figures being at present covered up, and the ornamentation of the pedestal incomplete and tentative, a conclusion can scarcely be arrived at. We have a strong impression, nevertheless, that the pedestal is too large and clumsy for the surmounting figure. Honour should have been at least double the size, and even then the pedestal would need refinement.

*INDICATION OF STONE BY THE ANCIENTS.*—On reading Sir Henry Rawlinson's observations with reference to silicating stone, I would suggest whether the ancients might not have applied the first varnish in a fused or heated state, which would at once render it impervious to the weather, and might in some measure account for the deposit, so desirable to obtain.—A. B. C.

## RENOVATIONS AND SPOLIATIONS IN HEXHAM ABBEY CHURCH.

OUR statement of the erroneous course pursued at Hexham, coming as it did amidst the plans and complimentary accounts in the local papers, has excited very considerable interest far and wide, and, of course, is not to be allowed to pass unquestioned. We have received a letter, signed "J. Oswald Head, Hexham," and would print it if it showed that any part of our statement was untrue. As it does not do so, the writer must be content with a digest of it. Mr. Head pretends to assume that, because we assert that what has been recently done has more disturbed the important features of the choir than the earlier Vandalism, we consider whitewash essential to the beauty of cathedral walls; desire the "bases of pillars to be concealed below the level of the floor; and think that the spaces between the pillars cannot be more appropriately filled than by an incongruous series of hideous galleries." He knows better than this, or he is incompetent to write on the subject. As to the Ogle screen, he proceeds—

"I may state, that the beautiful Perpendicular screen consisted, in other words, of an oblong box, open on one side, lined with green baize, and not possessing one single architectural characteristic of any description whatever; with the exception of the specimen of fifteenth century painting to which you refer, and which was concealed in the roof.

The frial-stool remains in the church as much an object of antiquarian interest as ever. True, it has been removed; but, if any of your readers will be kind enough to inform me of its original position, I have little doubt but what it can be again placed there.

The most original and inexcusable criticism which you have passed upon the committee, however, remains to be noticed. This is neither more nor less than that they have done wrong in attempting to rescue the choir from its deformity; and by placing seats in it, &c., have unfitted it for cathedral services!

To offer any remark upon this would be to admit its infallibility, a concession which I must confess myself utterly unable to make.

In one respect the antiquarian superintendent recommended by you, I will allow, might have been of service. The contractors were perfectly unjustified in using any lead-stones for any purpose whatever. That "fragments of Norman coffin-lids" were used as you state I do not believe, but that grave-stones of more modern date were employed in covering an air-drain I had ocular demonstration, and remonstrated at the time against it.

In reference to the Ogle shrine, we deem it probable that our correspondents is still unaware of the open transeptal screen with which it was surrounded. This may have been, (like the fifteenth century altar painting, claimed by the joiner as old materials, whose existence he admits), concealed by what he terms "an oblong box." In October large portions were lying, placed among the rubbish in the passage leading from the cloisters at the south end of the south transept, and the remainder—portions of a cornice with the crescent, for the Ogle crest, carved upon it—we ascertained to be dispersed, and in the possession of various individuals in the town. In support of our observations we may mention that the more debased, and consequently less valuable, stone oratory of Prior Richard was chosen for re-erection; while this earlier and consequently more valuable monument has been completely scattered.

The right position of the frial-stool (seat of peace) was the chancel, or chancel aisle, whence it was taken. As the most sacred refuge of those who sought the privilege of sanctuary, it was near the altar. The one other known example, in Beverley Minster, stands in the same position as did that at Hexham.\*

With reference to the use of the ancient grave-stones, it was scarcely likely that the contractors would have chosen the identical model that Mr. Head was present to use up fragments of Norman sculptured stone, to cover the air-drain; but, as he had ocular demonstration that part of our statement was correct, it is difficult to guess by what mental suppressing process he is able utterly to disbelieve the rest of it. As we stood by the edge of the cutting made through layers upon layers of coffins and skeletons, and looked down upon the men at work within it, we saw "fragments of Norman coffin-lids, with zigzag ornaments" so used, as surely as our correspondent admits having seen grave-stones of more modern date employed for the purpose.

The great question respecting the restorations remains the same. Here was an abbey church, consisting of choir and transepts, of dimensions equal to the requirements of episcopal ceremonies, existing in a town which has a probability of becoming a cathedral see. The choir possessed ancient stalls, appropriately situated, and was

additionally enriched with two ancient shrines, and a still rarer relic—a Saxon frial-stool; the transepts were unappropriated. Side by side with these valuable remains of ancient art were galleries and other modern disfigurements. What has been done? One indiscriminate sweep has cleared away gold and cross—the carved stalls, and "the hideous galleries," the shrines and "the three-decked pulpit," the Medieval painting, and the transparency "with a goose," the whitewash and the seat of refuge! The choir, thus denuded, has been packed with new benches: the immense space in the transepts is still unappropriated.

## THE ARCHITECTURAL EXAMINATION QUESTION.

## LIVERPOOL ARCHITECTURAL SOCIETY.

At a meeting of this society, held on Wednesday evening, October 31, Mr. James M. Hay, the president, in the chair, it was announced that two drawings had been sent in on the terms of the proposition made at the close of the last session. One was that of West Derby Church: the other was a book of drawings of buildings taken during the recess. The council awarded the prize to the drawing of the West Derby Church, provided the competitor was prepared to say that it was taken by measurement on the spot, and not from the architect's or builder's plans.

Mr. Brown, of Norwich, described his patent for making doors and windows air-tight and water-tight, noticed by us some time ago.

The chairman then invited a discussion on the nine propositions submitted by the council of the Royal Institute of British Architects, which were as follow:—

Proposition 1. That it is desirable to afford an opportunity for a voluntary professional examination to the present associates, and to the future fellows and associates of the Royal Institute of British Architects. That a climatic examination be therefore established for the students and associates of this Institute under the age of twenty-five years; and a higher examination in the theory and practice of the profession for associates above that age, and for future fellows. 2. That the rates as to students and their prizes be reconsidered by the council so as to lead educationally towards the last-named more important examinations. 3. That the elementary examination embrace pure and applied mathematics, land-surveying, mensuration, geology, ordinary construction and materials, drawing, the styles of architecture, the history of architecture, and chemistry. The examiners to define the subjects absolutely necessary; the marks to be apportioned to each; and the aggregate number essential to entitle such candidate to a certificate. 4. That the chief subjects for the higher examination be such as occur in professional practice, with the general theories on which the detail of such practice is based,—e.g. languages, architectural jurisprudence, the Building Act, sanitary arrangements, the history of architecture, the theory of the beautiful, the analysis of the styles of art, architectural composition, the literature of architecture, the theory of the higher subjects of construction,—e.g. arches, bridges, and domes, the application of iron, &c. That the subjects for the higher examination may also be a development of those enumerated for the elementary examination, to an extent commensurate with the information on other subjects expected from the persons examined. 5. That a curriculum be prepared and circulated, giving a general outline of subjects for examination. 6. That the examiners be authorised to take into consideration any diplomas or certificates of competency that may have been obtained elsewhere,—e.g. from the Universities of Oxford and Cambridge, the professors of architecture at University College, and King's College, London. 7. That the examination be carried on by means of writing as well as orally, and that they take place in the months of July and October. 8. That the examiners be chosen by the president, the vice-presidents, the past vice-presidents, and the council for the time being, from among the members of the Royal Institute of British Architects, so far as may be possible; and that they receive fees for their attendance. 9. That the following rates be paid by the candidates on entering their names for examination, viz. 1.—For the elementary examination, two guineas; higher, three guineas.

Mr. II. P. Horner communicated his views to the meeting in a letter to the chairman, dated from Windermere on the previous day. The following are extracts from it:—

"Believing that in certain respects the profession, and through it the public, would be benefited by a general system of examination, publicly recognised as preparatory to the practice of architecture as a profession, I still think it quite consistent with this belief to balance very deliberately on the other hand the difficulties which the arguments of those who most strongly advocate a system of architectural examination and diploma. As regards the peculiar character of our profession, it must always be remembered that it is essentially a *fine art*, while dependent on the *science* of its construction on a material means; but the conceptions themselves, which constitute the art, are primarily independent of these means, though so far concerned with them as tritally dependent on the physical structure made to express upon sound and satisfactory architectural design. This admitted, and a competent theoretical knowledge of the principles of construction on the part of a designer be requisite, it is without this, however, that he can scarcely design at all; it seems to me that the practice of architecture takes its place with that of the other modern arts, sculpture and painting, and can no more be made the proper subject of a license or diploma than

\* According to Spelman, as quoted in the Oxford "Glossary," the seat at Beverley had this inscription:—"Hec sedes lapideis frontalibus ductor, or, parvis cathedra, ad quum reus fugiendo perueniens omnimodum habet securitatem."

could these. No one would more than myself deplore the neglect of practical construction as a subject of study by the architectural student; but in proportion as this, which seems to me the branch of architectural knowledge alone capable of the test of examination in its strict sense, takes precedence of design the imaginative part of architecture, and that proportion will architecture decline as a fine art; and this, I fear, be one tendency of the establishment of a system of architectural examinations, which might prove the possession of mathematical knowledge sufficient for a Cambridge examiner, and of classical lore enough for accomplished pedantry, but still leave the possession of real architectural skill utterly untested. The kind of examination sketched out in the paper of the Royal Institute of Architects would include the elements of a liberal education with a leaning towards architectural history and the ground-work of engineering knowledge; but I do not see that architecture as a fine art would be, as I hold, indeed it scarcely could be, a part of such curriculum. With respect to the position of the profession among us at the present day, I do not believe that, with English independence of feeling and opinion, any material change could be wrought by the existence of a diploma system in education: I would disparage in no degree the worthy aim and careful deliberation of those by whom the course proposed has been framed; but I cannot see the offering scope for the test of professional skill; regarding that, I must repeat, as an essentially artistic power. I do not question the advantage to the profession and to the community of any means which shall tend to ensure the practice of a calling bearing so intimately on many important interests being confined in any considerable measure to the hands of men of liberal education and good general attainments; and if the prestige attaching to it, and the respectability of the examination shall occasion a preference in the public mind for the employment of those who have passed it, each good would, doubtless, be accomplished; but still I cannot see that the art of architecture will be necessarily advanced. With regard to the higher examination, I hold that executed works, really the production of their fessed authors, afford the best diploma for a practising architect. If the Institute should continue to hold their doors open, as heretofore, to those who, seeking admission as fellows, prove themselves worthy of it by their executed works, and who associate those who are distinguished for professional skill in primary and direct reference to the imaginative element of the art; granting, if need be, their certificate of the attainments of these latter, I cannot see that, for the present, any new exists among us, its interests will be, in all probability, better served than by an attempt to systematise to form what the very state of things must in a great measure render inoperative, and which would occasion separation and invidious distinctions where unity now happily subsists."

The Chairman said.—The first question to consider in this discussion is the object to be gained by a diploma, and whether a diploma will effect that object. The object aimed at is to raise the status of the profession, by excluding all from its ranks until each has undergone an examination upon subjects more or less essential to the practice of architecture. What those subjects are will be discussed under the third and fourth propositions. This examination will compel the student to undergo a long and tedious preparation; for, although architects generally may be more or less acquainted with these subjects, it is a very different thing to be called upon to answer every question at a moment's notice; and the best men may not always be the most successful in their answers. Still the result will be to improve the education of the architect. There is just a difficulty in the introduction of a system which, without being too lenient to him mere mockery and a sham, would yet not be so severe as to exclude any one who would be at the pains to prepare himself for it. When the system is fairly established the examination should gradually increase in severity till a proper standard is reached; for I conceive it would be unfair to many who are just about commencing practice, though possessing undoubted architectural ability, that they should be subjected to an examination which they never contemplated or anticipated when they first entered on their articles of apprenticeship. There must be a unanimity on this question throughout the kingdom, otherwise the profession will be divided into two great factions which will be injurious to its interests. The greatest care and caution must be adopted in introducing the system—liberal treatment and fair play—so that the minority excluded may neither be formidable in numbers nor ability. Anything like stringent measures or severity at the outset will defeat the object aimed at.

Mr. Boulton said he should submit some resolutions which would seem to embody the answer which the society should return to the Royal Institute of British Architects. He thought there was an inconsistency in Mr. Fowler finding fault with the curriculum because it did not embrace any test of fine art in architecture, and then saying that such a test was impracticable. The question was, how could the quality of an architect be tested before he commenced practice. And here he took exception to what appeared to be the view of Mr. Horner, that old men as well as new beginners should go through some examination. The result of these examinations would be to induce young men to go through a regular course of study, and he should therefore move—

"That this meeting, having carefully considered the propositions of the council of the Royal Institute of British Architects, for securing a professional examination, are of opinion that it is highly desirable a course of study should be defined for all who may desire to become members of the profession of architects; and that an examination should be established to test the manner in which the studies defined have been pursued; those who may pass the examination with credit or distinction being furnished with honourable certificates of merit.

That this meeting are further of opinion that it is desirable the certificates granted to gentlemen who may pass the examinations should ultimately have the value of diplomas, which shall secure to the architect upon whom they may be conferred full exemption from the special provisions of any Metropolitan and other Local Building Act; and from the bye-laws for regulating building construction which may have been adopted by any local board, under the provisions of the Local Government Act, 1858.

That similar exemption should be conferred upon all architects who have practised as principals on their own account for a prescribed minimum period.

That this meeting hopes that the Royal Institute of British Architects will continue to give that cautious and enlightened consideration of the subject of professional examination which its importance demands, as they believe a judicious solution of the problem will tend to elevate the status of the profession, and will entitle the Institute to the gratitude of the whole body of architects.

Mr. John Hay would second the resolutions, with the exception of that part referring to the Building Acts, which, he thought, impracticable.

Mr. Weightman was in favour of a voluntary examination. The question at present was one of principle, not of detail, and he should move that a voluntary examination was desirable.

Mr. Frank Howard begged to move a direct negative to Mr. Boulton's proposition. He would, if he felt competent, practise as an architect, in spite of any diploma, and protested against any examination which should be conducted by a self-constituted body of men who had not been themselves subject to the test, and who were not at all superior to Liverpool architects. He never heard anything so absurd in his life as that these self-elected judges should be paid for damning their opponents, who were cleverer than themselves.

Mr. Audsley would let the Royal Institute of British Architects do as they liked with their own members, but would not tolerate any interference with others.

Mr. Callihan, student member, objected to an examination by men in London, and read the following resolution, which was passed at a meeting of the student members of the society on Tuesday night:—

"That, in the opinion of the students present, the granting of a diploma, before being allowed to practise, was very desirable; but they did not think it proper for the Institute of British Architects to take upon themselves the power of examining all candidates. In their opinion the Society formed in the town where such candidates are studying can have the power to grant a certificate, such certificate to hold as good as that granted by the secretary of the Board of Architects, and being the same."

The resolution submitted by Mr. Boulton was then put to the meeting. Professional members only were entitled to vote, and the resolution was carried by three to one.

It was then proposed by Mr. William Weightman, seconded by Mr. John Hay, and carried *neg. co.*—

"That the local examinations, especially the elementary ones, be conducted under the auspices of the respective local Architectural Societies."

#### FROM VIENNA.

THE new exchange, by Herr Ferstel, of one front of which the *Builder* gave an engraving some time ago, is much admired. The interior decoration, ceiling painting, walls in mosaic of imitation marble, and metal-work, are in a motif Gothic, with ideas from the Romanesque and Cinque Cento. This building has very many things in interior decoration that would interest an English architect, and would be new to him.

Herr Ferstel has just finished a country-house in the Pointed style, with constructional polychrome, at Gmunden; and is about to commence a large private house in Vienna, on the quay near the Ferlland-bridge, a simple massive Gothic building, in brick and stone. His work has this character,—it is massive and solid, thoroughly constructional, and its decorative feature is German Gothic, not of the wiry nature, but more French. His votive church in Vienna is progressing. He is well acquainted with the works of Street, Burgos, Scott, Woodward, and others, through your paper.

Professor Smith has commenced his new large Gothic church for the Lazzarists here. It is an interesting design, solid, and not wiry in cha-

factor. It is necessary, in criticising works from here, as to their depth and light and shade in the windows, to remember that the windows must be double, to suit the climate; hence it is difficult to get that depth you can get in an English modern Gothic work, where the glass is single; and it is necessary here at least to have 6 inches between the two windows.

There is a competition open in Vienna for a new Opera-house. The programme could be had by applying through our embassy, or to the Austrian consuls in London. T.

#### INFANT SCHOOL FOR THE DEAF AND DUMB, NEAR MANCHESTER.

CONSIDERABLE efforts are being made at this moment, in the metropolis and elsewhere, in favour of the deaf and dumb; a movement in the success of which we feel much interested. A few weeks ago an institution for the reception and education of deaf and dumb infants was opened at Old Trafford. It is said to be the only one of the kind in the world.

The Rev. Canon Clifton, in opening the proceedings, said a school for the infant deaf and dumb was an entirely new idea: similar institutions did not admit children under eight years old, while here they were received between the ages of three and seven. Children are most susceptible of cultivation when very young; and this was particularly true of deaf mutes, who were not generally deficient in mental ability, but their minds became early dented by isolation and neglect. This institution, therefore, supplied a very great want. There would be accommodation ultimately for fifty children. Already more applicants had appeared than could be accommodated, so anxious were the parents of these unfortunate little ones to use the institution. There had been raised for the Institution the large sum of 11,500*l.* Of this amount 4,500*l.* was obtained in donations, and the unexpended sum of 7,000*l.* had, thanks to the ladies, been raised by a bazaar.

Allusion was made at the meeting to the intelligence often displayed by the deaf and dumb; and it was shown that one of them had thus ably answered the following questions:—

"What is hope? Hope is the blossom of happiness.—What is the difference between hope and desire? Desire is a tree in leaf; hope a tree in blossom; enjoyment is a tree in fruit.—What is gratitude? Gratitude is the memory of the heart.—What is time? A line that has two ends; a path that begins with the cradle and ends in the tomb.—What is eternity? A day without yesterday or to-morrow; a line that has no end.—What is God? The necessary Being, the sun of eternity, the mechanism of nature, the eye of justice, the watchmaker of the universe, the soul of the universe.—Does God reason? Man reasons because he doubts; he deliberates, he decides. God is omniscient; he never doubts, and therefore never reasons."

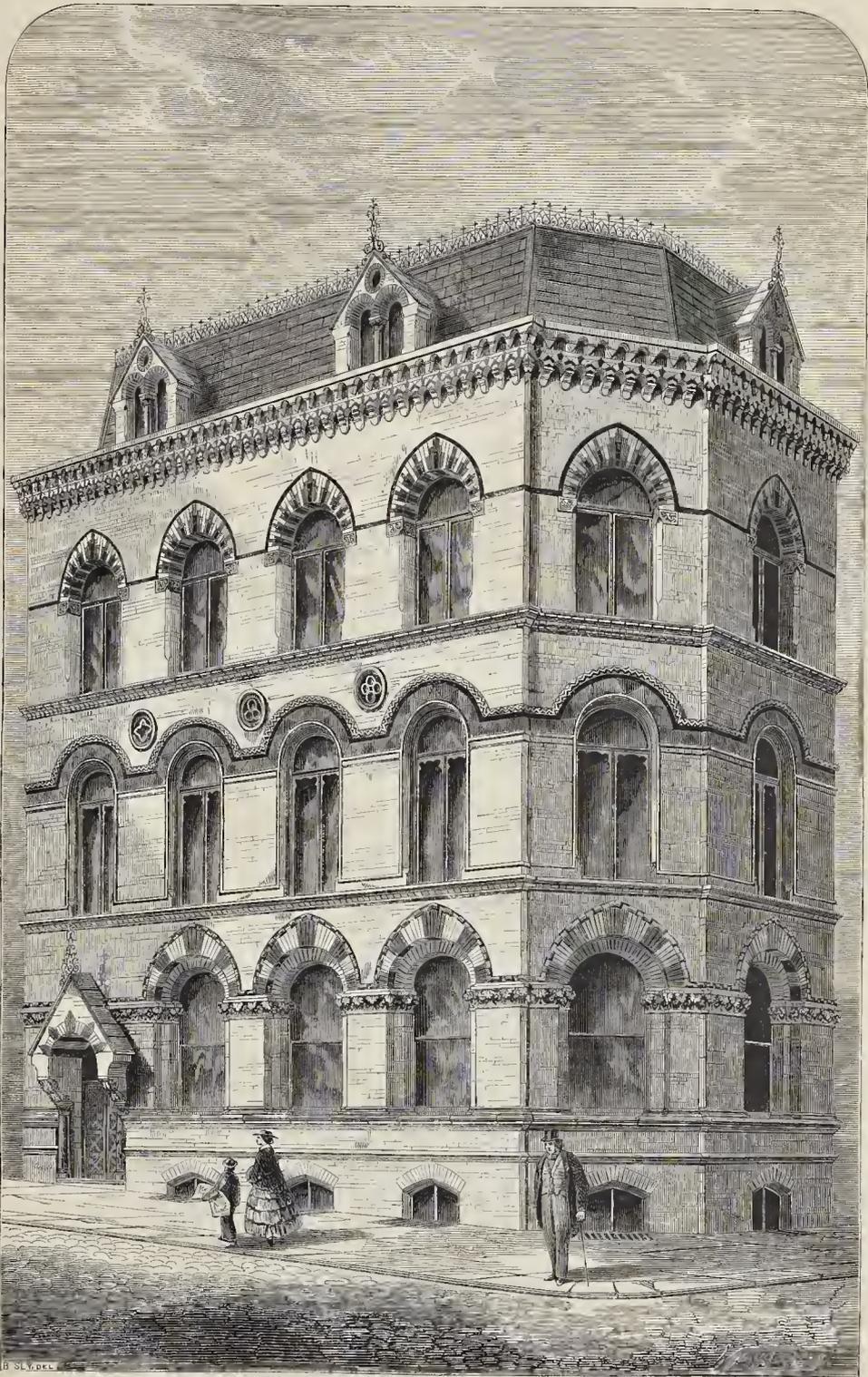
The structure, of which we give views, was built by Messrs. Bowden, Edwards, & Forster from the designs of Mr. J. Redford, at a cost of 4,700*l.*, and is situate at Old Trafford, adjoining the Botanic Gardens. The site selected is in the rear of the present institution, but abuts beyond the left wing, so that the front of the edifice is visible from the road; forming a detached addition connected by a covered way. The foundation stone (as noticed by us at the time) was laid on the 8th August, 1859, by Mr. Thomas Turner, F.R.C.S., the originator of the school. The structure is assimilated in exterior to the Tudor style of the time of Henry VIII., which was adopted for the main building. The façade is of "summit" stone. It covers an area of 577 yards, although from the circumscribed form of the land a frontage of only twenty yards could be obtained. It comprises sheltered playgrounds in the lower story, over which is a schoolroom 40 feet by 25 feet, dining-hall 29 feet by 20 feet, boys' dormitory 40 feet by 25 feet, girls' dormitory 45 feet 6 inches by 20 feet, sick ward, lavatories, committee-room, nurses' rooms (divided from the infants' by a glass partition), apartments for the housekeeper, domestic servants, &c.

The principal rooms are upon piers: the staircases are fire-proof; the dormitories, with an open timbered roof, give 800 cubic feet of space to each bed. The dining-hall and schoolroom have low-pressure hot-water circulation in addition to fire-places, and dwarf wallscaling; to the latter room the panels are formed of slate, upon which the children are taught their lessons. The walls are of second bricks, painted in the dining-hall and schoolroom, and lime-washed in the dormitories. The woodwork (including exposed carpentry, beams, joists, bridging, spars, boarding, and principals) is stained pine varnished.

## INFANT SCHOOL FOR DEAF AND DUMB, OLD TRAFFORD, MANCHESTER.

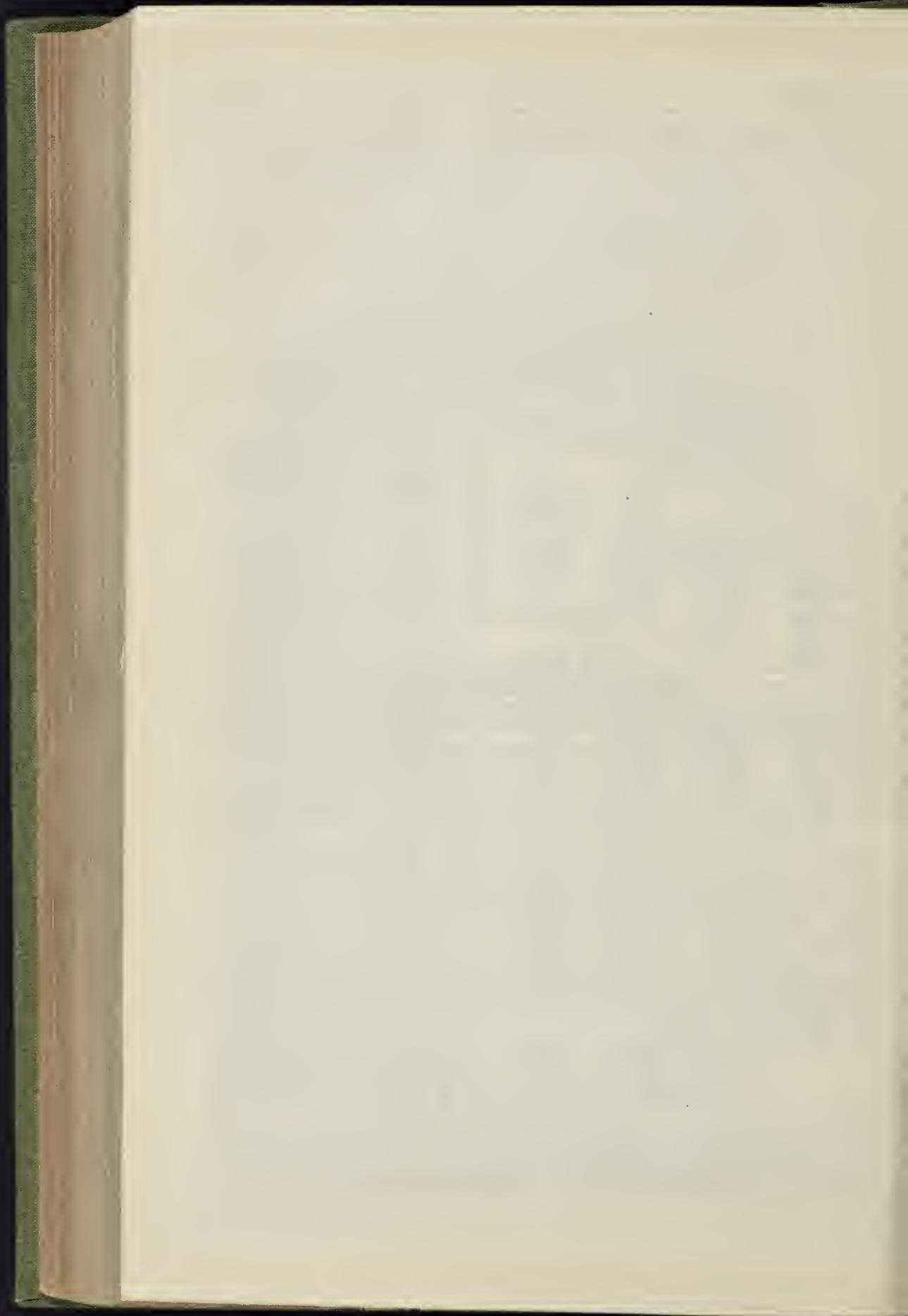
MR. JAMES REDFORD, ARCHITECT.

*Entrance Front.**Dormitory.*



H. ST. Y. DEL.

RECTORY HOUSE FOR THE PARISH OF ST. THOMAS APOSTLE AND ST. MARY ALDERMARY, LONDON.  
MESSRS. TRESS & CHAMBERS, ARCHITECTS.



**THE RECTORY HOUSE OF THE PARISH OF ST. THOMAS APOSTLE AND ST. MARY, ALDERMARY, LONDON.**

The rectory of the parish of St. Thomas Apostle is built upon a piece of ground at the corner of Cloak-lane and Queen-street, Cheap-side, formerly a part of the site of the church or churchyard of St. Thomas Apostle. The church was destroyed in the Fire of London, but the churchyard remained until 1848, when a large portion of it being required to widen Queen-street and to form new Cannon-street, it was, with the consent of the parish and the Bishop of London, purchased by the City,—the consideration being a sum of £1,000, paid over to the parish for the erection of a dwelling-house for the rector on the remainder of the site. This amount was afterwards increased by a subscription from the united parish, St. Mary Aldermary.

The building is faced with white Suffolk bricks, with string courses and arches of red and red and black brickwork. Ambury stone is used for the architraves, string courses, and dressings generally. The course of inlay over the first-floor windows and in the circular panels is intended to be of coloured marble and granite. The works have been carried out by Mr. Macey, builder, of Milford Wharf, Strand, under the superintendence and from the designs of Mosses, Tress & Chambers, architects. The present rector is the Rev. L. B. White, M.A.

**TRAVELLING STUDENTSHIP IN MEMORY OF THE LATE A. WELBY PUGIN.**

The subscriptions towards the endowment of a permanent fund, to be entitled the "Pugin Travelling Fund," the interest arising therefrom to be awarded to an architectural student in such manner and at such periods as may hereafter be decided, now amount to about 750*l*. To the studentship, as our readers know, it is proposed to add a medal.

This memorial, whilst providing a lasting recognition of the services rendered to art by the late Mr. Pugin, will be the means of promoting in a thoroughly practical manner the study of architecture. It is most desirable that the support of this proposed foundation should not be looked on as a party badge. Men on both sides of the style-question have already subscribed to it, and the Institute of Architects will, it is understood, accept the office of dispensing the funds. While we have Mr. Beresford Hope and Mr. Scott acting as joint treasurers, we find Mr. Tite, who seems just now bent on doing liberal and wise things (all praise be to him for it), subscribing his twenty guineas to the fund. The committee will need at least 1,500*l*, or 2,000*l*., and we shall hope to see provincial architectural societies, architectural students, and art-workmen, lending their aid to bring up the amount to the latter sum.

**HEALTH AND CRIME.**

The Registrar-General's quarterly report, just published, offers some points worthy of notice. The season has been remarkably healthy: the death rates have decreased; the births are about the average; and the increase of the marriages shows the general prosperity of the country. *Sanitary improvements have gone on: the temperature has been remarkably low; and the rains have purified the sewers, and retarded putrefaction.*

The epidemics of diarrhoea and cholera have been frequently attributed to the extensive supply of fruit. In the present season, whatever may be the scarcity of grain and vegetables, the supply of fruit has been remarkably abundant throughout the whole country; and, in the poorer neighbourhoods of the metropolis, apples, pears, plums, and other fruits have been sold in greater quantities and at smaller prices than we ever remember. Apples, of not bad quality, have been offered in some of these districts for 3*d*. a pound weight. Notwithstanding, diarrhoea has declined in the metropolis.

86,423 deaths were registered in the three months ending in September. In the corresponding quarter of the last year the deaths were

Deaths last quarter .....	164,330
.....	86,423
Difference of deaths.....	17,916

and it is to be noted that the largest amount of saving has been in the large towns.

Notwithstanding that the price of nearly all kinds of provisions has been high, the number of marriages has increased, particularly in the

great manufacturing districts of Lancashire and Cheshire. Pauperism is declining on the average. The number of paupers in receipt of relief was

At present the number is .....	783,449
.....	789,360
Decrease .....	14,069

All the above figures, with the exception of the high price of food, are of a favourable nature. We learn, however, that in consequence of the general prosperity, the extent of employment, and the price of labour, the public health has not, so far, been generally affected by disease from scarcity of the necessities of life. As probably always will be the case, there are classes suffering at present, and a vast multitude, amid all our prosperity, are in distressed circumstances. We may hope, however, that,—with the great development of our national resources and industry, by the improvement of the condition of the children of the poor and others, by the institutions which are in progress for rendering useful the younger portion of these populations, who are at present a waste to the community, and by adopting a sensible and efficient system of emigration, and opening out sources of employment for the suffering thousands,—the amount of distress, even in the most favourable circumstances of health, which causes so much anxiety, may be abated, and by this means a considerable amount of life saved and much ill health prevented.

We may just now note that the average number of deaths in the town districts in the summers of 1850-9, was, yearly,

The deaths in last summer were....	52,651
.....	45,495
Below the average .....	7,356

In the country districts, where, generally, sanitary improvements have been less attended to, the deaths for 1850-9, averaged, yearly

In last summer .....	43,607
.....	49,028
Below the average .....	2,769

For the purpose of battling with crime in England and Wales, we have an army of 20,507 men: 152 of this police force are detectives;—and the cost of the whole force was last year 1,485,029*l*. 10*s*. 10*d*. This, however, as we have before shown, is but a small part of the cost of crime in Great Britain. The number of persons employed in the jails and other prisons, the judges, councillors, and others, to whom the large extent of vice gives employment in England, would make a body almost sufficiently numerous to repel a foreign invasion.

Although unpleasant, it is useful to look steadily at these figures, and to know that the cost of crime, taking it in all its pounds, shillings, and pence considerations, is probably over five millions a year. Nor is the extent of prostitution less shocking to contemplate. The whole matter, however, shows that all should work most strenuously in their various ways to endeavour to abate the monster evil which is such a disgrace to our civilization. In order to do the greatest amount of good, it is necessary to discover the chief causes of these evils; and it is worth while to consider calmly, and with care, the opinions of persons who have had by observation and experience opportunities of obtaining useful knowledge on these points. Amongst the opinions which have recently been given, the chaplain of Horsemonger-lane Jail has, in his annual report to the Surrey Justices, which has been printed, thus said:—

"From my experience of predatory crime, founded upon a careful study of a great variety of prisoners, I conclude that habitual dishonesty is to be reformed neither by ignorance, nor to drunkenness, nor to poverty, nor to overcrowding in towns, nor to temptation from surrounding wealth, nor, indeed, to any one of the indirect causes to which it is sometimes referred, but mainly to a disposition to acquire property with a less degree of labour than ordinary industry."

The above statement, made by a gentleman who holds an important position in our metropolitan prisons, is very different from those of the chief authorities who have written, after much thought and investigation, on this most important subject: if such a statement should be to any extent agreed with, it might lead to the fresh introduction of the whip and treadmill as means of curing laziness. Whether the chaplain of the above-named prison be right in his statement as to the true cause of our crime, or whether that true cause do not at least involve the neglect of those measures of a more humanizing character which have been shown to be the means of preventing a large amount of national disgrace and exposure, remains to be seen; but, certainly,

the experience which we have gathered from long observation, the opinions of hundreds of distinguished authorities, the police reports and statistics of crime, and the working of reformatories, are all against this gentleman's theory.

**THE LUTHERIAN MUSEUM.**

THE LUTHERIAN MUSEUM, a collection of various objects gathered together by an inhabitant of Hallerstädt, has been, according to the *Illustrirte Zeitung*, transferred from the latter place to Wittenburg, where it is to remain for exhibition, in Luther's own house. It is well known that the purchase was ordered by the Prince Regent. The heirs have sold it for the moderate sum of 3,000 thalers,\* fully aware of the wishes of its late proprietor that the collection should find a permanent resting-place at Wittenburg. The contents are, among other objects, thirty-four paintings, principally portraits of Luther, Catharine de Bora, his wife, Madeleine Luther, the Elector of Saxony, Melancthon, Erasmus, Pontanus, and Ulrich de Hutten. Many are by L. Cranach; for example, those of Luther and his wife, in the year of their marriage, and which remained in the family of the Reformist up to 1720.

The second section of this museum contains, in thirty-four portfolios, nearly 7,000 portraits of Luther and his contemporaries, including those of his family. Then follow the autographs of Luther and his contemporaries, in number about 2,000, contained in 213 cases of different sizes; and 294 medals, struck in honour of Luther and his friends.

**CROYDON.**

WHITGUFF'S Hospital has just undergone a renovation both internally and externally. The alterations and improvements are rather extensive. Some time since, the trustees caused the quadrangle to be sunk or dug out about the depth of 2 feet, so that the earth outside the floors of the dwellings of the old inmates might be on a level with the inside, thus preventing the previous dampness of the room in the first floor, and rendering it more easy for the aged people to gain admittance to their different apartments; as, before this alteration took place, they had to descend into their rooms by a flight of steps. After this alteration had been effected, and the quadrangle space laid out with grass plots and flag pavements, the trustees determined to put the old building into a better condition by repairs, alterations, and decorations. The work was accordingly contracted for by Mr. C. Hyde, builder, Croydon, while the designs for the work were furnished by Mr. Willoay Mullins, of London.

Drainage tenders have been sent in to the Local Board, for the construction of a new brick sewer, proposed by the surveyor (Mr. Fenton), which will be laid from Pitlake, through Church-road, and continued on to the Brighton-road, terminating near the Swan and Sugar-loaf Inn. The tenders were as follows:—

Mr. Adam Bull .....	£1,955	0	0
Messrs. King, Burton, & Hipwell .....	1,685	0	0
Mr. Thomas Morris .....	1,380	0	0
Mr. E. Thirst, London .....	1,338	0	0
Mr. John Laid .....	1,304	1	8
Messrs. Hartland & Bloomfield, London .....	1,300	0	0
Mr. John Walker .....	1,240	0	0
Mr. James Hayward .....	1,225	0	0

The lowest tender (Mr. Hayward's) was accepted. The Croydon drainage already in operation appears to be now contributing not a little to the healthfulness and prosperity of the town. From the usual quarterly reports of the mortality of the parish it appears that the mortality of the whole parish, at the commencement of the current year, was at the rate of only 15½ per 1,000 of the population, which itself contrasts remarkably with the twenties and thirties of many other places; but in the central and western districts of the parish the percentage was only a little over 14 per 1,000, apart from the Union House, which happens to be situated in this part of the parish. The remarkable circumstance also now occurs, that the hitherto least healthy district ranks as the most healthy; and to what can this be attributed but to the sanitary improvements, which would of course be directed most especially to the unhealthy parts? The number of infant deaths in the past quarter was only 42, as compared with 104 for the same period in the previous year. Under all these encouraging circumstances it is not to be wondered at that a great increase in

\* About 44*s*.

building operations has of late been going on. The number of houses in the parish, which in 1851 was 3,234, is now 4,794; and the population has increased from 26,734, in 1855, to 29,144 in 1860. The large number of 102 notices for new houses, moreover, have been approved for building in the quarter last past.

A prospectus has been issued in this now thriving town of a "Croydon Sewage Irrigation Company," with a capital of 30,000*l.* in 10*l.* shares. The board is composed of eminent agriculturists and landowners, and a hope may, therefore, be entertained that the experiment will be so conducted as to aid greatly in leading, through its successful example, to a general utilization of the sewage of the large towns of the kingdom. In the present instance a concession has been obtained from the town of Croydon for 100 years, and the quantity of sewage to be obtained is estimated to be sufficient for 9,000 acres of land per annum. This will be pumped to a reservoir on an elevation about two miles distant, whence it will flow to each farm and field by gravitation. The works could be completed by March or April next.

The benefits derivable from irrigation with town sewage have been recently urged in a statement made to the new company just notified by Mr. George Shepherd, C.E., of London, in which he points out,—1st, the beneficial results obtained from the sewage during the late winter of 1859 and the late cold spring of the present year; 2nd, the great advantage obtained by the use of this invaluable manure during the late wet, cold, and extraordinary harvest season. While non-sewage farms were suffering all the horrors of a famine, it appears from this statement that sewage-manured farms were revelling in abundance of food for their stock.

"In May last," continues Mr. Shepherd, "the sewage of Croydon was used to irrigate several fields; the land is undrained, and the soil was very poor. The land was sown with clover and rye grass; one field of grass and one of oats. The fields were irrigated in a most crude manner, but the result has been most astounding. The hitherto poor soil, since May, has produced two heavy crops of clover, also two heavy crops of rye grass, while the third crop is now ready for cutting for the farmyard in a green state. One heavy crop of hay was obtained from the grass field; the second crop has been grazed off, and at the present moment yields most abundant pasture of rich green grass. "Had this season been favourable so that the produce could have been cut when ready, three, if not four, crops would have been obtained from each field. Comparing the present state of the pastures in these fields with those adjoining, in the former there is sufficient food to fatten several hundred head of sheep, while the other non-sewaged fields are comparatively bare. Nor has the crop of oats irrigated with the sewage been less satisfactory. It was the finest field of oats I ever saw, notwithstanding the abundance of cold rain, and the absence of the heat of the sun to ripen it. The oats were fit for cutting full three weeks earlier than the grain in the adjoining fields, had the weather permitted the operation. When cut it was found, from being over-ripe, a great deal of the oats had shed. (I have noticed many farms this year, and this is the only instance I have seen the crop ripe enough to shed, as it is termed, while standing. In many parts the crops have been cut in a very green state. I have heard this expression from the farmers in too many instances:—'The land is too poor to ripen the grain.' " \* \* \* As soon as the oats were carted, the well my friend Mr. Morrison, late of the Links farm, Malvern, says:—'My opinion, after six years' experience is, that irrigating with sewage is the finest manure possible for grass lands; the quantity of stock it enables you to keep is surprising, the bite on the fields is much earlier and continues much later than on the non-sewaged lands.'"

#### GLASGOW ARCHEOLOGICAL SOCIETY.

At the annual meeting and *conversazione* of the Glasgow Archæological Society, Mr. James Smith, of Jordanhill, was voted into the chair, and the proceedings commenced by the reading of the annual report, by Mr. Honeyman, jun., the honorary secretary.

The following were elected the office-bearers for the year 1860-61.—President.—Mr. James Smith, of Jordanhill, F.R.S., &c.; Vice-presidents.—Mr. Laurence Hill, and Sheriff Strathern; Councillors.—Messrs. J. T. Rothead, J. B. Thomson, Wm. Burns, John Buchanan, Gabriel Neill, R. Hart, J. Baird, Alex. Galloway, James Fleming, Sir A. Orr, Dr. Straug, and W. Euing, hon. sec.; Mr. John Honeyman, jun., architect, hon. treasurer; Mr. Wm. Church, jun., accountant.

The President then gave a few short sketches of the "Pre-historic Antiquities of the West of Scotland." He said the stone hatchet belonged to the rudest and earliest state of society, and it had been the same here as elsewhere. John Buchanan had left him nothing to do with regard to the caucos of antiquity part of the question. Where these caucos had been found it must have been under water, for they were found imbedded in the sand, and sometimes nearly in a vertical position, as if the vessel had been run down. Then the question presented itself—Was that water fresh or salt

water? Both were possible, for they knew that in elevated land, which had either been the sea-bottom or that of an ancient lake, marine shells were found, but then they were edible ones, and might have been brought up from the sea coast; but he thought it belonged to a period before the last upheaving. The study of silts of elevated lands, then stone hatchets and stone arrow-heads, which had recently attracted much attention, was the same with the canoe question of this part of the country. They knew that such changes of level did take place in the human period, although in great periods of time. He then remarked that there were a few stone monuments of a single stone in this country, which were doubtless erected "in memory of" some of the great and important persons of the day, who were now quite unknown to fame. One of these was at Inverary, and another at Strachlar. There were what were called Druidical circles of stones also, although no one knew what they were for; and in Bulderock parish there were three cromlechs, or, as they were called, the "Three Old Wives' Lifts."

After some discussion,—  
Mr. Smith read a paper on the Old Church at Ruffrew.

#### THE RESERVOIR IN HYDE PARK.

VARIOUS schemes have been proposed, including the design for an elaborate Gothic fountain, with a large amount of sculpture, for the transformation of the circular reservoir in Hyde-park, close to Park-lane, into "a thing of beauty." We now understand that the large Waterloo vase which stood in the vestibule of the National Gallery is to be conveyed there, and made to form a prominent object, with what necessities and arrangements we have yet to learn.

The works at the National Gallery are being vigorously proceeded with by Messrs. Cubitt & Co., under Mr. Pennethorne's direction, but we can scarcely believe that they will be completed within the few weeks originally spoken of as the length of time during which the Gallery would be closed.

#### PROVINCIAL NEWS.

*Stow.*—On Thursday, October 24, the principal stone of the new mausoleum in course of erection by Mr. Charles Higgins, on his recently-purchased estate at Stow, was laid. Boycott Manor Farm formed a valuable part of the Stow property, and was bought, together with some adjoining land, by Mr. Higgins, when the Stow sales took place a year or two since. Mr. Baillie is the architect of the new building; Mr. Johnson, of Maid's-Norton, the master carpenter; Mr. Madock, the head bricklayer; whilst Mr. Harrison and Mr. Mansfield are commissioned to execute the necessary stonework.

*Bramford (Suffolk).*—The new Church of England schools at Bramford have been opened. These schools have just been erected at a cost of 725*l.* The building is erected on a piece of land, the gift of Sir G. Broke Middleton, on the north side of the churchyard, and abutting on the public road. The school-room is 48 feet long by 18 feet wide. At the upper end is a glass door opening into the class-room, which latter is 21 feet long by 15 feet wide. Accommodation is provided for about 150 children. The warming is effected by two open fire-places in the school, and one in the class-room; and ventilation by means of a lantern in the roof. At the end next the road is a house for the teacher, consisting of parlour, kitchen, scullery, and three bedrooms. The walls are built of rubble stone, faced with cracked flint, and red brick quoins to the exterior angles and round the door and window openings. The character of the building is plain, effect being obtained by the grouping of the gables and other features requisite for the arrangement of the plan. The principal front consists of the school as a centre, with two porches giving separate entrances for boys and girls, and three gabled windows between them, the wings being formed by the house at the north side and the class-room on the south, in the gable of which is placed the "memorial stone." The works have been executed by Mr. Girling, of Ipswich, for the sum of 630*l.*, from the design and under the superintendance of Mr. F. Barnes, of the same place, architect.

*Peebles.*—The opening of the new corn exchange in Peebles was celebrated by a dinner in the exchange. The building, which is situated to the west of the Chambers Institution, and immediately behind the stance on which the market has been hitherto held, is a plain structure, lighted from the roof. It is 60 feet long, 16 feet wide, and 25 feet high. There are two stalls or offices

at the south end of the building. Mr. John Lessels, of Edinburgh, was the architect; the contractor for the woodwork, Mr. Dickson, of Peebles; and Messrs. J. & R. Veitch, Peebles, for the mason-work. The cost, which will be about 4,000*l.*, has been defrayed from the funds of the town.

#### CHURCH-BUILDING NEWS.

*Folkingham (Lincolnshire).*—The church here has been restored and reopened. The nave has been rebuilt. The clerestory walls are cased with ashlar, and covered with an open timber roof of the Perpendicular style, the brackets of which rest upon carved corbels, representing various leaves and flowers. The side roofs are of the Decorated style. The greater part of the north aisle wall has been rebuilt and also cased with ashlar. The pulpit is of carved oak. In the east end of the chancel a stained four-light window has been placed, representing the birth, crucifixion, resurrection, and ascension of our Saviour. The donor is Mr. John Ward, of Folkingham. It is from the firm of Ward & Hughes.

*Leckhampstead.*—A chapel of ease to the parish church of Chieveley, has been in course of erection at Leckhampstead since March in last year. It is dedicated to St. James the Great, and has just been consecrated. The church consists of nave and chancel, with aisle on south side, and small vestry: it will accommodate about 250 persons. The internal dimensions are—the nave, including chancel, 70 feet long by 22 feet wide, and the aisle 8 feet wide. The style of the church is Geometrical Decorated. The walls are built externally with brick quins at the angles, filled in between with flints crossed with brick hands, and internally faced with bricks of different colours, formed into patterns. The windows and floor-dressings are of Bath stone. The windows in the chancel are filled with stained glass. The roof is plain open timbered, and is covered with tiles laid in patterns. At the junction of the nave and chancel rises a timber-framed bell-turret. The body of the church is filled with open seats, with bench ends. There is an open timber porch on the south side. The vestry, which is about 9 feet by 13 feet, is on the north side of the chancel. A stained glass window over the altar has been placed there through the efforts of the Misses Witts (daughters of the churchwarden, Mr. E. Witts) and a few friends. The whole of the timber is stained. The entire cost of the church has been about 1,200*l.* The architect was Mr. Teulon.

*Southampton.*—The sanctifying of St. Lawrence Church spire has been removed, according to the *Hampshire Advertiser*. In building the spire it was considered advisable not to adhere to the original intention to build it with brick, the committee having decided in favour of stone; but both spire and tower have been curtailed of the dimensions intended by the design. The spire is relieved by the introduction of finialled gables and trefoil openings. The builder was Mr. S. Stevens. The decayed stonework will be renewed; but the committee want funds to have the brick-work cleaned and pointed, which is much required. The architects are Messrs. Hinx & Bealborough, of Southampton. The amount expended in completing the tower and building the spire has been about 500*l.*: the estimate to renew the decayed stonework is between 80*l.* and 90*l.*

*Winterbourne.*—The church of All Saints, Winterbourne, has been consecrated, after having been in use for two years. The church consists of nave, chancel, and north aisle, from designs by Mr. Street. It is erected on the elevation of Winterbourne Common, through the liberality of the family of the Rev. F. W. Greenstreet, the clergyman who officiates in it. It will accommodate 250, all free. After the consecration of the church and burial-ground by the bishop of the diocese, there was a dinner in a marquee, at which 600 parishioners were present, when the bishop stated that had he known in time that there was a piscina (with drain) in the church he would not have consecrated it; and that as it was he could not sanction the conversion of the edifice into a district church till the piscina was removed, which he had ordered to be done. His lordship added, according to the *Gloucester Chronicle*, that it was the fault of the architect, who had done the same thing before.

*Clevedon.*—All Saints' Church, East Clevedon, has been consecrated. The edifice is situated about a mile from the Clevedon railway station, and from Clevedon Court, the country seat of Sir Arthur Elton, Bart., through whose family the church has been built, and it is known by the residents as Lady Elton's Chapel. The style is Early

English. Mr. Giles, of London, was the architect. The contractors for the masons' work were Messrs. Palmer & Green, of Clevedon; Mr. Bennett, of Portishead, having taken the contract for the carpenters' work. Sifting accommodation is provided for 400, mostly free. The total cost of the building will be short of 2,500l. The organ (a Scudamore) is from the manufactory of Mr. H. Willis, of London.

#### STAINED GLASS.

*St. Giles's, Camberwell.*—In a former number we gave a short account of two stained glass windows, then just placed in the chancel of this church. We may now state that the remaining four windows have since that time been erected, and the work, therefore, is complete. The subjects of these windows are incidents in the lives, or connected with the writings, of the Apostles, one in each light, so that the six windows comprise the twelve Apostles. The east window, dedicated to St. Simon and St. Jude, was completed by Sunday, the 28th of October, the festival of these saints. We understand they are from designs and have been executed by Messrs. Lavers & Barrard, and that the whole cost has been about 570l. The money is raised by subscription from the congregation.

*Great St. Mary's Church, Oxford.*—There is a project afoot for erecting a memorial of the late Archdeacon Hardwick, who was killed in the Pyrenees last year. It will take the form of a window in Great St. Mary's Church, and a partial restoration of the church of Slingsby, Yorkshire, the archdeacon's native village.

*Bradfield College, Reading.*—Mr. Jones, according to the *Athenæum*, has executed for the window of the dining-hall of Bradfield College, Reading, three subjects from the Old Testament:—1. Adam and Eve, after the expulsion from Paradise, undergoing the effects of the curse: he is uprooting thorns; she spinning and nursing: behind him the Eden guardian angel, red-flaming sword in hand, with outspread wings of various dyes. 2. The Confusion of Tongues: the Angels of Judgment are seen casting down the Tower, with levers, &c.; the people are wrangling amongst themselves down lower: lower still, Nimrod is seen led out between the swords and wide wings of two angels: at the foot is a furnace burning, the architect looking at his plans, and the people labouring about him, who are not as yet affected. 3. The Procession of Solomon and the Queen of Sheba: he is leading her down to look at the works of the new Temple; trumpeters go before and attendants following behind. Messrs. Powell & Son have executed the work.

*Bromsgrove Church.*—A few ladies in this town have formed themselves into committee to collect funds for the purpose of filling the east window of the church with stained glass. The cost will be about 300l.

*Hanley Castle Church.*—A stained window, by Messrs. Lavers & Barrard, of London, has been placed in the north aisle of the church, to the memory of the late Mr. William Moore, breeder of storthorns and Shropshire Downs, and a liberal friend to the industrious labourer. The design for the window and the cartoons were prepared by Mr. G. R. Clarke, architect; the subject for the first light being "The Good Samaritan," and for the second, "The Good Shepherd." The canopies over the figures are composed of vines, lilies, and passion flowers.

*St. Peter's Church, Derby.*—A stained-glass window has been placed at the west end of the south aisle, over the place occupied by the font. It consists of six incidents from the life of John the Baptist; the central subjects representing him preaching in the wilderness; and the baptism of Christ. Messrs. Clayton & Bell, of London, were the artists. This window is the gift of Mr. J. L. Davenport, and is an obituary memorial of one of his sons.

*The Sharpe Window, Doncaster.*—The committee have determined on requesting designs from Messrs. Hardman, Messrs. O'Connor, and M. Gérôme, Paris. The cost of the window is not to exceed 1,000 guineas.

A "Student in Art," writing us on this subject, says:—

"That all parties wishing a good design for a stained glass window should make it a public competition for the best idea of filling the window. Let such idea be properly drawn out and coloured to a certain scale; but let there ever be a careful guard against looseness of drawing, or richness of colouring usurping the place of a noble scene. If three penmen were held forth for this, the best might be given to the best, the second for the next colouring, and the third for the best drawing. But

that would form a matter for reconsideration. If the best points out of three such designs were chosen, or if the three artists combined harmoniously to draw out the whole window, what a glorious one it might be. One distinct rule, then, should be, that it did not follow the designer was to carry out his own design in execution. If it is to be a memorial window, some account of the person or persons to be memorialised should be taken to the competitors; and last, but not least, those who combine with others to decide upon the best production, let them do it impartially, and with an honest wish really to have the best. Their position is a responsible one, for in them lies the power either to encourage the noble mind up the bright path of glory, or to thrust it back sometimes into the dark tunnel of despair—greatly to promote, or sadly to hinder, their country's advancement in Art."

The chances are that those best qualified would not risk the loss of their time in such a competition.

#### SCHOOLS OF ART.

*The Taunton School.*—At the annual meeting of those interested in this school, Mr. A. Mills, M.P., took the chair. In his address the chairman congratulated the meeting on the progress of the school. Out of the eighty Schools of Art in England, he remarked, he had selected a number, in towns, some of which had a population five or six times—all more than twice—the size of Taunton; these towns included Nottingham, Cheltenham, Wolverhampton, Bath, Yarmouth, Carlisle, Halifax, Lancaster, Leeds, and he found that the fees paid by the Taunton School of Art exceeded any one of them. It was a very encouraging circumstance that the school, now in the fourth year of its existence, should have attained so very favourable a position; but it should be stated that by far the largest proportion of those fees came from the morning class—a class attended only by the wealthy portion of the community. He regretted that the school had not succeeded so well with regard to the artisan and tradesman class. Now, considering that there was one department of art manufacture in which Taunton had attained considerable celebrity—that was the art of carving—he thought it especially desirable that prizes should be awarded for the encouragement of this art. He had therefore resolved to offer a prize in drawing with a view to encourage the department of wood-carving, in the hope of inducing more mechanics to join the classes; for he believed that the main object for which schools of art were established would not be attained unless they attracted that class of which he had been speaking.

Mr. G. C. Bentinck, M.P., also addressed the meeting, and offered a prize for competition.

The report stated that the number of pupils returned in attendance during the year ending June, 1860, was as follows:—Pupils at the Central School, 158, including 49 from private schools; children from public schools, Wellington and Taunton, 216; making altogether 574 pupils receiving instruction in drawing from the Master and Art Pupil Teachers of this institution.

*The Coventry School.*—The annual meeting of the friends and subscribers to this school has been held in St. Mary's Hall, the mayor presiding. The hall was crowded, chiefly with ladies. The report, which was read at the outset, stated that "the number of students entered on the books during the past year was 365, against 363 in 1858-9, and 346 in 1857-8. In addition to these the pupils of the British School receive regular instruction in drawing from Mr. Frost, the pupil-teacher of the School of Art." It also stated that "the accounts of the school for the year show a balance against the school of nearly 30l. This most unsatisfactory state of accounts has arisen from some decrease in the annual subscriptions, and from the balance brought forward last year. As some of the items of expenditure may now be fairly reduced, there is nothing in the real position of the school to create alarm, especially as a slight revival in trade would enable the subscription list to be materially increased."

Alderman Browett, in speaking to a resolution, said,—"If ever there was a time for special exertion to improve the production of articles of taste, it was the present. When the manufacturers of this country enjoyed a sort of protection over their manufactures, it might be price that would tempt the purchaser; but now that there was a "fair field and no favour," it would be their own faults if they were not in the race of competition. There were no reasons why this city should not rank as high as any in the world in the production of ribbons. The production of articles of taste had hitherto been placed too much in the hands of the French. Now, to recover, or rather to obtain the rank that the manufacturers of Coventry ought to occupy as manufacturers of ribbons and watches, it was one of the first essentials that they should have a school of art of the highest possible

standard; that we should stimulate our youth to those exertions that were necessary to enable them successfully to compete with foreign rivals; and he was quite sure that in this we should further, not only the interests of Coventry, but should advance the interests of the nation at large. The very circumstances of the time should stimulate them to special exertions. He did not take at all a discouraging view of last year's exertions. He thought, as compared with former years, they had not gone back; but if a suitable building had been erected, where ladies as well as gentlemen, boys as well as girls, could assemble, with proper accommodation and proper appliances at their disposal, to enable them to study efficiently, in the course of twelve months they would attain a much higher position. He hoped, therefore, next year, to see a building erected suitable for the reception of the works supplied by the Government, and worthy of the City of Coventry.

Mr. Dresser, in also speaking to one of the resolutions, showed, from statistical details, that the state of depression in which the trade now stood was not confined to Coventry, and was not the result of any peculiar competition to which the trade of this country was at this moment exposed, but was shared alike by all the silk-producing countries and districts throughout the world; and he was satisfied that, when a change of fashion came—when the manufacturers here had adapted themselves by improvement, by additional application and additional energy to the carrying on of their business,—they would not be left behind in the race of competition in which they had now to contend.

*The Carlisle School* held its annual meeting in the local Academy of Arts, Finkle-street. Mr. Davidson, banker, took the chair in the absence of the Mayor.

The Chairman said he was delighted to see the number of prizes for distribution. It was very creditable to the Institution. He thought they might congratulate themselves that the school was in a more prosperous state than it had been at any previous period of its existence.

The prizes were then distributed, but no report of progress appears to have been read.

*The Brighton Art Society's Conversazione.*—About 500 ladies and gentlemen attended this conversazione in the Pavilion, where, besides an exhibition of paintings, drawings, photographs, and antiquities, the amusements of the evening also included national and other music, and dancing. The company included most of the chief patrons and friends of art in Brighton.

#### ARTICLED PUPILS AND THEIR MASTERS.

Sir,—That such a feeling as you described in a recent number of your journal between masters and their pupils *should* exist is self-evident, but that it always *does* exist is, perhaps, not quite so evident. Masters are not in every case respected as they ought to be, and pupils are not always treated as they should be. There are men calling themselves members of the architectural profession whose chief care seems to be not to do honour to that profession, but to put it to an open shame. You, sir, are, doubtless, aware of their existence, and I unfortunately am only too well acquainted with it. These are the men who are continually advertising that "A vacancy has occurred," &c., or "An architect, &c., has a vacancy." A vacancy! yes, they have always a vacancy ready; if not in their office for a youth, in their pockets for a premium. No matter to them whether they have any business to employ the lad upon, no matter whether or no the lad has the slightest artistic taste (100l. will cover a multitude of sins); they take him into their office, give him a pretty elevation to copy, with green trees, blue windows, and red curtains. The poor boy "thinks he shall like it," and there he is, bound for three years, along with three or four more pupils, in different stages of their articles, left to their own devices for nearly half their time. And what is the natural impulse of youth when thus left alone? Will they work? Will they study? Have all the diligence and the genius of a Pugin, a Turner, or a Barry? And what are the consequences? At the termination of their articles, they awake to the mortifying discovery that they have wasted the three best years in their life, and in all probability they in their turn will become those pests to architecture, the so-called "Architects, Builders, and House Agents." Let me ask you this question, is it not the duty of the master, in consideration of the premium he has received, of the services of the pupil, and, last but not least, the honour due to the profession, *not* to instruct his pupil *only* to

those branches of the profession by which he can make him immediately useful, such as to trace and to copy—not to convert him into something between an assistant and an errand-boy (thus depriving the two latter of their lawful employment), but thoroughly and systematically to teach him, and to endeavour, by all means in his power, to train him up in that love of true art which shall render him an ornament instead of a disgrace to his profession? Again, the public are able to discern between a quack and a professional medical man,—between a dissenting minister and a clergyman,—but how can they distinguish a false architect from a true one? A PUFF.

#### INTERIOR DECORATION. ST. JOHN'S CHURCH, DORSET.

THE embellishment, just completed, of this church affords another proof that art is becoming more and more a necessity to all grades of society. Since the year 1823, when the church was built, until now, the congregation have been content to worship in a dreary barn-like room, fitted with rows of drab-coloured pews, and having a whitewashed expense of ceiling and walls. Now the woodwork throughout is grained oak and varnished; the walls are carefully jointed and coloured; the ceiling has been tinted cream colour, the lines and bands being picked out with a judicious tone of blue. All this is nothing more than doing up, perhaps, but the altar may claim to be something more. It is in a deep recess, flanked by wall pilasters: in the centre of the recess is a circular-headed window within a larger arch, the space between the architraves having radiating panels. The architraves spring from a cornice with pilasters to each, having panels between: these pilasters stand on the entablature of the rosettes, which has columns under the pilasters, the whole forming one composition, supported by a dado slightly higher than the communion-table. The window is filled in by a painting of St. John baptizing our Saviour, from a design of the late Mr. Ward, R.A., and the architectural work has been well painted in imitation of various Italian and Belgian marbles by Mr. Rule, of Stratford, the cornice, mouldings, &c. being heightened by gilding. The general effect is enhanced by a stained glass mosaic window on each side, executed by Mr. Clutterbuck. Certainly the transformation from the shabby, irreverent badness of whitewash is very decided, and suggests the advisability of sparing a carved capital or two outside for the benefit of the inside; indeed the Italian masters and our own great master, Wren (witness St. Stephen's, Walbrook, and St. James's, Piccadilly), if driven to select, always attended to the interior first.

AN ARCHITECT.

\* \* \* Our correspondent is more easily pleased than we are. We must see something more done than "graining and marbling" before we can offer any congratulations.

#### STATE OF FURNACE ABBEY.

SIR,—I would say a few words with regard to the present state of Furnace Abbey. I was amidst the ruins of that venerable pile on the 2nd instant; and, to my great sorrow, while looking at the refectory from the vestibule, which is at the southern extremity of the abbey, I perceived that the eastern wall of the refectory was leaning in a most painful and fearful oblique. My anxiety about its immediate dissolution may cause me to exaggerate, but it certainly did seem to me as if the next turbulent equinoctial gale would prostrate the tottering wall to another earth. Some steps to prevent this should be taken forthwith. I hope that, by the influence your paper has on the minds of those mostly concerned and deeply interested in archaeological remains, this notice may tend to the conserving of that time-worn and time-admired relic of former grandeur.

W. B. D'A.

#### VENTILATION OF HOUSES.

If "Salus" your correspondent of the 27th October, refer to the *Builder* of the 29th September, he will, under the heading "Condensation of Moisture on Glass" have the result of practice as a confirmation of what he states in the second paragraph of his letter on "Ventilation of Houses."

With regard to the query contained in the third paragraph, "What is the best remedy in houses already built and not provided with ventilating flues?" an opening in the centre of the ceiling concealed by a simple *rosace* allowing the heated atmosphere to escape to the external air is certainly a good plan I think; but I am persuaded, unless

there be a counteracting *ingress* to the *egress* channel, that a down-draught will ensue when horizontal ventilation is desired. Where arrangements of joisting prevent the following, something else must be tried.

On the one pair and other floors, when the joists run from front to rear, between the two centre joists in the front and back walls build a common cast-iron metal ventilator—a current will thereby be established in the direction of the wind between the two ventilators, and so draw off the vitiated air through the *rosaces*. This plan I am at present carrying out in some 24-foot houses to do away with the expense of air-flues; and, as to its efficiency as well as to its defects, if any, I will be happy, by-and-by, to communicate for the benefit of "Salus" and others, unless some one else in the mean time, who may have hit on the same plan, may be good enough to favour us with the benefit of his experience.

R. A.

#### CARVED STONEMARK TO SHOPS.

MR. EDITOR,—Architects seem just now to be very fond of introducing many of my class with our friends the stone piers and bases when they are engaged in erecting new shop houses; and I must say, without vanity, that we are very justly admired when first completed; but in a few months our faces begin to look dark and dim, and in twelve months we become black as soot. Our owners, the shopkeepers, then think we do not look so handsome as when they first paid for us, so they set to work to have us scraped, or they apply the paint-brush, in either case taking off the sharpness from our features, which I, as an individual eap, particularly object to. Can you, now, Mr. Editor, suggest some way or wash to keep our faces clean, and to prevent the horrid paint being plastered on our cheeks or having them scraped, whereby we become "small by degrees and beautifully less?"—I am, Mr. Editor, with sorrow, still beautiful, but

A DIRTY STONE CAR.

#### ST. PATRICK'S, DUBLIN.

SIR,—My attention has been drawn to a letter in your paper signed "Medievalist," in which, referring to St. Patrick's Cathedral, Dublin, he alludes to the "debased restoration" from the design and under the superintendence of the late Mr. Carpenter.

The facts are simply these: Mr. Carpenter certainly did prepare designs for the restoration of the whole cathedral, but only furnished details for, and superintended, the stonework of the lady chapel; and as, for these portions, the ancient work was most strictly adhered to, I am at a loss to understand the precise bearing of the word "debased" as applied to Mr. Carpenter's works.

WILLIAM SEATER.

#### SUBJECTS FOR PREMIUMS.

INSTITUTION OF CIVIL ENGINEERS.

THE council have issued their list of subjects for premiums, including, with those before published, the following new ones:—

On the Effect of Shunting, in removing and preventing Deposits at the Entrances of Docks on the Coast and in Tidal Rivers.

On the Measure of Resistance to Steam Vessels at high Velocities.

On the Forms and Materials for Floating Batteries and Iron-plated Ships ("Frégates blindées"), and the Points requiring Attention in their Construction.

On the Initial Velocity, Range, and Penetration of Rifled Projectiles, and the Influence of Atmospheric Resistance.

Description of Street Railways and Carriages, as used in the United States of America, in Paris, and at Birkenhead, with the Results.

On the Application of the Electric Telegraph to Railway Train Signalling.

#### WATER GAS.

THE *American Gaslight Journal*, of the 15th ult., contains a detailed account from *Le Journal de l'Eclairage au Gaz*, of the renewed and apparently successful attempt to introduce water gas into Narbonne, in France. The gas, according to *Le Génie Industriel*, quoted by its French contemporary, is made without retorts. The decomposition of water-steam into gas is effected by passing the steam over a mass of burning coke in a close furnace, and the more rapidly this is done the more effective and economical is the process. The oxygen and hydrogen of the steam are of course separated, and the oxygen forms with the carbon of the coke carbonic acid gas, leaving the hydrogen unattached even to carbon, so that the water gas is pure or mere hydrogen. The carbonic acid is withdrawn by means of damp quicklime, which, however, rapidly accumulates in quantity, and it is proposed to use

carbonate of soda instead, as the carbonate of soda will unite with the carbonic acid and form bi-carbonate, from which moderate heat will again expel all the gas absorbed, so that the carbonate of soda, if calculated, may be used over and over again indefinitely. Could not the carbonic acid also be made use of, as in the production of aerated drinks? Bi-carbonate of soda itself, too, is of some value. One chief peculiarity in the water gas is in the mode of burning it. Hydrogen yields a very weak light of itself, but each burner is supplied with the well-known contrivance of a small wirework of platinum, which, by adequate pressure on the main, becomes white hot, and produces an intense light with the hydrogen, without wasting the rather expensive platinum. The price of the gas, however, is still high, from the limited number of consumers, it is said. The experiment is one of direct interest in London, where the water gas is now being tried.

#### LIGHT AND AIR CASES.

*Terms of an Award.—Ford v. Gye.*—In the Court of Queen's Bench, on the 3rd instant, Mr. Raymond moved for a rule to show cause why an award should not be set aside, or why part thereof should not be struck out. This was an action for obstructing light in Hart-street by the erection of the Opera-house. The arbitrator was to say what the plaintiff was entitled to for any past or future damage he had sustained or might sustain, and also if Lord Gardiner, the reverser, close to come in, what sum he should be entitled to. The whole matter was to be determined by the reference. The arbitrator made his award, and certain sums to be paid to the plaintiff by annual payments for ten years, and other sums to be paid to Lord Gardiner; and he added this clause:—"So far as I lawfully may order that the actual payments of the sums shall be a condition of the permanent continuance of the walls and buildings of the Opera-house." The defendant now contended that there was no finality in the award, as, if there was default in payment, the walls might be taken down. It was a reference of all matters in difference, and it was awarded what sums should be paid for damages by reason of the permanent erection of the walls and buildings.

The Chief Justice.—How long is the payment to go on for?

Mr. Raymond.—For ten years.

Mr. Raymond now wanted that clause struck out. The arbitrator said he found for the plaintiff, and ordered the amount of damages to be increased to 800*l.* for the damage he had sustained and would sustain in respect of his interest in the premises, by reason of the permanent erection of the walls.—300*l.* on the 5th November next, and 50*l.* on each 5th November for ten years.

The Lord Chief Justice.—In default of payment what becomes of the walls?

Mr. Raymond.—It is a question whether the party may remove the walls, suspending the payments are not made according to the award.

The Lord Chief Justice.—Take a rule.

#### DECISIONS UNDER METROPOLITAN BUILDING ACT.

*An Equestrian Circus.*—At Greenwich police court, Mr. Frederic Ginnett, the equestrian circus proprietor, appeared to a summons, at the instance of Mr. Browne, the district surveyor under the Metropolitan Building Act, charging him with erecting a building, used as an equestrian circus, without giving the notice required by the Act.

The complainant stated that the building in question was erected within 12 feet of the footpath in the thoroughfare of Greenwich, being boarded in at the front with canvas covering, and was capable of holding at least 1,500 persons. His (the surveyor's) attention had been directed to the building by the notice of a similar character, but the present building was so large, and there being also danger from its taking fire, that he had considered it his duty to take the present proceedings.

Mr. Ginnett said he was not aware that any notice to the district surveyor was necessary. He held that the place was not a building within the meaning of the Act, having canvas surrounding it merely as a screen from the weather, and a canvas roof.

Mr. Trail said from the drawing he held in his hand the defendant appeared to have the place boarded in at the entrance, which brought it within the meaning of the building.

Mr. Ginnett observed that the boarding had only been put up to prevent persons improperly obtaining entrance to the performance, but that, if necessary, the woodwork might be removed and replaced with canvas. It was also merely intended for a temporary purpose.

Mr. Trail said the Act made no difference in the application of its provisions whether the building was for temporary or permanent purposes, and therefore notice ought to have been given.

Mr. Browne said that being his worship's opinion, it would then become necessary for the permission of the Metropolitan Board of Works to be obtained for the building to remain.

Mr. Trail said that in order for this application to be made and an answer obtained, he would adjourn the case until the 26th instant.

*STREET RAILWAYS FOR CORK.*—At a meeting of the "standing committee" of the town council, held to hear a proposal from Mr. Hugh H. Roche, agent to Mr. Train, a resolution was carried to the effect that tramways be permitted to be laid down by Mr. Train from the Passage Railway Terminus on Albert-quay through the South Mall, the Grand Parade, Patrick-street, and the Lower Gaudin-road to the Great Southern and Western, and Cork and Youghal termini.

## Books Received.

*A Description of the Human Body: its Structure and Functions.* Illustrated by Physiological Diagrams. By JOHN MARSHALL, F.R.S., F.R.C.S., Surgeon to the University College Hospital, London. London: published by Day & Son, Lithographers to the Queen, 6, Gate-street, Lincoln's Inn-fields.

On reading the voluminous text which accompanies and purposes to explain these beautifully-executed physiological diagrams, the question immediately suggests itself, to what class of the community is it adapted? We are told in the prospectus and preface that the book is intended to convey "precise information of anatomy to the nobility, gentry, and clergy!" to tutors and teachers in non-medical schools, and to young men "destined for the medical profession." We must confess, however, with a strong feeling in favour of the intention of the work, that it seems to us to go too far for one class, and not far enough for the other. To teach anatomy, even to a limited extent, the grand essential is the possession of a perfect knowledge of the groundwork of the science,—the anatomy of the bones; and until this is thoroughly known it is impossible for any one to learn it properly, much less teach it. In the present work the bones might almost as well have been neglected altogether: they are too loosely described for any practical purpose. Again, with regard to the muscles, the only way, or, at any rate, the best way, to learn and remember them, is by mastering their origin and insertions; but these it has not been thought desirable to mention (*vide p. 23*); and without this knowledge it is almost impossible to retain them in the memory. There is a large amount of information in the work very interesting and instructive to the curious in these matters; but it is very discursive, and calculated, we fear, greatly to puzzle any eager aspirant for anatomical knowledge.

It appears to us that if fewer subjects had been taken up, and more thoroughly treated of, it would have been much better calculated to attain the wished-for object.

To the artist the first part of the book is likely to be useful; but the latter and greater part he would scarcely meddle with. By the amateur it may be read for a time, but it is doubtful if he do not get thoroughly tired and perplexed before he has accomplished a third of it; and should any "young man destined for the medical profession" have it presented to him, he will be wise if he refrain from opening it until he has acquired his anatomy from other sources.

The plates, which are in a portfolio, are admirably executed by Messrs. Day.

*Observations on the Niagara Railway Suspension-bridge.* By P. W. BARLOW, C.E., F.R.S., &c. London: Weale, High Holborn, 1860.

ONE of the most remarkable results from Mr. Barlow's personal and careful examination of the Niagara Railway Suspension-bridge is that the favourable conclusions to which that examination has led induced him to suggest the formation of two cross lines of suspension railway over the central districts of London, one commencing at the Elephant and Castle, and terminating near the Shoreditch station of the Eastern Counties Railway; and the other commencing at the junction of Oxford-street and Tottenham-court-road, and terminating at Whitechapel. Street railways, he suggests, might converge from the outskirts to these lines. The cost of a wire suspension-girder viaduct, with a span of 1,000 feet, would not, he estimates, exceed, for a double line of street omnibus traffic, 150,000*l.* per mile. The only land required would be for the wrought-iron towers, as a wire-bridge might be erected without the least interference with intermediate property. Allowing 100,000*l.* per acre (the average cost of the terminus of the South-Eastern Railway) for the land required, or 50,000*l.* per mile, the whole scheme might, he calculates, be carried out for a little above 1,000,000*l.* He further suggests the adoption of wire suspension-bridges where bridges have been long projected and abandoned from their cost and interference with property as hitherto proposed; and as an example he suggests the connection of Holborn and Newgate-street by a suspension-bridge, thus avoiding Holborn-hill. A wire suspension-bridge, with towers of wrought iron, constructed like a vertical lattice beam, he urges, would offer little obstruction to the light, and would not exceed in cost the sum of 75,000*l.* Mr. Barlow also proposes to connect Liverpool with Birkenhead by a wire suspension-bridge, 150 feet

above the level of the river, at an estimated cost of 1,000,000*l.* sterling, passengers to be raised to the level of the bridge at one end and lowered at the other by steam power. The span of this bridge would be no less than 3,000 feet. He also proposes to suspend a similar bridge from New York to Brooklyn, with a span of 2,000 feet.

The Niagara bridge, notwithstanding certain defects, Mr. Barlow is convinced, "is the safest and most durable railway bridge of large span which has been constructed;—firstly, because it is less liable to deterioration; and, secondly, because the greatest strain to which it can be submitted is a less proportion of the ultimate strength of the supporting material."

## VARIORUM.

"The Sewage of Towns, its Value and Distribution" (Lynn & Gough, Camberwell-gate), by Mr. F. C. Maguire, repeats some of the more striking evidences as to the value of town sewage, and advocates its distribution to the land by pipes, but does not, as it seems to us, solve any of the difficulties of the question.—A pamphlet by Mr. A. Scratchley, M.A., barrister-at-law, titled "Remarks on the Post-office Savings Bank 'Plan, extracted from part 5th of the forthcoming practical Treatise on Savings Banks" has been published by Layton, 150, Fleet-street. The scheme referred to, or one very like it, was proposed by Mr. Whitbread, M.P., so long ago as 1807; and the establishment of the penny-postage system since that time must go far to encourage the hope of its realization now; although the additional work implied in making the Post-Office a medium of transmission to and fro between savings banks and their customers seems to constitute a very grave element for consideration in reference to the practicality of such a scheme, more especially as it is proposed to make all such transmissions post free. That saving habits would thus be vastly facilitated and promoted there cannot be a doubt; but the formal titles of "Poor's Fund," and "Poor's Assurance," incidental to the plans proposed, do not seem to be calculated to favour the ends in view; inasmuch as those of the working classes who are likely to be benefited by the opening up of a frugal access, as it were, to the savings bank and the assurance office, are just those who are most likely to revolt at the idea of "Poor's Funds" and "Poor's Assurance," the word "poor" having become so inseparably associated with "poor-houses" and pauperism. And truly the man with 1,000*l.* a year who has difficulty in meeting his yearly liabilities is virtually as poor a man at least, as he who can save even a shilling a week out of his twenty or thirty. The plan referred to, however, seems to be essentially an excellent and desirable one, and would do great good were it carried out into full practice.—On "The Progressive Screw as a Propeller in Navigation," by Julian John Révy, C.E. (Weale, High Holborn), is a scientific pamphlet, the object of which is to consider the phenomena connected with the screw as a propeller in navigation, from the general physical point of view, as well as to show by mathematical formulæ the laws which govern these phenomena. The second section is devoted to the author's special subject—the "Progressive Screw," or the means of obviating the loss occasioned by the "slip" of the screw and by the shock of its concussion with the water.

## Miscellaneous.

THE BISHOP OF LONDON AND THE RAILWAY WORKMEN.—At the close of service at All Saints' Church, Derby, on Thursday last week, a deputation of workmen from the Midland Railway Station requested an interview with the Bishop of London, who received them with courtesy and cordiality. They expressed on behalf of themselves and their fellow-workmen a wish to hear the Bishop preach to them in their workshop, to which his lordship gladly assented, and appointed Friday, at dinner-time. The workshops on Friday furnished a congregation 2,000 strong, to listen to the bishop's address. The workshops on Friday were the place appointed for the service, and the platform of an engine, on the hand-rail of which was fixed a book-ward, served for a pulpit. The large shop was filled; and, after the service, his lordship expressed his delight with the attention that was paid during the service. After inspecting the locomotive-carriage department, the library, reading-room, lecture-room, and board-room, he expressed himself as having been highly gratified with his visit to the station.

THE GLASS TRADE.—Last week, the glass-polishers at the Ravenhead Glass Works, St. Helen's, numbering upwards of 100, turned out in consequence of a reduction in their wages from 2*s.* 6*d.* to 2*s.* per 1,000 feet of glass. They expressed their willingness to submit to a reduction of 2*d.* per 1,000 feet, but the employers would not agree to it.

ARTESIAN WELL, PASSY.—The interesting operation of boring at Passy is drawing to a close. It is well known that, after the rupture of the tubes or casings for the boring-rods for a distance of 46 metres from the surface, it was deemed necessary to excavate, in that damaged portion, a shaft, lined by cast-iron cylinders, 3 metres diameter, firmly bolted together. By this means the fragments of the tubes which were compressed by the weight of the surrounding sand were arrived at, and the boring continued again in full operation. It had already reached a depth nearly approaching that of the aquiferous green sand, supposed to be 550 metres below the plain of Passy. Before going any deeper at present, in order to avoid any sudden up-bursting of the water, a wooden shaft is being constructed of oak timbers, lining the whole shaft lately excavated. The chisel is of wrought iron, with seven teeth, and weighs over two tons.

EXPLOSION OF A LOCOMOTIVE AT KING'S-CROSS.—The frightful explosion of the bottom of the fire-box of an engine used at the tunnel of the underground railway by the contractors, whereby two persons were instantly killed, and another nearly so, while several others were more or less injured, has led to a coroner's inquiry, which was resumed on Monday last, and then adjourned. On Monday two or three scientific men were examined as to the cause of the accident. Mr. Amos gave it as his opinion that there was some defect in the original construction of a part of the engine; but Mr. England, another engineer, attributed the accident to an insufficient supply of water in the boiler,—an opinion which was shared in by an engineer in the employ of Mr. Jay, the owner of the engine. As the Government inspector did not arrive, and the friends of the deceased persons were desirous of further inquiry, the proceedings were adjourned for a fortnight.

AMALGAMATED SOCIETY OF ENGINEERS.—A dinner has been given in Radley's Hotel, Blackfriars, at the presentation, by the executive council of this society, to Mr. William Newton, of a testimonial for services rendered to their society and trade. Mr. Thomas Hughes occupied the chair, and was supported by some gentlemen who took an interest in the cause of the engineers during the strike of 1851. After the Chairman had spoken on the subject, an address, recounting the services of Mr. Newton, was presented to him, together with a silver goblet containing 300*l.* Mr. Newton, in acknowledging these gifts, incidentally observed that after the strike, "when they were bent, but not broken," the society commenced with only 7,000 members, to a certain extent disorganized and demoralized, but they had now more than 20,000. According to a statement made by Mr. Heaps, the president, the society has, since the amalgamation, about nine years ago, distributed among unemployed, sick, and disabled members, &c., 209,837*l.* exclusive of the expenses of management.

METROPOLITAN BOARD OF WORKS.—At the usual meeting of the Board last week a report was presented from the committee on drainage, and adopted, in reference to the stoppage of the works for the Northern Middle-level sewer. The report, after stating that Mr. Rowe, the contractor, had declined to proceed with the works, recommended that a notice be immediately served on Mr. Rowe, requiring him to proceed with them with due diligence, or threatening in three days to let them to other parties, holding him and his sureties responsible for all loss and damage. Mr. Tite, then moved, "That the Board take the necessary steps for a renewed application to Parliament in the ensuing session for the amendment of the Metropolitan Local Management Act." Mr. Tite stated that there was a general desire on the part of the different vestries of the metropolis that there should be a renewed application to Parliament for this amendment. Mr. Bristol, M.P., seconded the motion, which was carried. Mr. Tite then said that he would follow up this motion by moving "That the bill withdrawn by Mr. Tite in the last session of Parliament be referred to a committee of the whole Board, with a view to the consideration if any, and if so what, alteration should be made in it previous to its introduction to the House of Commons, and that the requisite notices be given." This motion was also carried.

Gas.—The Eastbourne Gas Company have determined to reduce the price of their gas to 5s. 10d. per 1,000 feet, being a reduction of 10d.

THE QUEEN'S STABLES, BUCKINGHAM PALACE.—The old riding-school and the stable adjoining Buckingham Palace have been improved and beautified very considerably. Mr. Theed has just now completed a group, "Hercules Taming the Mares of Diomedes," which is placed in the tympanum. It will probably be uncovered in a few days. The size is beyond that of life. The Americans will put it down as an idealism of Rarey.

WATERING THE STREETS.—Can you explain why our parish "authorities" do not make annual contracts, as they tell me that the reason the streets are now unwatered is, that the contracts expired last quarter-day, the 20th. Is there no dust apprehended in October, November, and December? Our streets require constant sprinkling, not flooding, with water: the same quantity of water properly applied would water twice the area. The common sense of the matter is, they should be systematically watered—done by the parishes themselves, and not left undone by a contractor.—A HOUSEHOLDER.

THE LATE ACCIDENT ON THE RAILWAY WORKS NEAR DOVER.—The adjourned inquest on the bodies of the three men who lost their lives by the falling of the bridge at Ewell, near Dover, was resumed, Mr. Vincent, of Canterbury, had, by the directions of the coroner, made a professional survey of the bridge. Mr. Warden, from the office of Messrs. Freshfield, the company's solicitors, attended to watch the proceedings. Further evidence bearing upon the case having been heard, the jury retired for about an hour, and then announced that they had agreed upon the following verdict:—Accidental death, and the jury suggest that the company should be more careful in building such bridges in wet weather. The verdict was not a unanimous one.

THE FIRE AT CHAPPELL'S PIANO FACTORY: DISASTROUS EXPLOSION.—While the firemen and others were engaged in extinguishing the serious fire at the extensive factory of Messrs. Chappell & Co., a fearful explosion of steam-piping suddenly took place, more or less injuring, it is said, no fewer than twenty persons, one of whom, a woman, who was looking on, died in the course of a few minutes on the ground. A piece of the piping which flew through a window and a partition fell upon and injured a man in head, and set fire to the sheets. The explosion, it is believed, was caused in this manner:—The fires in the furnaces having been extinguished, the steam in the boiler and the pipes had turned to water; and, when the heat of the fire became intense, the water suddenly generated steam so fast and in such quantities, that the pipes, being red with heat, gave way by the pressure of steam, and hence the melancholy catastrophe that ensued. Independent of the large loss of veneers and other goods, upwards of 100 valuable instruments have been consumed.

ART-NEWS FROM ABROAD.—We find the following in the Athenæum.—The church of Santa Croce, at Florence, displays, in the front now building, various figures of saints, prophets, &c., in inlaid marble, which are good examples of modern architectonic art in their way.—In the very extensive modern Campo Santo at Bologna, there is a regulation, probably a year or two old, that nothing new is to be put up save in marble. Meanwhile provisional monuments are erected, painted in imitation of sculpture.—The Townhall at Piacenza, a famous Mediaeval edifice, now a mere lumber-room, of no particular use inside, is to be cleaned out and employed for public purposes.—In the Brera, Milan, there has recently been held an Exhibition of the works of modern Italian artists: these being hung over the old pictures to a great extent, prevent the visitor from inspecting them. The former are generally poor in character, imitations in French styles.—At Luca it is reported that the barbarous atrocity is to be perpetrated of entirely removing the wonderful Lombardo-Gothic front of the church of San Michele, on the ground of dilapidation, and putting up a modern facade-simile of the sculptures and decorations.

HANDSWORTH SCHOOLS COMPETITION.—Sir,—In reply to your correspondent, the Handsworth Bridge Charity trustees, with the assistance of an architect, have selected my plans for their proposed schools. Some little delay was occasioned by the trustees desiring a detail bill of quantities, together with a contractor's tender, both of which I submitted at a meeting held on the 15th ult., when the resolution in my favour was adopted. GEORGE BIDLAKE.

THE WELLINGTON MONUMENT IN ST. PAUL'S. An "Inquirer" asks "What has become of the monument of the Duke of Wellington? It is now eight years since his death, and we seem to have no chance of ever seeing the 20,000l. voted for his monument made visible." We believe Mr. Stephens is making progress with the full-sized model. Mr. Calder Marshall and Mr. Woodington are commissioned to execute bas-reliefs to be fixed round the chapel at the west end of nave (south side), in which the monument is to stand, and they are at work upon them.

THE DOCK-WORKS AT LIVERPOOL AND BIRKENHEAD.—The total expenditure at Birkenhead, for works, exclusive of land, from its commencement, according to returns read last week in the Liverpool Council, has been:—The Great Low-water basin, 103,191l.; Great Float, 256,710l.; restoration of walls of Great Float, 60,720l.; Morpho Dock, 14,895l.; Northern entrances, 45,878l.; graving docks, 24,217l.; river wall, 46,724l.; Wood-side enclosure, 23,754l.; Seacombe sewer, North-road, and other new works, 36,915l.; repairs of old works, 10,844l.; engines, machinery, &c., 8,508l.; total, 709,093l.; total stock in hand, 40,000l. Grand total of expenditure on Birkenhead, 749,093l.—Expended on Egremont and Seacombe river wall, 14,043l.; paid Corporation of Liverpool on account of works constructed by them, 79,911l. Total expenditure at Birkenhead from 1st January to 31st October last, 275,557l., of which 48,000l. was expended on Great Low-water basin. The expenditure at Liverpool for works, exclusive of land, from the commencement, was,—upon Inland Carriers' Dock, 228,770l.; and from 1st January to 31st October, 19,312l.; Canada Half-tide Basin, 59,000l., of which 47,000l. incurred this year; Branch Dock, 27,905l., of which 22,504l. expended since 1st January. Total expenditure this year, so far, at Birkenhead, 275,557l.; at Liverpool, 89,782l.

INAUGURATION OF A TESTIMONIAL DRINKING-FOUNTAIN AT NORTHAMPTON.—A meeting was recently held in the Town-hall, Northampton, at which Mr. W. Collins presided, in reference to a testimonial to the Rev. Mr. Hutton, M.A., late chaplain of the Northampton County Gaol, and now rector of Stilton, Hants. An address was presented to the rev. gentleman by the mayor, Mr. E. F. Law, stating that the subscribers desired to record their appreciation of his services during a residence of eleven years, by permanently associating his name with a substantial monument erected as a drinking-fountain, under the conviction that such a testimonial would be most in accordance with his own feelings, and contribute most to the welfare of those on whose behalf he had invariably manifested so warm an interest. The reverend gentleman cordially thanked the subscribers. The inauguration of the fountain then took place. It is a standard or pedestal one, and built of stone in the Gothic style, and was designed by Mr. E. F. Law, of Northampton, architect. It is situated at the intersection of four roads, and affords a supply to animals as well as man, the water flowing out of an octagonal basin down the shaft into four dog-troughs at the base.

LECTURE ON PRINTING.—Mr. Ellis A. Davidson, head master of the local Government School of Art at Great Neston, in Cheshire, recently delivered a lecture in the new school-room there on "Printing; its History, and its Application to the Arts and Commerce." The chair was taken by the Rev. R. W. Gleadowe, who opened the proceedings with a short address. Mr. Davidson illustrated his lecture by various mechanical appliances and processes to show how types were cast, wood and copper-plates engraved, and lithographs printed, &c.; and exhibited fac-similes of illustrations from the "Book of Chess," the first book printed in the English language. The lecturer then quoted from Mr. Knight's work an interesting account of a meeting of the printers after Caxton's death,—their doubts, hopes, and fears; they wished to print the Bible; for, they said, "no doubt the time may come when each parish will require a Bible, but they said they despaired of ever getting them circulated, as the king would never mend the roads, and men would be frightened of having their throats cut, and of starvation." One of them was more hopeful than the rest, and wonderfully indeed, said Mr. Davidson, have his most sanguine hopes been accomplished. The average number of Bibles, Testaments, and religious works published annually by the British and Foreign Bible Society, and the Society for Promoting Christian Knowledge, is 38,000,000, printed in about 150 languages, and again sub-divided into dialects; and this is besides the large number published by private firms.

TENDERS

For taking down and rebuilding a Foreman's House and Office Buildings, at Grays, Essex, by Mr. W. A. Homerdam, architect. Quantities supplied by Mr. J. A. Barker:—  
Ward ..... £665 0 0  
Fowler ..... 647 0 0

For a house for Mr. Thomas Cole, Clapham-road, Wandsworth-common. Mr. G. H. Page, architect:—  
Eastman, Battersea ..... £1,177 0 0  
Notley, Clapham ..... 1,149 0 0  
J. & C. Todd, Brompton ..... 1,049 0 0

For the erection of a house and premises in Houndsditch. Messrs. Richard Tress & Chambers, architects:—  
Corder ..... £3,404 0 0  
Hawtry & Son ..... 3,393 0 0  
Deards ..... 3,350 0 0  
Macey ..... 3,298 0 0  
Brass ..... 3,247 0 0  
Lawrence & Sons ..... 3,240 0 0  
Brown & Robinson ..... 3,157 0 0  
Willson ..... 3,111 0 0  
Coleman & Son ..... 3,059 0 0

For alterations at 59, Upper Stanhope-street, Lambeth. Mr. F. F. Holsworthy, architect. Quantities supplied by Messrs. Lansdown:—  
Battenbury ..... £785 0 0  
Keys & Head ..... 754 0 0  
Wicks ..... 732 0 0  
Tyler ..... 720 0 0  
Patrick ..... 715 0 0  
Jeffs, Brothers ..... 409 0 0  
Keut ..... 672 0 0  
Shenan ..... 615 0 0

For alterations at Brunswick House, Old Kent-road. Mr. F. F. Holsworthy, architect. Quantities supplied by Messrs. Lansdown:—  
Wicks ..... £459 0 0  
Keut ..... 448 0 0  
Patrick ..... 422 0 0  
Jeffs, Brothers ..... 409 0 0  
Tyler ..... 398 0 0  
Shenan ..... 267 0 0

For the erection of three villas at Woodford, for Mr. Bartholomew. Mr. W. Williams, architect. Quantities supplied by Mr. Robert Carls:—  
Page ..... £2,250 0 0  
Stevenson ..... 1,594 0 0  
Hedges ..... 1,350 0 0  
Hill ..... 1,245 0 0  
Rivett ..... 1,513 0 0  
Raby ..... 1,467 0 0

For building "Palace rooms," Kensington, for Mr. F. Hellewell. Mr. Withers, architect:—  
Evans ..... £1,620  
Sutton ..... 1,590  
Rowland ..... 1,557

Elm Schools and House.—A tender has been accepted from Mr. Brown, of Lynn, by the committee for the above buildings, under the direction of Mr. S. S. Teulon.

TO CORRESPONDENTS.

J. O. H.—W. & P.—M. M.—Leeds' Mechanic.—E. A. D.—W. M. (will find ads. at Office)—Rev. T. C.—R. L. S.—Mr. H. Jun.—G. H. N.—W. H. B.—S. R.—W. G. T.—P. M. J.—Architect. Some architects to draw their commission with each instalment paid to builder—there is no settled price on the subject—Observer (should send his name)—E. E. L. Get us drawing, or tracing, J. C. B. (too late next week)—C. R. A.—G. C.—Y. K. C.—H. G. M.—A. Pugh (his type)—E. C. (ditto)—C. B. (ditto).—The name of the writer in two letters is illegible. There is no greater evidence of stupidity than an unseasonably reserved signature.—Alpha.

Post-office Orders and Remittances should be made payable to Mr. Morris T. Coleman.

TRADE CATALOGUES.—"One cannot but be struck with astonishment at the innumerable ways in which an enterprising tradesman appeals to the public with a view to increase his trade. Printing in all its branches, assisted by the skill of the wood engraver, seems in the present day to be one of the media most generally employed in spreading the knowledge of various manufactures. These arts have ably been brought into use by Mr. Benson, the eminent watchmaker of Ludgate-hill, who has sought, by means of an "Illustrated Pamphlet" (consisting of nearly 60 pp., and containing upwards of 250 beautiful designs for watches, clocks, &c., with an elaborate description of every construction of watch now made), to enable persons living in any part of the world to select the watch best adapted for their use, and have it forwarded free by post."—Sun, 23rd August.—ADVT.

ADVERTISEMENTS.

MR. WILLIAM ELLISON, CONSULTING SURVEYOR, late of STAINBURY ROAD, 13, FENCHURCH-BUILDINGS, FENCHURCH STREET, E.C. Where he continues to advise BUILDERS. ON TENDERS OF CONTRACT, DISTURBED ACCOUNTS, &c.

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# The Builder.

VOL. XVIII.—No. 928.

Some of the Work we have to do.



LENTY of work remains to be done,—work architectural and work sanitary, work artistic, and work social,—notwithstanding the progress which has been made,—as we showed in our brief retrospective sketch last week,—since the commencement of the present half century. It may not be useless now to point out some few of the tasks that require to be performed—some of the obstacles lying in the road that will need removal, when we turn our faces towards the work we have before us. These are no new difficulties: we have known all through that they are in the path, just as Christian knew he would

have to pass giants, lions, dragons, and tempters, on his road to the Celestial City. But there is the same armour for us that there was for him: we have only to suffer Energy, Knowledge, Charity, and Discretion, to huckle it on, and the difficulties that beset us will disappear: we shall find, like Bunyan's hero, the lions chained and the dragons harmless.

There is a big giant lying in the sludge who must be slain early. A mighty river runs through the heart of the richest city in the world. This stream, instead of bringing health and healing on its bright waters to the three millions of inhabitants living around its banks, is suffered to become so foul, by the discharge of common sewers into it, that at certain seasons it is as a rotting sea, where "a thousand thousand slimy things" disport themselves, and whence is wafted into the crowded streets an odour that even the long-suffering statesmen, legislating in the palace on its shore, have pronounced unbearable. If we were to hear of this circumstance in connection with some foreign city—St. Petersburg, Constantinople, or Damascus,—we should exclaim,—“Benighted people! they should bargain with English enterprise and English energy, and their river would be purified in a month!” But the current rendered so offensive—thus converted into a *Cloaca Maxima*—is no other than the Thames: it flows past regal Windsor and through commercial London. And what has our proverbial indomitable pluck been doing? With the exception of calling meetings, and appealing to the public through the columns of the press, this giant has been left unfettered, to work as much ill as summer-heat permits him. Thanks to an overlooking Providence, he was this year weakened with rain: his nasty strength was washed out of him. The higher and middle levels of London sewerage are being attended to, but the attack upon the lower level and its attendant Thames embankment has yet to be made. When the health and pleasure giving river, transformed into a pestilent sewer, has been brought back to its original condition, and that which befouled it and plagued the nostrils of the town has been made to fertilize the earth and minister to man's support, we shall indeed have done a work of mark.

We find, not only in the metropolis and its suburbs, but in country towns, and more fre-

quently still in villages, houses built upon undrained land, without the slightest provision for sewerage. Here then, again, head and hands are needed. We know that the effluvia arising from the deposits that must necessarily be made around such places, must so affect the air in the immediate and surrounding neighbourhood, as to render it fruitful with fever and other epidemics: and we calmly suffer this state of things to continue. This absence of compulsory drainage is the next enemy we must vanquish. There is already a force in the field against it. Local boards of health should obtain powers, and stringently insist upon proper means of drainage being afforded to every inhabited building; whether new or old; whether in remote or public places; whether occupied by a pauper or a peer. They should get powers, too, to look into all buildings let in tenements, even if they stopped there. Having disposed of these monster evils, we should have leisure to consider how many lives might be saved annually, by the more general use of fireproof floors and staircases. The expense of the former might be too considerable for the lower rate of houses; but no consideration of this kind should prevent the universal use of fireproof staircases in habitations of many stories. A glance at Mr. Braidwood's statistics shows us that there have been upwards of 800 conflagrations annually, of late years, in the metropolis; and, what is more to our purpose, that the number of fires is on the increase. Who, that has seen the pale figure of a human being at the windows of a house on fire, wildly imploring rescue,—who that read the harrowing details of the burning last week of the Kildare-street Club-house in Dublin, when James Wilson Hughes, the hookkeeper, showed us what heroes live amongst us unknown, can have a doubt about the propriety of building all tall houses with fireproof staircases, and with proper arrangements for escape? In the construction of our houses generally, other great changes are desirable: they are full of evils which wait to be conquered.

Then, in the matter of homes or harbours for our noble fleet and the still more noble seamen therein employed, we have a large margin for improvement. The recent instance at Alderney, where the frigate *Emerald* was jammed hard and fast upon a hidden rock, in the very centre of the harbour, shows that we do not always take the trouble to learn whether we are enclosing a man-of-war, or a reef, or any other danger, in the bosom of our refuges from sea storms. We have diving-hells, we have dredging-machines, and we spend, ungrudgingly, many thousands of pounds weekly on our harbours and docks. When we are about to build a harbour, we must ascertain whether we shall have any enemies to contend against in its deep bed. And we should also take careful soundings of our existing harbours, to prevent the recurrence of danger similar to that which the ship we have named, with the two batteries of the 15th brigade on board, so narrowly escaped. Then, too, we must form many additional harbours of refuge, and more lighthouses, to render our seas, under Providence, as safe as our high roads.

Many of our provincial towns, wealthy and thriving, are in a discreditable state, and need thorough revision and improvement. A correspondent entitled to speak writes to us thus appositely:—

“I was at Leeds,” he says, “about ten days since for three or four hours, and I was surprised and disgusted to think that such a wealthy place should be so mean and filthy. It forms a sad contrast to the towns abroad of a like description, where, by means of ample local funds, the municipalities can afford to do noble works and found grand establishments.

Their Brigade at Leeds is a wide thoroughfare, but with low-class shops on each side, and reminded me of the High-street in the Borough (Southwark): the end is blocked up by a building running quite across. There are no cross streets of any ample width, and you have to go from one side to the other of the town through streets about the width and character of Drury-lane.

Look also at Portsmouth. Imagine the millions that must have been spent there commercially. Yet no percentage, however insignificant,

has been set aside to render it tolerable, convenient, or healthy.”

He continues:—

“We want an autocrat, as at Paris and Lyons, to compel noble lines of access and thoroughfare to be formed, and introduce salubrity, comfort, and nobility into most of our towns. This should not be left to the enterprise of an individual, as at Newcastle, or to the spinniness of low interests and selfish money-makers. Here is a fine topic for the *Builder*. Analyse our provincial towns in detail—lay bare their biddensness, and suggest their improvement. Shame them, and good must be done. Our recent legislation for such matters has been only *permissive*; it should be *imperative*. The *Builder*, I know well, has done much in this way already: let it do more.”

The want of enlarged views in our cities and towns is undeniable. We may presently take some additional steps to make evident the necessity for change in this respect.

We have so often and so recently called attention to the great need of still further and more general improvement in the dwellings of the poor in the metropolis and elsewhere, that we should forbear to touch upon it here if the subject did not stand out from the work we have to achieve as a task of gigantic magnitude. The poor, we have been assured, we shall have always with us. It well becomes us to do our utmost to lighten their lot. Sunshine was given alike to all, save the blind; and as its vivifying influence is now so well understood, how resolute we should be in securing its admission into all dwellings, more especially those of the poor and those intended for the sick! The repeal of the window-duty has left the matter entirely in the hands of the public. There is no reason why large and numerous windows should not permit the glorious sunrise, daylight, and sunset to flood into the meanest home. We are taught, in a proverb, to regard cleanliness as standing next among the virtues to godliness; and we all fully recognize the advantage of cleanliness in a class that it is the fashion to call “the great unwashed.” But who, unless endowed with more than average energy and health, could he clean with no water, but little light, and less air? So it behoves us to urge, and re-urge, as we have done before and hope to do again, the imperative necessity of seeing that all the children of Adam and Eve under the rule of our most gracious Queen are properly housed, allowed to breathe fresh air, and supplied with pure water. Not only those whose daily course is run in the dingy, melancholy back streets of the metropolis, or who are engaged in the various trades of our manufacturing cities, but field and farm workers and labourers of every description require protection, or instruction which would enable them to protect themselves.

In the northern counties, for example, the homes of shepherds, or, as they are there primitively termed, herds or hinds, consist but too frequently of four bare walls spanned by a roof. Even the fireplace and the window are considered fixtures, and must be furnished by the poor tenant. When he takes possession of this attractive tenement he puts up two wooden beds, resembling euphoards, across the chamber, by which contrivance a division of the premises is effected,—the one side of the box-heds to be the living and sleeping-room of his family, the other the manger of the cow, if he be a hind and possess one. Where there is no cow the same division is effected in favour of the coals. The window and grate, brought from the last home, have to be fitted to the present openings, or *vice versa*. The widow is of the smallest dimensions, because, when it was made, glass was costly: the grate is absurdly large, because coals are cheap. The dresser is next set up, and the wife arranges her delf; then the man pulls out his pipe, and is “at home.” If he is not particularly fond of it, he is looked upon as a social monster. But this is seldom the case! The love of home—even of such poor homes as these—seems part of our common nature; and, in case of foreign invasion, the hinds and herds we speak of will be as ready to protect the land, sacred to this beautiful sentiment, as the lords who own it. Consider, then, the height to

which their patriotism would attain if their homes were decent, with no vague smell of cows pervading their bedding, their food, their clothes; if the wife had a wholesome larder to keep her bacon, milk, and home-made bread in; and if the barns had plenty of water to wash with!

Model lodging-houses are essentially an institution of these latter days. If we made them a little less like factories and barracks, it would go far to give an air of home to them—a quality those experimentally erected can hardly be said to possess. As a suggestion for further consideration, we might inquire how far infant schools and playgrounds in connection with the lodging-houses for married people would be conducive to the general weal. But we must here leave our prospective sketch, though it be but washed in, and does not embrace half the subject. Our workhouses, hospitals, manufactories, and barracks, all offer evils to be conquered, and we have not said one word of the victories that wait to be achieved in the higher realms of architectural art. The Usefulness of the Beautiful must be everywhere enforced. We must not merely get rid of the ugly, but we must set up what is handsome.

#### THE PROPOSED EDUCATIONAL QUALIFICATION FOR ARCHITECTS.

WHEN the president of the Institute calls this proposal a *vital* question, he assigns to it no exaggerated importance. It is by far the most weighty question that the Institute has ever raised. It is a question to which the past policy of the Institute may not be found to apply. It is the question whether the Institute itself shall assume a character, perhaps ultimately a form, essentially new. It is the question whether the time has arrived when our profession may safely abandon those principles of recognition which have hitherto been accepted, and initiate a system more advanced and more honourable, but more difficult and severe. If such a question should be settled at haphazard, without adequate investigation,—if the programme of a few should be accepted on personal considerations, without thorough discussion among the many,—or if the project should be abandoned, as is not unlikely, for the sake of avoiding a little confusion and controversy,—then in either case the danger is considerable that the effect upon professional progress for the next twenty years may be very prejudicial indeed.

Whether the promoters of the scheme now before us have adopted the best possible means of bringing it forward, or what may have been the influence of a policy which for many years has caused much serious complaint, are points which are not unimportant practically, but which there is no pressing need to discuss: but certain it is that for a *vital* question the amount of public interest excited by the *pronunciamento* of the council has been small. A short note of warning on the part of our most respectable old school has once or twice appeared in your columns; and we have seen certain formal reports of the opinions of provincial societies, as called forth by the invitation of the Institute; but of that public comparison of opinions, through the medium of the press, which in such a case must necessarily precede official action, if this is to be of good effect, there has been none.

The judicious postponement of the Institute discussion gives us now several weeks (and several numbers of your journal) to remedy this condition of the question; and it is to be hoped that those who really feel an interest in it will come forward, even at this eleventh hour, and let us know their views.

The point for investigation, as it seems to me, is this: here is a craft of grand antiquity, numbering on its long list of brotherhood many of the most illustrious names of mankind; a craft which, in its highest efforts, deals, not merely with large amounts of property, but with the most enduring and the most impressive of all human works; a craft high in merit and public esteem, the pride of an extended class of refined minds in every country of the civilized world; a craft, lastly, in whose fascinating art and responsible science we have reason to assert that, at the present day, England, to its infinite credit, takes decidedly the lead. Other crafts, of dignity no greater but often less,—of value not superior, but often inferior in public estimation,—demanding, in respect of that quick and subtle judgment which is the test of professional usefulness, no more and often not so

much,—present themselves to the fastidious criticism of the day, with all the advantages of that complete elementary training for which nothing else, whether under the name of experience, or talent, or genius, will be fit for criticism for a moment accepted. Query, then, has the time come, or has it not, when this craft of ours shall be able to admit into its organization the element of special education?

Special education! exclaims the outside public. Is it possible that in 1860 a vocation such as yours has not even attained to special education? Is it true, indeed, that one half of the "architects and surveyors" of the Directory, have never been even "brought up to the business," pitiful as in the hands of some of them that business is? That of the other half, who have at least had a few years of office-routine in their youth, not one can boast of having pursued a recognizable curriculum of study? "Why," says the public, "that is a state of what is called *quackery*!"

Accordingly, when the Institute comes forward at length, and asks leave to amend itself, and through itself the profession at large, in some educational direction, the project must inevitably receive the support of the entire voice of the intelligent classes of the community.

Now, if the educational principle be really the question which is before us, we become prompted to make such inquiries as these:—1st. Whether it has been properly so understood out of doors; 2ndly. What the scheme is in detail; 3rdly. What is the *modus operandi* suggested; and so on.

I propose just now to go no further than the first inquiry,—whether there is reason to think the body of architects at large have understood the scheme of the council aright as an educational measure.

I venture to think we have not so understood it. Whatever discussion has as yet taken place, seems to turn altogether upon another idea—the idea, namely, of a *diploma of license*, as the be-all and end-all; not that of a *curriculum of training*, to which a diploma may be a useful appendage, and no more. Some have even gone so far as to call for a legislative enactment,—positively to suggest that the House of Commons should pass a Bill,—to confine architectural practice to the possessors of the diploma! And this diploma to be conferred upon what principle? The mere principle of *regular-dustmanhood*! The sole object in this view of the case actually seems to be the establishment of a fictitious certificate, with academical pretensions, to distinguish the *soi-disant* regular from the irregular practitioner!

No one, I am proud to think, can charge it against the programme of the Institute council that any word of it is meant to encourage so wild and so unworthy a notion. It is beneath the level of the scheme; and it only seems surprising that any class of architects should have so misunderstood a question so plain. The fact, however, of such a misconception having been entertained to any considerable extent goes far to show that the time has *not* arrived for the movement to be carried into effect; but I hope it will at least appear, for the credit of the profession, that the error has been but a passing inadvertency, which a word of explanation suffices to correct.

The duty which is suggested to us is the origination, not of any trades' union for the present, but of an academy for the future. We are called upon, in view of the deficiency of our own education, to establish for our pupils a hetero-system. I can well understand that there is something here which on the surface may appear to certain minds distasteful; and hence one other source of hesitancy. Why should he who is too advanced in age to cram for examination, or too much occupied in business to find leisure for the remedy of his own shortcomings,—why should he confer upon his juniors an honour and substantial mark of merit which he himself cannot obtain? Why should he proclaim his pupil to be more worthy of the public confidence than himself? Let me ask another question. Who says that an Englishman is made of no better material than querulous, jealous, envious stuff like this? The men of our noble craft, when they come to think over it, are proud of the boys that are about them: they are not rivals, but sons; and I will never believe of any one of us that he would prefer the delusive appearance of a trilling personal advantage to himself, to that magnanimous motive which is inherent in every man's spirit—the desire to leave the world better than he found it.

Moreover, it could be very easily proved that in respect of public standing there is nothing to be dreaded by the established practitioner from the possession by the beginner of an educational

certificate. It would be long before the value of a diploma came to be recognised. Indeed, that it must fight its way by merit, and that this would be a slow process, everybody knows. If an educational system were established to-day and the first diploma signed to-morrow, there are many of the strongest of us who would never live to see the practical value of either the one or the other. We are looking twenty years ahead at least: we ourselves may feel perfectly safe. And if another argument is wanting, let it be this. When we are asked, even if it be only ten years hence, how it happens that young So-and-so has his diploma and we have none, our answer is—*we gave it him!*

After all this, however, it does not follow that the time has come for the organization of a system. This question must be decided on proper evidence. I hope such evidence will be in favour of the affirmative; but I cannot say as yet how it will be. But one thing I can say: this question is the preliminary of further inquiry; and if evidence goes to the negative it is vain to discuss the project in detail. To force an educational system, even of the best, upon the profession prematurely would be a more serious error than to delay it too long. When it is done it must be well done, but it must also be done wisely. R. K.

#### RECOLLECTIONS OF SICILY.\*

THE temples which are specially referred to in my own notes are those of Juno Lucina; of Hercules; of Concord; of Jupiter Olympius; of Esculapius; of Proserpina; and of Castor and Pollux. At least such are the deities to whom these ruins have been assigned by the local antiquaries. Most of the buildings present but a confused mass of mutilated blocks and fragments piled together. This is especially the case at the temple of Hercules and that of Castor and Pollux. So confused a heap have they become, that it is impossible to define their plan on a mere superficial inspection.

Some of the blocks of stone thus piled together are of colossal dimensions. Even at the small temple of Proserpina I measured a block 8 feet 6 inches by 3 feet 10 inches, by 2 feet 10 inches, weighing, therefore, five or six tons.

Indeed there are, when viewing these stupendous ruins, few things that excite more surprise in the mind of the architectural observer than the wonderful solidity of the mode of building practised by these Greeks. It is not flattering to contemplate the wide difference of practice in this respect between the builders of the sixth century *before*, and of the nineteenth century *after*, the Christian era. It was a saying of Plato, as reported by Elian, that "the people of Agrigentum built as if they were to live for ever, and feasted as if they were always about to die." Elian goes on to say that "Timaeus reports that they use oil-flasks and strigils of silver, and had entire couches of ivory." Such was the luxury in which they lived.

It should not, however, be overlooked that the contrast between the *domestic* architecture of the Greeks and that of our present generation would probably have gone far to redress the balance, if the Greeks had left behind them any adequate means of comparison.

The temples of Juno and Concord are the least mutilated, and in their ruin present most beautiful and picturesque objects. The temple of Jupiter is the most remarkable, both for its magnificent size, with the flutes of its columns 16 inches wide, and for the singular example it offers of the use of Caryatides in interior temple architecture. These Caryatides were built up in courses, like columns, and are about 25 feet high and 6 feet across the hips. One was lying on its back at the period of my visit, having been recently put together by Signor Politi. There had been then found portions of nine other similar statues.

An idea of the huge proportions of this temple may be gathered from the fact that the diameter of the columns of the peristyle is not much less than two-thirds the size of that of the monument on Fish-street Hill.

Little need be said of the modern town of Girgenti. It is built very irregularly, but is of some extent, and is not without some visible signs of a certain degree of prosperity. There is an extensive ecclesiastical seminary, and a cathedral. The latter is a modern structure, remarkable for a portico-voce, which it is usual to point out to the notice of strangers. Although the building is of great length, a low whisper at the west door is said to be distinctly audible behind the altar at the eastern end, and that notwithstanding the

\* By Mr. Sydney Smirke, R.A. See p. 715, ante.

interception of a transopt. I had, however, no opportunity of observing the phenomenon myself, on account of the sounds attending the performance of service at the period of both my visits to the building. I should add that the nave consists of a Doric colonnade, with a continuous, unbroken entablature,—a circumstance no doubt favourable to the conveyance of sound.

The baptismal font is remarkable, being an ancient sarcophagus, of classic workmanship, applied to this very different purpose. The sides are sculptured with figures about 3 feet high, the subjects being taken from Phœdra and Hyppolitus.

Many doors and windows, and other details are met with in the town of Girgenti, of Norman architecture, in which the Chevron ornament is profusely used,—a peculiarity the more notable from the general absence of that ornament in Italy; contriving, therefore, to strengthen the presumption that the Norman adventurers brought their arts as well as their arms to this island.

I cannot quit Girgenti without here bearing testimony to the kind courtesy of Signor Politi, a highly cultivated antiquary and scholar, whose refinement was the more striking when found amidst a semi-barbarous and ignorant people. Nor can I in these desultory notes refrain from jotting down the inscription which I observed painted on the exterior of his bookcase, bearing melancholy testimony to the irregular habits of some of his ungrateful visitors:—

"Perduto o multo libri col prestanti;  
Contentati. Letter, soldi intratti,  
Se dell' avviso a proffitar se' inabile,  
Un grande minchione sei immolchionabile."

A ride of forty miles over a level and richly-cultivated country brought me to Sciacca, a large rambling town, wearing an aspect of so much poverty as to excite one's regret that a country so richly endowed by nature should not be in the hands of a more active and industrious people.

The only architectural object here was a convent of nuns, outside the eastern gate, which was a large and striking building of perfectly Medieval character, and, as far as could be judged from the exterior, but little modernized. The impossibility of gaining admission of course greatly increased my desire to enter: a visit to the interior would doubtless have been, as it were, to step back into one into the Middle Ages: but my curiosity was not destined to be gratified. Twenty-four miles' ride brought me to Castel Vetrano, a town at no great distance from the ruins of Selinunte. This ancient city is now only a dreary waste of mutilated masonry. It is, in fact, even more entirely ruined than Agriguntum. It appears to have been built upon two low hills, close to the seaside. Little of all this vast tract of ruin is now traceable, except some of the external walls, and portions of some temples. While wandering over these relics of a wealthy and active population long since passed away, I met with a well of undoubted antiquity, and of peculiar construction, being lined with cylinders of terra cotta, still in excellent preservation. This Greek mode of forming a well appears to me to be on a sounder, more sensible, and more workmanlike principle of construction, than the modern mode of staining wells with bricks or small stones. The internal diameter of these cylinders is 2 feet 1 inch; the uppermost cylinder being a trifle larger; the thickness of the sides is about 1 inch, and their ends are thickened to 1½ inch, for the purpose of increasing their strength, and giving them a better bearing on each other. The durability of the mode of construction is proved satisfactorily enough by the present perfect condition of this example, and that it would exclude impure and superficial springs better than ordinary brick staining, must be obvious.

Adjacent to the ruins of the city are the remains of three fine Doric temples. That which is the farthest from the sea is of magnificent dimensions; very little smaller than the great Temple at Agriguntum. I will not dwell on these temples, for they have been already made familiar to most of us by various published illustrations. Their style is somewhat heavy and archaic. The metopes found here by our respected member, Mr. Angel, together with Mr. Harris, are well known to all of us, and being in our great national Museum. These bas-reliefs are carved in a limestone quarried at the Istoma of Campo Bello, seven or eight miles distant, which appears to have supplied materials for much of the architecture of the ancient city; although many fragments of white marble are to be found scattered about.

At this quarry, which I did not fail to visit, I observed the mode adopted of getting out the

cylindrical blocks, or drums, for the shafts of the columns. They appear to have been cut or scarified out *in situ* from the living rock, the cylindrical blocks being worked out to nearly their true size and form by forming a channel, or interval, all round, so as to render them insulated, although still undetached from the living rock. The length of each block was of course regulated by the depth of the cutting around it, or rather perhaps by the depth of the vertical face of the rock at its escarpment. In some cases I found these drums 10 feet high. By what process they were detached and lifted from the parent rock does not appear from any indication that I could discover. Many of these portions of great Doric columns remain in various stages of completion at the quarry, just where they have lain undisturbed ever since the overthrow of the Selinuntines, in 409 B.C.

What a picture of retrogression do these appearances present! When the world was not much more than half as old as it is now, there existed here a great, rich, and even civilized population. That the people were vigorous and energetic we see plainly by their works; that they were highly civilized we may infer from the character of their art; yet now the silence of desolation prevails amidst a scanty and degenerate people, who allow all these remnants of their ancient greatness to be unheeded.

As to Marsala, my next resting-place, I have a livelier recollection of its *wine* than of any more professional object of research. I have a few notes, however, on the cathedral here, which is in an ornate, but modern, style, with marble pillars, said (but I know not with what truth) to have been originally intended as a presbytery, or oratory, to the chapel of St. Thomas à Becket at Canterbury. It is unnecessary here for me to inquire how far these Roman Doric pillars would have consorted with the architecture of that venerable archiepiscopal pile.

From thence I proceeded to Trapani (where is a great fishery for the shells used by the carvers of Cameo ornaments), and then Catalini (or, more properly, Calatafimi), and three or four miles beyond the latter place brought me, over a rugged, mountainous country, to the remains of ancient Segesta.

Except the striking and beautiful remains of the one well-known temple, and part of the external walls of an amphitheatre, the whole city presents an undistinguishable mass of mutilated fragments of worked stone, covering a very extensive area, and baffling all attempts at defining any separate building. Never was there a picture of more complete destruction; but it cannot be doubted that an explorer, having abundant leisure and energy, might reap here a rich harvest, were he to proceed methodically to lay open the contents of the piles of worked stones that have been lying there undisturbed for so many centuries.

I will not enter from my note-book upon any description of the temple here. Justice has been done to it by Scarradifaleo and others. I would, however, remark that there are various unmistakable evidences of the building never having been completed: its progress, we may presume, was arrested by the utter and final discomfiture of Segesta by the Carthaginians. There are rough bosses projecting from the face of most of the stones of the plinth; left there, no doubt, to facilitate the hoisting and setting of the stones, and intended to be subsequently worked off. The shafts of the columns, also, are unfinished, the surface appearing to be left for the flutes to be worked afterwards. We may infer from these indications that the practice of the Greek masons was to finish their work in detail when up, and subsequently to the erection of the building.

Were this practised more frequently by ourselves, we should both save expense and gain effect; for it is impossible to prevent a mason from over-labouring his work when done on the banker. But our workmen are too apt to be opinionated and intractable, and influenced by routine and prescription.

After a ride of about thirty-six miles I reached Palermo, situated in a beautiful bay, and surrounded by the richest country, and by, perhaps, the loveliest wooded hills I have ever seen.

No traces remain here, as far as I know, of the more ancient inhabitants of this island; but that it was the favourite resort successively of the Saracen and Norman masters of the country is abundantly testified by a variety of existing remains.

The cathedral is remarkable for a diversity of styles; with a modern dome, a florid Gothic porch; the rest of the exterior for the most part Norman,—such, at least, is the term which conveys nearest to its correct designation, for it was built

during the Norman rule, although it is a Norman widely differing from that of the north of Europe. This deviation is, probably, due to the strong infusion of Saracenic workmanship, which it is easy to account for. The Norman ecclesiastics, no doubt, would bring their knowledge of architecture to bear upon whatever churches they may have caused to be built when the island fell under the dominion of their race, and the plans of their churches are strictly Norman; but the actual carrying out of the work must have necessarily been entrusted for the most part to the Saracenic natives, who were excellent masons, and belonged to a far more æsthetic faith than the rude crusaders from the north. It was natural, then, that much of the ornamentation, and many even of the leading forms, should savour of the Eastern art, both Byzantine and Arabian.

The Royal Chapel, the church of S. Martorana, and the cathedral at Morreale, a few miles distant from the city, are, as regards their earliest portions, interesting examples of this modification of Norman architecture, and are in their style generally similar. The walls and other flat surfaces are incrustured with inlaid marbles; their vaultings, spandrels, and soffits, as well as portions of their walls, covered with mosaics of Byzantine workmanship, as is apparent from the Greek costumes, prevalent throughout. These arches are pointed, without mouldings or splays; and for the most part they rest on ancient marble shafts, no doubt derived from Classical buildings, with capitals often imitating in a rude way the Roman work.

The subject of Saracenic art in Sicily is not yet in a very satisfactory position. Since a paper in the twenty-first volume of the "Archæologia," written by myself when but a tyro in the archæology of our art, and before the existing examples had been critically examined by travellers, various writers have treated on the subject, who have not in all cases had any personal knowledge of the buildings themselves.

There can be no doubt, with respect to the churches I have named, that they are of Christian, and therefore Norman, origin, dating from the early to the later part of the twelfth century. But there are two secular buildings, the Ziza and the Kooba, that belong to a very different category.

That they were the palaces of the Saracenic emirs before the invasions of the Normans, there are, I think, the strongest possible grounds to believe. The fountains and alcoves, the interior courtyards, the numerous Cupic inscriptions, all savour of Oriental taste and art, and are identical with the domestic architecture of the neighbouring Asiatic continent.

The very name of the Ziza may be identified with the name of a caliph of the tenth century; and as to the Kooba, that is a Saracenic equivalent to a cupola, a covering, a tent; and there are said to be Koobas all over the Moslem world.

Roger, the first Norman king, in an existing diploma, speaks with regret of the marvellous palaces ("Palatiorum suorum studio mirabili compositorum") of the Arabs, which had been piteously destroyed by their conquerors; and there can be little doubt that, during the two centuries of their undisturbed rule in Sicily, the luxurious Arabs erected many such *maisons de plaisance*. As such they are stated by Smyth to be specially referred to in an Arabic MS., preserved in the library at Morreale. As the residences of the emirs, these palaces are referred to by other early Sicilian historians, quoted by Farello, in the sixteenth century. Alberti, a little later, so treats them. More recently D'Agincourt so regards them; whilst Hitton and Gally Knight do not hesitate to point them out as examples of Saracenic art of the tenth century. It is true a certain Benjamin, who visited Palermo, in 1173, speaks of the Ziza as one of the marvels of that city, built by William; but, as Gerault de Prangcy, one of the latest authorities on the subject, truly says, it was a common practice in the Middle Ages to speak of one who had but repaired or even greatly embellished a church or monastery, as the *builder* of it.

M. de Prangcy is an eminent authority on such a subject, and he has evidently referred to these two Sicilian examples with great care and caution. He admits the absence of direct proof, but he clearly leans to a belief in the pre-Norman and Saracenic origin of, at all events, one of them, the Ziza.

On the whole, I may say that the force of evidence satisfies my mind that these buildings, which in their exterior are identically alike in style, were originally built during the rule of the Saracens; that they went to decay during

the strife with the Normans; and that they were ultimately renovated by, and adapted to the use of, the Norman conquerors, when those interior works were done which so closely resemble the Siculo-Norman portions of the churches to which I have adverted.

The beauty of their situation could with difficulty be paralleled, and such, indeed, appears to have been the opinion of the builder; for, inscribed in large Gothic characters along the parapet of the Kooon, are words which are stated by Smyth to have been translated thus:—

"Europe is the glory of the world; Italy of Europe; Sicily of Italy; and the adjacent grounds are the pride of Sicily."

Lying among the wooded hills to the east of the city, is the Benedictine Monastery of S. Martino, a magnificent modern structure of great beauty. The library especially is large and handsome, and the principal staircase, rich in polished marbles and alabaster, is one of the most striking features of this very noble building. Perhaps a less indulgent critic, in the interest of morals rather than of aesthetics, might suggest the incongruity of this ostentatious display of art and decorative luxuries in a building dedicated, not so much to the service of God, as to the domestic uses of a religious community professing a rule of self-denial, and an abnegation of all personal enjoyments.

It seems probable that to secular pride, and a spirit of rivalry with some neighbouring ecclesiastical establishment, we are indebted for many such great works in connection with the church, and its various orders and endowments.

A showy picture in the hall represents a colossal S. Martin, mounted on a prancing charger, and cutting off the skirts of his crimson cloak for the benefit of a prostrate beggar, not without a certain air of swaggering and vainglory.

About three miles north of Palermo is La Favaria, a royal residence of most fantastic character, both gardens and palace being strictly Chinese. I need not dwell on this elaborate foy; but I can not refrain from noting that so anxious did the royal occupant appear to be to disencumber himself from the restraint imposed upon him by the presence of servants that his dining-table was contrived so that the dishes and plates should rise and descend through apertures in the floor; thus, when a fresh course had to be served, a bell was rung, the dishes disappeared downwards, and after a short delay rose again from below, with their varied burden of fresh delicacies. Other whimsical arrangements I noted, with which I will not trouble you.

About eight miles south of Palermo is La Baglaria, a village where many of the Palermitan nobility have their pleasure-houses. That of Palagonia is a remarkable specimen of the grotesque. The quantity of marble sculptured into deformed figures, uncouth animals, and shapes that defy all natural classification, is almost beyond conception. The ceilings of the principal rooms are of looking-glass, and the same material completely lines also the walls, together with polished marbles, agates, and jaspers.

As a specimen of the affectation, not very uncommon in Italy, of attempting to make their furniture the vehicle of a sentiment, the following inscription appears on one of the walls of this palace:—

"Spechiati in quel cristall e nell' istessa  
Magnificenza stupolar," contempla  
Di fretta mortal l' imago espressa."

In the library I took note of an easy-chair which was readily convertible into a short flight of steps, for reaching the upper shelves, a contrivance which I have occasionally since seen attempted nearer home, but never, I think, so successfully as in this piece of Palermitan joinery. At the villa of Prince Butero the chief curiosity was a large building in the gardens, called La Certosa, being, in fact, a counterfeit convent, with its separate cells arranged exactly after the manner of such establishments; these cells containing monks of waxwork worthy of the atelier of Madame Tussaud, and each cell provided with bed, seat, table, cooking apparatus, books, &c. I never happen to have seen elsewhere a baby-house on so colossal a scale! I have some recollection, too, of waxen representations of *nuns*, as well as monks, occupying these cells in most uncanonical companionship; but so preposterous a *divertissement* for the amusement of the princely owners of a country house seems incredible, if I had not found it duly recorded in my note-book. Another curiosity, but of a very different character, is the burial-place of a Capuchin convent near Palermo. It consists of various galleries, of considerable extent. There are twenty-five small chambers

leading out of these galleries, into which bodies are placed on their first arrival, and where they remain six months shut up for desiccation by heat. When thus prepared, the bodies are brought out, like dried mummies, and clothed in their ordinary costume during life; priests in their canonicals, monks in the habit proper to their order, and so on. The shocking-looking objects so dressed up are then placed in a standing posture, each in its niche. Nothing possibly can exceed the hideous deformity of the spectacle presented by the avenue of niches so tenanted, on either side of you, as you pass along the galleries. Each body is held up in its place by a cord round the waist, attached to the back of the niche. But this cord by no means always suffices to support them in an upright position: the ligaments of the limbs gradually yield to the weight of the body, which consequently falls, or rather stoops forwards, and is prevented from falling down only by the cord. The ghastly head droops downwards or sideways, the dark brown countenance looking truly frightful: the arms, too, droop; and the legs give way under the weight which they are no longer fit to support. Under each niche are written on a tablet the name, age, and period of death of the individual it contains. The miserable remnants of mortality thus exhibited present a combination of the ghastly and the ludicrous which, I suppose, could hardly be equalled. Certainly the had taste of the exhibition may well be supposed to be without a parallel; unless, indeed, it be found in Rome, where, at the cemetery of a Capuchin convent, near the Barberini Palace, are vaults containing niches tenanted by the bodies of the dead brethren, preserved with the skins on, and clothed in their ordinary dress. The roofs of these vaults are ornamented with human bones formed into panels and patterns, and are lighted by lamps shaped out of the bones of arms and legs symmetrically arranged and adapted to this new, posthumous, use.

I have now cursorily touched upon some of the chief objects of interest or curiosity that attracted my attention. Although my stay in the island extended over two months, and my whole time was spent in constant activity, I felt regret at leaving its shores, for my visit had been one of the highest interest. My regrets were further enhanced by the conviction I felt that much remained unseen. The coast road from Palermo to Messina remained unvisited, including Cefalu, Tyndaris, and Termini, where, besides what has already been made known, I cannot doubt but that there is much of antiquarian interest, at least, to reward the researches of future explorers. But reports reached me of some thirty *fiumi* that had to be crossed, and of the almost total absence of bridges over them. These *fiumi*, be it remembered, although dry ravines in the summer, are very formidable torrents during the two or three wet months of the year.

As to the interior of the island, all accounts agreed in describing it as devoid of architectural interest, few buildings of the best periods having survived, it is said, the ravages of the frequent earthquakes with which this beautiful island has been for so many centuries afflicted. I was still further deterred by the reported absence of roads and inns—evils for which, not nature, but man alone, is answerable. Still I have always regretted that I did not make any exploration inwards, and I strongly recommend those whom the altered circumstances of the country may induce to visit Sicily to traverse its little-known central districts, where I feel convinced that there is a rich harvest still unreaped. Such a student will do well to provide himself with a sound and correct knowledge of the early history of this remarkable country, and of the races which have successively, and even simultaneously, occupied it. He will find traces more or less distinct of at least eight populations—namely, Celtic, Greek, Punie, Roman, Ostrogothic, Arab, Norman, and Italian. Perhaps no country of like extent in the world has derived its population from so great a variety of sources.

But if antiquarian and artistic wealth lies concealed in this shattered island, how infinitely richer are the hidden and unheeded sources of physical wealth! Although the cultivation of the soil is most primitive and imperfect, and although the nature of the tenure on which land is usually held there is most adverse to agricultural improvement, yet it is still a land abundant with corn, wine, and oil. Captain Smyth, who knew this country intimately, pronounces it to be "one of the most fertile spots on earth."

Untold wealth in flax, timber, sulphur, marble, and no doubt very many other natural products, only wait the capitalist and merchant.

Of the articles I have last named, only the white

veined marble finds its way into this country; yet various-coloured marbles and jaspers, of great beauty, are produced, and were, we know, duly appreciated by the architects of ancient Rome in its best days.

The following may be named as the localities of some of them, as furnished to me by an intelligent mason at Palermo:—

Marble, of	Trapani, of a grey colour.
"	di Castelnuovo, yellow "
"	di Segesta, yellow "
"	di Taormina, red "
"	di Parso, yellow "
"	di Ogliastra, red "
"	di Castelaccio, grey "

The two last-named marbles are readily obtainable in blocks, 12 or 13 feet long. Specimens of some, if not of all these, I found included in the fine collection of polished marbles made by the learned and amiable Avvocato Corsi, of Rome, which collection was subsequently brought to England, and exists now, I believe, at Liverpool. Each specimen it contained is no less than eight Italian inches long by four inches, and two inches thick, and is highly polished. It comprises ten varieties of agates—a mineral in which Sicily is so rich that one of its rivers, the Achetes, is supposed to have given to it its name.

There are also in that collection at least eighteen varieties of jasper, in which beautiful substance Sicily is stated by Corsi to be more abundant than anywhere known locally. A recent writer has stated that there are no less than fifty-four varieties of Sicilian jasper. That a trade has not been established in these precious productions can only be due to the want of enterprise and capital in the island—a want easily accounted for by the long-continued course of wretched and degrading misgovernment.

What may we not hope for from the country when it shall have firmly established its political freedom, and re-entered upon the path which freemen alone are destined to tread! The present apathy, indolence, and ignorance of the people will, it is to be feared, oppose many and heavy obstacles to the re-establishment of a durable and prosperous administration. But such was not always the character of Sicilians. When in early times Palermo was besieged, the patriot women are said to have given up the hair of their heads to serve as the bowstrings of their gallant defenders. May we not then reasonably hope that in the councils of Providence it may be permitted to this ancient people to vindicate for themselves some portion of that moral and material eminence which their forefathers of old so worthily achieved?

#### LORD MAYOR'S DAY.

The chief feature in the decoration of Guildhall on the 9th instant, when the Right Honourable William Cubitt, M.P., was inaugurated Lord Mayor of London City, with the hearty goodwill of even a larger circle than that of his fellow-citizens, was the sculpture which Mr. Bunning, on this as on many former occasions, had gathered together. We have before now expressed our appreciation of Mr. Bunning's endeavours in this direction, especially in respect of the statues commissioned for the Mansion House. Can he not persuade the Corporation to do something for Painting? The history of the City would afford noble subjects, and the Guildhall and Mansion House offer walls to be covered.

The works contributed were by W. Calder Marshall, H. Weekes, S. S. Westmacott, J. Hancock, Felix M. Miller, J. H. Foley, P. Maedowell, Signor Fontana, and others.

At the dinner there was, as might be expected, a stronger muster of men connected with architecture and building, and other art and science, than usual. Within our own ken, for example, were Messrs. Donaldson, Tite, M.P., Peurose, Lewis Cubitt, Bunning, E. Barry, P. C. Hardwick, Bidder, Mylne, Jennings, Fowler, John Shaw, Piper, Gassiot, Hart, R.A., Jous, R.A., and John Thwaites (chairman of the Metropolitan Board of Works); and there were, doubtless, many others. Politically viewed, the banquet was one of great importance, and all Europe has read with eagerness the utterances of the two P.s. England is just now "master of the situation;" and Palmerston and Persigny were wholly at accord.

The new Lord Mayor has well begun his year. The Chancellor of the Exchequer bore more than ordinary testimony to the opinion of him entertained in St. Stephen's; and all who heard it ratified the statement with hearty applause.

Another Lord Mayor of the ancient city has passed in a civic triumph from the Guildhall to Westminster; and although, of late years, much

has been said against these public spectacles, if we may judge from the good-humoured aspect of the vast multitude of all ages and grades who thronged to witness the sight, the Lord Mayor's Show has not lost all favour with the masses.

In looking at the procession of the other day, arranged as it was without any attempt by art or allegory to afford materials for more intellectual ideas, many portions of the sight contrasted strangely with all around. The picturesque and antique dresses of the Lord Mayor's hargemen, although their occupation is gone, came out bravely; and the dingy and faded coats of the watermen, who bore the banners of departed worthies connected with the City, showed the changes which are going forward on the Thames,—how steam-packets, steam-forges, bridges, and tunnels, are superseding the once familiar craft which plied in hundreds along the bustling banks of London,—causing little demand for the waterman's occupation, and thus accounting for the faded coats. The careful observer, in various parts of the procession, would note, in the costume of the headles of companies, the maces, and other details of the show, matters which reminded them of old times.

The knights in armour, followed by their esquires, also in suits of armour, passed on amid the roaring laughter of the crowd. Singular did these sham ghosts of the past look in the modern streets; and thoughts went back to the days when stalwart warriors, in steel casing, attended by low and buckler men in buff, would have done useful service. Miserable and uncomfortable looked these imitation knights of antiquity, and sad the shaking of the plumes, when comparing them with the active riflemen who kept unbroken ranks, their improved weapons, and the wonders which have been achieved by the locomotive steam-engine and other matters which have been brought into use since the days when real knights, in substantial armour, on their prancing war steeds, moved along the City streets.

The quaint-looking houses and shops, the embattled and strongly fortified houses of the nobility, the high walls and gates of the City, the darkness of the nights, the evil condition of the roads, the terrible outbreaks of pestilence with which those of the present day in England are not to be compared, and other evils contemporary with the ancient knights, have nearly passed away; and along the Strand and Fleet-street, where stood so many of the dwellings of those persons of rank who once overawed the industrious citizens, are steam-printing presses busily at work, producing newspapers and periodicals for the use and instruction of the multitude.

In times very far remote, it does not seem that the show on Lord Mayor's-day was remarkable for any very great display; the procession chiefly consisting of the minstrels, the headles, and livery-men of the companies. We have accounts of brave processions in the olden times, in honour of royalty; but it was only about the beginning of the sixteenth century that the Lord Mayor's Show came to be famous. In the accounts of London there are many particulars of royal processions: we will, however, just now only refer to one of comparatively recent date. On the 29th May, 1660, when the King approached London, the Mayor and Aldermen proceeded to St. George's-fields, Southwark, where tents had been erected, and great provision for feasting made. From this point the following procession was formed:—

First marched a gallant troop of gentlemen, in cloth of silver, brandishing their swords; then followed another troop of 200, in velvet coats, with footmen and liveries in purple; then another troop in buff coats, with cloth of silver sleeves, and very rich green scarfs; and after these a troop of about 200, with thirty footmen, in grey and silver liveries, and four trumpeters, richly habited; then another troop of 105, with grey liveries, and six trumpeters. Other troops followed. Then came the sheriff's men, in red cloaks, richly lined with silver, to the number of three-score; then followed 600 of the several companies of London, on horseback, in black velvet coats, with gold chains, each company having footmen in different liveries, with streamers, &c., kettle-drums and trumpets. His Majesty's Life Guards and the various City officers followed in succession. Then the two sheriffs, in scarlet gowns, and all their rich trappings, with footmen in liveries—red coats, lined with silver and cloth of gold. After came the Lord Mayor—bareheaded—on horseback, carrying the sword, with his excellency the General and the Duke of Buckingham—bare-headed also;—and then rode the King himself, between his royal brothers, the dukes of York and Gloucester:

several regiments of cavalry closed the gay and stately procession.

Turning from this royal bravery to the civic shows of Sir William Draper—Lord Mayor, 1566,—there was, we learn, much display on the river. In 1568, Sir Thomas Roe, of the Merchant Taylors' Company, was elected to fill the honourable office of Lord Mayor: at this time, his company voted him 40*l.* to help to defray the expenses of the progress to Westminster. The pageant selected on this occasion had reference to the patron saint of the company—St. John the Baptist,—consisting of an allegorical representation of the saint, and other similar personages. There were also four boys who spoke complimentary speeches, which in parts alluded to the name of the Mayor; for instance, St. John is made to say, "I am that voyce in the wilderness which once the Jewes did call." *1st Boy:* "Behold the Roe, the swiftest in the chase;" and such-like sorry wit. There were allegorical personages who, for some time, figured in the shows: these consisted of children and females, dressed in peculiar costumes, who represented London, the Thames, the Country, the Soldier, Sailor, Nymphs, &c. There were also representations of Magnanimity, Loyalty, and other virtues, all of which were of course ascribed to each new Lord Mayor.

In 1613 Sir Thomas Middleton was in office. This gentleman, who was a grocer, attempted an emblematical and scenic representation. On this occasion a water spectacle was prepared in imitation of a pageant mentioned to have been exhibited by Sir John Wells to Henry VI. This device consisted of five islands artfully garnished with all manner of Indian fruits, drugs, spices, and the like: on the middle island was a fair castle, especially beautiful, which probably was intended as referring to the forts about that time established in the East Indies. From the period above mentioned to 1708 the shows were similar: at this date pageants of a more elaborate and poetical description came into use. An attempt was made to add to the interest by giving to the shows something of a dramatic character. Poets were engaged to compose what were called projects, that is, the arrangement of scenes with action. These were dialogues, songs, &c. introduced, and speeches made descriptive of the Lord Mayor elect and his company. The painter, dress-maker, and mechanic were also brought into use, whose united efforts surprised the Londoners. Before this date the pageants shown on land were fixed in certain positions, but now the stages were made to move along the streets with the Lord Mayor's processions.

The machines used for the pageants were unwieldy affairs, and were also too costly to be destroyed on each year. Some of these were stowed away in the roofs of the companies' hulls. There was also a pageant-chamber in the City, in which the smaller matters connected with the shows were preserved. In the companies' accounts mention is often made of the cost of fitting up these, and for setting up beasts and other lustrate fittings. The repair or making up of these articles was managed in the Leadentail. A conspicuous feature of the pageants were the firemen, sometimes called monsters or terrible men—hair-clad savages with torches and fireworks. We read, also, of allegorical pageants of trade—the factory of commerce, the palace of pleasure, the house of riches, and the arbour of delight.

#### THE EAST INDIA HOUSE.

LONDON changes go on with amazing rapidity, and circumstances are frequently happening which a few years before could scarcely be looked for. Amongst these may be noted the altered circumstances of the great building of the East India Company in Leadentail-street; a structure which is in some respects handsome, and so substantial that it promised to remain for some centuries to come. Few who passed it a dozen years or so ago but thought it about as likely for the Lord Mayor and the Mansion-house to be removed to Piccadilly as that the offices of the East India Company should be removed to Westminster, together with the splendid library and valuable collection of manuscripts and articles of curiosity and instruction which so thickly occupied the museum.

When looking at the long front of this building, its lofty and well-proportioned portico and wide-spreading wings, one observes the execution and design of the sculpture of the pediment and other parts, by Bacon. George III. is a principal figure, representing for a time the power of England, and marking the date of erection of the edifice: he is leaning on his sword with one arm, and

with the other extending a shield of protection. Figures of Liberty; Mercury, attended by Navigation and followed by tritons and sea-horses, emblematical of commerce, are introducing Asia to Britannia, before whom she spreads her products. On the other side appears Order, accompanied by Religion and Justice. In the background appear the city large and other emblems and representations of Integrity and Industry. The western angle contains a view of the Thames, and the eastern that of the Ganges. On the apex of the pediment is a figure holding in her left hand a spear and a cap of liberty. On the east and west corners are Asia seated on a camel, and Europe seated on a horse.

In connection with the Company will be remembered an account of a building, curiously constructed of wooden framework and turned ornaments: on the top was a carving of a ship. This was engraved in a previous number of the *Builder*. This, the first house of the East India Company, stood near where the west wing of the present edifice now is.

In the commercial history of this nation there are few incidents of our progress more remarkable than the rise and progress of the East-India Company. In 1599, 101 persons subscribed for the purpose of carrying on an Eastern trade to the amount of 30,139*l.* 6*s.* 8*d.*, in various sums of from 13*l.* to 3,000*l.* For long after the establishment of the Company the attendance of one managing director at the old wooden house was sufficient. It seems that, owing to some treaties which were in negotiation with the Government of Spain, the Company did not obtain their charter of incorporation until 31st December, 1600, and then it was limited to fifteen years' duration. By the time the above-named privilege was granted the money subscribed amounted to 68,379*l.*, of which 39,771*l.* were expended in the purchase and equipment of ships; 28,742*l.* were appropriated to hullion, with which, and goods to the value of 6,860*l.*, was commenced by England a traffic with the mighty empire of Hindostan. The first expedition, which was destined to produce such marvellous results, started from Torbay on the 2nd of May, 1601. Great was the success; for, with a single exception, during eleven years, the profits ranged from 120*l.* to as much as 340*l.* per cent. In 1609 the charter was renewed, and still the merchants prospered. It is worth while to mention the following anecdote connected with the early days of the company. A merchant named Bragge made a claim against the East-India House for upwards of 6,000*l.*, for services said by him to have been rendered. This gentleman pressed his claim in language and in a manner which seem singular. He backs his views by goodly sayings and quotations, and balances much good with a considerable amount of selfishness. For instance, after making what seem to be some very large charges, he says,—“For thirteen negroes, or Indian people—Well, for the estimation of these poor souls, they are not to be valued at any price.”

Another item:—“For twenty dogs and a great many cats, which altogether, under God (as by your books written), of late ridd away and devoured all the rats in that island, which formerly ate up all the corn and many other blessed fruits which that land afforded,—Well, for this I will demand 5*l.* apiece for the dogs, and as to the cats, they may go.”

Some idea of the enormous profits of those connected with the East-India trade may be gathered from the following comparative prices of teas and other articles (this about 1612): a book of muslin cost in India 20*s.*: in England it sold for from 30*s.* to 40*s.*; Zurat satins, per piece, in India, 40*s.*, in London, 60*s.*: a Taffeta quilt cost then in London from 10*l.* to 20*l.*; and raw silk was 20*s.* a pound.

When the first expedition was sent away, Capt. Lancaster, the chief in command, took royal letters of introduction to various Eastern potentates; and in 1614, so important had become this traffic, that an ambassador was sent to the Great Mogul. The diplomacy of this gentleman was attended with great success, and amongst other advantages obtained permission for the English to establish factories on any part of these dominions. The ambassador saw from the first the troubles which would result from territorial acquisitions or military expenses, and cautioned the Company against such measures. In 1617-18, the increase of the trade made it necessary to raise a fresh fund of 1,600,000*l.*, and the Company now consisted of 954 proprietors, and had 36 ships, of a tonnage ranging from 100 to 1,000 tons burden each. In 1631, a third joint-stock capital of 4,200,000*l.* was raised.

In 1611-12, the first important settlement was

made on the shores of India by the erection of a fort at Madraspatam, which was afterwards called Fort George, and erected into a presidency. In 1698, an opposition East-India Company was formed, which, after a feeble management of four years, amalgamated with the original company, and the firm was named the United Company of Merchants trading to the East Indies. Soon three presidencies were formed, all under the control of the Company at home: one was at Madras, and the others were at Bombay and Calcutta.

The English population did not advance in proportion with the increase of the traffic, for we find that, in 1716,—105 years after the first settlement was made at Madras,—although the presidency extended for five miles along the shore and one mile in breadth, the number of Englishmen there did not exceed 300 persons, of whom 200 were soldiers in the garrison.

As time rolled on, the French attempted to oppose the Company in India, and rebellion—if it might be so called,—was raised. The victories of Lord Clive, Lord Cornwallis, and the Marquis of Hastings vastly extended the British dominions in this direction.

In 1813, the Eastern trade was partially broken open, and this largely increased the export, which in 1815 amounted to 570,177*l.*; but in 1819 it amounted to 3,052,710*l.*

It is tempting to follow the effect of British enterprise, and the comforts and advantages it has afforded to the western and other portions of the world: we must, however, be satisfied with giving the following note.—In 1677, the quantity of tea imported into England amounted to 100 lbs. weight: in 1814 the quantity was 25,000,000 lbs., which yielded to the Government a revenue of 4,000,000*l.* sterling.

In the interior of the Leadenhall-street building there are several matters worthy of notice, statues of famous men connected with India, paintings, and bas-relief decorations. The great hall and other chambers in which so many remarkable men have met, and in which important subjects affecting the welfare of millions have been discussed, have historical interest. The library has been collected with great skill, labour, and expense: it contains everything—either in manuscript or printed books, drawings, sketches, &c.—which illustrates the past and present condition of the Queen's wonderful empire in the East. The museum is to the student of these matters a valuable aid to the library. The former has also much interest to the public generally; and these collections are particularly useful in a combined state, not only as a class collection intended to throw light on a most important subject, but as containing a vast amount of historical facts and other evidence.

This museum and library, whatever changes may take place, should never be allowed to merge into the British Museum, or any other collection, where its individuality and chief interest and utility would be lost.

We have had three Royal Exchanges, each illustrating the progress of British trade, architecture, and taste; and not long will have passed, before the third East India House will be reared, in a style—in all its parts—which, it is to be hoped, will be a credit to the age. Great ideas are suggested by the fact of the Home Government of such an immense empire, and lofty thoughts should be inspired in the architect who designs, and the artists who may be called upon to decorate, a building appointed for the centre of such great power.

From the comparatively small beginnings at which we have above hinted, and since the days when in the wooden house one director managed the affair, the British power in India has grown to be an immense responsibility and the cause of national anxiety. Great is the benefit which may be bestowed on the masses of people in India by the intelligent, firm, and unselfish management which, it is hoped, will be connected with the India House at Westminster.

#### THE ARCHITECTURAL ASSOCIATION.

THE first ordinary meeting of the Architectural Association was held on Friday evening, the 9th, at their house in Conduit-street. The President, Mr. T. Roger Smith, occupied the chair.

Routine business, including votes of thanks, having been transacted,

Mr. Arthur Smith, hon. sec., read the report of the committee for the session 1859-60, which, after enumerating the papers read and discussed at the various meetings held during the past year, stated that, in addition to the class of design, it was proposed to have a class on botany, under the

direction of Mr. Blasbill, which would assemble half an hour before the hour appointed for the ordinary fortnightly meetings. The committee had met several times during the recess, and had recommended certain modifications of, and alterations in, the rules and regulations of the Association. These included, *inter alia*, the personal introduction of new members to the president at the next ordinary meeting after election; the fixing of the subscription of town and country members at half a guinea per annum, instead of 12*s.* 6*d.* for town and 5*s.* for country members, as heretofore; and certain other verbal amendments calculated to improve the efficiency of the Association for the objects for which it was promoted.

Mr. J. A. Bunker moved the adoption of the report and the recommendation of the committee with reference to the rules.

Some discussion ensued as to the expediency of considering the recommendations *in globo*, as proposed by Mr. Bunker, or in detail; and ultimately, at the suggestion of Mr. Hammond, it was resolved that they be taken into consideration *seriatim*.

The question of subscription was then raised, and the general feeling of the meeting was declared to be in favour of abolishing the distinction between town and country members.

The President and others urged the desirability of fixing the subscription at a sum which would enable members to bring in as many of their pupils as possible; and it was contended that no country members who really had the welfare of the profession or of the Association at heart would be deterred from joining the latter by the payment of so modest a subscription as half a guinea per annum.

Several other rules having been considered and amended, a regulation was agreed on to the effect that each class should report annually to the general meeting of members.

The report of the committee was then agreed to, without a dissentient voice.

The Vice-President (Mr. A. Blomfield) next brought under notice the proposal for a memorial to the memory of the late Mr. Pugin, for his services in the promotion of the true principles of Mediæval architecture. It was, he remarked,

proposed to solicit donations to be devoted to the endowment of a permanent fund, to be entitled the "Pugin Travelling Fund," the interest arising therefrom to be awarded to an architectural student, and to be expended by him, within one year of the time of its allotment, in travelling in the United Kingdom, and in examining and illustrating its Mediæval architecture, sculpture, and painting. To the studentship it was proposed to add a medal, and it was the intention to request the Royal Institute of British Architects to become trustees of the fund. This was a subject in which the Architectural Association, as a body, ought to feel great interest, and he would be happy to be the medium of transmitting to the treasurer any sums which members might not wish to send in their own names, and which would be acknowledged as a contribution from members of the Architectural Association.

On the motion of Mr. Bunker a resolution was passed requesting the curators of last year to lay upon the table at the next ordinary meeting a list of the property of the Association in their possession.

The President then called attention to the offer of Mr. Tite, M.P., to place at the disposal of the Association the sum of 5*l.* annually, to be devoted to a prize or prizes for the best design, essay, or other object which might be considered most desirable in the interests of architecture. Mr. Tite, when making the offer, had intimated that, if the President would call upon him, he would make arrangements for the payment of the amount, and also offer a suggestion or two as to its application. In accordance with that intimation, he (the President) had called upon the hon. gentleman, who handed him a cheque for the amount for the present year, and at the same time expressed a wish that the prize or prizes might be awarded in the course of the current year. In that case he held out the hope that he might be enabled to present them personally. Mr. Tite also suggested that perhaps the Association might consider it advisable to divide the amount into two, one of 3*l.* and one of 2*l.* He also made some inquiries about the class of design, and seemed to think it might be useful to give the prize to that class, although he expressed his desire that the matter should be left to the unfettered discretion of the Association, and intimated his readiness to concur in any course which might be considered the most desirable.

Mr. H. A. Reeves suggested that the 2*l.* prize might take the place of the Association's prize,

and that the 3*l.* might be awarded to the best sketch in the class of design, and presented at the next *conversazione* of the Association, which would be held in April, 1861; at which time it might, perhaps, suit the convenience of Mr. Tite to be present. Should the Association still continue to give its prize, there would then be three prizes. He hoped, however, that the highest prize would be given for a selected subject in the class of design. In conclusion, he moved a resolution to the effect that 2*l.* be the value of the prize to be given for the best series of designs by the class of design, and that 3*l.* be the prize for the best selected subject, to be competed for by members of the class of design only. He was of opinion that some such regulation was necessary to prevent the elder and more accomplished members of the Association from competing.

Mr. Wimbridge seconded the motion. After some desultory conversation Mr. Blasbill moved, and Mr. Bunker seconded, an amendment on Mr. Reeves's motion, to the effect that 3*l.* be given for the best series of sketches in the class of design, and that 2*l.* be given for the second best.

A division was ultimately taken, when there appeared for the amendment nine against ten; majority against, one.

The President then put the original motion, which he declared to be carried by twelve to nine.

It was then announced that the next subject for the class of design would be an entrance-lodge and gates for a mansion.

The President observed, in reference to the proposed consideration of the subject of architectural examinations, and the report thereof which had been entered upon their syllabus of that evening, that it would be impossible to take up the discussion at the late hour at which they had then arrived (ten o'clock), but that at their meeting on the 23rd instant he hoped they would be able to make considerable progress with the subject.

#### RAGGED SCHOOLS:

THEY SHOULD BE AIDED AND ESTABLISHED BY GOVERNMENT.\*

THE benevolent and able efforts of Miss Carpenter on behalf of Ragged and Industrial Schools at Bristol we have ere now brought to the notice of our readers. From the titles of the tracts just quoted, it will be seen that she has of late been urging the dispensation to such schools of a full share of the School Aid given by Government under the superintendence of the Committee of Privy Council on Education; and we not only give our hearty approval to such efforts, but, as our readers, and those of "London Shadows" and "Town Swamps and Social Bridges," very well know, have ourselves dwelt on this point for years past, and before the importance of it was either generally recognized or often urged.

In the letter on the debate lately in the Commons, on Sir John Pakington's motion,—one moiety of which was "that Ragged and Industrial Schools, which are alone adapted to meet the wants of a considerable number of destitute and neglected children, do not receive the amount of aid to which they are therefore entitled,"—Miss Carpenter expresses the error or fallacy of Mr. Lowe's assertions and arguments in course of the debate, and re-urges the case in favour of Ragged Schools; as indeed is also done in her other papers under notice.

One strange objection felt by the Committee of Council on Education to giving efficient aid to Ragged Schools, as stated by their late vice-president, is that the doing so *might make them permanent institutions*, and that an officer of state ought not to take it for granted that there would be permanently a Ragged School class in the country, and therefore ought not to make provision for it!

Do the Committee of Privy Council on Education then anticipate that "the poor" are about to "cease from the land?" or are they millenarians, and expect, with Dr. Cumming, that all these evils are to be remedied in 1867?

"Surely," says Miss Carpenter, evidently surprised, "this is not the principle on which the government of

\* Letter on the Debate in House of Commons on Ragged and Industrial Schools. By Mary Carpenter. Bristol: Arrowsmith, printer.

Abstract of Paper on Educational Help from Government Grant to Destitute Children, read by Mary Carpenter, at British Association Meeting at Oxford, in 1859. The Relation of Ragged Schools to our Educational System, and their Claim to a full Share of Aid. By Mary Carpenter. Read at Bradford Meeting of Social Science Association, 1859.

Charge of Mr. D. Hill, Recorder of Birmingham, to Grand Jury, October, 1859. Arrowsmith, Bristol, printer.

our country is carried on! It arises from a wrong state of things unquestionably, that the Ragged School exists: it arises equally from a "wrong state of things" that the pauper class exists—that thousands of our countrymen and women annually find it impossible to obtain an honest living in England,—that the sanitary condition of our large towns is such as to perpetuate disease both of body and mind,—that crime is constantly committed, even in open day. And does the government of our country remain passive, and allow of the existence of dreadful evils, because these things *ought not to exist*—and does it not become a statesman to do something more than ignore them? Should he not rather grapple with each evil in such way as appears most for the good of society in general and for the individual concerned? Does not the Government provide in such way as seems best for the necessities of paupers,—aid in the emigration of those whose labour will find a better market in more distant parts of the empire,—grapple vigorously with the unwholesome condition of streets and alleys, and even of private houses,—and, with respect to the thousands of criminals who annually spring up afresh in our country, does it not withdraw them from society, feed and clothe them, and otherwise provide for them, even at the risk of appearing thereby to discourage the honest labourer, who has often a far more scanty fare for himself and family than the pauper and the felon? No Government does act on such a principle in other matters; why should it do so in respect to the "something rotten in our state," which poisons its very core—the millions of children who neither can nor will avail themselves of the higher educational establishments?

As long as the poor, the destitute, and the diseased exist, so long, it is to be feared, will there be ragged children; and so long as there are ragged children, so long will there be a necessity for Ragged Schools, and for Government aid to the benevolent exertions of the public on their behalf.

Ragged Schools occupy a definite, recognized, and now popularly established position between the National Schools on the one hand, and the Workhouse Schools on the other; and neither of these can ever occupy the field that is open to the Ragged Schools. The children of the poor who are not absolute paupers, but are either unable or unwilling to keep their children in decent and cleanly condition and send them to the National Schools, must either be left to grow up into precisely the most dangerous and criminal class of the whole population, or they must be educated in the "Ragged Schools," to which more respectably attired children should rather be directed from going than persuaded to go; for, if once the Ragged Schools become more "respectable," shame and pride and vanity will keep off the more ragged children from a sphere where they will be liable to "odious comparisons;"—and even a child of four years of age is quite old enough to appreciate such comparisons. There is much in a name; and the very name of "Ragged School" is of value in the retainment of the special character of this class of school.

Would Christ's Hospital, which was originally in fact a ragged school into which the very street sweepings of society were daily emptied, be at this moment occupied exclusively by the children of the "well-to-do," without a single "wild Arab" from the streets among them, had the name of "Ragged School" been from the first as unchangeably fastened on it as the quaint and antiquated clothing of the children educated in it has been? What is it that keeps the ragged children of the streets themselves out of the workhouse schools but the very names of "workhouse" and "panner," which stink in the nostrils of all parents who can keep either themselves or their children out of them? And right it is that it should be so. The name of "Ragged School" then, occupies a special, exclusive, and proper place among the rising or falling grades of educational establishments, and it is to be hoped will never be altered. Those who begin to feel a wholesome pride, prompting them to refuse longer to allow their children to go to the Ragged School, will forthwith send them to a National school. Those who have no such pride, but nevertheless dislike the name of paupers, must feel the Ragged Schools to be the proper place for their children; and whether they do so or not, it is so in fact; and they do allow their children to go to such schools.

Why should the Government affect to ignore the Ragged Schools? It is now too late to do so: they are an established and decidedly requisite institution, and ought to be made permanent, both by means of Government aid and by legislative Act; in which Act, moreover, the very name of them ought by law to be perpetuated and made unalterable.

**PHOTOGRAPHIC PROGRESS.** From Paris we hear that crowds are attracted to Mayer's photographic gallery on the Boulevard des Capucines, to see a full-length, the size of nature, exhibiting the Emperor of the French. This is the first full-length of natural size we have heard of: it is doubtless produced by the new process of enlargement to which we lately drew attention.

WIRE-ROPE TESTING AT LIVERPOOL.

A NUMBER of gentlemen interested in shipping assembled at the Corporation testing-machine, King's Dock, Liverpool, recently, to witness a series of experiments having reference to the relative strength of wire-rope, as adapted to ships' rigging. The following, according to the local *Courier*, is a tabulated statement of the result:—

	Giroin-ference.		Guaranteed strain		Breaking Point.	
	Inches.	Tons.Cwt.	Tons.Cwt.	Tons.Cwt.	Tons.Cwt.	Tons.Cwt.
Newall & Co. ....	4	29 0	19 15			
Ditto .....	3½	22 0	16 15			
Ditto .....	2½	11 0	7 15			
Totals .....		61 0	41 0			
Garnock, Bibby, & Co....	4½	24 8	25 10			
Ditto .....	3½	15 0	18 5			
Ditto .....	2½	7 8	8 15			
Totals .....		47 2	53 10			
Whaley, Barrows, & Penton	4½	34 0	21 0			
Ditto .....	3½	20 0	18 5			
Ditto .....	3½	15 0	14 0			
Totals .....		69 0	53 5			
Hutchings & Co. ....	4	19 6	15 0			
Ditto .....	3 11-16	17 0	11 15			
Ditto .....	2 9-16	8 11	5 0			
Totals .....		44 17	31 10			

A piece of wire-rope, made by Messrs. Newall & Co., 1½ inch, weighing 3 lbs. per fathom, was then tested, and broke at 5 tons: a piece of 4½-inch Manila rope, manufactured by Garnock, Bibby, & Co., was next tested, weighing 2½ lbs. per fathom, and broke at 8 tons 5 cwt.; showing that Manila hemp rope is stronger, weight per fathom, than wire rope.

DESIGN FOR CONNECTING THE POPULOUS QUARTERS OF SOUTH KENSINGTON AND BAYSWATER, AND THE DISTRICTS ADJACENT, BY MEANS OF A SUBWAY UNDER THE MIDDLE WALK IN KENSINGTON GARDENS.

AMONG the unpublished plans for metropolis improvements left by my father, the late John Martin, were several suggestions for connecting the Bayswater and Kensington sides of Hyde-park and Kensington-gardens. One of these suggestions was to convert the existing Ha-ha fence into a roadway, and another was to form a species of sunk-road across Kensington-gardens. A recent consideration of the latter project has caused me to devise a plan, which I now venture to submit to the public through the columns of the *Builder*, merely premising that all the drawings, &c., of the requisite details have been kindly supplied to me by Mr. Ignazio Bonomi, who was formerly in extensive practice as an architect, and as engineer for the county bridges of Durham. The drawings have been made several months.

ISABELLA MARY MARTIN.

The point selected for the subway, is the most direct and shortest line between the Usbridge-road and South Kensington. Being only about 1,100 yards long, or five-eighths of a mile, it affords a commodious substitute for three miles by Park-lane, or two miles, with two turnpikes, by Church-lane, Kensington,—two narrow and crooked streets, which at present form the only lines of communication between the north and the south sides of Kensington-gardens and Hyde-park. At an average speed of five miles an hour, the subway would be passed through in eight minutes.

The subway is intended to be always open for general traffic like any other road or street, and will thus provide for constant communication with the London railway stations, where trains are arriving and departing at almost every hour of both day and night.

Notwithstanding these advantages the traffic will be entirely unseen, and the surface of both Hyde-park and Kensington gardens will remain undisturbed, excepting for the formation of the entrances into the subway next to and within 40 yards of the Usbridge and Kensington roads. The park and gardens are besides not rendered accessible at other than the present gates, and at the regulated times of admittance, as the railing bounding the quadrant entrance-roads excludes access from without.

The subway is proposed to be about 30 feet wide, and the arched roof 2 feet beneath the sur-

face level of the middle walk. The road is to be divided down the middle the whole length by a line of cast-iron columns and arches, or stone columns and brick arches, to support the roof. On each side of the columns are the footpath and carriage-road, edged with cast-iron or granite terraces for the wheels, one road being for carriages entering, and the other for carriages going out. The subway is entered from the main road by inclined quadrant roads sunk in the narrow strip of land between the footpath and the outer fence at each side of the gardens.

The rise of the surface of the park and gardens at about 40 yards respectively from the Usbridge and Kensington roads, equals at least 4 feet, and thus affords, by a gradual sinking of 12 feet in the quadrant roads of approach, a clear height of 1½ feet in the subway for vehicles, and 2 feet above for the arched roof and gravel.

The subway will be ventilated by gratings, which also light it by day; by night, gas will be used. The higher part of the middle walk is at about 150 yards south of Bayswater, from which the level slopes both ways so as to afford the means of draining off any percolating water into the street-drains at the two ends, and the construction of the subway is adapted for adjusting its level to the general level of the surface.

The subway does not interfere with any private property, nor with drains and pipes: the work can be effected in a short period, and with small amount of inconvenience, the cutting as it proceeds being closed in with its arched surface, and gravelled over.

The estimated cost of the entire work would be 38,000*l.* or 40,000*l.* if cast iron pillars and beams are used; but only 30,000*l.* if stone pillars, with brick arches down the centre.

It does not appear that the scheme could be carried out by a company, because the returns would have to be obtained by tolls, which are totally unsuited to the internal traffic of the metropolis. As the communication has been long required and in some degree requested, and the necessity for it is daily increasing, owing to the augmentation of the population in the important districts which it would unite, the undertaking may be considered of such general and public advantage as to deserve to be paid for by the public or parishes and authorities concerned with public improvements, for it must be remarked that the road in question is for general traffic at all periods of day and night, and for all classes.

Supposing the subway to be accepted and substituted for any contemplated roads through the park and gardens, the cost of such roads with the lodges and gates of access might be applied as a contribution to the subway by the Commission of the Board of Works. A notable saving would be the consequence in the yearly repairs of park roads, and in the salaries of the lodge and gate keepers.

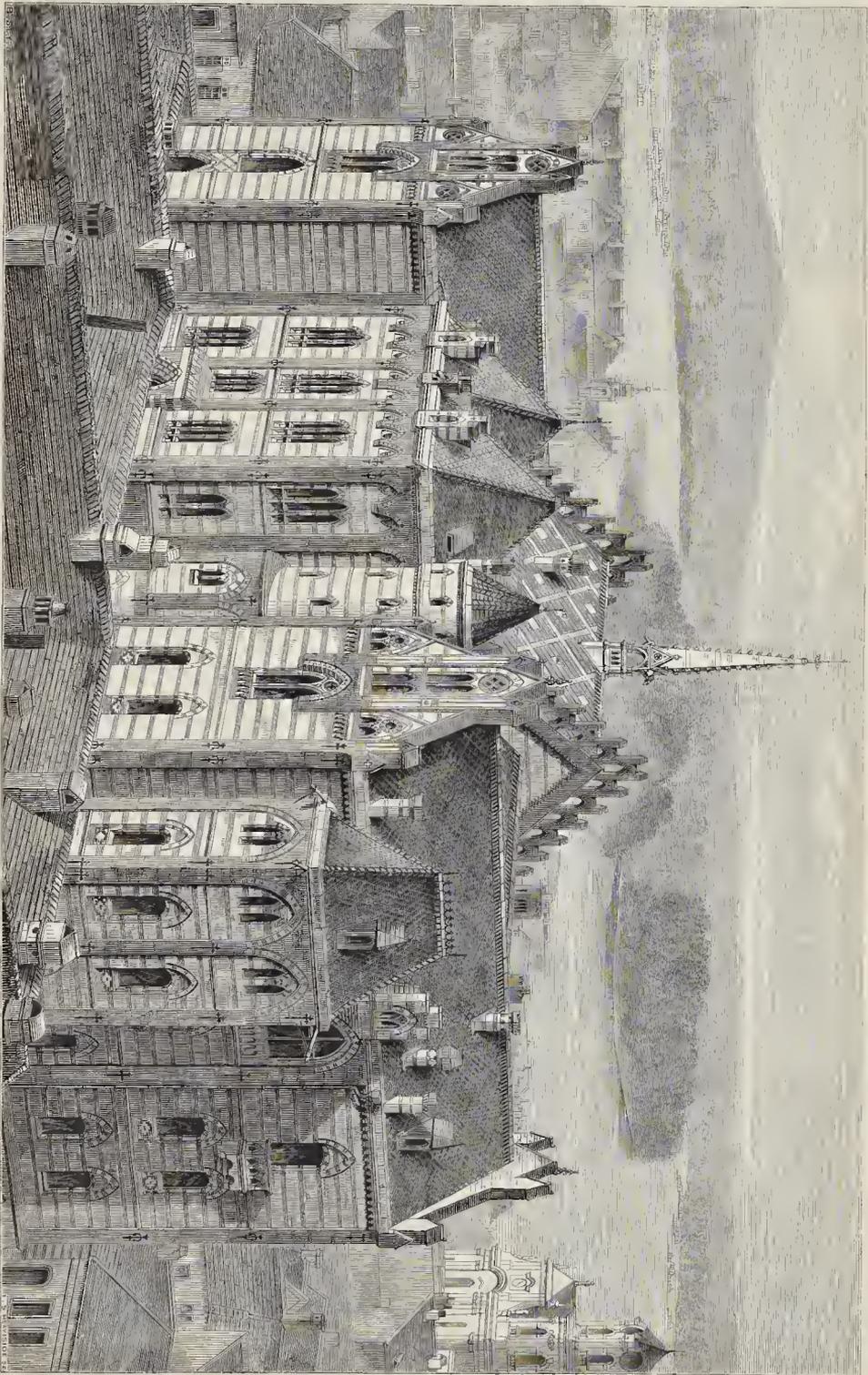
The adjoining parishes of Paddington, Kensington, St. George's, St. Margaret's Westminster, Chelsea, and the Brompton district would be more especially benefited, and the wear of the roadways east and west of the park and gardens would be much diminished.

The Metropolitan Board of Works would, no doubt, deem the communication of sufficient public importance to make arrangements for engaging in the undertaking.

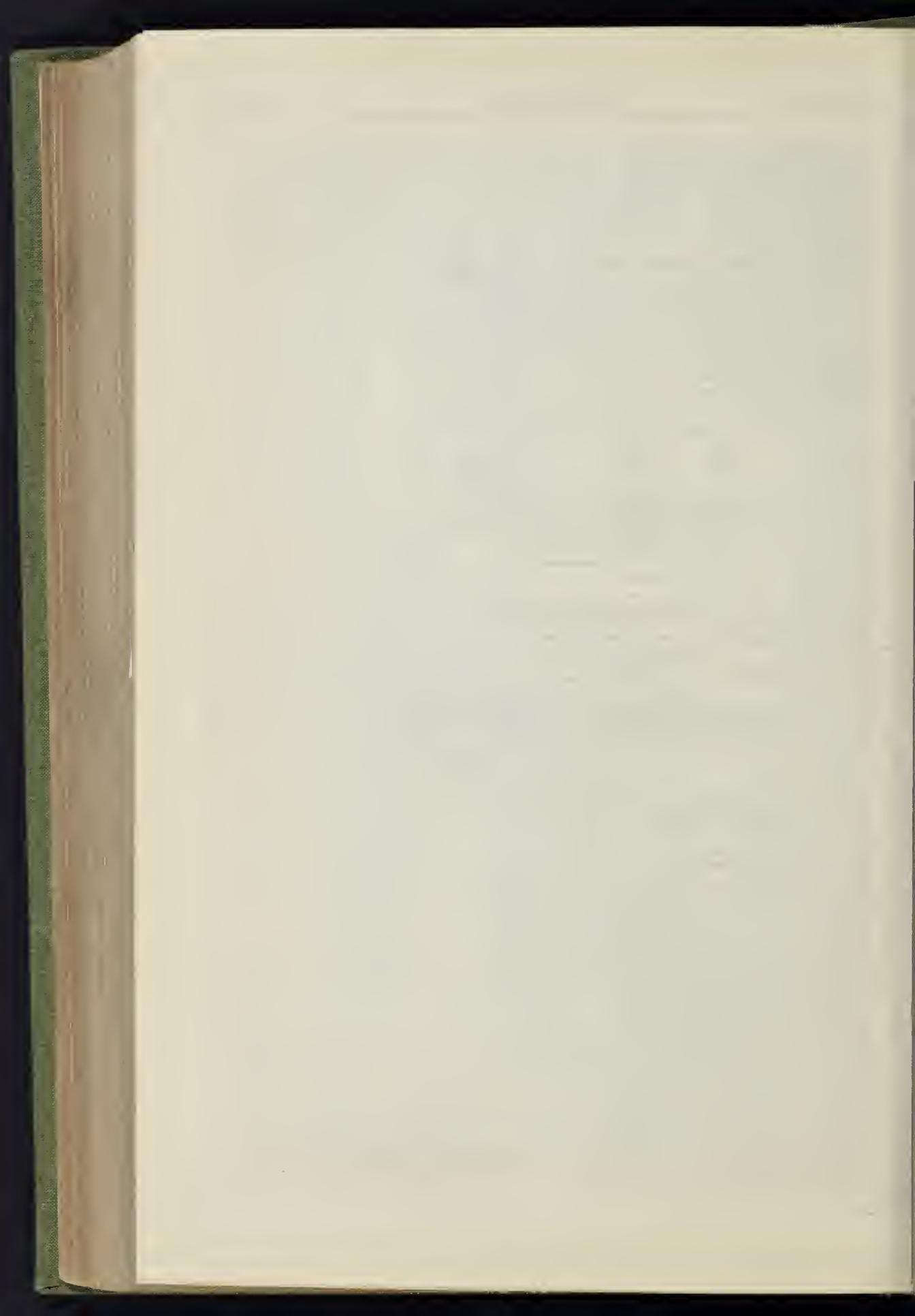
Impressed with the necessity of making the subway adequate for future as well as present requirements, and to avoid the necessity for a similar undertaking, possibly at no great distance of time, it seems advisable to provide a double carriage way for passage in each half of the width. The additional cost is estimated at 7,000*l.*

\*\*\* A means of communication always open between the two districts separated by the Park and Kensington-gardens has long been a crying necessity. Miss Martin's plan meets many of the objections made to the accomplishment of this object, and demands immediate and careful consideration. Miss Martin has, moreover, a claim of no ordinary kind upon the public. Her father, the late eminent painter, John Martin, devoted money, genius, and time for long years in the preparation of designs for the embankment of the Thames and other great metropolitian improvements, some of which have been carried out, and others will be, without the slightest return to Mr. Martin or his representatives. In all these efforts, as we know personally, his daughter was his devoted and loving assistant, acting as his amanuensis and right hand. Without any reference, however, to this, but entirely on the merits of the plan, we again commend Miss Martin's design, for connecting two very important districts, to the careful and considerate attention of the authorities and the public.





THE REAL-SCHOOL IN PESTH, HUNGARY.—PROFESSOR PETCHNIK, ARCHITECT.



### THE REAL-SCHOOL AT OFEN, OPPOSITE PESTH, HUNGARY.

The schools represented in our engraving have been erected in Alt-Ofen, adjoining Buda, a town of Hungary, on the right bank of the Danube. The design was made in 1857, and the schools were finished in 1859. The materials are red and white brick. The architect is Professor Petchnig. It is well situated on a height, and has a pleasing effect from the Danube, where the elevation has more unity. The architects of Pesth claim to be well acquainted with what is being done by English architects, through our pages. Dr. Henzelman, the well-known archaeologist, of Paris, a born Hungarian, has now the direction of the restoration of Villard de Honneour's church at Kaschan. Gerster is the architect under him, and the doctor will see the work is well done.

He will also be judge for the forthcoming competition for the new Academy of Arts in Pesth.

Pesth, as our readers will remember, situated on the left bank of the Danube, is connected with Buda by a fine suspension-bridge. It is about 136 miles from Vienna. Buda, the capital of the kingdom of Hungary, is a city of great antiquity. It was occupied by the Romans until the fourth century.

### CLASSES FOR INSTRUCTION IN ELEMENTARY SCIENCE, AND MECHANICS' INSTITUTIONS.

On the 1st instant Mr. Buckmaster delivered a public address at the Banbury Mechanics' Institution on the advantages and aid given by the new Science Minute to evening classes in connection with Mechanics' Institutions. Mr. Samuelson occupied the chair, supported by a number of gentlemen who have long taken a deep interest in the educational institutions of the borough. A discussion took place, in which Mr. Beale, Mr. Samuelson, Mr. Cadbury, Mr. Morrison, Mr. Roles, and others took part, when the following resolution was unanimously adopted:—"That in the opinion of this meeting the Science Minute of the Department of Science and Art is deserving the support of the evening classes in Mechanics' Institutions."

On the following evening Mr. Buckmaster addressed the workmen employed by Mr. Samuelson. One of the large workshops was extemporized for the occasion, and there was rather a large attendance of working men. With the exception of the persons on the platform, all were genuine working men. Mr. Samuelson was in the chair. He explained the reason of their being called together on so short a notice, and the deep interest he felt in every thing which tended to make men better than what they were. From what had taken place at the meeting last evening he was most anxious that the working men should have an opportunity of discussing this question of instruction in elementary science. It appeared to him that the Government were very willing to help those who were willing to help themselves. Mr. Buckmaster then explained that the object of the Minute was to assist the industrial classes in procuring instruction in those sciences which bore directly on the industrial resources and prosperity of the country, viz., practical, plane, and descriptive geometry; mechanical and machine drawing, building, construction, or practical architecture; mechanical physics, applied mechanics, experimental physics, inorganic chemistry, organic chemistry, geology, mining, zoology, human physiology, and botany.

To understand the conditions upon which aid is given, let us (he said) suppose a class in any of these subjects in a mechanics' institution or evening school, and the teacher holding the lowest, or third-class, certificate, and to which a yearly value of 10*l.* has been attached. In order that the teacher may obtain the benefit of his certificate, he must give forty hours' instruction in some subject, aided by the Department, to a class of pupils not under twelve years of age. This class will be examined; and, if only three pass, the teacher will receive his certificate allowance. In addition to this allowance, he will receive for every pupil who obtains a Queen's prize the sum of one, two, or three pounds, as payment on results. The amount which the teacher may receive under this head is only limited by the number of successful pupils. The standard of examination is low, and only such as justifies the examiner in reporting that the instruction, so far as it has gone, is sound. The examinations are not competitive: every teacher who obtains the necessary number of marks will obtain a certificate of the first, second, or third grade. The pupils of these science classes are encouraged by Queen's prizes, which consist of

suitable books, selected by the pupil or his friends, up to an amount which is determined according to the grade in which he passes. It will be seen at once that the chief feature of the Government scheme is to pay on tested results: how these results are obtained is rather a secondary consideration. The plan of assistance does not interfere in the slightest degree with existing institutions or schools, but rather stimulates them to greater usefulness. I know it has been said that the prospect of rewards and prizes is not the proper motive for seeking knowledge. Perhaps not; but with the mass you must have some definite and clearly-defined object which they can understand, and which they believe to be within the grasp of a reasonable effort. After all, rewards are not so bad: the heaven and hell of all Christians are based on this idea. Apart from the material advantages of knowledge, it is well when men seek knowledge for its own sake. But how difficult it is to master the elements of one single department of science! It is especially difficult for working men; but the same spirit which I have seen in times past, which has enabled you to labour patiently under great trials and privations, will, if properly directed, enable you to pass through the "wearisome bitterness of learning." Let what has been accomplished give us courage; and, if we are disappointed in the result, let us never fear the interests of humanity are safe under the eye of a Provident Providence.

The Rev. H. Back and other gentlemen addressed the meeting; and three workmen, Messrs. Manwaring, Holmes, and Cornes, are making arrangements to go to South Kensington, to be examined for the teachers' certificate in science, so that they may give instruction in the evening classes connected with the Britannia works. This is perhaps the first instance of working men taking up a question of this kind.

### SKINNING METROPOLITAN BUILDINGS.

At the present time this process is going on in various parts. Buildings of comparatively recent date have become so begrimed with soot, and the beating of the weather, or are so decayed, that scaffolding has been erected, and the structures are in the way of being chiselled from top to bottom.

The Scotch Church in Regent's-square, Gray's-inn-road, has been treated in this way. It seems that about the eighth of an inch over the whole surface has been cut away, and now the front looks like that of a new building. Satisfactory as is the present appearance, it is not desirable this process should be often necessary.

On another church in this square, which has been erected about the same time as that just mentioned, an examination has been made of the portico and facings. The state of decay is remarkable. In some parts the futings of the columns have entirely disappeared; and in other parts, the surface is rotten to a considerable depth. This rapid decay is a serious consideration. We ought to know more about stone than we do.

### PRINCE ALFRED'S VISIT TO THE CAPE.

YOUNG and inexperienced in worldly affairs as the two elder princes of the Royal Family of England are, their conduct on making what may be called their first public appearance has been unexceptionable, and must have had an immense influence in promoting a respect for royalty all the world over. As for the parents of the young princes themselves, the dignified yet affable and gentlemanly bearing of these their young sons,—not seldom in tedious, harassing, and trying circumstances,—has constituted a triumph of social and educational training with which they may well be pleased. The demeanour of the Prince of Wales in the United States was of no inconsiderable importance in an international view. Had even a vestige of undignified, of ill-natured, or of disrespectful conduct been displayed, under any circumstances, however trying, the whole tide of feeling might have been turned against us all, in the States, as if the nation were responsible. As it is, the good feeling between us and our Transatlantic consins has been decidedly enhanced by the well-trained and charming demeanour of the young prince. And this was equally the case in our own colonies,—in Canada with the Prince of Wales, and at the Cape of Good Hope with Prince Alfred—of whose visit our more immediate purpose at present is simply to take a professional note.

Among the events in Prince Alfred's visit were the laying of the first stones of the projected breakwater in Table Bay, the laying of the first

stone of a sailors' home (site given by Prince Alfred and the Governor, on Government property), and the opening of a public library and museum. The prince was feted and received (as was his brother in America) with the utmost enthusiasm, both by civilized and by savage. The Kniffrs and other aborigines vied with their less primitive brethren in the expression of loyal feeling towards the young "Ikosi," or Prince—a term, by the way, very curiously suggestive, though in Africa, of the ancient "Incas" of the American continent. Besides a ball, a concert, &c., there was an illumination, and the Prince was honoured by a formal body-guard of horsewomen, of whose (gallant) attentions (shall we call them?) the young midshipman appeared to be very proud.

The Cape Colony is making progress. One of its most recent steps in advance is the establishment of a penny post within municipal limits, with deliveries three times a day; and an extension of the English money-order system to the colony is contemplated.

### THE POLYTECHNIC INSTITUTION, REGENT-STREET.

THIS popular place of instructive amusement having fallen into the hands of a new company since the failure of the principal staircases—the consequences attending which are familiar to every one,—the new management have set themselves to work to re-construct and re-model a considerable part of the premises, with the view of rendering greater accommodation to the public.

The portico which formed the entrance to the building has been removed, the entrance considerably widened, and a shop constructed on each side, in that portion of the front premises which was formerly occupied by the officers and the vestibule of the Institution. To effect this, several walls and partitions have been cut away, the walls above being carried upon iron girders: the central corridor which was formerly constructed with stone paving on wood joists, is now paved with stone, on Fox & Barrett's fireproof floor, and access is obtained to the principal staircase by a broad flight of stone steps. The shops have plate-glass partitions next the corridor, and one of them has the convenience of a basement, with direct communication by means of a spiral iron staircase.

Great pains have been bestowed on the reconstruction of the principal staircases. The whole of the old steps, excepting those of the top flight, leading only to a gallery, have been removed, and new solid steps of Parkspring stone have been employed in the place of feather-edge Portland steps, formerly used. Under all the landings cantilevers have been fixed, and the security of those over the principal entrances to the exhibition has been insured by the upper ledge passing through the wall and being bolted down on the inside face. A wrought-iron string has been fixed under the outer edge of the upper flight, which is composed of old steps, and is supported by iron cantilevers, bolted at one end and well tailed into the wall at the other. The security of the staircase has also been increased by fixing cast-iron stays on the outside of some of the balusters, and also by fixing wrought-iron guards on the handrails at the landings, to give additional height.

A separate entrance from the principal staircase to the large side theatre has been constructed, with solid steps, up and down, and fireproof landings: by this means the access to, and the egress from, this theatre are materially assisted.

The engine which formerly stood in the entrance-hall has been placed in the great hall of the Exhibition. The floor of the gallery at the western end of this hall has been reconstructed, with wrought-iron riveted girders, the original construction having shown signs of failure. The staircases at this end have been re-constructed of Parkspring solid stone steps.

A new stone staircase has also been formed from the gallery of the Exhibition to a room at the back of the screen in the large side theatre; this room being made more available than heretofore, with additional light and new fire-place. At the extreme end of the building a small theatre has been remodelled and converted to the purposes of a picture gallery.

The management of the Institution having incorporated with the original undertaking an educational department, the front portion of the building above the ground-floor has been devoted to that purpose, and class-rooms have been formed for carrying out that object.

The laboratory, which has been a growing feature of the establishment, has been removed from its original *locale* in the basement, and placed in a well-lighted apartment off the principal stair-

case, and has every appliance attached to it which can make it an efficient laboratory.

The whole of the building has been thoroughly restored and painted. The works have been executed, under the direction of Mr. T. H. Wyatt, by Messrs. Lougnire & Burgo. The coloured decorations throughout have been carried out under the direction of Mr. Phené, the managing director.

We shall have another opportunity to speak of the entertainment provided and some of the things exhibited, but we must at once express a hope that a greater power of management exists in the Institution than was exhibited on the night it was opened for a private view. Unless it be so, the result will not be satisfactory. We say this by way of warning (not of complaint), and in the interest of an institution the success of which we desire.

#### WASTE HEAT USED UP, AND SMOKE CONSUMED, ON ECONOMICAL PRINCIPLES.

UNDER this heading we have occasionally called public attention to Mr. Hands's patent, as a promising mode of carrying out a suggestion long before made in the *Builder*, that waste heat, as of kilns, should be turned to account.

We hear, as to the manufacture of bricks, that some of the old brick-yards (where they are incapable of working above four months in a year with safety) are being transformed into factories, where they can make, dry, and burn bricks all the year round by his mode, which involves extracting the moisture from the centre of the newly-made bricks, tiles, or pottery, before the surfaces of the ware are allowed to incrust. Abroad, too, we are told that men are turning their attention to this invention. The *Journal des Mines*, in speaking of them, says Mr. Hands not only burns the smoke, and so effects a saving in fuel, but he obtains another result, which is this,—the articles dried by this principle never break in the kiln, for the heat is evenly diffused over the drying room, which is perfectly shut up, and free from draughts. The combustion of the smoke creates so strong a draught in the heated passages, that openings are made in them, through which the surplus vapours proceeding from the bricks or pottery are carried off.

Some gentlemen from Huddersfield, after going to his office, 5, Holland-street, Blackfriars, inspected his system in operation, at the works at Sudbury, a few days ago, and found some of the kilns were burning, and others were being emptied, and at the same time the process of drying the newly-made bricks was kept up with the waste heat from the kilns. They have since determined to erect rooms on his system. Other evidence has reached us of the gradual adoption of the principle. The system appears to be very simple, and the result economical.

We hear that Mr. George Jennings is extensively working this patent at his Pottery-works, Poole, Dorset, and that with great satisfaction to himself.

#### THE STREET TRAMWAY MOVEMENT.

At Birkenhead a certain class of the inhabitants are conscientiously object to the tramways, because they facilitate motion on Sundays; and they got up a memorial to the local Board of Commissioners on the subject, insisting—not that the tramway omnibuses should be prevented from running on Sundays but—that the tramways should be torn up altogether! Could anything be more preposterous and absurd in the shape of rational inference? Yes, there is one thing still more so; and that is, that another reason given for removing these very tramways is "that the facility given to the public by the street cars tends to induce parties to visit Liverpool in the way of marketings!" Were there a vestige of sanity in this idiotical inference, it is time the Londoners were astir to induce the Legislature to authorize the tearing up of every railway centering in London! Surely this memorial is a mere cunning dodge of that acute Yankee, Mr. Train, to enhance the merits of his tramway system? or is it an extract from *Punch*? The worst of it is that, while Mr. Train is assured, as he states, that, if he were not to run his cars on Sunday, the objections to leading would altogether cease; the foremost and most ostensible objection is pretended to be "the facility given to the public"—to run from Birkenhead to Liverpool,—but not (we presume) from Liverpool to Birkenhead—while the real objection, with its absurd inference, modestly appears, by a pious fraud, at the tail of the memo-

rial, like a lady's postscript, which is of more importance, in the eye of the writer, than the letter itself.

Mr. Train, we should suspect, whatever he has the merits of his system, could not well desire or require any more efficient promoters of it than these memorialists seem to be. And that they are promoters would appear from the result, according to the latest intelligence, which is that they have aroused a feeling the contrary of what they desired; and that the tramways are to be extended in Birkenhead.

The Marylebone vestry have resolved, by a large majority, to instruct their Paving Committee, in reference to the subject of paving the roadway of a certain part of Oxford-street, to take into its consideration the propriety of themselves laying down stone tramways within the same limits.

The tramway movement is also making active progress in Lambeth, Shore-ditch, and other districts of the metropolis.

#### THE LOCAL BUILDING REGULATIONS AT DONCASTER.

THE Doncaster council have adopted a series of bye-laws as to new streets, buildings, sewerage, &c., which, according to the local *Gazette* of 9th inst., which gives an abstract of them, have been confirmed by the Home Secretary. Every new street, not being a carriage-road, must be at least 30 feet wide, and where more than 100 feet long, the local Board of Health have the option of determining whether it shall be made into a carriage-road or not. The walls of every new building must be of such thickness as the Board of Health approve of, the foundations to rest upon solid ground, concrete, or other solid substructure. The external or party-walls to be of stone, brick, or other solid and incombustible substance, unless otherwise allowed where no danger of fire is apprehended. No finish or dowerwork shall be placed within 4½ inches of the inside face of any chimney or flue, and no openings shall be made in any chimneys or flues, nor shall pipes be fixed for conveyed smoke, heated air, steam, or hot water, except in manner approved of by the Board. Every dwelling-house to be erected shall have, either at the rear or side, 150 square feet free from any erection whatever, and the distance across such open space and the opposite property shall be 10 feet at least. If two stories in height above the level of such open space the distance across shall be 15 feet; if three stories, 20 feet; if more than three stories, 25 feet. Every new public building or school, and also every shop or factory, now erected or to be erected, shall be supplied with the means of ventilation to be approved of by the Board. With respect to the drainage of buildings, to water-closets, privies, ashpits, and cesspools in connection with buildings, the closing of buildings unfit for human habitation, and the prohibition of such for habitation, the clauses are somewhat numerous, extending from the 8th to the 26th.

#### CHURCH-BUILDING NEWS.

**South Hinksey.**—The parish church of South Hinksey, after having been closed for three months, for the purpose of restoration, has been re-opened by the Bishop of Oxford. The edifice was first built in the thirteenth century, but the decay of time, and the so-called taste of the last century, had almost obliterated the earlier features of the structure. These features have, however, been brought out again by Mr. C. A. Buckridge, architect, under whose direction the whole of the works have been executed by Messrs. Young & Co., of Oxford. The interior of the nave and tower has been restored, and fitted with open fittings; whilst the roof (which before had a very unsightly appearance) is now uniformly covered with Stonesfield slates.

**Abchurch.**—The new Baptist chapel has been opened. It was designed by Mr. James Cranston, architect, and erected at a cost altogether of about 900l., by Mr. W. Showell, builder, Birmingham. It is in the Gothic style of architecture.

**Brecon.**—A numerous meeting has been held at the Sbir Hall in this town, to consider the propriety of restoring a portion of the Priory Church. The Marquis Camden had offered 1,500l. towards the restoration of the chancel, provided 2,000l. were raised for the tower and transept. The chair was occupied by the Bishop of St. David's, and among those present were the Marquis Camden, the Earl of Brecknock, Sir Thomas Phillips, Archdeacon Davies, and Mr. Scott, the architect, who addressed the meeting, but presented no formal report. He said what they ought to do, in the

first instance, was to look to the main security of the building. The outer walls were substantial and firm, but the foundations wanted examining and under-pinning. The roof of the tower would have to be made new, the pointing attended to, the walls internally cleaned, and the accumulation of whitewash removed, so as to expose the fine old grey stone of the country; the roof of the transept was much decayed, part to be restored to its proper height. The floors would all have to be taken up, and especial care taken in relaying and replacing those monumental memorials of the past of which there were so many. The screen dividing the chancel from the nave would have to be removed, in order to give the fullest effect to the interior. The meeting resolved to meet the Marquis Camden's views by raising the sum required, and of this sum 1,250l. were subscribed at the meeting.

**Holme Pierrepont (Notts).**—The church here has been recently refitted and partially restored, at the expense of the late Earl Mansvers, and under the direction of Messrs. Hine & Evans, architects. The square box pews have been removed and open benches substituted. The family pew of the Earl, with its armorial hearings and other carved and gilded ornaments, has not been spared, and the family bench is now as one of the rest. The works have been executed by Mr. Joseph Hill.

**Lichfield.**—The choir of Lichfield cathedral has been re-opened, the stonework having been completed. The entire edifice will not be re-opened until the whitewash has been removed from the nave. There are six additional figures placed in niches in the choir, representing St. Peter, St. Philip, St. Christopher, St. James, St. Mary, and St. Mary Magdalen, which are the gifts by collection of several ladies and gentlemen. The new organ lately erected in the cathedral was built by Holditch, of London, and presented by Mr. Josiah Spode, of Hawkesyard. It is supplied by three pairs of bellows, with double feeders, requiring three men. The organ consists of three rows of keys, and a large independent pedal organ, the compass of the manuals being from CC to F in alt. The total number of great organ pipes is 1,056, of swell organ pipes 828, and of choir organ pipes 312; the pedal organ contains 211 pipes. The total number is 2,507 pipes and 60 stops. The pedal organ has a compass from C to E; and the large 32 feet CCC pipes are laid down.

**Melbourne.**—The church here has been restored, at a cost of 2,000l., and re-opened. During the restoration there were discovered many traces of its having been on fire, and for a long series of years the nave seems to have been roofless. In restoring it care has been taken not to cut away or injure any of the older work, and the new has been added in a style of architecture corresponding with the old. Mr. Scott has been the architect, and Mr. Hall, of Nottingham, the contractor.

**Birmingham.**—The new church of St. Barnabas, in Ryland-street North, has been consecrated. The edifice is in the Early Decorated Style. The architect was Mr. Bourne, of Dudley, and the builder, Mr. Melson, of Birmingham. Provision is made for 850 persons. The dimensions are, length, 80 feet; width, 44 feet 4 inches; height, 50 feet; and side walls, 20 feet.

**Woolton.**—The small Roman Catholic Church of St. Mary just erected at Much Woolton has been opened with the usual solemnities by the (R. C.) Bishop of Liverpool. The edifice is situated on a slightly elevated plot of ground. It is in the Early Geometrical style, and seats 650 persons. At the east end, the communion-rail, which is 46 feet in length, is brought 6 feet within the chancel arch. The church is composed of nave, chancel, side chapels, and transept. The estimated cost was 2,203l. Mr. R. W. Hughes, of Preston, was the architect; and the contractor, Mr. Hill, of Woolton; sub-contractors, Messrs. Walker & Co., Nicholson, and Bromley. The carving work was executed by Mr. Gellowski, of Liverpool.

**Manchester.**—The foundation stone of a new Wesleyan Chapel has been laid on a plot of ground known as Pooley's Park, fronting City-road, and near to Stretford Old-road. The chapel will be in the Early Pointed style, with stone dressings, and be capable of seating about 800 persons. The frontage to City-road will be 60 feet, and the interior of the chancel 72 feet by 38 feet 6 inches; besides the semicircular apse at the end, in which the communion will be administered. The roof will be constructed so as to gain the effect of the ordinary steep-pitched church roof; columns will be avoided. The gallery will traverse the sides and across the front of the chancel, the body of which will be lighted by three-light windows under the gallery, and above by circular cusped

windows, instead of the usual long windows, stretching nearly from floor to ceiling. The chancel will be lighted by three cusped lancet windows. A tower and spire are to be raised, the extreme height of which from the ground will be 100 feet. The work will be executed from designs by the architects, Messrs. Haley & Sons, of Manchester; and the contract has been entrusted to Mr. Warburton, of Harpurhey. A number of the sittings will be free.

**Sheffield.**—The new church, erected at Solly-street, and dedicated to St. Luke, has been consecrated by the Archbishop of York. The church is a Gothic structure, in the Flowing Decorated style, the arrangement of the plan being a nave with north and south aisles, and an internal chancel. The ground is considerably elevated, and the approach to the principal entrance is by a stone flight of steps. The plan provides for a spire to be erected at the corner adjoining Solly-street and Garden-street. The height of the spire will be 125 feet. The total length of the building is 74 feet, and it is divided into a nave, 40 feet by 24; chancel, 34 feet by 24; south aisle, 58 feet by 18; and north aisle, 56 feet by 11. It accommodates 700, about half of them free. It is intended to erect galleries at some future period over the aisles. The cost of the building in its present state is 2,500*l.*, all raised except 300*l.* It will take about 700*l.* more to complete the edifice. Mr. James Mitchell is the architect.

**Hovingham (Yorkshire).**—The church of Hovingham has been rebuilt and restored by Mr. Marcus Worsley, as a memorial of his deceased wife, and re-opened for divine worship. The church consists of a chancel with north aisle, and a nave with north and south aisles. The chancel and nave have been entirely rebuilt, the original character of the edifice being maintained. The old Norman tower has been repaired, and a new roof of stone placed upon it, surmounted by a plain cross. The roof of the chancel is open-timbered and unvasecoated: that of the nave also shows the rafters, which are stained. The floor of the chancel within the communion-rails is laid with mosaic tiles, and the remainder of the chancel floor is paved with self-coloured tiles. Mr. Hawkins, of London, was the architect; and Mr. Peale, of Malton, the contractor.

#### SUBWAYS FOR GAS AND WATER MAINS, REGENT STREET. LOSS OF GAS.

UNDER this head in the number for the 13th ult., the *Builder* published an account of an effort then being made by the Vestry of St. James's, Westminster, to bring about the formation of an accessible subway through Regent-street, for the deposit of a simplified system of the necessary gas and water mains, of which under present arrangements there is in the street a complex accumulation of no less than nineteen lines. The project had its immediate origin in an intimation the Vestry received from the Chartered Gas Company of their intention of breaking up this street for the purpose of taking up two of their mains, and the replacing them with others of greater calibre, for extending their business operations to distant quarters. The Vestry, desirous of availing themselves of the opportunity here presented of carrying out, in conjunction with this work of the Gas Company, the construction of such a subway, entreated the directors to delay for the moment their proposed operations in Regent-street; holding out, as the project in contemplation did, a probability that the mains might at once be laid in that way. But the company rejecting all overtures on the subject, proceeded to break up the street in defiance of Vestry interdiction. Whereupon the Vestry, actuated, not by a spirit of obstruction, but merely by a desire to gain time for maturing and giving practical effect to their scheme, resolved on taking a stand in vindication of its controlling powers in these cases (Metropolis Local Management Act, clauses 109, 110). However a bill filed in Chancery, and an injunction moved for, to restrain the Gas Company from going on, has been unsuccessful, Vice-Chancellor Kindersley ruling that a Court of Equity ought not to interfere unless the public interest suffered, which he considered it did not in this case, as it was manifestly for the interest of the public that the gas supply should be increased.

The Vestry, dissatisfied with the equity decision, and unwilling to leave any proceeding that promised a chance of success to its object untried, and, backed by the unmistakable clearness on the point, of the restrictive powers conferred by sections 109, 110, and 114 of the abovementioned

Act, recommended that, of procedure by summons for recovery of penalties; but, in consultation with eminent counsel, so much importance seemed to attach to the probable influential operation of the Vice-Chancellor's recent decision on the case, on magisterial judgment, as to render the attempt at proceedings in that way futile. As the result of this same consultation, an effort is now being made to so apply the powers of the 98th section of the same Act as will secure such a mode of carrying out the unexecuted portion of the gas-work in progress as will prepare for the ultimate introduction of a sub-way; but, in the mean time, the work of laying down the mains is being pushed forward with all haste, and in a few days more, so much will have been completed, that even though success attend this action, little advantage will be secured to the object in view. Indeed, it is now conclusive that the opportunity of forming a sub-way in Regent-street is finally gone by. The difficulties to the future execution of the project will be so enormously increased by the effect of the work now going on as to render any attempt hereafter to accomplish it, as a parochial undertaking, perfectly hopeless. And thus an enlightened local effort to preclude the establishment of a great metropolitan requirement has become abortive.

In a subsequent communication, having reference to the same subject (see p. 678, *ante*) allusion is made to Professor Spencer's report to the New River Waterworks Company on the corrosion of iron mains from the effects of gas leakage. This report contains further matter of so much moment to the London public at this juncture as to induce one more communication on the subject, founded mainly, it must be observed, on the deductions put forth in that document.

In the metropolitan supply of gas, it would seem that nearly one quarter of the entire manufacture is unaccounted for: in other words, that the gas companies receive pay for only three quarters of the stock they produce; this loss being occasioned by the various processes of condensation, defective meterage, fraud, and leakage.

After giving full allowance for loss from all other causes, that from leakage alone Professor Spencer sets down at 630,000,000 cubic feet per annum. That is, a quantity of gas equal to one-tenth of all that is burnt in London escapes from the mains, and is absorbed into the street earth, giving that blackened appearance and gas odour always observable in the subsoil of leading streets, wherever turned up. Were this immense loss of gas—which in value is equal to a dividend of 3½ per cent. per annum on the entire subscribed capital of all the thirteen metropolitan companies—a mere matter of "profit and loss," the circumstance would be of little interest to any but gas shareholders themselves. To the London public, however, it involves consequences most serious. (See the *Builder*, Oct. 20.) The joints of the mains are the outlet of this fearful escape. And Professor Spencer's arguments makes it pretty clear that this arises mainly from defects inherent to the mechanism of the joint now in universal use; and that it is the thing that it is now especially sought to bring under notice.

Gas mains and water mains are formed of a series of iron tubes of about 9 feet long, each tube having one widened end forming a socket, the other end being narrowed; and in laying, the narrow end of one tube is passed about 4 inches into the socket end of the next, just as the jointing of a flute or clarinet; and just as the joints of these instruments are not air-tight until wrapped with cord, so it is with the pipes for the conveyance of gas. The small end of the tube is less than the socket into which it goes, and when placed on concentrically, leaves a space of half an inch or so all round. Into this interstice a piece of hempen rope is pressed tightly, similar to the process of calking the seams of a ship; and the orifice of the opening is then plugged with a molten lead. As left by the workmen, this joint is probably generally gas-tight, and if it remained in the state as finished, there would be little to complain of; but it would seem every joint soon becomes more or less leaky, the fitting appliances (hemp and lead) being insufficient to the permanent retention of the gas. Thus, first, as to the hempen calking portion of it: if the hemp could be retained in a moistened and swollen state, as is the case in its similar employment in the jointing of water-mains, it might be successful to its intent here; but the nature of the contents of the gas-mains, on the contrary, is to dry and shrink the hemp, and, however tightly the calking may have originally been performed, the gas after a while freely permeates it. And, secondly, as respects the leaden plugging, the failure of this is attributable

to the contraction and expansion of the metals, by the alternations of cold and warmth. Of course iron pipeage for gas, though situated some two or three feet beneath the surface, is subject to this same universal law. It is a well-known fact that the iron rails of a railway expand in warm weather, on which account a space of about a quarter of an inch is seen to be always left between the ends of each rail. In warm weather the iron tubes of the Britannia-bridge measure several inches in excess of what they do in extreme winter, for which contingency ample provision is made at either end. Although what is just said applies to longitudinal expansion and contraction only, yet expansion and contraction of metals takes place also laterally in the same way, and hence, more particularly, the disturbing effect on the joints of gas-mains. For example, take the joint of a gas-main that has been laid during warm weather, when its diameter and length are at their maximum; as soon as the coldest weather sets in, the size of the main, including the joint, will have reached its minimum. But in its progress from one extreme to the other, it is evident that the joint must undergo disturbance; even though the lead and iron should expand and contract in an equal ratio: this latter, however, is not the case. Lead is but little acted upon in this way: its expansion and contraction as compared with cast-iron is only as 1 to 3. Thus, however tightly lead may be driven into the interstice of the joint originally, the joint subsequently becomes liable to disturbance from the operation of this law. Remembering, too, that there is no chemical adhesion between the iron and the lead, as in soldering, the joint being altogether mechanical.

It will now be obvious that a chief defect of the lead and iron joint for gas-mains arises from this important physical difference in the nature of the two metals. Notwithstanding the disturbance to which this joint is subjected by every change of temperature, it is clear that if the metals composing it contracted and expanded in equal ratio, less injury would arise in practice. But it is thus—the lead and iron are each contracted to a minimum in winter; but as the contractile power of the lead is not equal to that of the iron, it is obvious that the latter, in contracting, will press the softer metal into a less diameter than it would have assumed naturally. On the return of warm weather, when the iron portion of the joint becomes expanded to its original diameter, that originally belonging to the lead is necessarily covered, consequently, space is left between the iron and the lead sufficiently large to allow of the constant escape of the gas complained of.

According to ordinary ideas of space, openings in themselves so minute as are here implied, may appear inappreciable in practice; yet, taken in connection with the extremely subtle nature of gas, more especially best gas, they are far from being so. It is a well-known fact in chemical practice that apertures sufficient to exclude air and water will not exclude gas. A cracked receiver, for example, will hold water tightly enough, though it will allow gas to escape freely.

The fact of this mode of jointing gas and water mains, continuing to this day precisely the same as has been in use in the metropolis ever since the time of the first application of iron to the purpose, nearly fifty years ago, considered in connection with the fact of the joint being notoriously defective, naturally suggests the question,—has the working in iron, which has made such wondrous advance in the past half century, done nothing to the improvement of gas mains? The metropolis answers no; but Liverpool, Manchester, and Leeds, say yes. Gas mains with joints denominated "bored and turned" have for some years been in use in these great towns, with the most successful results, which a few recorded facts from Liverpool, where they have been long employed, sufficiently demonstrate.

The tubes for the mains, with the joint here referred to, are planned with their diameter a little larger at one end than the other. After the casting, the tubes are subjected to a finishing process: this is, a few inches of the interior of the larger ends are bored and ground, which is, in effect, like preparing the neck of a bottle to receive its stopper. The exterior of the smaller end is then lathe-turned, and fitted into the interior of one that has been previously bored. Thus the small end may be looked on as a stopper made without difficulty to fit into the neck of its fellow, every joint being so finished and completed in the foundry as at once to fit air-tight with precision and accuracy, after which each pair is numbered, so that in laying the respective pieces may be joined together without mistake. A coating of unctuous cement is applied to the ends on laying.

Since the adoption of this species of joint in Liverpool the loss on the manufacture of gas from all causes together has been reduced to 11 per cent. as against 22 per cent. in the metropolis, which low rate has been by degrees arrived at apparently just in the ratio that the replacing of the old pipeage by the new has progressed. And it has been observed that, in places where the old pipes have been long disused, the street earth has become comparatively without the odour of gas; as also that the water, the mains of which lie side by side with those of the gas, is now in no way affected.

Nor is the fact of the rapidity with which a line of main on this construction can be laid, underscoring of notice,—a rapidity, it is reported, equal to keeping pace with the most expeditious opening of the ground by one set of men, and the filling in behind by another.

At the present moment the metropolitan gas companies are each, to a greater or less extent, renewing their trunk mains in much larger calibre.

These prodigious pipes are being put together precisely on the same faulty principle as heretofore, a circumstance which suggests the question—apart from the consideration of subways,—are the gas companies doing justice to the public in their thus persevering in laying down these defective conduits? In the full knowledge, at the same time, that more perfect constructions are practicable at a little additional cost; and thus perpetuating the existence of one of the most fearful nuisances the metropolis is subject to.\*

Take the Regent-street case as an example; here two 10-inch mains are being removed, and replaced with others of 20-inch diameter. Now it is a principle in hydraulics that a tube twice the diameter of another will permit the passage of five times the quantity of liquid of the lesser one (the same law, it is presumed, applies in the case of gas); hence it follows as a certainty, that from this ten-fold increased flow of gas through the street, there will be at no distant period, when the new joints shall have had time to become leaky—the inevitable consequence of their “make,”—a corresponding increased escape of gas into the subsoil of the road. By no means an agreeable prospect for Regent-street. It is, however, a verification of the old adage, that “that which is everybody’s business is nobody’s.”

F. C.

#### ENGLISH SCULPTORS AND THE “CEUR DE LION” STATUE.

SIR,—Your remarks of last week on Baron Marchetti’s “Cœur de Lion” statue have been welcomed by all having the slightest regard for that impartiality of criticism demanded of the public journalist, which same measure of justice, much to the regret of honest minds, appears to be at times ignored in columns but too readily opened to any disparagings of our national character as artists.

You observe with truth, “this work has been greatly overpraised,”—an opinion, I am sure, held in common with all liberal men, who, whilst admitting whatever merits it may possess, must protest against the false tone and invidious feeling characterizing much of its criticism, as being not only insulting to Englishmen, but tending to foster most pernicious influences in the public mind. Is it that the writers of these glowing praises, sickeningly eulogistic on the one hand, and invidiously detractive on the other, are themselves striving for favour in high quarters by the back stairs? or is their estimate of our national art-capacity and patriotism so low as to lead them to believe that, in the desire to honour our illustrious dead, or embellish our public places with works worthy of a nation foremost in the ranks of time, we, Englishmen of the nineteenth century, are to cower under the humiliating sense of self-abasement, and, from convictions of incompetency, accept with grateful thanksgiving the production of a foreigner, whose works have, over and over again, been arraigned

\* Not yet, perhaps, should it be concluded that even this “bored and turned joint” is the very best thing that can be had for the purpose. A matter of such vital importance to the public, and pecuniary interest to the gas shareholders themselves, when the great works now in progress were about to be undertaken, ought to have instigated some effort on the part of the directors to the finding out of the most perfect construction for the purpose. A premium of £1000, offered for the most approved plan of gas main, would have put in motion—the elucidation of that point—all the inventive genius of the world in that line. The new Gas Act, just passed, by assigning companies, at once puts an end to the competition or rivalry in any way, and there is now nothing to prevent them, in such proceedings as that now suggested might have been carried out for 1000. per company.

at the bar of professional opinion, and notoriously found wanting? If such are the doctrines of our self-elected censors of art, the sooner they descend from their pedestals the better, not only for their own credit, but especially for the cause, which, while pretending to serve, they in reality damage.

Why, sir, the very journal whose influence the public is taught to hold as paramount, in at once directing and reflecting English taste and feeling, unhesitatingly tells the world we cannot make an equestrian statue, and therefore have cause for congratulation in having one made for us. Is the writer in the *Times* unconscious of the existence of Mr. Foley’s “Lord Hardinge and Charger,” or aware of its merit? Has he, in the face of such a fact, the bravery to taunt us with incompetency for such subjects? This work alone is more than enough to vindicate our national honour, and not only does it overwhelmingly refute any such malignant aspersions, but will hereafter serve to mark the school and age of its production.

In common honesty, then, let us “render to Cæsar the things that are Cæsar’s,” and, since the “Hardinge” statue demonstrates, beyond all doubt, the Englishman’s capacity for such achievements, we cannot stand coldly by and see the laurels of Fame wrenched from the brow of Genius, to wither in the uncongenial grasp of propped up mediocrity.

Among the various works to which the “Cœur de Lion” has been compared, is Kiss’s “Amazon,” and nothing could be more ill selected, there being no point of similarity in common between them. The “Amazon” is a fine example of the most complete concentrative unity in idea, design, and execution, whilst the “Cœur de Lion” is but a patchwork of incompatible isolations: the fore and hind parts of the horse appear to belong to different animals, or at best to an animal in different actions, the back parts being at rest, while the fore parts are in motion. As regards the surface manipulation, the modelling is most unworkmanlike. Altogether the work is unworthy its purpose, and must be viewed rather as a warning than an example, whilst the attempt to foist it on the public as a standard for English imitation can be met only by the earnest protest of all capable of appreciating such effort. X. Y. Z.

#### A CAUTION TO CARPENTERS.

SIR,—A carpenter of the name of Wm. Bachelor worked five days for Mr. Rudkin: he was paid the usual rate of wages, 5s. per day for an ordinary workman. He was told after dinner on Saturday that his services would not be required after that day, and to take his tools away with him, which consisted of fixing tools, which perhaps weighed 20 lbs. or 25 lbs. in the whole; he neglected to do so, and went to the job on Monday morning to fetch them, for which he wanted to be paid for a quarter of a day, after having had sufficient notice to take them with him when discharged. He then took out a summons for an additional 6d. per day, the wages given to superior workmen, as well as for the quarter he demanded for grinding on the Monday morning, which amounted to 3s. 10d. Of course a verdict was found for his employer, the defendant; and the plaintiff was ordered to pay his employer and his foreman, for appearing against so unreasonable a demand, 5s. each. The earliest insertion will much oblige.

E. COWARD,  
(for T. RUDKIN).

#### SCENERY AND THE STAGE.

At *Her Majesty’s Theatre*, “Robin Hood” still fills the house, and in many respects deserves to do so. It is to be regretted, however, that its production was not superintended by some competent person. The “getting up” is beneath criticism. For example, Robin Hood flourished in the reign of Richard of the Lion Heart,—the twelfth century,—the king is spoken of more than once in the opera; and yet we have in the second act an apartment specifically and ostentatiously of the fourteenth century, while the steps and terrace of another scene at the end of the opera belong to the sixteenth or seventeenth century. Mr. Sims Reeves is singing magnificently in it; and Mrs. Lemmens Sherrington has exceeded the expectations of those who expected much from her. This lady is a great acquisition to the lyric stage.

*Royal Italian Opera-house, Covent-garden.*—Mr. Harrison has produced Mr. Edward Loder’s opera, “The Night Dancers,” which contains, as the public know, some very pleasing music, and enables Mr. Henry Haigh to show that he has

improved greatly, and is now a charming singer. Madame Palmieri sings much of the music very well, and would do it better if some kind friend would lead her to show that she really understands what she is doing.

In the new drama, at *Drury-lane*, “A Tale of the [Rebellion of] ‘45,” besides some very spirited representations of the “March to Finchley,” and another of Hogarth’s pictures, Mr. Beverley has produced a novel and very clever moonlight scene, with flying clouds, which obscure and pass the moon, with admirable effect, and which would he even improved if the movement were a little less rapid. The piece is interesting, and Mr. Webster and Mr. J. L. Toole (in a Robson part) act admirably.

#### THE ARCHITECTURAL EXAMINATION QUESTION.

##### LIVERPOOL ARCHITECTURAL SOCIETY.

On the 6th, a meeting of the associates and students of this Association was held, to take into consideration the plan proposed by the professional members with regard to the question of “Architectural Examination,” laid before the Society by the Royal Institute of British Architects, and for the purpose of framing a memorial, to be presented to the Institute, informing its members of the opinions of those who, by the Liverpool Architectural Society, are excluded from voting on professional matters, yet on whose shoulders the whole weight of the proposed examination falls. Mr. Wm. Audsley presided. Several gentlemen having addressed the meeting at some length in condemnation of the proposed examination for a diploma, Mr. G. A. Audsley moved, and Mr. Doyle seconded, a resolution to the effect that the decision come by the Liverpool Society at their next meeting was, as just, and that, if it were not reversed, the associates, students, and professional members would memorialise the Royal Institute of British Architects to negative that decision.

#### DECISIONS UNDER THE METROPOLITAN BUILDING ACT.

##### BUILDINGS ON WHEELS.

At the Clerkenwell Police Court, on Friday, the 6th inst., Mr. Cases, of Ackerly-row, Islington, was summoned by Mr. Godwin, the district-surveyor of South Islington, for not amending certain irregularities committed in erecting a workshop, used as a wheelwright’s, in the rear of No. 6, Ackerly-row. Several shops had been erected at the end of the back gardens of this row, having a frontage in a Lower-road. The building in question was erected on a vacant space between two recently-built shops, having a frontage of about 29 feet 6 inches, and a depth of about 23 feet 6 inches. The defendant had covered over the area with a circular roof of boarding, pitched with gutters on each side, about 15 inches wide, also of wood sawed pitch. The roof was supported by four uprights on each side, resting on plates upon the ground, beneath which were some small wheels, and had one upright in the centre, resting on the ground. The front also was partly enclosed with woodwork.

The solicitor, on the part of the defendant, maintained that it was not a building contemplated by the Act, but merely a booth on wheels, so erected in order that it might be removed at the end of the term, with no intention to evade the Building Act.

It was held by the district surveyor that even with the small wheels attached it could not be removed without being taken to pieces, and the front part being taken down.

The defendant replied that it could be removed in two pieces.

The magistrate (Mr. D’Eyncourt), after a very patient hearing, said he was perfectly satisfied that it was a building not erected in accordance with the Act, and dangerous to the public, and he would make an order that the irregularities be forthwith amended.

##### BUILDERS’ ACTIONS.

*Ormes v. Beadel.*—This appeal, in the Court of Chancery, before the Lord Chancellor, from a decree of Vice-Chancellor Stuart, was argued a few days back, and stood the case until the end of the term, with no intention over for judgment. The case made out by the pleadings was that the plaintiff, a builder, in August, 1858, signed certain conditions, whereby he agreed to erect a house for one of the defendants, Alfred Copland. One of the conditions of the contract stated that if the works did not proceed with such progress as the architects, Messrs. Beadel, Son, & Cancellor, of Chelmsford, might consider necessary, they should be empowered to purchase materials and employ such workmen as they might consider necessary, and deduct the costs from any money due to the contractor. The whole of the money for the erection (with the exception of a sum to be retained for six months) was to be paid to the contractor, during and upon the completion of the work, on the architects’ certificate. The building was commenced; and, after two months, amounting to 25s. had been paid on the architects’ certificate, the plaintiffs’ agents, the architects, refused to give another certificate. Ormes made several applications, both to the architects for a certificate and to Alfred Copland for the money, but without success. The defendants then applied to the court, and the architects’ workmen not having been paid, all their wages were to the architects’ office to make another effort to obtain money, and he was followed there by the workmen, who were clamorous for the money, but he prevented his leaving the office until the wages were paid. Ormes then, at the dictation of the architect, signed a letter, dated the 11th of December, 1858, whereby, in consideration of 50l. then paid to him, he agreed to pay the balance of the sum being due to him; he gave up his contract, and agreed that the works should be paid for at a valuation. The bill was filed by Ormes to set aside this last agreement of December, 1858, on the ground that the plaintiffs’ agents, the architects, had obtained that the plaintiff’s signature to it had been obtained under such circumstances as that he was not bound thereby, or the subsequent proceedings thereunder.

From the defendants’ appeal, the following appeared:—Mr. Malins and Mr. Osborne were for the appellants;

Mr. Bacon, Mr. W. D. Lewis, and Mr. Drace supported the decree.

The Lord Chancellor on the 7th instant gave judgment and said there was no feature in the case which rendered the decision of the court below incapable of being supported. It appeared from the evidence that the plaintiff was fully aware of the nature and effect of the agreement of the 11th of December, 1858, at the time he executed it; that he voluntarily entered into it, and subsequently acted upon it. For these reasons the plaintiff was precluded from now asking to be relieved from its operation, and therefore the decision of the court below must be reversed and the bill dismissed.

**COMPENSATION TO WEEKLY TENANTS.**

An application was made last week at the Marylebone Court-house, before W. Griffiths, Esq., and Valentine Knight, Esq. (the presiding magistrates), by Mr. Pook, of Basinghall-street, on behalf of Mr. Bolin, a baker, residing at the corner of Chapel-street, Edgware-road, for compensation, in consequence of his premises being required by the Metropolitan Underground Railway Company.

Mr. Burchell, who appeared for the company, opposed the application, on the ground that the claimant was merely a weekly tenant, and therefore not entitled, under the Lands Clauses Consolidation Act, to compensation. He examined Mr. Withall, surveyor, and other witnesses, in support of his contention.

Mr. Pook argued that where a tradesman had been conducting a profitable business for some years, and even where there was no written agreement for a yearly tenancy, the uncertain nature of the tenancy made it a yearly one. In support of this view Mr. Pook cited several cases from well-established authorities, and called Mr. Pook, the auctioneer, and other witnesses, whose testimony, he contended, was conclusive upon the point.

The court having been cleared, after an hour's deliberation the magistrate decided that the claimant was entitled to 17*l.* as compensation.

**Books Received.**

*Useful Information for Engineers.* By WILLIAM FAIRBAIRN, LL.D., F.R.S. Second Series. London: Longman & Co. 1860.

The first issue of this important and valuable work was peculiarly successful, and this has led to the publication of the present volume, which contains various original papers not before printed, or not easily accessible to ordinary readers.

In a discourse on the education of working men, Dr. Fairbairn has shown what a wide field is still open for talent, combined with industry and self-reverence, in the attainment of distinction in science and art. In the papers on the Collapse of Tubes, a law of resistance determined by experiment is laid down—the law that “the resistance is inversely as the length of the tube exposed to pressure.” In the paper on the resistance of glass globes and cylinders to collapse from external pressure, and on the tensile and compressive strength of various kinds of glass, the author has sought to confirm the previous experiments on wrought-iron tubes, by experiments on a perfectly homogeneous material. On the influence of temperature on the cohesive strength of wrought-iron forms the subject of another paper, recording Dr. Fairbairn's experiments on that important subject.

For some part of the paper on the compressive strength of brick and stone, intended for the guidance of the architect and engineer, we must endeavour to find room in an early number of the *Builder*: in calculating the strength of piers, walls, and other structures, the results, the author confidently states, may safely be relied on.

There are also lectures on the machinery employed in agriculture, urging on the farmer the value and necessity of machine culture;—on the rise and progress of civil and mechanical engineering;—and on iron ship building, showing the disastrous consequences of construction on erroneous principles, and that numbers of iron vessels are perfectly unseaworthy; no wonder, therefore, they so often and so suddenly break up and sink.

Altogether, this volume forms a very important addition to our standard scientific treatises.

“The Year 1800;” or, *The Sayings and Doings of our Fathers and Mothers Sixty Years ago.* Compiled by F. PERAZZI, author of the “Chart of the Navy of Great Britain, from the earliest Period of History.” London: Thomas Sanderson, Fleet-street.

MR. PERAZZI, by putting together extracts from the newspapers and magazines of one particular year, has formed an interesting delineation of the manners and habits of our immediate ancestors, by which the reader may be able to judge of the advances made in the political and social condition of the people at the present time.

The compilation has been made from upwards of 1,000 different newspapers, printed during 1800, and contains a variety of curious advertisements, together with selections of articles on most of the political and domestic topics of the

period, arranged according to their subjects, and comprising home and foreign politics; Parliamentary proceedings; naval and military intelligence; magisterial and judicial cases; the fine arts; the theatres and amusements; sporting news; the *haut-ton* and prevailing fashions; the *faciæ* of the day; comprehending a variety of miscellaneous matter from which much information may be obtained of the public and domestic life in England at the conclusion of the past century. Gas, locomotives, electric telegraphs, and free trade were then unknown.

Mr. Perigal has classified his extracts so that the book really gives a readable view of the condition of things in 1800.

**Miscellanea.**

CARDIFF.—It having at length been resolved to demolish the present town-hall at Cardiff, the materials have been sold by auction. The first bid was only 20*l.*, and it was with considerable difficulty that the auctioneer obtained 100*l.* for the whole with the exception of the clock, which, however, has not kept time for the last 150 years. The auctioneer sold the old hall contained at least 20,000 superior bricks, and a large quantity of lead.

EDINBURGH.—Designs for a new Free Church in Pilgrig-street, by Messrs. Peddie & Kinmar, architects, have been adopted, and operations will be commenced at Whitsunday next. The style of the new church is Gothic, with a French tone in the composition, and the prominent parts of the design are a tower and spire nearly 150 feet high, and gables pierced by large and characteristic windows. As the site of the edifice is a space acquired on the north side of Pilgrig-street at its junction with Leith-walk, it is intended to give effective frontages to both streets. The principal entrance will be from Leith-walk, and the church will be seated for between 700 and 800 persons.

A CASE AS TO AN ARCHITECT'S CHARGES.—*Prideaux v. Middleton*, in Birmingham County Court.—Plaintiff, who retained Mr. King, was recently landlord of the Acorn Inn, Temple-street; and defendant, for whom Mr. Robinson appeared, is an architect in the same locality. The action was brought to recover a sum of 16*l.* 13*s.* 4*d.*, for rent of premises in Temple-street (adjoining the Acorn Inn), due from Mr. Middleton to Mr. Prideaux. A set-off for 10*l.* was pleaded by the defendant, for professional services rendered by him to the plaintiff, under the following circumstances:—Mr. Prideaux had been tenant of a farm upon the Perry Barr Hall Estate, under Lord Calthorpe. By arrangement made, a farm cottage, or cottage *ornée*, was to be erected at the cost of the owner, and Mr. Pashby, architect, of Birmingham, had made plans of the building. According to the statement of the defendant, he was commissioned to make another set of plans, or complete Mr. Pashby's, for the house upon the farm in question, and did so, together with the usual working drawings and specifications. For this he had charged the sum of 25*l.*, and of this Mr. Edwards had paid him 15*l.*, leaving the 10*l.* which formed the set-off pleaded. From circumstances which did not transpire, Mr. Prideaux left the farm, the buildings had not been erected, and Mr. Prideaux, leaving also Birmingham and becoming a timber dealer at Topsham, Devon, sought to settle matters with his tenant, the present defendant. Mr. Edward Holmes, architect, was called to speak to the charge made for the plans as to the Perry Barr farm buildings as executed by the plaintiff, and in his opinion the same were fair and reasonable. Had the architect been employed to superintend the erection of the buildings, the charge for the plans would have been included in the usual per centage paid upon the superintendence of the building. This, however, had not followed, and thus Mr. Middleton was entitled to the 2½ per centage charged for the plans upon the estimated cost of the buildings. After hearing the respective advocates, his Honour, in giving judgment, appeared to place much stress upon the fact admitted by plaintiff, that some conversation as to his paying for the plans, or at least a portion of their cost, had evidently taken place between him and the defendant. After due consideration, he had come to the conclusion that the plaintiff was liable for the 10*l.* claimed on account of the plans and the verdict would therefore be for the defendant, with costs. Of course the above decision did not affect the 6*l.* 13*s.* 4*d.*, paid by defendant into court, which will be handed over to Mr. Prideaux.

PROPOSED MECHANICS' INSTITUTION IN LEEDS: COMPETITION.—In response to the advertisement issued by the committee, twenty sets of plans have been sent in: the estimated cost of carrying out each design, with two exceptions, is 13,000*l.* In two cases that sum is exceeded by about 1,000*l.*

THE WORKS OF MR. FAED.—Messrs. Agnew & Son have gathered together ten works of Mr. Thos. Faed, in their gallery, 5, Waterloo-place, Pall-mall. The collection includes “The Mitherless Bairn” (one of his best pictures still),—

“Oh! speak him nas harshly; he trembles the while; He bends to your bidding, he blesses your smile. In the dark hour o' anguish the heartless shall learn, That God deals the blow for THE MITHERLESS BAIRN.”

also “Conquered but not Subdued,” and “His Only Pair,” exhibited at the Royal Academy in 1860. Grace and sweetness characterize all these pictures; but we doubt if they gain by massing. A glass of Hermitage is pleasant at dinner; but if there were nothing else on the table it would be less agreeable after a time. A charming engraving of “The Mitherless Bairn” has been made by Mr. Cousin.

COPYRIGHT OF DESIGNS, AND THE METAL TRADES.—The Birmingham Chamber of Commerce has presented a memorial to the Commissioners of the Treasury, praying that the scale of fees now charged for registration of designs, under the 5th & 6th Vic., cap. 100, the 6th & 7th Vic., cap. 65, and the subsequent statutes amending these lists, may be revised, and that the fees for the registration of designs of articles composed wholly or chiefly of metal may be reduced from 3*l.* to 1*l.*, and that the fees for registration, under the 6th & 7th Vic., cap. 65, may be reduced from 5*l.* to 1*l.* The official reply is, that the Lords Commissioners of Her Majesty's Treasury have signified to the Board of Trade their approval of the reduction of the fee on metal designs from 3*l.* to 1*l.*, but that there does not appear to their Lordships to be sufficient reason to justify the reduction of the fees on the registration of useful designs.

TOWN REFUSE.—A pamphlet has been published by Whitaker & Co., of London, and Leng, of Hull, on “A proposed new Mode of Collecting the Animal, Vegetable, and other Refuse of Towns, and the converting it into Composts for Agricultural Purposes, under the direction of Local Boards of Health.” There is also a supplementary article containing suggestions for converting farmyard manure into compost for drilling in with seeds. The refuse, such as street and market sweepings and horse-droppings, garbage, night-soil, and dustbin refuse, it is proposed to collect, along with purchased mixtures of cow and horse dung, into large towers, placed two or three miles out of a town, upon a line of railway, and ascended to by a summit level leading to the tops of the towers, into which the matter is to be dropped, with the aid of a substitute for hoppers, so as to produce various mixtures, to be turned over afterwards and worked into composts under cover, and sold in a dry state to farmers. The author of the project confesses himself to be but an amateur, who offers the suggestions for the consideration of practical men.

POUNCEY'S PHOTOGRAPHIC CARBON PRINTING PROCESS.—The claims of Mr. Pouncey, of Dorchester, to some more adequate remuneration than he has yet received for his useful process of carbon printing in photography, so long a desideratum, are urged in the *Dorset Chronicle*. In the course of the article the writer says,—“We ask a candid comparison of Pouncey's two leading directions already quoted, with the two following items in the ‘practical details’ of Sir Henry James, and confidently challenge any one to say whether they are not identical.—‘A solution of gum arabic is prepared by dissolving three parts by weight of gum arabic in four parts of distilled water. Boiling water is then saturated with bichromate of potash, and one part of the solution of gum arabic is mixed with two parts of the solution of bichromate of potash, both being kept at a temperature of about 200 degrees.’ Having seen thousands of impressions produced from glass negatives by Mr. Pouncey himself, we can assure our readers that the Southampton process is throughout nothing else (for it signifies not that Pouncey transfers to stone and James to zinc) than that long previously pursued in Dorchester, and which it often struck us our simple-minded townsman was little other than connosed to reveal and surrender for the most inadequate consideration—(Mr. Sutton says he received it all about 80*l.*). If, however, an improvement of such immense importance, in peace and in war, has been avowedly taken from Mr. Pouncey and introduced into a great Government department like the Ordnance Survey, the matter cannot rest there.”

**FOUNDATION OF NEW HOTEL, SHEFFIELD.**—The ground on which the hotel is about to be built being all artificial to a considerable depth, large masses of rough rock, brought from the neighbouring quarries, are being built up, and cemented with hydraulic mortar, forming a platform of solid (though artificial) rock, weighing upwards of 2,000 tons. This layer is to be 4 feet thick, spread over the entire area to be occupied by the hotel, and upon this the superstructure will rest.

**THE PEACOCK MEMORIAL.**—It appears that the subscription raised to promote a memorial of the late Dr. Peacock, the Dean of Ely, amounts to the sum of 3,565*l.*, inclusive of 1,000*l.* given by the dean and chapter. It is proposed to apply the subscription to the further adornment of the "ancient and beautiful house" with which the late Dr. Peacock's fondest associations were bound up, and the restoration of the lantern is to be accordingly undertaken.

**EXPLOSION AT ST. MARY'S CHURCH, OXFORD.** St. Mary's Church, about two months since, began to be under repair, for the purpose of laying down the hot-water apparatus, to keep the church in a proper state of warmth. The boiler exploded one Saturday noon, and caused sad havoc. The vice-chancellor's and proctor's seats were blown to some distance, almost into splinters, while some of the seats of the heads of houses were nearly demolished, and those of the ladies were much injured. So great was the explosion that no fewer than thirteen windows are greatly damaged, some being entirely destroyed, and others partially so. The large window over the western entrance has had even the lead surrounding the stonework forced from it.

**BIRMINGHAM ARCHITECTURAL SOCIETY.**—An ordinary meeting of this society was held on the first Thursday in the present month. There was a good attendance, and the following gentlemen were unanimously elected as honorary members:—Sir Francis E. Scott, Bart., and Messrs. S. Timmins, J. T. Bance, and A. Davidson. A paper was read by Mr. W. Harris, "On the Application of Colour to Architecture," in which he advocated a far more extensive use of colour in both exterior and interior decoration than it was at present the practice to employ. He differed from those gentlemen who upheld the use of the same materials in the interior of a building which served excellently for producing coloured decoration on the exterior. He thought that stone, and bricks, and tiles, had a harsh effect about them, which disqualified them for producing interior decoration. He thought that in interiors the actual materials should be concealed, and the decoration adopted not be suffered to depend in any way upon the materials employed in the structure of the building. A discussion followed.

**ARTESIAN WELL AT SELBY.**—At a recent meeting of the Yorkshire Philosophical Society, reported in the *York Herald*, Mr. Noble read a communication from Mr. John Turner, of York, containing an account of the sinking of an artesian well at Selby, from which it appears that the town of Selby being very inadequately supplied with water, it was determined to sink an artesian well, and the borings for this purpose began on December 8, 1853, and were continued till April 1, 1854, when an abundant supply of soft-water was obtained. The engineer of the works, Mr. Linton, has furnished a precise account of the strata through which the boring passed, with the depth at which they severally occurred. At the depth of 75 feet the new red sandstone rock was reached. All the remaining borings were through this stratum. An abundant supply of water having been obtained at the depth of 330 feet, the boring was not carried farther. Mr. Linton says that the new red sandstone has been bored in the neighbourhood of Selby to the depth of 370 feet, but that the strata which are supposed to lie beneath it have never been reached. The flow of water is not uniform, and the well stands the highest at noon and at midnight. The figures indicate the distance from the top of the well to the surface of the water, consequently the water is highest when the figures are the smallest:—

	Fect.	In.
6 a.m.	9	53
12 noon (highest)	8	63
6 p.m.	9	6
9 p.m.	9	0
12 midnight	8	9

Mr. Linton says that at first the variation in the amount of the flow was much greater. It would be desirable that further observations should be made, in order to ascertain that the difference is really constant.

**GAS: THE OUTGOING TENANT'S ARRAREAR QUESTION.**—The gas companies, it appears, are likely to be checkmated on this question under the new Act, 23rd & 24th Vic., cap. 125, entitled "An Act for the better regulating the Supply of Gas to the Metropolis," a summons having been granted at the Thames Police-court to a tradesman in High-street, Poplar, against the Commercial Gas Company, Stepney, for refusing to lay on the gas in his house. Mr. Self admitted that under the Act, the Company, if convicted, would be liable to a penalty of 40*s.* a day. The attempt to compel one man to pay the gas debts of another or he shall be himself supplied with gas is a most iniquitous one, which no gas company would dare to make were it not that they take unscrupulous advantage of their absolute or relative monopoly. As well might a butcher insist that a new tenant in a house shall pay the debt due to him by a previous tenant or he will supply the new tenant with butcher's meat. Had the butcher a monopoly of the business such might be the perverse and immoral influence of this position on his conduct that he too might be induced to insist on so unjust an act; but the wholesome dread of rivals in a trade has wonderful influence in keeping tradesmen and manufacturers out of the way of iniquity and extortion.

**TENDERS**

For finishing six houses in Cambridge road, Islington. Mr. H. Dawson, architect:—  
Turner & Sons.....£2,975 0 0  
Grime & Co.....2,960 0 0  
Hollins.....2,852 0 0  
Henshaw.....2,738 0 0

For a villa on the Copenhagen estate for Mr. J. E. Bradford. Mr. Jasper Cowell, architect:—  
Hale.....£2,179 0 0  
Macey.....1,748 0 0  
Keys & Head.....1,687 0 0  
Newman & Mann.....1,655 0 0  
Batterbury.....1,549 0 0  
Wheen.....1,431 0 0

For alterations, &c., at 39, Upper Bedford-place, Russell-square, for Mr. J. Solomonus. Mr. N. S. Joseph, architect:—  
J. & W. Crossweller.....£398 0 0  
King.....379 10 0  
Newman & Mann.....339 0 0  
Rolfe.....295 14 0  
Stone.....238 0 0

For repairs to a house and premises, No. 25, Bedford-row, for Mr. Salmon. Mr. Joseph Levensder, architect:—  
Stephens & Latta.....£268 0 0  
Aldridge.....161 8 0  
Brake.....139 0 0  
Clements.....119 0 0  
Sutton.....119 0 0  
Green & Son.....111 0 0  
Bryan Helm.....55 0 0

For new Congregational Chapel and School, Stratford, near Manchester. Messrs. Poulton & Woodman, architects:—  
Hollins.....£2,142 0 0  
Buxton.....2,109 0 0  
Young & Co.....1,950 0 0  
Clark & Jones (accepted).....1,859 0 0  
The old materials of present building in each case calculated to belong to the contractor.

For works to be done in alterations at 111, London premises, Nos. 18 & 19, Farnham-street, for Messrs. T. Simpson & Co. Messrs. Tiltott & Chamberlain, architects:—  
Fish.....£289 0 0  
Canon.....355 0 0  
Wills.....547 0 0  
Weston.....510 0 0  
Anley (accepted).....456 0 0

For works at Ousewetry Cemetery. Mr. Hans P. Price, architect, Weston-super-Mare. Quantities not supplied:—

	Contract		Contract		£. s. d.
	No. 1.	No. 2.	No. 2.	Suppl. Stone	
	Laying out.	Buildings.	facial in	Chapels.	
Jones.....	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
Climie.....	481 17 3	1,701 18 9	45 0 0	45 0 0	
Evans.....	508 0 0	1,341 0 0	0 0	0 0	
W. & J. Harris.....	526 0 0	1,275 0 0	0 0	0 0	
Hughes.....	535 0 0	1,159 0 0	0 0	0 0	

\* Accepted. Mr. Climie declining No. 1. contract separately.

For rebalancing Nos. 27 and 28, Bishopsgate-street, City. Messrs. Young & Son, architects:—

	General Estimate.	Work-Bench.	If New Iron	Shutters.	Superior Work.	Estimated Work.
Myers.....	3,690	24	0	19	0	310
Piper & Sons.....	3,686	24	0	19	0	310
Wilson.....	3,468	25	0	30	0	330
Lawrence & Sons.....	3,452	22	0	60	0	338
Holmes.....	3,391	17	0	59	0	311
Browne & Robinson.....	3,350	23	0	27	0	364
Conder.....	3,239	30	0	29	0	335
Abbey & Sons.....	3,159	26	0	15	0	320
Henshaw.....	3,043	29	0	45	0	296
Brass.....	2,985	26	0	45	0	290

For Music Hall at the rear of the Bear and Castle tavern, Oxford-street, for Mr. Morton. Messrs. Punch Hill & Paraire, architects:—  
Lucas, Bros.....£14,790 0 0  
Mansfield.....14,367 0 0  
Hyslop.....13,890 0 0  
Patrick.....13,620 0 0  
Hollands & Hannen.....13,505 0 0

For the erection of New School buildings and Master's Residence at Enville, near Stourbridge, for the Right Hon. the Earl of Stamford and Warrington. Mr. S. Dutton Walker, architect, Nottingham. Quantities supplied:—  
Fogot.....2,513 17 4  
Smithman.....2,500 0 0  
Bale.....2,021 0 0  
Nelson.....1,886 0 0  
Owen.....1,785 0 0  
Elliot & Lovatt.....1,669 0 0  
Harland.....1,611 10 6  
Thompson (accepted).....1,603 17 4

For four houses, stable, and laundry yard in Marlborough-street, Westminster, for Mr. Abel Birch. Mr. George C. Handford, architect. Quantities supplied by Mr. Gritten:—  
Stimpson.....£2,375 0 0  
Synons.....2,265 0 0  
Brass.....2,191 0 0  
Smith.....1,089 0 0  
Harrison & Sons.....1,070 0 0  
George Todd, jun.....1,834 0 0  
J. & C. W. Todd (accepted).....1,693 0 0

For new saloons at the Theatre Royal Pavilion. Mr. W. Nunn, architect, Martha's-lane, City:—  
Blanchard (accepted).....£348 0 0

For alterations in Godliman-street, Doctors' Commons. Mr. W. Nunn, architect:—  
Day.....£297 0 0  
Wills.....589 0 0  
Owen.....551 10 0  
Notley (accepted).....343 0 0

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# The Builder.

VOL. XVIII.—No. 929.

Edinburgh.—Holyrood Palace.



**AVID**, King of Scotland, who appears to have been as devout a prince as his great namesake, the Israelitish poet-king, was out hunting one day, when he was suddenly attacked by the infuriated stag he was pursuing. He would probably have perished but for the ready aid that monarchs appear always able to command. A knight rushed to the rescue, and King David lived to found an abbey upon the site of his perilous adventure. This pretty tradition, redolent as with incense from the censurers of gratitude and piety, is borne out by the armorial device of the abbey and adjoining burgh of Canongate,—a cross between the antlers of a stag,—although there is not wanting a different version of the story, which ascribes the escape to miraculous agency. The monastery thus founded was called

Holy Rood Abbey, on account of the incident having occurred on the festival day of the Holy Cross, and was held especially sanctified by virtue of the possession of a small black fragment of the true cross,—a legacy bequeathed by Margaret, the grand-niece of Edward the Confessor, to her son, King David. We read in the old Scottish records, that the good prince sent to Flanders and France for “the great crafty masons” under whose hands the structure arose; and that the marshes around were subsequently drained and the cemetery walled by the “pleasant, devout, affable” Abbot Elias. Here for upwards of four centuries, through various vicissitudes, the brotherhood dispensed charities and hospitalities,—now impoverished by the ravages of Edward II., afterwards burnt out by Richard II.,—now sheltering a Scottish queen, who gave birth to twins within the precincts of the monastery,—then assisting in the ceremonies attending royal nuptials, coronations, and burials. The marriage of the French princess, Mary of Guelders, and that of Margaret, the Danish princess, were both celebrated within the abbey church; as were also the celebrated nuptials of the English princess, Margaret, with James, the hero of Flodden. Every trace of this religious house has disappeared, except the nave of the abbey church, which, under the name of Chapel Royal to the palace subsequently erected by later kings, has been preserved. Most of our readers are familiar with its picturesque ruins, its tower arch, filled in with decorated tracery to form an east window; its *flou-de-lis*, the broken columns, the pinnacles of the buttresses peeping over the crumbling wall of the north aisle, and casting slender shadows on the incised slabs with which the nave is paved: for who is there that has visited Edinburgh that has not examined, with lingering curiosity, the storied stones of Holyrood Chapel?

The adjoining palace was commenced by that flower of Scottish chivalry and romance, James IV., for the reception of his English bride, the high and mighty Princess Margaret, described by Marchmont Herald, when distributing largesse on her wedding-day, to be “Queen of Scotland by the grace of God, and first daughter engendered of the very high and mighty prince, Henry VII., by that self-same grace King of England.” Their son, James V., continued the work that the battle of Flodden arrested, and under his auspices the palace became “*amplissimum et superbissimum*.” But before Holyrood became the residence of

the beautiful queen whose association with it has paled the memory of the pious founder of the abbey, and that of all the princes and princesses whose names would have otherwise invested it with romantic charms, it was again veiled with scaffolding, having been much injured by the Earl of Hertford’s army in 1543. The towers at the north-west angle of the present building are part of this ancient palace, and contain the suite of rooms once occupied by Mary. Her bed, her baby’s cradle, her workbox, the almost tintless tapestry, seem to be all toned down to the sad hue of her fate. We can realize the supper party which was disturbed by the sudden lifting of the arras, and the entrance of Darnley and his followers on their errand of murder—the lovely queen’s revengeful threats, albeit spoken in broad Scotch, as her “chalmier chield,” Rizzio, was dragged from her presence with her husband’s dagger sticking in his back,—her tearful and stormy audiences with Knox, the Reformer,—the anguish, horror, and despair with which her breast must have been torn by the vicissitudes of her fortune. But where are the bright chambers where she and her four Maries, the Ladies Fleming, Seaton, Livingstone, and Beaton, danced before her guests disguised in male attire? Where was the window through which the queen listened to the serenade of violins and “little rehecks,” with which her citizens welcomed her from France? Surely nothing joyous ever existed here!

We are so accustomed to associate King Charles with Whitehall, more particularly, perhaps, with a certain window facing the Treasury, that it is not without effort that we bring ourselves to look upon some portions of Holyrood as being built under his direction. He was crowned in the nave of the abbey church, then called the Chapel Royal, for which ceremony considerable renovations were effected, in testimony of which a tablet was inserted in the external wall over the main doorway, thus inscribed:—

HE SHALL BUILD ANE HOUSE  
FOR MY NAME, AND I WILL  
STABLISH THE THRONE  
OF HIS KINGDOM  
FOR EVER.

BASICAM HANC SEMI  
RUTAM CAROLUS REX  
OPTIMUS INSTAURAVIT  
ANNO DOMI  
CIB, 1633XIII.

Charles II. rebuilt the palace of his ancestors from the designs of Sir W. Hamilton, retaining the strong tower in which his great-grandmother, Mary Queen of Scots, resided, in the north-west angle of the new building, and continuing the use of the remains of the abbey church as the Chapel Royal. The new design was, of course, in the Palladian style; but the original architecture was preserved in the towers in question, as well as in a lodge known as Queen Mary’s Bath.

After a long season of neglect, Holyrood was once more lighted up for the festivities and rejoicings in 1745, when the Pretender held his court there, only to be made more ghostly than ever in the gloom and desolation that followed. In 1850 the echoes were awakened with sounds of hammers and chisels,—the preparation notes for the reception of our Most Gracious Queen, who since that period has annually brightened Holyrood with her presence and that of her admirable family.

The street scenery of the old part of Edinburgh is as picturesque as the purple hills, melting link-ways into a sea prospect, with which it is environed. The immense rock rising out of the heart of the town, crowned by the Castle with its old-world history; the innumerable wynds, close alleys containing the quaint mansions of the ancient nobility, sometimes ornamented with Latin, sometimes English inscriptions; here a cannon-ball left half embedded in the wall; there a ducal coronet, with supporters, rudely carved over a doorway; here a gable semi-hipped side by side with overhanging eaves and projecting stones; the streets of tall houses, some of them fourteen stories high, with their steep step-

gables,—all over-shadowed by the mighty crag, fantastically called Arthur’s Seat, form as strong a contrast to the wide, colourless streets of the new town, as the quilled ruff round Queen Mary’s throat does to the smooth neck-gear of our modern belles. Of late years a very laudable attempt has been made in the old city to maintain in the architecture the characteristics for which it is peculiar.

The National Security Savings Bank and Offices of the Free Church of Scotland, now erecting on the site of the recent conflagration on the head of the Mound, grouping boldly with the towering houses up the ascent into the Lawn Market and the new Cockburn-street, are conspicuous examples of this spirit. The last we illustrated a few weeks ago. Of the former, in North Bank-street, at the head of the earthen mound, we now give an engraving.\*

These buildings are near to the Free Church College, and occupy half of the site of that immense and lofty tenement which was destroyed by fire a few years ago. This ancient pile was a striking feature in the dark grey mass of the old town leading up to the Castle. The addition of it still stands, attracting the admiration and wonder of strangers visiting the city, who count with curiosity its nine or ten “flats,” approached by one common stair, the height being to the attics about one hundred feet. On the right hand in the illustration is one of the old steep doses or “wynds,” leading up to the Lawn Market.

Although we cannot but regret the fate of the ancient building, the new design in its place forms an attractive and pleasing subject, especially as seen from Princes-street, where the varied towers, turrets, and pinnacles, tell effectively against the sky. Owing to the area of the new erection being strictly limited and other conditions, the front was restricted as much as possible to a flat unbroken elevation, allowing no hold projections to give light and shade, and, therefore, surface decoration was employed in the dressings of the doors and windows until the roof was approached.

The style adopted is the “Scottish Baronial” of the sixteenth century. The Savings Bank offices are entered by the centre porch, and occupy the whole of the ground floor and the greater portion of the first-floor. The remainder of the building, entering by the doorway on the left, is appropriated as a Presbytery hall, library, and offices, in connection with the Home and Foreign Missions, and other schemes of the Free Church of Scotland. Over the windows of these are the armorial bearings of some of the most celebrated divines of Scotland,—as Wishart, Melville, Hamilton, Chalmers, Thomson, and Welsh. Above these rooms is a dwelling-house for the librarian and keeper; and in the upper floor and attics are the apartments of students attending the college.

The architect is Mr. David Cousin, who is the architect and superintendent of works for the city of Edinburgh.

The Commissioners of Her Majesty’s Woods and Forests have been making various alterations in and around Holyrood Palace; and in these, it appears to us, they have altogether ignored any national aim. In the new lodges to the palace they have produced *fac similes* of those recently erected in Regent’s-park and Hyde-park. With the picturesque lodge in view by which the murderers of Rizzio made their escape, with its conical roof, and cunning and characteristic turrets before them as a guide to the style historically required by the site, the Commissioners have preferred their stereotyped London park lodge. The French Empress, journeying through Scotland, and noting with appreciating regard the peculiarities of the land of her Scottish forefathers, will scarcely be gratified by these.

Among the improvements the Commissioners have effected are the removal of the iron railings from the east side of the palace, and the extension of the grounds by their re-erection on the southern side, by which arrangement the open space before the principal front can be closed in with gates when required. The new carriage-drive through the park is also

worthy of praise; but the new fountain ornamenting the approach to Holyrood from Canongate is not so satisfactory. When it was first proposed to reproduce the Linlithgow fountain here we protested against it in the interest of the art of the nineteenth century, and now that the proposition is carried out there are very few who will not wish that our objections had been listened to. If the design of the old fountain had been good, we should still have protested; but this is not the case. It is a confused and miserable mixture, ugly in outline and puerile in detail,—a pyramidal array of small figures in niches and otherwise, surmounted by a huge stone crown;—the water supply, mere spouts, falling from lions' mouths into a disproportionately small basin. In the second range we have, amongst other representations, Rizzio playing on a flute; John Cunningham, the old town-drummer of Linlithgow; and Queen Mary with a sceptre; and in the third range heads of Edward I., the Dunfermline Abbey fool, Oliver Cromwell, Shakspeare, and so on. The various constituents are of all scales; the lions' heads are as big as men. In short, it is an abomination, and deserves no more words. The supply of water to it has been made the means of further injury. The semicircular belt of rocks, called Salisbury Crags, dwelt upon with delight by the great author of "Waverley," as the spot of all spots whence to behold the rising or setting of the sun, has been selected by the Commissioners as the site of a reservoir, from which a pipe conducts water to the fountain. The beauty of rock scenery consists as much in the time-gotten tints it presents as it does in a certain wild, rugged aspect; and these cannot but be impaired by the breaking up the surface for the building of this reservoir. It is described as 45 feet square and 12 feet deep; it is divided into five compartments, laid with Caithness pavement lined with masonry, and has cost from 400*l.* to 500*l.*

It is understood that stables and coach-houses are to be erected for the Queen's use opposite the palace of Holyrood. The ordinary entrance to the stables will be from the Horse Wynd; but in the centre, and opposite the Palace gate, there will be an arched gateway for her Majesty's carriage to enter the great square. The facade of the new buildings, as seen from Holyrood, will be, it is said, somewhat in the Scotch baronial style, and in keeping with the architecture of the palace itself. Plans for the structure have been prepared by Mr. Matheson.

In another part of the city, the gardens of South Lauriston House, we may mention, by the way, a large building, Domestic Gothic in style, has been erected for the residence of the Sisters of Mercy. It is of considerable size, and has a tower next the new street, Lauriston Gardens. Mr. David Cousin is the architect, and Mr. William Matheson the builder.

In this monumental city,—this remarkable and striking union of the old and the new,—closes open in all directions into fine wide streets; closes where the houses nearly touch, and scores of families lie huddled together; closes where fever dwells and criminals are reared. We may have another occasion to speak on the subject.

As the great majority of tourists from the south, visiting the royal house of the Scottish dynasty, arrive in Edinburgh by the railway, it may not be useless or out of place to mention here that they will not be very favourably impressed with the national neatness, from the signs of neglect, the rust, the dust, that will meet their view when they alight in the railway station. Nor will they find anything conducive to an equable frame of mind in the embarkation of slaying horses from the passenger platform; or in the leisurely manner in which the somewhat small lift transports luggage from one level to another, unquickered by the ringing of the starting-bell, or the whistle of the guard.

If, however, they should chance to travel between Edinburgh and Berwick, and it be such a day as that in which we happened to do it, all annoyances will soon be forgotten. The sea was flashed with purple and green, the sky

was blue without a cloud, and the air was as exhilarating as champagne, without any headache for the next morning.

## FROZEN POETRY.\*

THE new state of things produced by the break up of Rome, described in the previous paper, gave birth to and elaborated a new art—all its own; whether viewed from the vasty dome of St. Peter's at Rome, or the fairy-like aisles of York Minister, or the Cathedral of Wells,—two seemingly distinct and opposite forms of art, yet which possess in common all the attributes of beauty. With the latter or Gothic art, we shall conclude our poem—with the former our sixth canto; and this cannot be better done than in the words of a great living poet, Alphonse de Lamartine. "St. Peter's [says he] is the work of an idea, of a religion, of the human mind in its entire extent, at one period of the world. It is no longer an edifice destined to contain a vile people which we are considering. It is an edifice destined to contain all the philosophy, all the prayers, all the grandeur, all the thoughts of man. The walls seem to rise and swell out, no longer in the proportions of a nation, but in the proportions of God. Michelangelo alone has understood Catholicism, and has given to it, in St. Peter's, its most sublime and complete expression. St. Peter's is truly an apotheosis of stone, a monumental transfiguration of the religion of Christ. Michelangelo is a philosopher in his conceptions. St. Peter's is philosophical Christianity, from which the divine architect banishes superstition and shadows, and into which he introduces space, beauty, symmetry, and floods of unextinguishable light. The incomparable beauty of St. Peter's at Rome consists in its being a temple which may be used by all worshippers—a god-like temple, if I may venture to employ that term in relation to stone. It seems destined to clothe the idea of God in all the splendour of which it is capable. Were Christianity to perish, St. Peter's would still remain a universal, eternal, and national temple of whatever religion should succeed to the worship of Christ, provided that religion were worthy of humanity and of God! It is the most abstract temple which the human genius, inspired by a divine idea, has ever constructed here below. When a visitor enters it, he knows not whether he is entering an ancient or a modern temple: no details obstruct the eye, no symbols distract the thoughts: men of all creeds and sects enter it with the same respect. They feel that it is a temple which can only be inhabited by the idea of God, and which no other idea could fill. Change the priest, take away the altar, pull down the niches, carry off the statues; nothing is changed—it is still the house of God. Or rather St. Peter's is in itself alone the grand symbol and type of that eternal Christianity which, possessing in its *morale* and in its holiness the germ of the successive developments of the religious ideas of all ages and of all men, expands along with human reason in proportion as God develops it, holds communion with God in the light, spreads wide and towers aloft in the proportion of the human mind, as the latter expands increasingly, and collects all nations into the unity of one adoration, every day more and more rational; shapes out of all divine forms one God alone, and out of all nations one only humanity. Michelangelo is the Moses of architectural Catholicism, and as such he will one day be understood. He has erected an imperishable ark for future times, a Pantheon of Reason, purified and rendered divine.

Our seventh canto is dark and shadowy throughout. It treats of temples without hieroglyphs, without sculpture, without painting, and for the most part without ornament of any description, save the wild moor, the bleak plain, the barren weird rocks, the dashing falls, the solemn oak forest. Yet it is highly interesting to ourselves, filling the mind with vague dreamy imaginations; the subject being the monolithic temples of our ancestors—the Druids.

"Darkness surrounds us: seeking we are lost  
On Snowden's wilds, amid brigantine coves,  
Or where the solitary shepherd roves,  
Along the plain of Sarum, by the ghost  
Of Time and shadows of Tradition, cross;  
And where the boatman of the Western Isles  
Sticks his course,—to mark those holy places  
Which yet survive on bleak Iona's coast;  
Nor these, nor monuments of eldest fame,  
Nor Palestine's unforgotten lays,  
Nor characters of Greek or Roman fame  
To an unquestionable source have led:  
Enough—if eyes that sought the fountain-head in vain,  
In vain upon the growing rill may gaze."

We have hitherto found that the study of the

\* See pp. 709 and 716, *ante*.

past is not necessarily dependant on written histories: indeed, were it otherwise, our knowledge would too often be scant indeed. Certain it is, we possess no definite records of our ancestors; yet abundant remains lie around us from which peculiarly interesting information has been obtained. Of course it is not to be expected that we shall ever reach the fountain-head of our history. The works of man in the earliest ages of the world may be buried beneath the veritable "drift," or lie beneath the hills and river; but we can only trace our ancestry to the period indicated by the barrows, stone circles, and earth-works, of Salisbury Plain. It seems pretty certain that about the time when Jacob was taking his journey into Egypt to see his son Joseph, the Celts were crossing the Channel that divides us from Gaul, and peopling the dense forests and swamps of our island; and their priests, the Druids, were fashioning the symbolic circles and raising the massive trilithons on our moors, downs, and forests, about the same time that the priests of Isis were, on the banks of Nilus, consecrating the proud monuments of Thebes, and the great lawgiver of the Jews was setting up the pillars of the twelve tribes in the wilderness of Sinai.

They who have visited the wondrous temples of Stonehenge and Avebury will bear me out when I say the effect they produce on the mind is most thrilling. Sublimity was certainly attained by the monolithic builders. Feelings of wonder and awe even now transfix the mind completely; and especially is this the case at Stonehenge—the *chorea giganteum*—and perhaps the most remarkable Druidic temple in the world. One feels that the tradition of Merlin, the magician, having brought the stones from Ireland, is but a poetical homage to the greatness of the work. Its appearance on approaching it is august in the highest degree; and once inside the magic circle the deepest feelings are aroused by them—shall I say, tragic—interest of the spot, and the mystic imagery the associations call up. The circle within circle, the avenue, the trilithic details, are all significantly symbolic: here the arch Druid, with bold, majestic mien, his long white beard flowing in the wind, invoked the God of the thunder-cloud and the tempest—the God of love he did not know,—and herein he celebrated those rites, deep and mysterious, which his forefathers brought from the far East,—

"Screams round the arch-Druid's brow the sea-mew,  
while  
As Menai's foam; and towards the mystic ring,  
Where augurs stand, the future questioning;  
Slowly the cormorant aims her heavy flight,  
Portending ruin to each hateful rite,  
That in the lapse of ages hath crept o'er  
Diluvian truths and patriarchal lore."

The sanctity of the mistletoe, the watchfires of spring, and summer, and autumn, still retain their traces amongst us, and our Sun-day and Moon-day still remind us of the untoward worship of our forefathers; and from the stone circles set up by Joshua at Gilgal to the circles set up at Stonehenge by the Druids, and maybe not far apart in point of time, the same principles are detected—*religiones interpretantur*.

In opening our eighth and concluding canto, which, as I intimated before, will treat of vertical art, I cannot do better than quote the words of that profound German thinker, Schlegel:—"The wonderful architecture of the Middle Ages," says he, "displayed itself in the richness of an inventive imagination, as so many splendid monuments in Germany, England, a part of France, Venice, and the north of Italy, can attest. The style of the Byzantine churches was the first and principal model of this Gothic architecture, though a fantastic monument of Arabic architecture may here and there perhaps have had some influence in its formation. The elaborate and orate style, and the fantastic singularity of this architecture, breathe the true spirit of the Middle Ages."

Gothic art is incontrovertibly *par excellence* the art of Christianity. All the great Pagan empires of old had their peculiar styles of art along with their mythologies, and which arose out of their own idiosyncrasies. The Hebrews, too, in the zenith of their power, were as peculiar in their architecture as in their religion: indeed, it is certain that the necessities of the religion of the nations of antiquity gave birth to and elaborated the fine arts: architecture, painting, sculpture, poetry—they are all a reflex of the religion they sheltered, adorned, and praised. Is there then anything remarkable that the best of all the religions that have swayed the hearts of the human race should give birth to and elaborate a style of art all its own?—and that that style of art should be a reflex of the religion which gave it birth? To call this art *Pagan* is a libel upon common

sense: it never was nursed in Rome or by the Popes: it belongs to no sect or party: it is, as all real art must be, universal. Especially adapted to ecclesiastical architecture, which is indeed very natural (quite as much as Solomon's temple and the Parthenon were to their several religious forms and services), symbolism is the very soul of Gothic art. There is nothing new or remarkable in this. All art is symbolic, and symbolism is the life of art: without symbolism art would be like the dry bones of Ezekiel's vision. Symbolism in true art never detracts from the reality nor sets aside the end in view. Lamartine says there is no symbolism which distracts the mind in St. Peter's, thereby inferring that in Gothic art there is. Now this remark is only true so far as *distracting* the mind goes; for this very St. Peter's is one of the sublimest symbolic poems upon the face of the earth: it embodies under other forms the same great truths that Gothic art does, and many minor things that Gothic art does not: St. Peter's is, in fine, a synopsis of the Papacy: Gothic art is a synopsis of—not any one sect, but—of broad Christianity as a whole. The very essence of Christianity is symbolism: all its great truths are conveyed to us in symbols: its praises are sung in symbols as well by the lisping infant as the hoary saint: much of its prayer is uttered in symbolic language: its great Founder taught His disciples and the multitudes in symbols; the books of Isaiah, of Ezekiel, and the Apocalypse, are full of the sublimest symbolism: the Song of Songs is a splendid symbolic poem: the minor prophets sang their words of reproof and promise in the language of symbolism: it forms the most beautiful and soul-stirring of modern preaching: in fine, without its symbolism, Christianity would be dry and prosy. Tell me, is there anything surprising or to be objected to in the symbolism of Christian art, seeing what Christianity is in itself? In Christian art symbolism attained a luxuriance and pliability never before acquired. Planned upon the Cross and reared towards heaven, emblematic of the hopes and aspirations of the race; its triangular details, typical of the Trinity; its aspiring vertical lines, reminding us of the Resurrection; the windows, symbolical of the light that has come into the world; the various sculptures, all pregnant with symbolic truth—all this has a deep and solemn meaning. Nobly and powerfully has Gothic art attained her ends; and wood and stone, fashioned with fastidious art, have fascinated every lover of the beautiful, the grand, the true, the ennobling, the sublime. Indeed, I—

— "love the high embowed roof,  
With antique pillars massy proof,  
And sturdied windows richly light,  
Casting a dim religious light,"

for the associations they call up. Yet I do not love "a dim religious light." Gothic art does not call for that, nor for devils in stone and paint, nor mythical monsters, nor representations of startling distorted countenances writhing in horrors of purgatory or something else as had, often, as in Chester Cathedral and elsewhere—the *tooth-ache*; nor for disgusting loathsome animals: all this meaning suited the age of monkdom, when penance was the order of the day; but now we require pure majestic beauty, chastity of design, a sacred elegance, a holy grandeur,—and these are emphatically characteristic of Gothic art. It is true there are many old-fashioned country gentlemen brought up and educated in the wonderful luxuriance of one ideal, either Greek or Roman, as the case may be, who cannot see beauty in any other,—perfectly correct in what they say of the splendid harmonic beauty of their own ideal, but equally wrong in their aspersions on another form of art. Horace Walpole said that "One must have taste to be sensible of the beauties of Grecian architecture: one only wants passion to feel the Gothic." Lamartine says that "the Gothic architects were sublime barbarians." Let me ask any one who may have a high taste for the beautiful, and who has seen the exquisite conceptions of York Minster, Salisbury, Lincoln, and Wells Cathedrals, if such aspersions can be true? Who, I wonder, was the greatest "barbarian," the beaten designer of the Parthenon, or the Christian designers of York Minster? Enter with me any one of our cathedrals, such as Salisbury or Wells. How grand—how majestic—how sublime! An air of solemn grandeur seems to be diffused over all the scene, and we breathe it: insensibly we feel a reverential awe stealing over us, and we seem conscious of the presence of something more than mortal, and the mind finds the chastening influence, and becomes grave and solemn; and, in spite of ourselves, we feel that it is a place meet for the Duty to honour with His

peculiar presence. Let us now change the scene to St. Paul's. We shall exclaim, "Beautiful and elegant, exceedingly! What symmetry and proportion prevail throughout! What a singularly beautiful effect the handsome columns and the elegant roof produce! Observe the fine effect produced by the sublimity of the towering dome, the harmonious blending of the colours, the richness of the gilding, and the solemn arcades! We cannot but admire! It is in very deed a magnificent creation of genius!" Wherein is the difference? The answer I must leave. It is not right artistically to call Christian art superior to the Classic, or the Classic superior to the Christian, for in many respects they are each superior to the other. Both are embodiments of chaste intellectual majesty, of beauty, sublimity, and grandeur. Both rise nobly from the earth, expanding the intellect, dilating the soul, and filling it with ennobling sensations. The one is a grand epic poem, the other equally grand in its poetic imagery and rhythmical consonance. Each is pregnant with the sublimest lessons, and each will cause all rightly-constituted minds to lift up their hearts in thankfulness to Him who has endowed man with such a marvellous variety of powers.

"What great power doth waken feeling  
In your column'd hall so high?  
Is it the dim shadows stealing  
Into deeper mystery?  
Or the golden sun revealing  
Forms of light and symmetry?  
Is't the vernal hand of Time,  
With his choicest tints adorning?  
Or the vapours of our clime,  
Crowning with the dews of morning?"

No, nor

"Yet in olden legends lie,  
Nor in heathen symmetry,  
The spirit-moving power,  
But in thoughts that never die—  
Thoughts that have their birth on high  
In a holy hour."

FRANCIS DRAKE.

#### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary general meeting of members was held on Monday evening last, at the house in Conduit-street. Mr. G. Godwin, V.P., occupied the chair.

The minutes of the last meeting having been read and confirmed.

Mr. T. Hayter Lewis (honorary secretary) announced the receipt of a number of donations to the library, of which the following are the most important:—A piece of curious mosaic pavement (15 inches square), representing one of the dogs of Diana hunting, from the site of the ancient city of Heliocarnassus, presented by Mr. J. W. Walton; a portion of a bird's-eye plan of Paris, showing the buildings around the Louvre, Tuileries, and Palais Royal, commenced 1734 (engraved 1739), presented by Mr. J. W. Papworth; a volume of engravings published by the Royal Society of Antiquaries, presented by Mr. Octavius Mansard; the new part of the Architectural Dictionary, including the letter F, presented by the Architectural Publication Society; the portrait of a "Fellow" (a very clever water-colour drawing by the late J. Hollis, A.R.A.), presented by "An Associate;" and the Ganges Canal Report, containing a great quantity of local information relating to prices of labour, material, &c.; and descriptions of certain improvements on the well-sinking principle as applied to the construction of the piers of bridges in unfavourable localities; and also an account of the simple but efficacious means, by which bridges in India have been protected against the devastating effects of mountain torrents.

Mr. Penrose (honorary secretary for Foreign Correspondence) called attention to a drawing of the new Roman Catholic Cathedral of New York (Messrs. Renwick & Rodrigues, architects), said to be capable of holding 14,000 persons. Mr. Penrose remarked, that whether a building of such size (300 feet long by 121 feet wide) could contain so large a number of worshippers or not, still that the building was a most important work, and that the Institute was indebted to the architects for their courtesy in forwarding the drawing.

The Chairman in bespeaking the thanks of the meeting to the donors of so many valuable contributions, spoke, with reference to a plate in one of them, of a recent correspondence respecting certain indentations found in the inside of a Roman well in Oxfordshire, and in relation to which various speculations had been indulged in. He observed that in the Greek cistern, shown in the plate, the same object appeared to be aimed

at by adopting an opposite principle; for, instead of indentations, a stone was made to come out in a spiral manner, in order to assist the person descending or ascending the well. With regard to one of the donations announced, namely, the last volume of the Architectural Dictionary, he begged to remind the members of the Institute that it had now reached the letter F, a sufficient assurance that the work would be completed. He hoped, therefore, that no member of the profession would hesitate to subscribe for a work so useful and so essential to every architect.

Mr. W. Burges then read a paper on "Architectural Drawing," which we print on another page.

At the conclusion,

Professor Donaldson observed, that they were much indebted for the very erudite, and, he might add, amusing paper with which Mr. Burges had favoured them. Some points, however, were raised in it which were of a debatable nature. He stated, for instance, that Harold sent to Flanders for architects, as if there were no architects in this country who could design, or men who could build.

Mr. Burges said, that Edward sent to Normandy for architects there could be no doubt whatever.

Professor Donaldson said that, with regard to the Weir collection of drawings at Lille, he had called the attention of the Institute to them in the year 1853, and had, after minute inspection, expressed his opinion that those alluded to were not by Michelangelo (as Mr. Burges seemed to think) but were the work of Vasari. Such was his deliberate opinion, but he admitted that the subject was open to discussion. He recommended the members of the Institute to obtain access, if possible, to the important collection of drawings by Italian architects of the thirteenth and fourteenth centuries, preserved at the Duke of Northumberland's, at Chiswick.

Mr. Burges replied, that the hands were put in with great anatomical fidelity, whereas the fact was that, in drawings by Vasari, these were drawn in a very clumsy manner.

Mr. Digby Wyatt agreed with Professor Donaldson in his opinion of the Lille drawings. They were wanting in firmness, and did not carry that sustained attention to the end, so noticeable in the drawings of Michelangelo. He expressed his regret that Mr. Burges had not referred to the Holbein drawings, which combined a firmness of line and a beauty of expression not always attained in such works. The practice of drawing in thin lines originated with the Anglo-Saxon illuminators. This style was subsequently initiated in France. In Italy, however, another principle obtained; Leonardo da Vinci had left the most beautiful sketches, showing how he excelled in broad, firm lines, and how he could mark the light and shade which floated in the fancy of the draughtsman. It must not, however, be supposed that we were indebted exclusively to foreign schools for beautiful architectural drawings. We could congratulate ourselves upon the possession of those of Inigo Jones, who was not only excellent in landscape, but in figures. Then, descending to more recent times, many specimens remained of drawings by the Adamsons, who had remarkable power as draughtsmen. This was a subject upon which he felt there was no reason to apprehend a declension. On the contrary, he felt that we were rapidly returning to that happy facility in drawing, without which it would be impossible to produce truthful or expressive delineations; and if we went on improving in like proportion in the other departments of art, we would inaugurate an epoch of rare perfection, alike creditable to the age in which we lived and the country in which we laboured.

Mr. Seddon remarked that the object of the paper read by Mr. Burges was to introduce a former mode of drawing. The question was, how was this desideratum to be attained? It seemed to him that the real origin of fine line drawing was to be traced to the invention of India-rubber. If that commodity were tabooed, it might be possible to introduce a firmer and more nervous system of drawing.

Mr. Papworth inquired whether Mr. Burges would have any objection to draw what he called a "moderately thick line," for that was a point upon which people might differ. There were some who thought thick and thin lines were desirable in order to show exactly that which it was intended to represent. In fact, the draughtsman could not accomplish this without showing a thick line and a thin line, and occasionally the much-abused shadow. The very thin style of outline observed in the drawings of the architects of the latter portion of the seventeenth and beginning of the

eighteenth centuries took root early in Italy, and then spread to France, although he was bound to say that he could point to a series of drawings for every year for seventy years, which left nothing to be desired by the architect of the present day. With regard to the Adamsses, they drew with a strong, fine line, but they also used thin lines, because they found it would be impossible to convey an accurate idea of their works without such use.

Mr. Street said it seemed to him that every architect drew more or less in his own manner, without reference either to the elder Pugin or to Willars de Honecourt. What the architect really wanted was to produce drawings which a builder could carry out. The drawings of the elder Pugin, for instance, showed precisely what he wished to be carried out. The question, therefore, in his (Mr. Street's) opinion, was one of style rather than of drawing. Another fallacy dwelt upon by Mr. Burgess was the supposed use of Indian-ink in architectural drawings. He could not tell what other gentlemen might do, but for his own part he could only say that he was unable to do more than get in his drawings in pencil.

Mr. D. Wyatt said he did not wish to be understood as condemning the use of shadows (as Mr. Papworth seemed to infer); on the contrary, he considered them most useful.

Mr. Penrose said that the observations of Mr. Papworth did not dispose of Mr. Burgess's argument. It was desirable that the best school of drawing should be pointed out to the student; and Mr. Burgess had done good service in pointing out Michelangelo as the most exalted master that could be followed. The best collection of his drawings was to be found at Michelangelo Taylor's Museum, at Oxford. He (Mr. Penrose) had examined them there six or seven years ago with great pleasure, and he hoped some profit. The drawings preserved at Bologna were also very interesting, and he had examined them for several hours. Those of Palladio had moderately thick lines. When he said "moderately thick," he meant that eight such lines would go into the eighth of an inch. The principal elevation was 3 feet long by 3 feet 6 inches wide, so that they were quite in proportion to the drawing. Unfortunately, Palladio was no sculptor. He could not draw the human figure; but if he could have done so he would have been all his most enthusiastic admirers represented him to be. With regard to the use of India-rubber, he did not think there need be any apprehension on that score, for he had not seen for the last few years a single pencil whose marks would rub out. He believed that the use of fine lines was to be traced to the practice of following French engravings, the lines of which were so fine that the majority of them could not be discerned without a microscope. He was of opinion that a firm line was better than a thin one, and he thought that any person who studied out of doors would necessarily fall into the natural style, because he would endeavour to portray the building before him as it really was. If the natural style were followed there need be no apprehension of getting into the practice of making the lines either too thin or too thick.

Mr. Kerr thought it was a question of style. There was, for instance, Gothic drawing and Classical drawing. In classical times, or quasi-classical times, the style of drawing was of a classical character; the lines were fine, the shadows were indicated, and the work of the draughtsman was refined, polished, and minute. Now that the style had become changed into the picturesque and the romantic, the drawings were found to be also picturesque and romantic. It was only necessary to point to the drawings of Mr. Burgess himself, and other gentlemen of his school (no doubt most meritorious works), to perceive that they were part and parcel of the intellect of the man which he followed, not arbitrarily nor by choice, but inevitably as a master-idea in his mind. The object of an architectural drawing was to present in outline what was to be executed in the solid; and the way to do this was to make a moderate line according to the scale of the drawing, which would represent honestly and faithfully the object to be delineated. Such was a plain, substantial, honest drawing; but when the architect got out of that and plunged into picturesque Gothic or classical, he gave expression to that which was really the individual intellect or idiosyncrasy of the mind. He agreed with Mr. Burgess that a firm nervous line was to be encouraged, for nervousness might be thrown into the most delicate drawing. Moreover, the present age was a nervous age, and it was part and parcel of the spirit around us.

Mr. White protested against the assertion that the picturesque was solely applicable to the Gothic

school, or a great element of it, or that grace and beauty were to be found in classic architecture alone. He believed that grace and beauty were common to both styles, and that it was much more a question of southern and northern than of Gothic and classical, and that thickness of line depended more upon the finish intended to be given than to the representation of any particular style of architecture.

Mr. Ferrey said he did not consider any defence of the late Mr. Pugin necessary in that room. Mr. Pugin appeared to have used back-lining from what he had seen in France. Mr. Pugin was a Frenchman, and naturally fell into that error. He would not discuss whether the line ought to be the sixty-fourth or the eighth part of an inch, but it should be the clear expression of the form to be hereafter executed. As little picturesqueness should be introduced as possible, as the object ought to be presented before the client and the builder as nearly as could be in the shape in which it was to be carried out. He objected altogether to back-lining.

Professor Donaldson differed from Mr. Ferrey on that point, for it would be impossible to represent what a thing would be when executed by drawing lines all of the same thickness; for, unless the back lines were put so as to show what was shadow and what light, the whole would resemble a piece of inlaid work, or he like the elevation of the Cathedral of Florence. He should have liked the directors of the School of Art at South Kensington to have heard the discussion of that evening, for there the students all copied a rigid, hard metallic line, devoid of all sentiment whatever.

Mr. Papworth agreed with Professor Donaldson that it would be impossible to give a correct impression of what a building would be in the solid, if all the lines of a drawing were precisely of the same thickness.

Mr. Street said that had draughtsmen generally put in back lines to conceal had drawing.

The Chairman, in closing the discussion, said he was glad it had been left to him to propose a vote of thanks to Mr. Burgess for his interesting paper, in which he had displayed his usual research, and imported into it those touches of sarcasm and gaiety which, when dexterously applied, lent light to the least inviting subject. In the course of his observations, he had playfully alluded to deceptions practised on a client as "allowable." This might have been the case in years gone by, but the architects of the present day would, he was convinced, never forget that they were gentlemen and men of honour, and would feel it to be a disgrace wilfully to deceive a client. There were some points referred to by Mr. Burgess which of course were open to discussion. For his own part, he admitted that he could not wholly agree with him in his sweeping condemnation of all "crochets and fizing;" for he was afraid if they were to admit the correctness of that as a principle, they would get into a plain and bald style of architecture, which it would not be desirable to encourage. The subject which Mr. Burgess had chosen for his paper gave ample scope for many interesting details with reference to ancient drawings. There was, for instance, a very interesting fourteenth-century drawing at Liege. A curious history also attached to the original drawing of Cologne Cathedral, which was no doubt familiar to most of them, and from which it appeared that one portion of it was found at Darmstadt, forming the bottom of a corn-sieve, while another portion was discovered in some distant part of the country, and both were ultimately united, after a separation of many years.

A vote of thanks having been passed unanimously, the following gentlemen were, on ballot, elected Fellows of the Institute:—Mr. John B. Waring, 22, Edward-street, Portman-square; Mr. Frederick Lett, 36, Essex-street, Strand; and Mr. Edward H. Martineau, 24, Lincoln's-inn-fields. Mr. William Potheringham, of 2, Queen's-terrace, Holloway, and Mr. B. A. C. Herring, of 1, Danes'-inn, Strand, were elected Associates. At the next ordinary meeting of the Institute, on the 3rd of December, a paper will be read by the Rev. Mackenzie Walcott, "On Church and Conventual Arrangements."

THE OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.—A meeting took place on Wednesday, the 14th, and was the first held since the change in the title of the society, which was made last Term, and by which the scope of its labours were enlarged. The usual business of the society being concluded, a discussion took place "On the Connection of History with Architecture."

#### ARCHITECTURAL DRAWING.\*

In giving the usual paper which is very rightly expected of every new member of this Institute, it is not without some little misgiving that I have selected the subject of architectural drawing. I feel that I ought rather to have tried my hand upon one of those stock subjects, viz., architectural colour and mosaics, on which so much is to be said, but which we have seldom or never the means of putting into practice, either from the disinclination of our clients, as in painting, or from the want of materials and special artists, as in mosaic. In the meanwhile, whenever we do get the opportunity, the result is generally a failure, partly because no rules will ever teach a man the value of one tone of colour as compared with another, and partly because we require in this case to be taught by repeated failures as to what combinations of colour look well, and what look ill. Under these circumstances, therefore, it has struck me that it may be more useful to bring together a few notices of a much less ambitious branch of the arts, but which, however, is of the most vital importance to us architects, inasmuch as it exercises more or less influence upon the design of the building itself; and we all know that although the building is but the skeleton for the additions of painting and sculpture, still, if that skeleton be bad or deformed, no satisfactory result can ever arise, even with all the painting and sculpture in the world. I venture to assert that the manner in which a man draws does and must affect the nature of his design more or less. Thus, if he uses strong thick lines, he will, in all probability, be induced to make his design massive and simple, and not give way to the vanities of crochets and pinnacles, because he will find that he has hardly got space to get them in. He likewise sees his design in its most severe and unfavourable light, and ten to one the building will turn out much better than the drawing, to the advantage of every one concerned. If, however, the architect draws in a moderately thick line, and puts in the stone joints and etches the walls (I am now speaking of elevations, &c.), he simply deceives not only his client, which is partly allowable, but still worse, himself, for the building is almost sure to come out worse than the drawing, the joints, roughnesses, &c., not, of course, showing in new work. As to the third style of drawing, with very fine hair-like lines, relieved by what is termed back lining, whereby small fillets are made to look like hollows, and hollows like fillets,—this style, in fact, is scarcely worth mentioning, for it means nothing, and hardly anybody employs it in the present day; and, indeed, one is almost tempted to believe it to have been invented by some instrument-maker. I may likewise observe that it was generally employed in the worst days of architecture.

And now concerning the way in which our ancestors drew. It is generally believed that very few drawings have come down to us from the Middle Ages, but, thanks to the labours of the French and German antiquaries, we have now a very fair catalogue of drawings of all ages, besides published *fac similes* of a tolerable proportion of them. In the Dictionary of the Architectural Publication Society, under the word "drawing," will be found an enumeration of the more famous of these, to which might be added the very numerous designs and drawings scattered up and down in the collection of MSS. and prints of the various museums in Europe. Instead of going through the whole list given in the "Architectural Dictionary," the great majority of the drawings mentioned in which I have not seen, and which I should have to describe second-hand from hooks, or else to confine myself simply to noticing the fact of their existence, I propose to touch upon those, the *fac similes* of which are published in books within every one's reach, and upon others which I have seen and examined myself at leisure.

I believe nothing whatever is known of the architectural drawings of the Greeks and Romans. The "Lapides Capitolini," containing a plan of Rome, are simply inscribed on marble, and formed anciently part of the pavement of the Temple of Romulus and Remus. The light and beautiful architecture painted on the walls of Pompeii was never, that I know of, resolved into real materials. Our series of drawings then opens with the plan of the Monastery of St. Gall, now preserved in the library of that establishment. It was first published by Keller, at Zurich, in 1844, and republished two-fifths of the real size in the fifth volume of the "Archeological Journal," p. 87, with a most excellent notice by Professor Willis.

\* Read by Mr. W. Burgess, as elsewhere mentioned.

The plan, which is drawn in thin red lines upon a large sheet of parchment, with inscriptions all over it, showing the uses of the different parts of the building, was sent, as one of the said inscriptions informs us, for the use of the Abbot Gospertus (who began to rebuild the church and monastery in 829), by some anonymous friend, who is supposed, with some reason, to have been Eginhard, the son-in-law of Charlemagne, and who held the office of prefect of the royal buildings. However this may be, the plan presents us with a very complete monastery, with its great church and accompanying buildings. The red line not only seems to mark the external and party walls, but also to indicate the furniture, such as benches, tables, stoves, &c., requisite to each building. The plan as Professor Willis very properly remarks, is not done to scale, but certain figured measurements enable us to form some idea of the sizes of the various parts. The church would appear to have been a most noble building, with two apses and their paradises or semicircular walks. The western one was further enriched with two circular towers.

The winding stairs of these latter are shown as gradually winding round from the circumference to the centre, like a section of a snail's shell. It is doubtful whether a common winding staircase is thus represented, or whether it was really an inclined plane which went from the circumference to the centre, and so on to an upper chamber, where there was an altar, in one case dedicated to St. Michael, and the other to St. Gabriel: there would, supposing the latter supposition to be correct, be space to hang the bells in the space between the novell and circumference in the upper part of the tower. The ornamental finial at the top is shown on plan as finishing the novell.

The arches of the cloisters and the crosses of the altars are shown by elevations in their respective places on the plans,—a mode which still obtains in Turkey at the present day, among the distinguished native architects who have the honour of working for his Imperial Majesty the Sultan, so little have things changed in the East. Another peculiarity in the St. Gall plan is, that sundry squares are drawn in the middle of courtyards and of buildings. These, as Professor Willis suggests, may be either indications of the classic atrium with its uncovered unpluvium, or a sort of upper lantern rising above the roof, and giving light by means of clerestory windows; both these explanations are very feasible, and both probably were intended in the original. Lastly, Eginhard, or whoever was the architect, wrote certain explanations in Latin verses on various parts of the drawing. Fancy that most matter-of-fact production, a modern plan ornamented with metrical directions to the builder.

The next drawings to be noticed are those incidental pieces of architecture which occur in the Anglo-Saxon MS., in which the British Museum is so rich. It is true that they are generally ill-drawn; but still they show us enough to enable us to draw very valuable conclusions as to what Anglo-Saxon architecture really was, and to refute the generally-conceived idea that both architecture and history began in England exactly in the year 1066. Mr. Wright has contributed a most interesting paper on the subject in the first volume of the Transactions of the Archaeological Institute. In it he shows that the triangular arches, and the baluster shafts, which are now recognised as Anglo-Saxon features, occur equally with representations of domes, and carved capitals, pinnacles (not crockets), and iron work, which antiquaries are generally unwilling to acknowledge as belonging to the time before the Conquest, as if the countrymen of Alfred and Edgar, both great and powerful kings, should have been unable to carve a capital or use a chisel, when they were renowned all over the world for their manuscripts, jewellery, and embroidery. I suspect the fact is, that the history of architecture has been lithero written in far too scientific a manner; and because the art exhibits a general progress and decline, people have believed that sundry processes were unknown at certain periods; when, in fact, almost all the essentials of buildings have remained the same since the first ages. Thus, because Gervase says that the work of the old cathedral at Canterbury was done with an axe, and the new with a chisel, we are to suppose that the Saxons had no chisel, and no carved ornaments. Now the MSS. distinctly show us elaborate capitals which

must have been done with a chisel; and no one can for a moment imagine that so useful and obvious an instrument could ever have been lost even in the most barbarous countries, much less so among the civilized Anglo-Saxons. We owe also to Mr. Wright the first doubt as to the date of Waltham Abbey church. Hitherto most antiquaries believed it to be of the date of Henry I.—first of all, because it was like the architecture of that time; secondly, because the two queens of that king were great benefactors to the establishment; and thirdly (and here was the rub), because it was more ornamented than any known contemporary Norman or Saxon building. As if Harold, the richest and most powerful man in England, could not have given orders for a rich building to be erected, or had not the funds to carry it out. I do not deny that he might have employed foreign workmen, but it by no means follows that these foreign workmen must have come from Normandy. Harold and his family were very properly anti-Norman, and it is just as likely that he got his workmen from Flanders or some other part of the Continent as from Normandy.

The next document I shall bring forward is a view of the church and monastery of Canterbury, contained in the magnificently illuminated Psalter of Eadwin, now preserved in Trinity College, Cambridge. This very curious drawing, which is made to do duty both as plan and elevation, has likewise received the elucidations of Professor Willis, to whom I may venture to say the literature and some parts of the practice of our art owe more than to any one else. The way in which the plan and perspective are made to co-exist is by making a vanishing point in the centre of each court, so that there are three or four of these vanishing points in the drawing. The two towers, which we saw in the plan of St. Gall here reappear, although in different positions. All the water-courses and drains are shown, and upon the whole, considering the very original perspective, it may be pronounced to be a very accurate drawing; indeed, Professor Willis tells us that wherever a building is shown on this plan, Romanesque work is more or less found at the present day at Canterbury. I have not been able to see the original of this drawing, but the notice in the "Vetusta Monumenta," where it is engraved, assures us that it is coloured. As a drawing it is curious, as showing the complete development of the practice of drawing elevations upon plans, as at St. Gall. I think, however, that we must consider this drawing of Canterbury more in the light of a survey for the purpose of showing the system of water-courses than as a document to be worked from. In all probability such documents would not be very common, and when the work was done the erasing knife of the writer would be brought into use, and the parchment or vellum, which was very valuable in those days, and which by the way is not very cheap in these, would receive a new employment. That this was the case we know from the discovery made by MM. Varin and Didron, in 1838, of the design for the west end of a cathedral, besides several details, and which they found under the writing of a manuscript containing a list of the deceased members of the chapter of the cathedral of Rheims. Now the last entry is 1270, and the drawings were executed in all probability some time before. They have, according to M. Didron's account in the fifth volume of the "Annales," been first sponged out and then scraped over, to obliterate the lines, and finally cut into leaves. However, enough remained to enable M. Didron, assisted by the late M. Lassus, to produce engravings of several portions, which will be found equally in the same volume of the "Annales." M. Didron assures me that the lines are very thin, which is not to be wondered at, considering the treatment they have undergone.

The principal composition shows a façade for the west end of a church, with the usual three portals, and the somewhat unusual feature of a large window above. It is either an unfinished production, or one for the use of the architect and his workpeople alone, for as little as possible is shown. Thus, only two or three crockets are shown at one side of each of the great pediments; no ornament or figure is shown in the vousoir; the left-hand corner is, indeed, more worked up, but the artist has made up for it by showing nothing at all on the right. The whole composition appears to me to want somewhat of severity, and I hope that it was sponged out, and never executed on this account. Another plate shows part of what M. Didron thinks is another portal, but which might possibly represent the return angle of the former drawing. It is remarkable, if really a portal, for showing the outer plane of the centre door as

filled with tracery; if this be really the case, it gives us an arrangement somewhat similar to that obtained in the west front of the now destroyed church of St. Nicaise, at Rheims. M. Didron thinks that the architect, being hard up for room, drew in the tracery of the window, but to a different scale to what the portal arch was drawn; but if even that were the case, a window would hardly have its centre light twice as broad as its side ones, which this has. Below this portal are three pieces of ornament, each drawn in between borders, composed of six lines each. What these six lines mean I am totally unable to decide, unless they represent in a sort of shading, the rounded edges of the houlds on either side of the great hollow in which they are placed; but I certainly cannot agree with M. Didron's suggestion, that they may be the lines of the musical scale, and as the outer parts of the ornament are occasionally drawn upon them, and of course go up and down, so we have a sort of architectural music.

Willars de Honecourt is the next on the list, the fac-similes of whose sketch-book are now in the hands of everybody. So much has been said and written concerning these drawings that I shall very much curtail my description of them, which would otherwise have been long, considering that these are the most perfect and the largest collection of the drawings of the Middle Ages which have come down to us; and first of all I must be allowed to claim Willars for our profession, as some attempts have been made to hand him over to the sculptors and painters, because, forsooth, he drew the figure too well and too frequently. There is one fact, however, which completely, as far as I see, upsets this theory, and that is this—the tendency of an artist, either painter or sculptor, or architect, would be to sketch details which would come in useful to him. Thus the painter and sculptor would draw parts of the human body, bits of costume, anatomy, &c., while the architect, on the contrary, would draw mouldings, capitals, foliage, &c. Now, in the sketches under consideration we do find the capitals, foliage, and mouldings, but we do not find studies of hands, of feet, of anatomy, &c.; but, on the contrary, there are a number of problems which would only be useful to a man engaged in actual building. As regards the drawing itself, the sketch was first made with a leaden or silver pencil, either of which would perfectly mark on the vellum. If the subject were an architectural one, the straight lines were ruled, and the circles put in with a compass, one end of which had a leaden point. These lines were afterwards gone over with a blackish brown ink, by means of the hand alone, no instrument being employed. Upon looking again at this MS. two months ago, I was struck more than ever by the extreme precision of the touch: there is no faltering or wavering, but the line is just as thick and as firm where it ends as where it begins. Again, in drawing things in small, mouldings and foliage became simplified so as not to break up the breadth of the composition. Clearness is got by hatching hollows where they occur, and the grounds of ornament, such as capitals, &c. The walls of the plans, however, are not etched, and we shall find this practice obtaining even in Hope's time, the majority of whose plans are not etched, although not devoid of colour. One would imagine that Willars might have etched them up with his leaden point as he often did his drapery; but nothing of the kind occurs. Another peculiarity of our architect was, when he copied any executed work, he copied it not as he saw it, but with variations of his own, and as he would execute it himself; thus the window at Chartres is considerably altered in order to get more space for light, while that at Lausanne is so much so that it can hardly be recognised. But with all his peculiarities, Willars presents us with a decidedly good style of drawing, and which, it strikes me, might eventually be developed into something much better than that in use of late years. I mean, that we should join our improved knowledge of perspective and of the figure to the energy, simplicity, and firmness of our confreres of the thirteenth century.

The fourteenth century affords us the drawings of the Cathedral of Cologne. These I saw some ten years ago, but as far as I remember I was told that the originals were in the architect's office, and that what I saw were only copies. It is very true that they, besides several others, have been published both in Germany and France, but I must confess that I should be sorry to deduce any theories as to thickness of line, &c., from the fac-similes made by the German, who have an admirable mode of publishing almost everything in the finest possible lines, exactly

\* See Willis's "History of Canterbury Cathedral." It is surprising that this book has not been more popular with the profession. It is the history of the building of a church, or rather of the choir of a church, during the very best period of art.

like Pugin's Specimens and other works of that period, thereby utterly depriving them of all vigour, and producing a very false impression.

The fifteenth century being nearer our own time, presents us, as might have been expected, with a greater number of drawings. First, we owe to Professor Willis the explanation of the legends attached to the section of mouldings from the door of the church of St. Stephen's, Bristol, made by William of Worcester in his Itinerary, preserved at Corpus Christi College, at Cambridge; but the most interesting to us as Englishmen, are those drawings for King's College, Cambridge, now in the Cottonian collection of the British Museum. The first of these shows the east and north sides of the chapel in perspective, *i.e.*, the north side is drawn parallel to the horizon, almost in elevation, while the lines of the eastern go to a vanishing point. The drawing is partially coloured, and is especially curious, as showing a small half-timbered building at the eastern end, with a niche containing a clock-face. The details of the architecture are very well made out, and there are ruled lines, like a modern drawing. No figures are shown in the niches, and the rain-water is carried off by regular pipes, as in the present day. Curiously enough, similar leaden pipes are to be found in those parts of the Cathedral of Beauvais erected at the end of the fifteenth century; but in this latter case they are elaborately finned with powderings of *fleur-de-lis*, &c. Although this drawing has a look of having been subject to a great deal of wear and tear, and looks just as if it had really been used by workmen, I am afraid that its general appearance has the look rather of the sixteenth than of the fifteenth century. Another drawing shows us the tower intended to have been erected close to the same building. As an architectural composition it is of no great value, having several stages, with a small window in each, and an octagonal buttress at each angle, which buttresses finish in spirelets. The drawing is executed in ruled black lines, and has a wash of blue colour, more or less deep, all over the building. The hollows of the mouldings are not blacked in, but etched, which is the next best thing, although rather a dangerous one; for a contractor on one occasion actually mistook the etched hollows in a drawing I gave him for dog-teeth, and estimated them as such. Of course, when the amount had to be deducted from the estimate, the dog-tooth ornament was not allowed too much for. I should mention that this drawing of the tower of King's College is in perspective, although of a very unsatisfactory kind, for, among other things, the whole of the four spires find themselves at the same level at the top of the drawing. Another design, of about the same period, is that for a gallery for Henry VIII.; this, likewise, is in perspective, and runs diagonally across the page. It is drawn with the free hand in black ink or pigment, but one or two of the longest lines have been ruled. It is likewise shaded up in black, and locally coloured with thin washes, like those I shall presently notice in Albert Durer's works. It is a very careless drawing, and the style is a sort of bad Germanized Renaissance, with baluster columns, &c.

A later drawing is contained in the same collection, the date of which would probably bring us to Edward VI. or Mary. It is the facade of a house, almost in what is now called the Italian style, but with Renaissance details. The perspective is very fair, the vanishing point being in the middle of the building, so as to show the projecting wings and the external staircases in perspective. The composition, also, is by no means deficient in picturesque quality; but we can hardly praise the colouring, which, with partial shading in black or gray, presents us with a bright body-colour cobalt roof, and bright vermilion cements to the windows.

Before leaving the MS. Room of the British Museum, I must notice one or two drawings there deposited. The first is a design in perspective for a large and complicated tent. The plan may be described as like that of Canterbury and other cathedrals, *viz.*,—a cross with two transverse. The drawing is made in black lines, is tinted up with yellow. The book known as Aug. 3, Cotton, presents us with several other tents, and a Renaissance fountain, the latter also in perspective, and tinted up with black or gray. It is likewise valuable to the artist as presenting him with several very large coloured figures of the costume of the time of Henry VIII.

The third drawing is a design for the tomb of Henry VI., which Henry VII., who revered him as a saint, had, it appears, intentions of erecting at Windsor. The execution, however, does not

appear to have come off. The design is in bad perspective, as usual, but drawn very carefully, and probably with a ruling pen. The circles and arches also appear to have been done with a bow pen. The ink is a sort of dark sepia; it is also shaded very neatly and carefully with the same. There are no figures shown in the niches, and the line of impencetration above is distinctly shown, whereas in some of the German drawings, if we may believe the engravings, the mouldings in similar cases are simply drawn as ending in nothing.

The Society of Antiquaries have published also in the "Vetusta Monumenta" the drawing representing the funeral of Abbot Islip. This very curious roll of vellum, which is now preserved in the Herald's College, is of great value both to the antiquary and to the architect, inasmuch as it presents us with sundry views of the interior of Westminster Abbey before the Reformation. The lines are thin and the execution delicate. From it we learn what statues adorned the altar-screen, and what statues were placed above it. The dossal, exactly the most curious part, is represented as being covered up; but the brackets on the pediment of the wonderful tomb of Amya de Valance are shown to have supported angels. Again, the blank wall space in the chapel over Islip's Chantry, where now the waxwork is deposited, had a large picture of the "Last Judgment," and another part of the roll presents us with the screens, now destroyed, which divided the chapels of the north transept from one another. Nothing can be made better than the drawing both of the architecture and of the figures in that roll. I may mention as another proof of the value of documentary evidence relating to the same building, that the manuscript life of St. Edward, written in the thirteenth century, shows us what figures were placed on the twisted columns at the western end of the Confessor's tomb. It appears that they supported statues, and if we may believe the MS., coloured or enamelled statues of the king and St. John.

I must now take you to the Print-room of the British Museum, to examine the drawings of two of the greatest artists the world has ever produced, for we shall here find drawings made by the hands of both Albert Durer and Michelangelo, both great in all the three arts, as I hope some day may be the case again with our profession. This day, indeed, will not come in our lives, but still we must do our best to help on the good time, and instead of fame take the consciousness of having done our duty, as the reward of our exertions. First, of Albert Durer, for he closes one great period of art. In the Print-room is a very large square folio volume, nearly filled with drawings by this master; at all events, they are attributed to him, although I have always had my doubts how ever Albert Durer, although aided by great industry and a scolding wife, could have got through even one-half of the work attributed to him. His drawings are done in moderately thick lines, either with black or dark brown ink, and betray most certain traces of compass points, ruling-pens and bow pens. The first drawing I shall notice is the plan, looking down from above, of a most complicated fountain or pinnacle; there are pinnacles and pediments with an S-shaped plan, and, indeed, it resembles the almost impossible architecture that Israel Van Meekin designed on paper, and Adam Kraft executed in stone.

There are a great many compass-holes in this drawing, as if it had been pricked off. It is most carefully done, and the sections of the mouldings have the beads turned in with the bow pen. The lines of operation, such as the centre lines, are simply scratched on the paper, as it does not appear that they had means of crasing the lead lines. We shall see John Thorpe doing the same thing. Another drawing represents a tomb, evidently Italian, beneath a vault, supported upon four pillars. This drawing is done in black, and elaborately shaded with the same colour mixed with white; the lines are ruled.

There are likewise designs for sundry pieces of jewellery. These are outlined in black or dark brown, and then very slightly coloured with light washes of colour, the raised parts being left white. One design would appear to represent a large vase or fountain of the most elaborate description. From it the various figures pour out streams of liquid, which, as it is coloured red in one case, I suspect to represent wine. There are two hands a little below the middle which hold out cups similar to those attached to the drinking-fountains of the present day, to receive the noble juice. Indeed, this design would make a most charming drinking-fountain if executed in copper

and enamelled, or, indeed, even in stone, painted; and I should be very much inclined to recommend it to the notice of the Drinking-fountains Association, whose designs certainly, to say the least, afford some margin for improvement. But to return to Albert Durer. Three or four leaves of the book are occupied with a coloured design for baluster column covered with arabesques; the drawing is most vigorous, and the colouring leaves nothing to be desired. The other drawings are more remarkable as curiosities than as having relation to architecture. Thus there is the figure drawn from the model which he afterwards used in his beautiful plate of Fortune. The original figure is covered over with squares drawn with a sharp point, evidently for reducing or enlarging it. At page 143 is a bird remarkably like the dodo, and further on a full-size elevation and plan of a shoe of the period,—a most valuable drawing for the writer on costume. Durer, in fact, appears to have had all the conveniences and appliances of modern times as regards his architectural drawing; but it is evident that his bow pen was none of the best, as his circles are the least neat parts of the drawings.

Now for Michelangelo: the British Museum is not very rich in the architectural drawings of this master, yet it will probably be better to go through them as they are more accessible to the student than those in other collections would be. They are for the most part sketched on with common ink, which has now turned brown, with a common pen, and drawn right off by hand, the circles being put in auyhow. Some of them may probably have been first of all scratched in with charcoal, but we have no traces of it: one of them, however, has evidently been inked in upon something resembling chalk, or very black soft pencil. The drawings, even the details, are exceedingly rough, and if ever worked from, must have been drawn out on a board by a pupil, and afterwards corrected by the master. They consist of all sorts of subjects, windows, capitals, entablatures, &c., but none of any great interest. The Musée Wear, at Lille, is the place one must go to who wishes to see what the architectural drawings of Michelangelo are really like. It appears that Wear got hold of a sketch-book of Michelangelo's, very similar, in fact, to that of Willard de Honecourt, and it is this book, cut up, and framed and glazed, which constitutes one of the riches of the Lille Museum. The book contains architectural studies from the modern contemporary edifices—from those of Bramante and Brunelleschi, studies from classic buildings, and his own compositions, including the facade of St. Lawrence, and the plan of the vestibule of the Laurentian Library; and, lastly, directions for casting artillery. It is curious to compare this latter with the trebuchet of Willard, so excellently described and elucidated by Professor Willis. I find the following notes in my copy of the Wear collection. These drawings are executed in brown ink, with the help of a common straight-edge. There are no cross-hatchings, and though the plans are tinted, they are done so in a very careless manner. Very often no straight-edge is used, and the lines are drawn in by hand. Lines are also often drawn with a blunt point on the paper. The same institution also contains the *velum sketch or pattern book of Francia*. As many of these compositions are very small,  $\frac{1}{2}$  by 1 inch, and as they have the appearance of having been done for niello, it is not improbable to suppose that they were intended to serve him in his profession of goldsmith. One page contains ten Madonnas, each less than the other, the largest 1 square inch, and the least,  $\frac{1}{4}$  of an inch by  $\frac{1}{8}$ . There are also on the same page twenty-four portraits, eight of whom are Turks, besides several other subjects, such as children's games, &c.

This museum also contains a copy of the drawing attributed to Van Eyck, of which duplicates are to be found, if I remember rightly, both at Bruges, Cologne, and I almost think Antwerp. It represents a female seated in front of a tower holding a palm-branch and book; the tower is octagonal or hexagonal, and in process of being built: it is drawn on paper and entirely by the pen except in some of the dark parts, where a little colour is dragged on to assist the lines; there is no cross-hatching, but occasionally small dots are used to continue the lines; it is covered with squares, and I suspect it to be a copy.

We must now return to England. By the very great kindness of Mr. S. Smirke, who put himself very much out of the way to oblige me, I have been enabled to examine the drawings by J. Thorpe now preserved in the Soane Museum. As several of these drawings are already known by the *fac-similes* published by Mr. Richardson in his series

of Elizabethan architecture, it will not be necessary to enter into the subjects represented, and I shall only say a word or two upon the execution.

Thorpe appears to have had all the advantages which we have in the present day, except that he could not rub out his pencil, or leaden point. Thus, the centre lines are therefore done with a blunt point. His plans are very seldom etched, although there are one or two that are so treated; among them, a very curious plan of Henry VII.'s chapel showing all the screens perfect, as well as the site of Edward VI.'s tomb in front of that of Henry VII., which tomb was put up by one of his sisters and destroyed by the other. It is curious that I did not observe any cast shadows in the tinted elevations of Thorpe,\* or indeed, of any of those which I have been noticing; it being reserved to us moderns to make our drawings at once ugly and scientific. With Thorpe we take leave of the Middle Ages, and there propose to close this small notice, merely calling attention to the very valuable and clever volume of drawings belonging to our library, containing a large number of sketches washed in in sepia and Indian ink, apparently designs for scenes. Although belonging to the most *Rococo* period, yet they display a power of invention and design which would do honour to any age; and we can only regret that such good men should have fallen on evil times. We also possess a little sketch by Sir C. Wren, done like those of Michelangelo, with the free hand, with common pen and ink. At the end of last century, and the beginning of the present, the fashion was to make drawings in fine lines, tinted with Indian ink.

At the revival of Medieval art a favourite way of sketching was to outline in pencil, and tint up with Indian ink or sepia. Most of Mr. Blore's drawings are done in this manner, and are so surprisingly and minutely finished, that they give the idea of very clear photography. But before this the custom of offices was to make the drawings simply in thin lines, and then to back-line them,—a practice destructive of all breadth of effect, and absolutely perplexing to the eyes.

The elder Pugin's works are specimens of this style, which, I am happy to say, is nearly obsolete.

The younger Pugin brought the first change to the system in his plates, where, on the contrary, made things look too well by his marvellous etching; indeed, there is a fizziness and an action in all his plates which you look in vain for in the real thing. The present system of etching up a drawing is an offshoot from this style, and is, I am afraid, open to very nearly the same objection.

We have to thank competition committees for its use, who, forbidding the employment of colour, have obtained a much more seductive style of perspective; for I think I would any day back a good etched drawing against a coloured one.

But, of course, the success of a design in stone and mortar must depend upon the working drawings, for nobody sets out work or chisels stones from perspectives; and it is in these that I hope to see good strong, thick, bold lines employed, so that we may get into the habit of leaving out those prettinesses, which only cost money and spoil our designs. But, after all, no amount of architectural drawing would make a man an artist or an architect,—for they are one and the same thing,—unless he obtains a complete mastery of the human figure; and I would earnestly suggest whether this Institute could not aid the attainment of this end by having evenings when a model should sit and a good artist be engaged to correct the drawings. When the profession generally begin to draw the figure and make bold architectural drawings, and generally to think for themselves, instead of going to past ages and precedents, we may then hope to have an *Architecture*.

#### PROPOSED PUGIN MEMORIAL FUND.

On the principle of allowing both sides in matters of judgment to state their views, we give place to the following letter, which has been addressed to the honorary secretary of the Fund, by Professor Donaldson:—

"I am truly ashamed to have allowed your friendly notes respecting the Pugin Testimonial to remain so long unanswered, but I was in the country at the time the first arrived, and have been pretty constantly away from town ever since, and occupied in absorbing matters of business, so as not to have had the time to acknowledge them with the deliberation they deserved. I am much gratified by the proposal to be upon the committee; but, anxious as I have ever been to take

part in any project which had the sanction of an influential portion of my professional brethren, and the object of which might professedly be the promotion of our art, I feel that I must decline the honour you propose to me. It is proper and due to you and the earlier promoters of this testimonial, that I should frankly state the grounds upon which I do so.

I consider that Welby Pugin was a very distinguished and earnest artist; that he did much for our school; that he freed it from the trammels of merely following in the course of Medieval art as it existed in this country; and, by going to France and Germany, and seeking in the productions of those countries fresh hints and suggestions, new sources of beauty, and novel combinations of form and decoration, he enlarged the sphere of conception, and produced works of high merit. We must also recognize in him an artist's soul, filled with an enthusiastic zeal. Under this point of view I should heartily concur in a testimonial, even although there already exist a most fitting one in the chapel at Rainsgate and the statue erected by the love and devotion of his admirers. But, amidst all the admirable qualities of Welby Pugin, there existed a narrow-minded sectarian spirit. His love for art was limited to a superstitious devotion and worship of Medieval or Gothic creations. He was intolerant of every other class of aesthetic thought; he could not bear any other style that might be supposed to compete with it. He attempted to crush classic architecture with a relentless and consequently with a very unfaithful spirit, as witness his 'Contrasts.' He reprobated its study, and considered its productions as intolerable nuisances. This exclusiveness was an unhappy feature in his character, an obliquity of artistic perception. Now, this obliquity it is sought to perpetuate by the memorial proposed in your letter for the establishment of a travelling studentship, in confining its purpose to examine and illustrate Medieval architecture, sculpture, and painting, in the United Kingdom. This special form of the memorial is founded upon an aspiration of his uttered many years ago. Since then Gothic art has been more studied in this country than any other, and greater encouragement given to its followers than to those of the arts of any other period or style; and a large portion of our leading men are those justly eminent throughout Europe for their talents as Medieval architects. The limitation I conceive to be most pernicious, for it fetters the taste and narrows the judgment. The highest privilege of the artistic mind should be its perfect liberty, and the student should be allowed to drink at every fountain of inspiration. It creates the false idea of there being one point of view from which form, sentiment, and expression can be alone properly studied, and that out of it there can be no propriety of thought and conception. It confirms the notion, too sedulously inculcated already, of antagonism, contempt, and strife; whereas, the arts should offer a common platform of peace, harmony, love, and generous rivalry between the lovers of nature,—that is, those who seek by their works to transfer to their production the beauties, intellectual and physical, of the material world. It sows the seeds of permanent discord, and of a foregone conclusion. In my writings and my lectures I have studiously sought to do all honour to the glorious productions of the Medieval period, and to teach those under me to appreciate the beauties of art and science which abound in the wonderful edifices of Gothic architecture. In fact, my view of our art is a catholic and general one, and I cannot but regard with apprehension any movement tending to drive out of the field all styles but one. It would be as pernicious as, in painting, to select for exclusive distinction and honour pre-Raphaelism, and so to ignore those classes of historic art which Raphael himself, Michelangelo, Paul Veronese, Titian, the Carracci, and other great masters illustrated by their magic powers.

Entertaining these views of the proposed Pugin testimonial, I should be stupid and cowardly if I shrink from expressing the objections I have to it in the true interests of architecture.

THOS. L. DONALDSON.

\*\* It should be remembered that as the fund will be handed over for its application to the Royal Institute of British Architects, by whom Architecture in its universal sense is to be maintained and fostered, and who have already a fund to aid their medallists in pursuing their studies abroad, the Pugin Memorial Fund, for studies at home, will take its place as one of the means at the disposal of the Institute for the promotion of the study of architecture in all its developments and varieties.

#### THE PROPOSED EDUCATIONAL QUALIFICATION FOR ARCHITECTS.

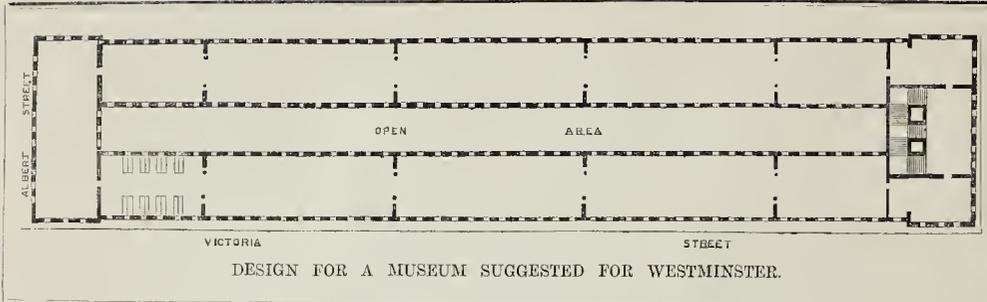
BEFORE leaving my first inquiry for the second,—that is to say, the general principle of the Institute proposal for its details,—it may be well to take up one point in transition, namely, whether the present seems to be the proper time for action. Is the condition of the profession suitable in respect of preparedness? Has the measure itself passed through a satisfactory preparatory course? If the profession is not ready, the measure must wait. If the measure is not matured, the profession must wait.

As to the condition of the body of architects, I am very hopeful that this may not be found unsatisfactory. Taking London alone, as the best criterion, we find about one thousand persons professing the craft, either as principals or salaried assistants. Make all allowance for irregulars: take away also those considerable classes of measuring surveyors and merely superintending surveyors ("practical men" so called), who are perfectly respectable in everything but their assumption, needlessly I think, of the superior name: eliminate also for the sake of argument those (some of them amongst our most responsible men of business) who profess and desire no other practice but that which arises out of dealings with property: there still remain, perhaps, three or four hundred gentlemen of good general education and social standing, together with a corresponding number of assistants, who are every one more or less competent to challenge the twofold test of a practical architect, namely, artistic design, and scientific construction. Now this is a goodly array of guild-brothers. Such a profession is entitled to public confidence; and it possesses it. Upon this basis of what is called respectability of practice, the present Institute has been established, and, by the exercise of the ballot for admission, has been successfully maintained. The introduction of an educational standard, whenever this shall be brought about, is a superseding of the present standard of so-called respectability; and we are now inquiring whether our organization is ripe for this advance,—whether our principles of craftsmanship are so far understood, not only by the few who are to lead, but by the many who are to support with their approval, as to be academically systematized for the more easy and thorough instruction of youth. This is matter for evidence; but at present I am inclined to believe that the result of evidence would be in favour of action.

If so, then what is the position of the measure before us as to maturity? I am afraid that some of our advisers, especially in the provinces, are under the impression that the proposal is entirely new and original, a sudden inspiration on the part of the last year's Council. But whether sufficiently matured or not, it is more matured than this. The readers of the *Builder* will remember, that for a good many years the question of educational reform has been kept steadily before the architectural public. In 1847, the demands of the students themselves for a better system of education led to the establishment of the well-known junior society, which still flourishes. Its object was to supply, for want of better, the means of mutual instruction. Several attempts have since been made to graft upon this institution something that should make it more academic, but without effect: certain proposals will also be remembered as having been offered to the Institute itself, with a similar view; still without effect. Again, not to speak of merely private suggestions, the establishment of a national Academy of Architecture has been publicly advocated in various shapes from the time of Mr. Bartholomew to the recent occasion, when the Institute took into serious consideration the position of architecture in the Royal Academy of Arts. Still, another endeavour dates from the publication by Mr. Fife, at the instigation of the junior society, of the famous Berlin curriculum. Such as these have been the chief stages of the movement. The last developed itself into what is called the "Diploma question," which fastened not only upon the professional mind, but upon the less accessible mind of the Institute, provoking long debate, until at length, discussion being "adjourned," the disquieting question, judiciously perhaps, if not quite constitutionally, was gently extinguished by the Council: the adjourned discussion never was heard of again, like the ship that sailed on a Friday.

The diploma question, as I argued last week, is based upon a radical error, the fallacy, namely, which would create a shadow signifying, before creating, the substance signified. The present

\* When I say cast shadows, I mean cast shadows sharply defined. There is often a cast shadow, but it is almost always shaded off.



proposal is a great improvement upon this. It provides the curriculum primarily, the diploma secondarily. Whether even now it is well matured, must be carefully inquired into; but if the principle of the "diploma question" is understood to be abandoned by the profession, and if the details of the present project will bear examination and amendment, I hope nothing else will occur to make it appear that the educational movement is otherwise than ripe for action now.

One more remark in passing. The organization of the Institute is such at present that no movement of any importance can hope for success unless it accords with the views of the council, so as in fact to be adopted as a council measure. There may be no positive harm in this, except that it is scarcely according to Hoyle; but at all events it renders it necessary that educational reform should become a council measure before it can be a successful one. To the credit of the council the "diploma question" never was adopted by them; on the contrary, they ultimately promoted its extinguishment. To their credit still, now that they come forward as movers in the cause, they appear at once to take the higher and more proper ground. Thus we find doubly. The cause possesses now the influence of our cabinet; and that influence, moreover, is put upon the right track.

Let me now proceed to a consideration of the scheme of the council as regards its details. If we should find it to be without fault it would be much more than in all the circumstances we are entitled to expect. If we find it to be capable of amendment let us be satisfied. This question of details is naturally divisible into two. What should we consider to be a complete system of instruction? How far is it possible or convenient to bring the agency of the Institute to bear upon it?

Perhaps every vocation amongst the so-called liberal professions has to be acquired in two forms, namely, practically, by means of assisting in the transactions of business; and theoretically, by pursuing a course of public or private study. Of office pupillage I need say nothing; the other branch is the matter before us.

The theoretical study requisite for the practice of the architectural profession is properly of two sections, the artistic and the scientific; under each of these categories I must necessarily be allowed to include much more than to some persons may at first be apparent. The artistic section of architectural education would embrace not only the delineation, design, and criticism of all that affects the fine-art of architecture directly, but a certain amount of knowledge of the subsidiary, supplementary, and even collateral fine-arts. The scientific section would embrace not merely what is called construction, but all physical science bearing upon matters of building, and the elements of mathematics to such extent as seems requisite for the application of these sciences: here also we may include the principles of the whole province of plan and such special matters of physical science as bear upon this. The practice of the measuring-surveyor, to some extent, in the bearings of law and usage in reference to building, and various minor matters of business which are more or less important to be understood, although not essentially architectural, must form a supplementary section. A good general education and an aptitude for draughtsmanship are of course essential preliminaries; and with the help of these I am prepared to assert that a complete curriculum can readily be determined which shall bring the whole of what I have now hinted at within reach of an average mind,—plenty of work to do, but nothing to fear. I wish I were twenty years younger, and had such a course of training fairly marked out for me. This cannot be; but the next

best thing is to help to mark it out for those who happily have not to wish for younger days.

I do not expect that the Institute can at once assume the control of a complete educational system. Indeed, I fully hold it to be prudent to creep before we run; and I clearly see that the introduction of an element such as this into our present organization must be a work of very careful and well-considered progress. But before the Institute is permitted to involve itself in any action whatever, the profession ought to take care to have this guarantee for success, amongst others, that the promoters of the measure exhibit a thorough knowledge of detail. Now, for this guarantee we can only look to their published programme. If this be well systematized, we have reason to be satisfied: if it is more or less vague and complicated, we have more or less reason to fear. I take it then *verbatim*. "Pure and applied mathematics, land surveying, mensuration, geology, ordinary construction and materials, drawing, the styles of architecture, the history of architecture, languages, and chemistry"—this is for the elementary examination. "Such (subjects) as occur in professional practice with the general theories on which the detail of such practice is based; e.g., languages, architectural jurisprudence, the Building Act, sanitary requirements, the history of architecture, the theory of the beautiful, the analysis of the styles of art, architectural composition, the literature of architecture, the theory of the higher subjects of construction; e.g., arches, bridges, and domes, the application of iron, &c."—this, with a further development of the elementary list, is for the higher examination. I do not know exactly what may be the general impression produced by all this upon other minds; but if I were to pretend to be myself left in any other condition than that of a respectable November fog, I should not be speaking candidly. It would be too much to say that the gentlemen who portrayed this panoramic sketch of architectural knowledge, were themselves hazy as to its interpretation; but, before the profession can rely upon them for carrying it into practical effect, it is only fair to ask that they should put it into the form of what they may consider to be a systematic scheme, in which the characteristics of irregularity and uncertainty may be kept at least within modest limits. For the essence of the scientific principle of instruction lies in system; and if our students are led to think that the curriculum before them is not capable of being reduced to system, the result must be discouragement.

It is true that the programme above recited is followed by a proposition, "that a curriculum be prepared and circulated, giving a general outline of subjects for examination;" and here I am willing to understand it to be meant that in the "general outline of subjects" we should have a specific and detailed guide to the course of study which is before given in the general outline properly so called. But if the lesser and more brief system of generalities he slightly chaotic, what would the greater and more lengthy system of particulars be? I therefore venture to suggest that before the question comes forward again for debate, the promoters should carefully reconsider their programme, and lay it out in an entirely new form; otherwise I do not see how it can possibly become the basis of any intelligible understanding.

R. K.

**SOCIAL SCIENCE ASSOCIATION.**—The next annual congress will be in Dublin, in response to the invitation of the Royal Dublin Society, who have resolved "That it be referred to the honorary officers to consider and report upon the steps necessary to be taken in order to secure the most efficient reception of that body."

#### MUSEUMS FOR THE METROPOLIS. SUGGESTED MUSEUM FOR WESTMINSTER.

This plan we have engraved, made by Mr. William Bardwell, architect, was laid before the late Select Committee of the British Museum by Mr. Rigby Wason, who stated that fourteen acres of land in Victoria-street, Westminster, might be bought by the Government at 7,000*l.* per acre.

The plan shows a continuous gallery on each floor, 1,780 feet in length by 50 feet in width, and has exits and entrances at each end on the ground floor. The total length of the building is 800 feet; the length of the end galleries 155 feet; the width of the area 30 feet.

#### COURT OF LIEUTENANCY.

A NEW commission of Lieutenancy for the City of London has, by command of Her Majesty, just been issued. The following is the list of the new members named to supply existing vacancies:—

Sir Anthony de Rothschild, Bart.; Edward Huggins, Esq.; Francis Burton Ware, Esq.; Josiah Hale, Esq.; George Whiting, Esq.; Joseph Sebag, Esq.; Henry Hill, Esq., F.S.A.; James Duke Hill, Esq.; Angus A. Croft, Esq.; S. W. Silver, Esq.; J. W. Carter, Esq.; John Jones, Esq.; F. G. Moon, Esq.; Charles Kelson, Esq.; John Clark Lawrence, Esq.; A. J. Waterlow, Esq.; H. V. Vallance, Esq.; Lionel Lucas, Esq.; W. Tite, Esq., M.P., F.R.S.

#### RAILWAY MATTERS.

ENGINEERS are engaged in making the necessary surveys for plans to be deposited with Parliament in the ensuing session, for the construction of an underground railway, commencing at Regent-circus, Oxford-street, and terminating at the station of the Metropolitan Railway in Victoria-street, Holborn-bridge. The line will not pass under the principal thoroughfares, as does the railway now being constructed, but will take a route to the south of Oxford-street and Holborn.—Another new railway project, which excites some interest in the City, is a scheme for directly connecting the Bank and Charing-cross. This connection is not sought to be obtained by any street railway such as that proposed by Mr. Train, but by means of locomotive railway, passengers to be conveyed from Charing-cross to the Bank in about six minutes, in trains running at intervals of five or ten minutes during the day. The proposed railway will connect the Charing-cross line directly with the City by means of a bridge across the Thames at a point where the river is at the narrowest, about midway between Southwark and London bridges, and carry the line thence to the back of the Mansion House, or to Cannon-street. The distance from a point immediately behind St. Saviour's Church, Southwark, to Cannon-street, is only about 800 yards. This is said to be practically the whole length that will have to be constructed in order to bring the Bank and Charing-cross within five minutes of each other.—A return has been issued by the Board of Trade, made up to the end of last year, showing the financial condition of the railways of the United Kingdom. The total capital raised is stated at 334,362,928*l.* It increases by several millions every year, part of the new capital being laid out in heavier rails, larger stations, and additional rolling stock, and the rest absorbed by new lines. The new lines opened in England last year were altogether greater in length than a railway from London to Durham, Lancaster, or Plymouth. The capital raised and spent by twelve companies exceeds 200,000,000*l.*; and three-fourths of it paid less than 5 per cent. in 1859; but 1860 is proving more auspicious.—There appears to be an unusual number of notices of application to Parliament next session as to railway extensions, junctions, branches, and other lines of railway throughout the country.



NATIONAL SECURITY SAVINGS BANK, AND OFFICES OF THE FREE CHURCH, EDINBURGH.\*

MR. DAVID COUSIN, ARCHITECT.

[\* See p. 745, ante.



## THE GROSVENOR HOTEL.

It is not a very hazardous conjecture that upwards of nine-tenths of the visitors to London arrive by railway, and that of these fully three-fourths are domiciled at hotels, inns, taverns, or coffee-houses. Every veteran traveller knows—and more than that, feels—that properly to “take one’s ease at one’s inn,” it should not be far from the point of arrival and departure. As the train gradually pauses at country town after country town, the words “Railway Hotel,” or “Railway Inn,” are among the first to catch the eye; and, for the sake of proximity to the station, and saving trouble and expense in the transport and retransport of cumbersome luggage, the traveller will often cheerfully prefer inferior accommodation close at hand to superior accommodation at the same price farther off. It would almost seem that some perception of this fact prompted, until recently, the opening of the worst hotels and the dirtiest coffee-houses in close proximity to the metropolitan termini. The inquisitive and persevering traveller may easily satisfy himself as to the former general state of miscellaneous accommodation in such localities by wandering in the neighbourhood of the Waterloo-station, until fatigued with carrying his carpet-bag. There he will perceive an archaic state of things still existing in the present day; but elsewhere, except perhaps in the savage regions of Shoreditch, *non avens changi tot cœla*. Although excellent hotels have for some time been established near other stations—that, for instance, at London-bridge—it is only recently that the idea has occurred to enterprising minds to connect with the chief termini hotels equal to the demand of the traffic on the lines, adapted for the reception of the middle and the higher classes, and even more commensurate with the importance of London than the best “Railway Hotels” are with that of provincial towns. This conception, prosaic though it may be deemed by some, is one of those striking conceptions which distinctively mark the civilization of the age, so far as it is justly considered that judicious arrangements for bodily comfort and convenience are absolutely essential for healthy mental exertion and truly pleasurable enjoyment. But such colossal erections were beyond the means of single individuals. Public companies were formed, and soon the Paddington and the Great Northern hotels (not to mention the Westminster, as unconnected with a railway,) formed conspicuous and even palatial features in the varied architecture of London.

In the Victoria-road, Pimlico, and communicating directly with the platform of the Victoria terminus of the Brighton Railway, another *monstre hotel* is now in course of erection by the Grosvenor and West End Railway Terminus and Hotel Company. This structure bids fair to dwarf even the lofty mansions of Belgravia, and to rival, in extent, convenience, and lavish decoration, any of its predecessors. The plan is oblong, and presents two street frontages of the respective lengths of 262 and 75 feet, the height to the highest part of the roof being 150 feet. Some brief particulars of the general arrangement and construction can scarcely fail to interest our readers; and, as the works progress, we shall recur to the subject.

One of the most important points to be considered in the planning of extensive edifices destined for the reception of successive relays of strangers is that the arrangement shall be so devoid of complication as to obviate, as much as possible, the visitor’s hesitation in finding the respective apartments. This difficulty appears to be fairly met in the Grosvenor Hotel. Our remarks, it should be premised, apply, not merely to the actual state of the works, but to what is ultimately proposed. Immediately on passing the vestibule and entering the extensive hall, the harp presents itself on one side, and the porters’ room on the other, there being also, adjoining the latter, a lift kept constantly in readiness to convey travellers and their luggage to the upper floors. Beyond, from the centre of the hall, two wide and straight corridors lead, right and left, to private sitting and other rooms and offices, and are terminated, at one end, by a large dining-room for wedding and other parties, and a ladies’ coffee-room, and at the other, which may be considered as the bachelors’ end, by the gentlemen’s coffee-room, adjoining which, at the rear of the edifice, is a smoking-room. The latter are very spacious apartments, the coffee-room being 69 feet by 36 feet, and the smoking-room 39 feet by 23 feet; both are 18 feet in height. At the end of the hall, facing the entrance, the principal staircase is placed; and two servants’ staircases are concealed on each side. Above, on the first floor, an open

gallery extends round three sides of the hall, which is lighted from above; and the hotel is thus separated into two portions. The galleries on the right and left of the hall communicate directly with two corridors on each side, between which corridors principal staircases, forming somewhat novel features, are placed, the servants’ staircases now mentioned being carried up at the rear vertically from their original starting-places in the basement. It must be evident how greatly this distinct division of the structure in halves tends to obviate confusion, alike in the service of the establishment as in the visitor’s ideas of location. He has but to remember that he should turn to the right or left, and he is at home, or rather in the proper part of the hotel.

There are seven stories above the ground floor, the two first containing suites of drawing, dining, and bedrooms, and other accommodation for separate families, the remaining floors being appropriated chiefly for sleeping accommodation. In each wing a bath-room and room for attendants are provided on every upper floor, except the top-most one for the servants. Three internal areas light the corridors, staircases, and offices.

The service department in the basement, which is amply lighted, is, as may be imagined, on an extensive scale. The kitchen is 38 by 36 feet, and the wine-cellar and coal-cellar are little inferior in area, the other rooms and offices,—bakery, pastry-room, plate-room, larders, stores, house-keeper’s room, servants’ hall, female servants’ room, visitors’ servants’ dining-room, engine and furnace house, &c.,—being also of proportionate dimensions.

Altogether the hotel forms, as it were, almost a little town under one roof, the number of apartments, exclusive of various closets, &c., being close upon three hundred.

The construction throughout is of a very substantial description. On account of the loose character of the soil, and the immense weight to be placed upon it, 22,000 cubic yards of concrete were used in the foundations. The concrete is 10 feet in thickness throughout the whole space built upon, the lower part of the bed, to the height of 3 feet, being formed of Portland cement and Thames ballast in the proportion of one of the former to nine of the latter; but the ordinary concrete extends to the depth of about 35 feet below the main walls. It has been deemed sufficient to make only the approaches and corridors fire-proof: these are paved with Portland stone on brick arches, and the staircases are of the same stone. The divisions of all the apartments are of brickwork, to prevent the passage of sound and fire, wood partitions being excluded. Stirling’s patent toughened iron is adopted, and wrought iron plate and box girders are introduced over the iron columns and in other places. The curves of the roofs are formed with three thicknesses of 1½-inch deals, with rafters and ceiling joists notched on: thicknesses of deals are in other instances substituted for solid beams. Lead is the covering material of the roofs, and a point often neglected is specially enforced, viz., turning the open sides or laps from the south-west, west, and south, wherever practicable.

The hall, corridors, &c., are heated by means of hot water, the pipes being placed in channels formed with bricks on edge on the arches under the paving. The latter is related for continuous iron perforated plates of ornamental design, running along both sides of the corridors and surrounding the hall. For the disposal of foul air, flues are led to a small shaft in connection with the furnace room, where a draught is created. The fireplaces are supplied with air by means of 3-inch glazed stoneware tubes, jointed with Roman cement and communicating directly with the outer atmosphere by means of air bricks; and thus draughts in the rooms towards the fires are obviated. The internal openings are at both sides of the fireplaces instead of below, and admit of regulation.

The elevations are designed in a bold and vigorous style,—a modification of the Florentine-Italian, similar to the edifice at the junction of Chancery-lane and Fleet-street.\* Bath and Portland stones, Portland cement mouldings, and Suffolk white bricks are the facing materials. The ground-floor street-fronts, of Bath stone, are arched and rusticated; and, extending from the respective key-stones, some of the largest swags in London will be carved. Above, the arched windows have pierced and foliated Bath stone hoods; and between these, on the first floor, which has a continuous balcony, are recessed circular medallions, to be filled with busts by Mr. Dayman. The roofs

are curved: that in the centre is flat on the top, and those at the ends rise to a considerable height, and are surmounted with cupolas. At the rear, the elevation, where it appears above the railway station, is similar in character to the principal front.

Internally, the hall, corridors, and principal apartments will be elaborately decorated in plaster, Keene’s and Martin’s cements: several of the walls are to be covered with diapered work, and scagliola columns will be introduced. The chimney-pieces for the chief apartments will cost from 30*l.* to 50*l.* each.

The site belongs to Mr. Kelk, by whom the works are being carried out from the designs of Mr. J. T. Kowles. Mr. W. Hemsley acts as clerk of the works, and Mr. W. Heru is the builder’s foreman. The estimated cost of the erection is, we understand, about 100,000*l.*

## LIVERPOOL ARCHITECTURAL SOCIETY.

## ARCHITECTURAL EXAMINATIONS.

At the ordinary meeting, held on the 14th instant, Mr. James M. Hay in the chair, the hon. secretary reported that he had received a letter, enclosing two resolutions, which were passed at a meeting of the associate and student members in the previous week, first, “That a vote be taken as to the desirability of an architectural examination of any kind.” For the examination, one; against, fourteen. Second resolution: “That we acquaint the members of the society with our decision, and request them to withdraw their late resolution of approval. Failing, a memorial to be forwarded to the Royal Institute of British Architects, to be signed by the associate students, and those architects who are against the movement; acquainting the Institute that they object to anything like an architectural examination being established.” A communication in answer to the resolution was requested to be sent before Friday.

The chairman observed that it was quite out of order to request the society to rescind a resolution which had been passed after public notice had been given that the subject would be discussed. The first resolution could be properly accepted as an expression of opinion, but the second was out of order. The duty of the associates and students was to have memorialized the society, and it would then have been a question with the society whether they would send the memorial to London as an expression of opinion.

The memorial was discussed at some length; some of the members expressing an opinion that it was not courteously couched. Mr. Howard supported it, and said three professional members were dictating to the whole of the society. Mr. Boulton said a statement in the memorial was not correct, and that he did not wonder, after the spirit they had shown, that the students and associates were afraid of an examination. Their minds were manifestly extremely inexact.

Mr. Audsley explained that the resolution was not intended to convey any threat; but as it was viewed in that light he would, on behalf of his brother, withdraw the whole communication, and it could be re-written, and sent to the society at the next meeting.

After some further conversation, the letter from the students and associates was withdrawn.

## PROPOSED UNION OF INSTITUTES.

The hon. secretary read a letter from Mr. O’bry, secretary of the Northern Architectural Association, Newcastle, enclosing a resolution of that body, recognising the desirability of a general alliance of the institutions of architects, in order that combined action might be taken, if any question should arise affecting the interests of the profession.

Mr. Bout proposed the following resolution, which was seconded by Mr. Hay, and carried:—“That the receipt of the communication from the Northern Architectural Association be acknowledged, and that the secretary be requested to say that the members of this society will be happy cordially to co-operate in the attainment of the proposed objects, so far as they may prove to be feasible; and that the letter be referred to the council of this society for their consideration and report, upon the best means of realising the proposals of the Northern Architectural Association.”

It was announced that Mr. Milner had given a prize for the best design for a door for his safes, to be competed for by the students.

## THE HISTORY OF ARCHITECTURE.

The paper for the evening was “An historical and critical Review of the various Styles of Archi-

\* Described and illustrated in vol. xiii. p. 389.

ecture that have been practised in the world from the dawn of art to the beginning of the present century," illustrated by a coloured chart of the history of architecture; by Mr. Samuel Higgins.

He commenced by saying, that though the secretary's circular promised an independent paper, illustrated by the chart, he had thought it best to reverse their relationship, and make the paper an illustration of the chart, which latter represented the origin and various successive transformations of the architecture of the Greeks, involving the rise, chronological sequence, relationship, &c., of the principal styles that have been practised from the dawn of art to the present time. It was embellished by various chronological tables,—one of the great ruling powers; another, of the principal architects; a third, of the great typical edifices in each style; and a fourth, of great events having an influence on architecture, which latter he had found so numerous as to show that, if the history of architecture was not identical with the history of the world, it was at least an appendage to human history, and organically developed out of it.

He began with the Egyptian style, the origin of which was lost in the night of time beyond the ken of historic record. To it belonged the oldest buildings on the face of the earth, irrespective of the pyramids, which, though sublime objects, could scarcely be considered as architecture at all. Unlike the subsequent styles, which invariably manifested progress for a certain portion of their career, the course of Egyptian art was one of decline; the oldest buildings being the greatest and purest in style. The Temple of Karnak was the oldest of temples, and perhaps the sublimest building ever reared by human hands. The Egyptian and Assyrian were the Asian and Eve of the architectural styles of the world. The Egyptian gave to the Greek some of its most beautiful elements and sublime characteristics, and showed forth the Doric order, while the Assyrian suggested the Ionic.

After describing the Assyrian style, which was chiefly illustrated by palaces, the remains of which had been, within the last few years, dug out of the earth, he went on to the Persian—a style almost identical with the Assyrian, and which continued to flourish at Passargadae and Persepolis, till the fall of the Achaemenian dynasty and conquest of Persia by Alexander the Great.

The style of the early inhabitants of Greece was the Pelagic, which, under the Dorians, was there mingled with Egyptian and Assyrian elements till it grew into the Hellenic, or true Greek, the first appearance of which was at Corinth, under the Cyclades, in a form almost as massive as that practised in the valley of the Nile. This originated the archaic age of Greek art, which was followed by the middle age of Pericles. Of the style, as it existed at this time, he would only say, that every increase of knowledge went to confirm the belief that it was the most pure, noble, and perfect architecture that ever existed in any form in which the most intellect and refinement of feeling was embodied, and that involved the sublimest graces and excellencies ever expressed in stone. The noblest example of the style—the Parthenon—embodied the most perfect beauty and æsthetic perfection of form and detail within the same compass than any other building in the world.

The period at which such architecture was produced, both Classicist and Medævalist must almost be the most illustrious epoch to which we could point in the history of architecture. As might be expected, it was otherwise illustrated; and the genius of architecture did not reach to so distinguished an eminence unaided, as it was aided by her sister arts; not only by sculpture and painting, which were then in their zenith, but by poetry and "Divine philosophy." The Homeric period of the Grecian epic was passing, at the time in question, but it followed close upon that of Pindar and the Greek lyric muse, and it was contemporary with the glorious dramatic era of Æschylus, Sophocles, Euripides, and Aristophanes; rendered still more illustrious by the pure doctrines and bright example of the greatest philosopher of antiquity, who was then living in Athens,—Socrates; while it heralded the philosophic age of Plato and Aristotle, and the no less brilliant era of Demosthenes and Æsopates.

The two styles, Greek and Etruscan, flowed together to form the Roman, into the defence of which, against recent depreciation, he warmly entered. The Roman style, in the time of Augustus, its great period, was practised from the shores of the Atlantic to the Black Sea and Persian Gulf, and all round the Mediterranean, save Egypt. With the exception of the Egyptian, it was the only style of the civilized world, and, notwithstanding all that had been urged against it, he thought it was not unworthy of its great extent of practice, as Paul's Cathedral, London, was Roman architecture as the Romans used it; and neither the Greek nor the Etruscan alone could have embodied such a composition, nor so Romanesque, in which the two styles were fused into one, in the manner in which the Romans should have united the styles, could have attained to half its grandeur.

After describing the style of the middle Persian Empire, which had an important bearing on subsequent styles, he entered on a description of the Christian career of architecture. Under the influence of Christianity, he traced the of all associations of Paganism, and its new requirements, the Christian Romanesque was generated, which style was no sooner formed than the Byzantine commenced its separation from that of Paganism, as Hope says, originated in a wish on the part of the architects' Com. stantople, after its separation from the Western Empire, of giving to the architecture of Christianity a form wholly different from that of Paganism. The Byzantine was the style of all nations of the Greek Church, or the remnants of Christian in the East, and did not embrace the faith of Mahomet. After giving a full description of the style which, in course of time, became and retained into several distinct branches, European Byzantine, Western Asiatic Byzantine, Armenian Byzantine, and Georgian, the latter coming down to the present time, he went on to the Saracenic group of styles, which were developed out of the Byzantine, viz., the Persian, the Syrian, the Egyptian, the Spanish, or Moorish, and the Indian and Turkish; of which styles he gave an interesting description, great influence through the medium of the Crusaders on the decorative development of the Gothic. It was devoutly to be hoped, for the sake of the general interest of architecture in the world, that the increased intercourse with Europe would not further interfere with the practice of these styles, and prove an extinguisher of so much

that was beautiful and poetic. Returning to the main stem of the history, he entered on the subject of the Gothic style. From rude attempts of the various tribes of barbarians, who overthrew the Roman Empire, to initiate the edifices of ancient Rome in Christian churches, an entirely new system was originated, called Gothic, which for a while was all one nebulous chaotic mass. But in process of time it consolidated, branched out, and grew with the faith which called it into existence, into the different countries of Europe, where it exhibited local varieties according to the character and energies of the different races who adopted it. As the vernacular languages of modern Europe pushed themselves through the Latin as the exponents in each particular country of the popular thought, so in like manner the Gothic styles of architecture made their exit from the Roman. Of these Gothic styles, the Lombard was the first that became formed into an independent style: the German was the next, which was the finest of the round Gothic styles, and the one most worthy to stand as the representative and typical style of the class. He described the career of Gothic in France, England, Spain, Belgium, Scotland, and Ireland, and traced them through all their different periods to the time when their course was arrested by the reformation and revival of Classical art and other causes. He meant no disparagement to the Gothic system when he expressed his belief that it never could have come to us, but through the artistic darkness and barbarism of the Middle Ages; for none but men who knew nothing of Classic canons of art, and on whom Greek and Roman tradition had no authority, could have made so bold a venture. The Gothic style which at the time was all but universal, as the Lombards and other Gothic tribes made in the sixth and following centuries. Reverence for their great predecessors did not never have suffered Roman artists to take sufficient liberties with the proportions of the Greek ordinance for the creation of a style so different in spirit and principle of composition as the Gothic. We were indebted to the advent of barbarism in the fifth century, which destroyed the civilization of the ancient world, and plunged Europe for ages in mental gloom, for the greatest system of architecture that had arisen since the Greek; and to the rise of a false prophet in the sixth century, who, by his doctrines by the sword, and carrying desolation over the fairest countries of the globe, for another, which, if not so great, was still more elegant and refined. He then traced the history of the Gothic style in the thirteenth century—Romanesque and mixed styles—such as the Sicilian, Italian, Gothic, Moresco, Neapolitan, and others; and then entered into an account of the revival of ancient architecture, the first dawn of which was in the thirteenth century, and traced the course of the modern Italian stream of art through the great period of the cinque secoli to the present time. In conclusion, he said he could not give so much attention to the subject as he was under the conviction that a knowledge of the development and history of styles was greatly assisting, if not absolutely necessary, to a right understanding of the principles of architecture.

Thanks were voted to the reader, and the publication of the paper and chart was suggested.

#### MASTER AND WORKMEN.

MESSRS. LUCAS AND THE VOLUNTEERS.

THE workmen, in Messrs. Lucas, Brothers', employment, belonging to the volunteer corps, to the number of nearly ninety, were invited by their employers to dinner, along with their fellow workmen, and various personal friends of the employers, on Tuesday last week, in a temporary dining-hall, prepared in the yard of Messrs. Lucas's works.

Mr. Charles Lucas occupied the chair, supported right and left by Sir S. M. Peto, bart.; Major-general Sir R. Daeres, K.C.B., R.A.; Colonel Wingfield; Colonel Hockley; the Vicar of Lowestoft, and various other gentlemen, both civil and military.

We do not propose to give a report of the meeting, our purpose being chiefly to quote some remarks by Sir M. Peto on the interference of third parties between masters and men. On this subject, Sir Morton, while responding to his own name in a toast, remarked that,

What he wanted to say to them was this,—Never let any one come between them and their masters. He did not wish to tread on tender ground, but he had very hard things said of him in London,—a great many things that he did not think he deserved. But it was because he believed he was the workman's best friend in telling the sure truth on all occasions, that he now said, if they let any one come between them and their masters, that confidence, which was something like the love of a husband and wife, would be destroyed,—the bloom would be taken from the fruit, and great injury would result. The reason why they got on so well with their masters, the reason that they had been so happy together, was that they had no strangers in Lowestoft stirring up mischief between them. He prayed them, as one of their best friends, to continue in this happy path; because he believed from the bottom of his heart, they might continue in it, for he knew their worthy chairman and his brother so well, that they would ever prize in their workmen that feeling which he had said began with the troublesome complaint (the Jack-plains fever) he referred to, and would be anxious to see them working their wayward waywardly. They wanted to see their workmen stepping the ladder as well as themselves, but they wanted to have the pleasure of stepping it with them apart from the interference of others.

The workmen present, it appears, were quite of Sir Morton's opinion, and have very strongly expressed their intention to follow his advice.

We may also quote a few further remarks by Sir M. Peto on the question of workmen's dwellings. In proposing the name of Mr. Lucas and his brother for a toast, he said,—

His friends were paying in the town of Lowestoft an annual amount of wages approximating closely on

40,000l. What did that do in a town like this, dispensed yearly? The amount of good it did in all its various modifications was scarcely to be credited. In the first place it kept every person employed by the firm, and most of them were the contented families. They had their houses which they had the pleasure of knowing were very different from the houses of workmen in London. He believed the great drawback to workmen in London was the want of suitable houses. He did not know how this question was to be met: it was one that presented itself alike to the workmen of London and Paris. However, that difficulty did not exist here.

The Chairman, in responding to this toast, took occasion to refer to Sir M. Peto's remarks as to the relationship between masters and workmen, and as to their own excellent understanding with their workmen, and the good fruits to all concerned.

He saw around him, he said, large numbers who had been in his and his brother's employ for thirteen years, and they had had the same number of men in their employ upwards of ten years, and who had never yet had to work an hour's short time. On the contrary, those who liked to do so had invariably worked overtime; and the lending men would bear out the fact that they had felt it their duty at times to take work at a loss in order to keep their old hands on. He did not wish them to believe that their trade had been a loss; but, on the contrary, it had been a profit beyond anything they could have anticipated. It was their desire, from the commencement, to become one of the first firms in London; and he thought he might say, without egotism, that they had become so. He could not express to them too strongly how much his brother and himself were indebted to their workmen for this result. There was one most delicate subject he should have touched on, but Sir Morton Peto had touched on it much better than he could do. It was anything between them and their employers, he would ask them to say what it was, and not to bring in a third party. He did not wish them to be shackled to him or any one else, but he wished them to use their own judgment, and to do what they thought right. If they did this, they might depend on it that they would retain their self-respect, and gain the respect of all around them.

On the subject of the mental and industrial education of the workmen's children, the Chairman also said,—

He believed there was no place in the world where a man could more easily obtain education for his children than in Lowestoft. He could only say to his workmen, when their children had been educated, and were in a measure of their hands, they (Messrs. Lucas) would be happy to take any of them, and apprentice them in any branch of the trade in which their parents might feel disposed to place them. They not only desired to do that free of cost, but they should also feel it their duty to pay them such wages as would relieve their parents from the great care they must necessarily have in supporting them.

"The Architects and the Profession" was a toast proposed by Sir M. Peto, coupled with the name of Mr. John Thomas, who was present. Of Mr. Thomas the speaker remarked that the first time he had the pleasure of seeing that gentleman, he was on a ladder, carving a lion's head on the front of a shop at Birmingham. The next time he saw him he was carving various graceful figures, with great effect, in St. Edward's Grammar School, Birmingham. Subsequently Mr. Thomas executed some works for himself; and on his (Sir Morton's) being, with his late partner, employed by the Government to erect the new Houses of Parliament, his friend Mr. Thomas took the whole of the sculpture connected with those edifices. He was now so much employed by the Queen and Prince Consort, that it was a matter of difficulty for him to get the necessary time for the rest of his work. Mr. Thomas had been able to do this, and surely there was the same path open to every one in this room. It was a happiness experienced by Englishmen that any man who had talent might have the opportunity, by perseverance and determination, of achieving similar success.

It was stated by Lieut. Lucas, in proposing "Prosperity to the Town of Lowestoft," that he himself remembered when the population was only 3,500 or 4,000, whereas now he believed it to be upwards of 10,000, a fact which spoke volumes.

#### THE PHILHARMONIC HALL, ISLINGTON.

On the eastern side of the Islington high road, close to the turnpike, and not far from "The Angel," a spacious house in front and an ungainly inclosed building seen at the end of a gateway at the side have long disgraced the spot. Under the direction of Messrs. Finch Hill & Parlane, architects, Messrs. Holland & Hanson have transformed these premises, for Messrs. Saunders & Lacey, the proprietors, into a handsome music-hall, with approaches, howling-alleys, and billiard-room. The principal entrance leading to the great hall is wide and commodious, and 40 feet long, at the end of which is the principal staircase, consisting of three flights, the centre leading down to the area of the hall; the two others lead to the balcony. Descending the centre stairs we reach the corridor, which is 100 feet long and 13 feet wide. It is divided into four bays by project-

ing columns, supporting semicircular arches. On the left of the passage are the billiard-rooms and American bowling-alleys; on the right is the music-hall, a well-proportioned room, measuring 100 feet long, by 43 feet wide, and 40 feet high. The balcony at the sides of the hall is arranged for two, and that at the end for five rows of seats, with a promenade behind. Above the form of the orchestra are private boxes, eight in number. The walls of the hall are divided into bays by pilasters, on the face of which are life-sized caryatides, supporting square blocks, round which breaks the entablature. The ceiling is divided into panels by hands formed by an open fretwork, which affords means of escape for the heated air. The orchestra is of a semicircular form, and is enriched by sculpture, gilding, and other decorations. All the interior decorations, in *carton pierre* and *papier mâché*, including all the ornamental work in relief, were executed by Messrs. White & Parby; the gaseliers by Messrs. Jones; and the ironwork was by Mr. G. Barrett.

#### NORTHERN ARCHITECTURAL ASSOCIATION.

THE quarterly meeting of this Association was held on the 20th instant, in the Old Castle, Newcastle-upon-Tyne. Mr. Green, vice-president, in the chair.

Mr. Oliver, the hon. secretary, read a letter from the secretary of the Royal Institute of British Architects, acknowledging the receipt of resolutions in favour of a diploma, passed at a previous meeting of the Association. Letters were also read from the Royal Institute of Scotland and the Birmingham Architectural Society, stating that the proposal for establishing an Architectural Alliance of the different societies throughout the country would be laid before the members of the societies named.

Mr. Watson then read an interesting paper on "The Practice of Architecture."

#### REMARKABLE GAS EXPLOSION.

ON Saturday last an explosion of gas took place in a small house, No. 1, Elizabeth-place, Wandsworth, which blew up the walls, and has necessitated the entire rebuilding of the house. It is stated that, through defective pipes, the gas had accumulated beneath the lowest floor in the front of the house. A woman and children were in the back room, where the floor remained uninjured, and they contrived to escape. The furniture in the house was blown to pieces. It is remarkable that a man and his wife, who were in the adjoining house, and were slightly injured, did not hear any explosion, though the neighbourhood were alarmed by it far and near.

#### CHURCH-BUILDING NEWS.

**Godalming (Surrey).**—The district church of Farncombe, near Godalming, has lately undergone enlargement and renewal, and has been re-opened. A north aisle has been added, corresponding with the other parts of the church. Two hundred additional sittings are provided, and a gallery has been erected for the use of the school children. All the windows of the church have been filled in with stained glass, supplied by Messrs. Powell & Son, of London. The architect was Mr. Scott, and the contractors were Messrs. Jackson, Shaw, & Co.

**Bathelston (Somerset).**—The chancel of this church has been rebuilt by the vicar, the Rev. T. P. Rogers, and re-opened. The stone work has been executed by Mr. Newman, of Bathford; and the wood work by Mr. Silver, of Maidenhead; whilst the carving was done by Mr. Earp, of London. The floor of the chancel is inlaid with encaustic tiles, by Mr. Godwin, of Lugwardine; and in the south-east is a memorial window to the first wife of the vicar, executed by Messrs. Clayton & Bell. The chancel has been rebuilt under the direction of Mr. F. Pready, of London, architect. In the rebuilding, the old stone work has been, as far as practicable, re-used; but being of two distinct periods, the architect has adapted the Earlier or Geometrical Decorated style. The debrased flat roof has been replaced by an open trussed roof of the same height and pitch as the original one, covered with the stone slate of the neighbourhood. The ultra-high pews have given place to low oak open benches. The benches and other parts in wood and stone work display a considerable amount of foliage and figure carving, and Messrs. Hardman & Co. have supplied a corona of brass.

**Leicester.**—A new clock for St. Mary's Church is to be erected by public subscription, promoted

by Mr. Joshua Underwood, with the concurrence and assistance of the vicar and churchwardens. It will strike the hours and chime the quarters on four bells, with a varied musical chime for each of the three quarters, and hour. It will have three dials, of 6 feet 6 inches diameter. The minute hands will move over each division at once instead of gradually, and enable the public to ascertain the time from the street, within a second, without waiting to hear the clock strike. Frame, 260 lbs.; wheels, barrels, and other brass works, 240 lbs.; moving weight of quarter-jack, 728 lbs.; hour weight, 501 lbs.; going-weight, 100 lbs.; total weight, without dials and hands, 1,829 lbs. The clock, says the *Leicester Advertiser*, will embody the several improvements of Mr. Losby's patent, and the works have been arranged throughout on the same model as he would employ for larger clocks than any yet constructed in Europe.

**Warrington.**—The parish church has been altered in the interior. The pews have been done away with, and nearly the whole area of the church thrown open, with free seats, to the people. The restoration of the tower and spire will be commenced as soon as funds can be obtained for the purpose, under the direction of the Messrs. Francis, architects, London.

#### FAILURE OF A POWDER MAGAZINE, WOOLWICH.

WHEN we mentioned, in October last, that a settlement had occurred in a magazine under construction in Woolwich Marsh, the contractor wrote for the name of our informant, and denied the truth of the assertion in so unqualified a manner, that we at once expressed ourselves willing to accept his assurance. It would seem, nevertheless, that we were correct, and the failure is now common talk. Thus we find the following in more than one of the London papers:—

"Reference having been made a few weeks ago to an alarming cleft which had made its appearance in one of the exterior walls of the newly-constructed magazine at Woolwich, the statement was hotly contradicted by authority; in some of the public journals; and, with a view of supplying all possible proof of the fact, the gap was cleverly plastered over, and temporarily obscured by what is officiously termed 'clocking the matter' in spite, however, of every precaution, the evidence very soon became again quite apparent, when suddenly the piers supporting the groins gave way, and the ponderous iron rafters, thickly inlaid with concrete and shingle, and covered with asphalt, composing the flat roof, together with the supporting brick wall underneath, now form a mass of ruins. From the present state of the structure throughout, it is apprehended that other portions may in all probability be insecure. The police are therefore strictly charged to warn visitors of the danger of their approach. The building is stated to have cost 7,500*l.*, and a discussion is likely to ensue as to the individual liability, the building having been constructed by contract from a draught furnished by the Royal Engineer department of the royal arsenal."

The contractor will probably think it becoming to explain the matter. We had no desire to attribute blame, but we have a desire to defend the correctness of our statements.

#### TRIBUTE OF RESPECT TO A NATIONAL SCHOOLMASTER.

IN this country the schoolmaster has been too little considered. In ninety-nine cases out of a hundred he has been allowed to pursue his laborious, tedious, and often thankless office with but little notice.

In many cases the salary of the schoolmaster and schoolmistress is not so much as that allowed to the agricultural labourer or the meanest mechanic; and yet what powerful workers are these men and women in connection with the welfare of the state! Of late a somewhat better spirit has been exhibited. It must be admitted that the schoolmasters and female teachers of the National Schools have, as a class, vastly improved. As an instance of a good change, we make a note of the death of Mr. Jessop, which took place a short time ago, after he had been master of the All Saints' National (boys') School, Islington, for a period of six or seven years. During that period, he in a most conscientious manner performed his duty. In spite of delicate health, this gentleman continued his exertions until he was stricken down in the midst of his scholars by the bursting of a blood-vessel. The body was borne to the district church, followed by a long procession of mournful scholars, teachers, and friends: the church was crowded in all parts; the incumbent read the funeral service; and, amid the sob of the assembly, delivered a warm and well-merited eulogium on the deceased. After this the mourners proceeded to one of the northern suburban cemeteries; and we noticed that as it passed along the Caledonian-road nearly all the shops of the tradesmen

were closed, and the window-blinds of the houses drawn as in the time of mourning for a near friend. Such marks of respect are gratifying to survivors, and will act as a stimulus to other schoolmasters rightly to perform their great mission.

#### TIMBER BRIDGE, BRITISH HONDURAS.

A TIMBER BRIDGE has been recently erected in the settlement of British Honduras, over the river Belize. It had been contemplated some years to erect a bridge of one span over the river (for which designs had been made); but, from the lowness of its banks, and the difficulty of making raised approaches, without interfering greatly with private property, the local government determined to adopt one of three arches, designed by the Colonial engineer, Mr. Baylis. The sum voted by the House of Assembly was 25,000 dollars, but the present bridge has been erected for 13,754 dollars. There is some novelty in the design: the centre bay is 50 feet in span; each of the side bays, 40 feet, and with slight rise, the angles formed by the struts and straining beams being less than is usual in such structures. The roadway is 20 feet wide. The bridge is built of timber little known in this country, viz.—Sapodilla wood, which is a close-grained, dense, hard wood, and weighs about 75 lbs. to the cubic foot. It grows abundantly in the vast forests of this region, and balks may be had 30 or 40 feet in length, that will square 12 to 14 inches, and cost in scantling, 2*s.* per cubic foot.

The old bridge, which was a beam bridge, resting on piles, was built of the same description of wood, and had been in existence upwards of forty years. Some of the timber, particularly parts of the piles, was sound and good on its removal, although it is a most trying climate for timber.

The piles of the piers of the new bridge were eased or sheathed with toughened cast-iron, which was fixed on and bolted to the piles, and these were driven into the bed of the river, and on the front of the abutments, after the sheathing had been put on. These effectually exclude the worms, as well as add stability to the structure.

The contract was obtained, and the work carried out by Mr. Connor (formerly of London), after an open competition. The other competitors were Mr. Lord, whose tender was 18,000 dollars, and Mr. Utar, 17,000 dollars.

#### EXHIBITION OF IRONMONGERS' ASSOCIATION.

THE Ironmongers' Association, of whose meetings our readers have at times heard, have opened an exhibition for a few days (at 76*a*, High Holborn) of inventions and specimens connected with the trade. Although it does not contain many things actually new, it deserves the attention of ironmongers and others who desire to see what is being done. Gibbons's knobs, wire-blinds, some Sheffield wares, Bulmer's gas-stove for bookbinders, Walker's patent stove, in which the fire-brick sides can be brought closer together, so as to reduce the fire, and the American brushes, are amongst the noticeable items. Messrs. Kenward, also, send some fair iron castings.

#### EMPLOYERS AND ARCHITECTS.

SIR,—A. employs an architect to build a church, which is opened say two and a half years, though unfinished as to pulpit and ornamental chiselling. B. is a sculptor who has done some little work for this church. A. happens to obtain possession of a statue of B.'s work which he finds in another county, and, wishing to mount it on a pedestal or column in the church in question, he writes to B., asking for a design, describing, as well as he can, the kind of church, to which he has sent, through the architect, what he had already done for it. B., however, writes back that diffidence with respect to the architect prevents his giving such design.

May I ask you if such is usual? If so, it seems to me to monopolize every out of a chisel or piece of glass in a church into the hands of the architect who began the church, thus preventing the paver for the church "picking up" what may strike his fancy elsewhere, or perhaps from encouraging some young artist from whom he may wish to order some little work.

#### A SUBSCRIBER

\*\* B.'s reply was correct and praiseworthy. Nevertheless, the employer can, of course, employ whom he will; good taste and good feeling alone controlling him.

## CONSTRUCTION OF FLAT ROOFS.

I HAVE noticed in your paper on several occasions lately notices relative to various modes of covering flat roofs with other materials than lead. If you can find room for the following particulars of a form of construction I have adopted, and which has now been executed about twelve months without any appearance of failure, they may be of use to some of your readers. The space covered is a dining-room ceiling, the joists of which are about 19 feet clear bearing, 9 by 3 inches, and 10 inches apart, with two rows of trussed bridging to make them perfectly rigid. About 2 inches above the underside of joists ribs are nailed to the sides, for the purpose of receiving 2-inch boards; on these rough boards the spaces between joists are filled in with sawdust to deaden sound; on the top of joists rebated 1½ boards are laid; these are covered with Croghan's asphalted felt, and upon this felt 9-inch Staffordshire tiles are laid, with painted edges and jointed in oil putty. It is important that the surface of each tile be perfectly level, or, rather, flat, so as not to hold water. This roof is in a very exposed situation, and it is used for walking upon and for plants, &c. Upon calculating the cost of the labour and materials used in lieu of lead, it is a little more than half that of 5 lbs. milled lead. A fall of 2 inches to 10 feet is given.

T. MERCER, Architect.

\*\* Such a mode of construction cannot be generally recommended, the risk of failure being considerable.

## WANTED! SOME CHEAP AND ORNAMENTAL WOVEN STUFF FOR CEILING OF ROOMS.

If your excellent paper, so widely spread among skillful manufacturers, will call their attention to this short note, I think that, with the many different kinds of raw natural material for cheap and thick cloth and matting, now brought to England from all parts of the world, some ingenious man will find a way to make ceiling covers, in place of the present ancient and barbarous lath and plaster; and that, like carpets on the floor, it will be put on in one piece, same size as the ceiling, and fastened to the joists by screws, with ornamental star-like heads; also which covers can be made thick, so as quite to deaden the sound of feet walking in the room overhead; also which can be taken down and cleaned, and put up again with little trouble; also on which agreeable skies, or patterns, in panels, in the Italian fashion, can be stamped or painted.

Surely some such kind of ceiling cover is wanted in many classes of rooms, and is likely to make the fortune of its inventor, and is therefore worth some trouble.

J. G. V. PORTER.

## EXPLOSION AT ST. MARY'S, OXFORD.

A REPORT on the cause of the recent explosion in St. Mary's Church, Oxford, by Mr. Siemens, of London, attributes it to gas accumulated under the flooring, where a workman had thrown down a burning match. The gas-main had been broken while laying pipes for the hot-water apparatus.

Sir,—In your last week's edition there was a short account of the accident at St. Mary's Church, Oxford.

As I happened to be at Oxford last week, I think it right to send you word that, from what I saw and learnt on the spot,—viz., the facts of the boiler not burst; the hot-water pipes broken straight across, as from an external blow; the gas-pipes old and honeycombed; and an overwhelming smell of gas previous to the accident; a light used by the gasfitters previous to the accident; the extensive character of the explosion, all the windows in the church being blown out, and the loud report,—the conclusion is inevitable that Mr. Rosser's low-pressure heating apparatus had nothing whatever to do with it, but that it was an ordinary gas or fire damp explosion.

F. C. PENROSE.

## ROADWAY AT KING'S CROSS.

Sir,—Allow me, through the medium of your paper, to call attention to the boon the Board of Works might confer upon the public by making a road across the new railway at King's Cross, opposite the Caledonian-road, thus making a direct way from the Gray's-Inn-road, and saving the present detour. The expense would be a mere trifle now all the houses are down; and, as anything improving the neighbourhood must be beneficial to the railway company, one would fancy they would gladly assist. To the market people it would be a very great benefit.

W. S. A.

THE AWARD, *RE MYERS & SARL & SONS.*

## COURT OF QUEEN'S BENCH (TUESDAY).

Before Lord Chief Justice Cockburn, the Hon. Mr. Justice Hill, and the Hon. Mr. Justice Blackburn.

An action was brought by Messrs. Myers, of York-road, builders, against Messrs. Sarl & Sons, silversmiths, of Cornhill. By arrangement, the action was referred to Master Norton, one of the Masters of the Court of Queen's Bench, who, after hearing evidence of most voluminous extent, made his award in favour of the plaintiffs, but, at the request of the defendants, left it to the Court of Queen's Bench to say whether the arbitrator was right in receiving parol evidence to explain a certain phrase ("weekly accounts") in the contract. The defendants, however, also moved the Court to have the whole matter referred back to the arbitrator for re-consideration.

Mr. Bovill, Q.C. (with him Mr. Tompson Chitty) now showed cause against the rule, and was also heard in support of the finding of the arbitrator. He said that the question raised in this case was whether the phrase "weekly accounts," in the contract, was a term of art. The objection raised by the defendants was, that no sufficient weekly accounts had been delivered by the plaintiffs. The question then was, whether evidence was admissible to show that the words were a term of art. The award found that they were a term of art, and that the accounts delivered were the words with which the contract was submitted for the opinion of the court were, first, was I right in admitting parol testimony to show the meaning of the term "weekly accounts," as used in the contract; and, secondly, was an arbitrator, in such a case, to be bound by an award?

Lord Chief Justice Cockburn said he did not find any ambiguity in the award. He understood the question was, was this a term of art; and, secondly, if it was, was it capable of being explained by parol evidence. At the moment you had ascertained that the words were not to be taken in their ordinary, every-day sense, but in an artificial sense, then you have a right to receive parol evidence. Was there any doubt about those words being a term of art?

Mr. Lush, Q.C. (for the defendants), said the question was, whether the arbitrator was right in admitting parol evidence to explain the meaning of a written contract.

Lord Chief Justice Cockburn said that would depend upon whether the words were clothed with a peculiar significance.

Mr. Lush said that weekly accounts were to be rendered by the parties of the first part to the contract to the work done thereunder, and the evidence proved that accounts of only half the work done were delivered. He, therefore, said it was in derogation of the contract, which was "to deliver weekly accounts of the work done."

Lord Chief Justice Cockburn said the fallacy seemed to be in supposing that the words used had a significance antithetical to the contract. The parties meant them in a different sense—in a sense different to their ordinary signification. If not so it was a very different matter.

Mr. Lush said the whole question was, whether, looking to the terms of this contract, the arbitrator was right in receiving evidence at all.

Master Norton explained, for the information of the court, that it was contended that the plaintiffs could not recover a large sum for additional work done which had not delivered "weekly accounts." It was contended for the plaintiffs that they did give "weekly accounts," and accounts were produced. The defendants then said those accounts were not "weekly accounts," and were not sufficient for the purpose, and it was contended I should hold they were not "weekly accounts." It was then proposed to show me that the accounts produced were "weekly accounts" used in the trade, and from thirty or thirty-five architects were called, of the highest eminence, who were all unanimous upon the subject. He called their attention to the accounts and asked if they were such "weekly accounts" as signified the exigency of the contract. It was unanimously held that "weekly accounts" was a term of art; and being such, the question was, were the terms of the contract satisfied?

Mr. Lush.—There was evidence on the other side.

Master Norton.—There was evidence on the other side, but what there was was very little, very contradictory, and very unsatisfactory.

Mr. Lush then proceeded to contend that the evidence received was not admissible. He asked, if a condition for weekly payments had been inserted, whether it would have been possible to call evidence of custom to explain away the meaning of the contract with regard to penalties. He relied upon the case of *Blackett v. Royal Exchange Insurance Company*, where it was held that the insurance of the ship, boats, furniture, and cargo, meant, the insurance of all the furniture and cargo. He applied this to the case under consideration for the purpose of his contention, that "weekly accounts of the work done" meant "weekly accounts of all the work done." Out of 1,400 extras, the accounts only showed about 300. He said the very object of the contract would be defeated. The object of the delivery of the accounts was in the event of any accident happening, that the present or any future architect of the defendants might know what was being done. He submitted that the term in the contract, "weekly accounts," must be read "weekly accounts of all the work done;" and that parol evidence was not receivable to show that by usage, "weekly accounts of part of the work done" would satisfy the contract.

Lord Chief Justice Cockburn said that the court were of opinion that the parol evidence was properly received.

Mr. Tompson Chitty then drew the attention of the court to the award, which he said he could not say for certain sketches, delivered by the defendant architect to the plaintiffs, and acted upon by them, were orders and directions in writing, under his (the architect's) hand, as in the contract mentioned. The direction was thus:—The arbitrator had awarded 2,050l., subject to be reduced by 1,075l., if the parol evidence was improperly received; and then to add 108l. 18s. 6d. if the sketches by the architect, handed up to the court, amounted to directions in writing under his hand. They were found to have been made under his direction, and by his order.

Lord Chief Justice Cockburn had no doubt they came from the architect, and it was a very proper question. The fact, however, of his not drawing them up in a more regular form left it open to say they were not within the terms of the contract, but it was a very unkindness and ungenerous objection.

Mr. Chitty then applied that the rule might be discharged, with costs.

Lord Chief Justice Cockburn, in delivering judgment, said he was of opinion that the course pursued by the

arbitrator was perfectly correct in point of law, and that the parol evidence was properly received. The duty of a court in considering a contract was to give effect to the intention of the parties. Although parol evidence is not admissible to control the terms of a contract, where the terms used merely indicate the intention of the parties, if the terms have no other than the ordinary acceptation, yet if the terms have not only an ordinary but a particular meaning in reference to the business, and it is obviously the true intention of the parties to interpret the words in their ordinary meaning, but in their particular signification, then they must be so construed. Therefore it has always been held that where terms have been used in a contract that have an ordinary, but besides a scientific and particular, meaning, those parties who have drawn up the contract with reference to that particular department of trade must be taken to have intended the words to be used, not in their ordinary, but in their particular sense. That was only acting upon the sound principle that a contract is to be interpreted and carried out according to the intention of the parties. It was only giving effect to that principle in this case, to give the words their particular instead of their popular sense; and it could only be by means of parol evidence that the particular signification of the words in the contract could be shown to be distinguished from and inconsistent with their ordinary sense. Having referred to *Sturton v. Ender* and *Illustration*, Lord Chief Justice Cockburn said that in the present case "weekly accounts" had been used by the parties, and that the parol evidence showed that "weekly accounts" of work has a peculiar signification in the building trade, and that it relates not only to a week, but to particular portions of a week. As to the case cited by Mr. Lush, he thought the doctrine there laid down had been carried to the extreme verge, and he did not think the case should be distinguished from the present upon the evidence that in this particular trade general terms were used with a particular meaning; and as to "weekly accounts" of work, that was taken as a general understanding, and was not considered as extending to the whole of the week. The terms are general, but there was no reason why evidence of usage should not be admitted to show it was not to all the week. He regarded the arbitrator's award as to be rendered, but only to that portion which was so in the understanding of the trade. His lordship having distinguished the case as cited by Mr. Lush, and pointed out the error in the reasoning of the present case, he observed, in conclusion, that true it was the parties here stipulated for "weekly accounts," yet he thought, even upon the authority of the case cited, that general terms may be restrained and specifications to the particular trade, and that in the contract. He, therefore, was of opinion that the evidence of usage was properly received by the learned arbitrator.

Mr. Justice Hill and Mr. Justice Blackburn concurred, for the reasons they stated. The rule was discharged with costs; the arbitrator's award to stand.

## TENDERS OF CONTRACTORS.

A POINT of some importance to contractors and others was decided in the Leeds County Court, on Monday last by Mr. T. H. Marshall, the judge. The plaintiffs were the contractors, and the defendant, Mr. G. A. Emmsley, was brought to recover the sum of 360l., being the balance due to the plaintiffs for the erection of some dwelling-houses by them for the defendant. Mr. G. A. Emmsley appeared for the plaintiffs, and Mr. Ferns for the defendant. It appeared that the defendant, in October last, being about to erect some dwelling-houses, submitted the plans and specifications to the plaintiffs, and requested them to give him a tender for the work, which they did in writing. The defendant afterwards accepted the tender verbally, and the plaintiffs executed the contract, and received the whole of the consideration of the contract, and the amount now sued for. Upon the tender of the plaintiffs being offered in evidence, Mr. Ferns objected to it because it was not stamped. He contended that the tender, having been accepted by the defendant, became evidence between the parties and required stamping as an agreement. For the plaintiffs, Mr. Emmsley submitted that the tender was merely a proposal by the plaintiffs to do the work for the amount specified, which the defendant had the option of either accepting or not, and that, as he did not accept it in writing, but verbally, the tender was not such a document as the law required to be stamped as an agreement. The question was argued upon except the amount now sued for. Upon the tender of the plaintiffs being offered in evidence, Mr. Ferns objected to it because it was not stamped. Mr. Ferns applied to the judge to grant a case to one of the superior courts upon the point, and his Honour consented.

## Books Received.

*A Walk from London to Fulham.* By the late T. CROFTON CROKER, F.S.A. Revised and edited by his son, T. F. DILTON CROKER, F.S.A. With additional illustrations, by F. W. FAIRHOLT, F.S.A. London: William Togg, 1860. This charming little book, rich in gossip and engraved sketches of things that have passed away, is founded on a series of papers by the late Thomas Crofton Croker, which originally appeared in "Fraser," and grew out of a chat with the conductor of this journal along the road here annotated. Alack! for the flying years! The neighbourhood has long been the resort of literary men, artists, and actors; and we get here notice, often too brief, of 350 persons more or less known in the world, and much antiquarian talk. Shaftesbury House, in Little Chelsea, as it was called, demolished to make room for the additional workshop for St. George's, Hanover-square, is illustrated very fully; and a whole chapter, the last, is devoted to a description of

the Pryor's Bank, Fulham, as it was when Mr. Baylis and Mr. Lechmere Whitmore held court there. These gentlemen had filled it with works of art, ancient manufactures, carvings, tapestry, and remnants of old places, tastefully gleaned, often from the lumber of brokers' shops; and many will remember the nights and days of piquant entertainment and unbounded hospitality enjoyed there.

Mr. Dillon Croker has performed his portion of the task with taste and skill, prefacing the "Walk" with a memoir of his father; and Mr. Fairholt has added some illustrations to those previously made.

### Miscellaneous.

**THE SEWAGE AND SEWERAGE OF BURY ST. EDMUND'S.**—The Home Secretary, according to the *Bury Post*, has signified his approval of Mr. Burns's plan for disposing of the Bury sewage, and has consented to the borrowing of 4,000*l.* to carry out the plan and complete the sewers.

**POISONOUS PAPER-HANGINGS.**—The Registrar-General's return of last week contains the following entry among the deaths:—"At Beresford Lodge, Highbury New Park, on the 3rd November, the son of an insurance broker, aged 3½ years, poisoning from arsenical exhalations from the green paper of a breakfast-room." There was a *post mortem* examination and an inquest.

**SOUTH WALES INSTITUTE OF ENGINEERS.**—A general meeting of this association has recently been held in Merthyr. The walls were hung with diagrams and sections explanatory of the papers about to be discussed. Mr. C. H. Waring, of Neath, also exhibited an improved safety-lamp for colliers, which he has just patented. The lamp, when locked, cannot be reopened without the light being first extinguished. The Institute discussed Mr. Heth Ogden's paper on "Improvements in Cupolas for melting iron suggested as applicable for Blast Furnaces," read at last meeting. Also Mr. Dorman's paper upon "The extent to which the mechanical power capable of being produced by the combustion of fuel is and may be utilized in the steam engine;" and Mr. Redington's on "The Longwork System." Papers were then read on a simple form of diagram for showing the motion of the valves in steam-engines, by Mr. Cope Pearce; on the Cornish engine, by Mr. Sims; and on his improved patent safety-lamp, by Mr. C. H. Waring. The members afterwards dined at the Castle Hotel, the President in the chair.

**METROPOLITAN BOARD OF WORKS: STOPPAGE OF MIDDLE-LEVEL SEWER.**—At the usual meeting of the Board last week, in reference to the stoppage of the works of the middle-level sewer by Mr. Roe, the contractor, a report was received from Messrs. Hunt & Stephenson, which stated that Mr. Roe had been paid more than he was legally entitled to under his contract. Mr. Carmichael moved that Mr. Roe, having failed to execute the contract with due diligence, and having declined to proceed with the works, the Board invite tenders for the execution of the said works from other contractors; that the specification he laid before the Board at their next meeting; and that their advertisements be issued soliciting tenders. The motion was put and agreed to.

**COMMUNICATION IN RAILWAY TRAINS.**—Sir: The circumstances attending the late fire in the express train near Lancaster again make one deplore that, although we can telegraph almost all over the kingdom with ease and certainty, we are unable to communicate from one part of a railway train to another. Although several methods have been suggested, and in some instances tried, they have not become universal, chiefly, I apprehend, because of the extra trouble in forming the line of communication when "putting on" or "taking off" carriages during a journey. Any plan, therefore, which would seem to obviate this difficulty deserves consideration; and, as your widely circulating columns are ever open to a suggestion calculated to benefit the community, I beg to offer one which I think would go far to attain the desired object of easy communication in question. In the screen, or that part of the engine which usually contains the eye-glasses or windows which the driver uses in looking ahead, I would place a mirror or mirrors in such a position as to reflect the train. The driver could then almost see both ways at the same time, and any signal of distress from a carriage-window or the guard's van, fire, or a train in too close proximity behind, would, at any rate, not remain long unseen. If the guard's van were fitted with glasses in like manner, it would be all the better. The signals may be flags by day, and lights by night.—H. GREEN.

**LIVERPOOL CEMETERY COMPETITION.**—The Burial Board have received twenty-four sets of designs for the above competition, and it is their intention to exhibit them publicly the first week in December.

**A STONE CRUSHER.**—A machine is now being completed at the great ironworks of Creusot, in France, which will dispense with the painful necessity of employing human labour in the breaking of stones upon the roads. By this machine, invented by M. Demarchais, of Saint Gengoux, blocks of granite of the most enormous weight are reduced in a moment to stones, the size of which may be determined beforehand.

**MONUMENTAL.**—A large mural monument to those who perished of the 32nd regiment of light infantry at Lucknow and Cawnpore (including 15 officers, 448 non-commissioned officers and private soldiers, 4 ladies, and 96 soldiers' wives and children), is about to be placed in Exeter cathedral. It is executed by Mr. Richardson, sculptor. The subject is an enraged and wounded lion crushing a viper; the regimental colours and badges form a hack-ground.—A movement has been commenced on board H.M.S. *Cambridge*, in Hamoaee, Devonport, for the purpose of erecting a monument to the memory of the late Sir Charles Napier, as a mark of esteem and respect for his person, and of gratitude for the manner in which he has laboured for the bettering of the social condition of the seaman and marine.—It appears strange that the statue of Sir William Follett in Westminster Abbey should have no inscription to show whom it represents, the only intimation being that on a small board attached to it, with the words "Sir William Follett, 1845."

**COMPENSATION TO OWNERS IN PARIS.**—A jury has been fixing the indemnities to be paid to the owners and occupiers of thirty-two houses in the Faubourg St. Honoré, and the Rues de Poitou, des Bœufes d'Artois, de Balzac, and other streets, required to be demolished for the continuation of the Boulevard Beauffon. The principal case on which the jury had to decide was the amount of indemnity to be given to the Duke of Brunswick for part of his mansion and grounds, situate between the Rues de Balzac, de Beaujon, and de Bel Respiro. The daily papers say.—His Highness claimed not less than 1,326,895*l.*, of which 624,000*l.* were for the ground, 227,895*l.* for the portion of the house to be taken, 425,000*l.* for the depreciation which will take place in the value of the house by being reduced in size and deprived of the greater part of the gardens, and 50,000*l.* for the expenses which the expropriation will occasion. In support of his claim, the duke made an advocate give the jury a detailed account of the sums he had disbursed for laying out his grounds, constructing a handsome railing, building greenhouses, placing statues and fountains, ornamenting the house, &c. The municipality only offered 140,000*l.*, and the jury gave no more than 360,000*l.* Among the houses to be taken is one in the Rue de Chateaubriand, belonging to M. Arsène Houssaye, the well-known writer, but the jury were not called on to decide respecting it, he having come to an arrangement with the municipality of Paris to accept the sum of 575,000*l.* For part of a house in the Rue Beaujon, for which 580,000*l.* were demanded and 268,000*l.* offered, the jury gave 325,000*l.*; and for part of one in the Rue de Chateaubriand, for which 610,000*l.* were claimed and 84,000*l.* proposed, the jury granted 300,000*l.* For ground on which there are no buildings, the award of the jury was at the rate of from 150*l.* to 160*l.* the square metre. To seven owners of houses which are to be partly taken the municipality only offered 1*l.* each, on the ground that the new Boulevard will greatly increase the value of the remainder of the buildings; but the jury gave in each case from 10,000*l.* to 30,000*l.* The cases of the occupiers presented no great interest. Madame Odin, keeper of a ladies' boarding-school in the Rue de Chateaubriand, asked for 260,000*l.*: the municipality only offered 20,000*l.*, and the jury awarded 60,000*l.* The keeper of a furnished lodging-house at No. 19 in the same street claimed 140,000*l.*, was offered 30,000*l.*, and obtained 60,000*l.* The proprietress of another ladies' boarding-school at No. 21 in the same street demanded 55,800*l.*, was offered 8,000*l.* and allowed 12,000*l.*; and the occupier of 18, Rue Lord Byron, who asked for 80,000*l.* for the inconvenience to which he will be subjected by a partial demolition of the house, was offered only 1*l.* by the municipality, and obtained 10,000*l.* The whole of the demands of the owners and occupiers amounted to 8,267,087*l.*; the offers of the municipality to 2,775,258*l.*; and the awards of the jury to 3,926,105*l.*

**ELECTRO-TELEGRAPHIC.**—It is announced that a company is in course of formation to extend the telegraphic system "throughout the West of England and South Wales, so as to afford increased facilities for the transmission of messages to and from the metropolis, the North of England, and the Continent, at greatly reduced charges."

**NEW BRIDGE BETWEEN WESTMINSTER AND LAMBETH.**—Notice has been given by advertisement, of an intention to apply to Parliament in the ensuing session for power to form a bridge, to be called Lambeth-bridge, between Market-street, Westminster, and Church-street, Lambeth, and to take tolls, make approaches, &c.

**ROADS IN CHINA.**—The *Moniteur de Paris* says:—"Among the numerous details we have received from our correspondents in China, we find it mentioned that the road from Tien-tsu to Peking is entirely macadamised, and has the advantage over roads of the same kind in Europe, of not retaining water on the surface, so that it is quite dry in a few minutes after the rain ceases. The inhabitants declared to our correspondent that all the principal roads in China are made in the same manner, and have been for centuries." Abbé Huc says much the same thing; and, moreover, that there are comfortable public resting-places for travellers, at short intervals, on every road in the interior.

**THE STREET TRAMWAY MOVEMENT.**—Application is to be made to Parliament next session, for powers to be granted to a Street Rail Company (limited), to lay down iron rails and plates upon the streets of the metropolis, and other towns, and to keep the road between and beside such rails in proper repair. The intended Act will "reserve to all persons entitled to use such streets or roads the right to run over, upon, and along the said rails and plates, when laid down, with all ordinary road wheels and carriages, but will reserve to the company the exclusive use of flange-wheels, adapted to run on an edge rail, upon the edge rail as laid down."—Mr. Train's tramways, it appears, are not to have a monopoly of the streets in our towns, and Mr. S. C. Ridley, a Bostonian, is said to be about to lay down lines in the streets of Edinburgh and Glasgow. We observe, however, that, so far as regards Mr. Train, the subject at Edinburgh has been handed over by the Council to a committee, for consideration.

**PRIVATE ELECTRIC TELEGRAPHS.**—A correspondent of the *Jersey Times* says:—"Sir: A few weeks ago you inserted an interesting article from the *Builder*, entitled 'Progress,' and purporting to give an account of the latest discoveries and inventions in science and in art. Amongst other things was a notice of the electric telegraph; and that notice contained an account of an instrument for the transmission of local messages. It was described as cheap, portable, and easy to work. Now, sir, as we too, in this island, are in the road of progress, would it not be expedient that we should add to our local improvements that of a local electric telegraph, on the plan of that to which I have just alluded, which should have stations in every parish, and by which every locality, even the remotest, in the island, should enjoy instant communication with the town? Would not such a mode of communication between country and town greatly facilitate the dealings between both?"—The London District Telegraph Company, we observe, are now ready to erect special wires to unite branch establishments of private firms, &c.

**BALTIMORE: OPENING OF A CENTRAL PUBLIC PARK.**—There have been great rejoicings at Baltimore on the inauguration of a fine park of more than 500 acres of land, named Druid Hill from its fine old oaks, and comprising both extensive undulating open ground, ornamented naturally with clumps of choice trees of all kinds, and luxuriant and shady forest-land, ravines with natural springs and waterfalls, capable, together with the water for the great reservoir of the City Waterworks, of being easily and cheaply laid out into ornamental lakes, fountains, and ponds. The park may be said to have cost the citizens nothing, since not only has no rate been exacted on account of it, but a fifth part of the gross receipts of its street passenger railways, amounting to fifty to seventy-five thousand dollars per annum, exacted and secured to the city's interests, has been devoted to the realization and sustenance of this park. The site is central and of easy access to the majority of the citizens. The expenditure in completing this natural park will, it is said, be trifling, the ground being altogether of a very superior description to that at New York lately inaugurated. There will be little or no planting of ornamental trees, pruning rather than shading being all that is required.

IMPROVEMENT OF WORKING-CLASS DWELLINGS AT ST. PETERSBURG.—The company formed at St. Petersburg for building dwellings for the poorer classes have, during the three years since its first formation, constructed houses containing accommodation for 200 families.

BUILDING ACCIDENTS.—At Perth recently a scaffolding attached to a portion of a weaving factory, in North William-street, suddenly gave way, when three persons standing upon it were precipitated to the ground, and severely injured. — A foolish workman, perfectly conscious of the danger he was incurring, ventured to ascend an injured wire rope which is used for drawing materials from the Cathedral yard at Durham to the restorations on the central tower. He had gained an altitude of some thirty or forty yards when the rope broke, and he was precipitated to the bottom, sustaining injuries which, it is feared, will prove fatal.

ANOTHER NEW DYE COLOUR.—The recent discovery at Lyons of a new species of red dye more brilliant than any hitherto produced, and, above all, more solid than the best Chinese reds, has caused a sensation amongst the manufacturers. The colour is said to be particularly soft to the eye—something between scarlet and ponceau—the peculiar red beheld in the small garden-flower, the "blood of Adonis." It is already highly appreciated as a "rouge sullime" in the trade, and promises, it seems, to become very popular, both for furniture and dresses.

ROYAL ACADEMY OF ARTS.—The lectures for the season 1860-1 will be delivered in the following order:—Anatomy—Professor Partridge; 1. Monday, November 12; 2. Monday, November 19; 3. Monday, November 26; 4. Monday, December 3; 5. Wednesday, December 12; 6. Monday, December 17. Architecture—Professor S. Smirke, R.A.;—1. Thursday, January 24; 2. Thursday, January 31; 3. Thursday, February 7. Sculpture—Professor R. Westmacott, R.A.;—1. Monday, February 11; 2. Monday, February 18; 3. Monday, February 25; 4. Monday, March 4; 5. Monday, March 11; 6. Monday, March 18. Painting—Professor S. Hart, R.A.;—1. Thursday, February 14; 2. Thursday, February 21; 3. Thursday, February 28; 4. Thursday, March 7; 5. Thursday, March 14; 6. Thursday, March 21.

VICISSITUDES OF BUILDINGS.—Crossing this bridge (at Lyons) I came to the foot of a high hill, on the summit of which is the church of Notre Dame de Fonvrievres, i.e., Forum Vetus. Ascending this hill, I passed on my way Les Antiquaires, a former palace of the Cæsars, in which both Claudius and Caligula were born. It has now degenerated into a madhouse. Great buildings undergo strange vicissitudes. Malmaison and St. James's, both new palaces, were in their origin leper-houses. The Maladrerie at Caen, once the retreat of corporeal disease, is now a house of detention for moral offenders. Avignon and St. Germain, one the former palace of spiritual sovereigns, and the other of a monarch who lost his crown for adhering to those sovereigns, are both now barracks for the soldiery; and the Tuileries, now the chief palace of a great empire, was originally a tile-yard!—Mr. Wm. Beumont's Tour in France.

REPAIRING VANE OF ROMAN CATHOLIC CATHEDRAL, SALFORD.—At intervals, during several weeks past, attempts have been made to get ropes round the ball on the summit of the spire of the Roman Catholic Cathedral, Salford, for the purpose of removing or repairing the vane, which has been in a dangerous condition. Messrs. Hibbert & Co., of 52, Granby-row, have been entrusted with the work. The vane, and ornamental brass work with which it was connected, cut in succession every rope sent up by the aid of a kite. Ropes were at length flung around it, however, by the kite, and the vane was secured on several sides with the ground; then a rope was drawn around the base of the vane which rested on the ball of the steeple; a pulley was run up, and ropes strong enough to bear a man drawn through. A young man, named James Thomas, in the employ of Messrs. Hibbert & Co., then took his seat upon a piece of wood fastened to the rope connected with the pulley, and ascended from the leads outside the heltry. From this point, we were informed, the steeple measured upwards of 150 feet. He set to work on his arrival, and lashed ropes round the top in various ways. To do this he stood upon the board on which he had ascended, and knelt upon the ball of the steeple. A small scaffolding has since been suspended from the summit, to facilitate the removal or repair of the vane.

FLAT ROOFS, GIBRALTAR.—The cost of flat roofs, described at page 693, is about 8d., not 8s. per foot superficial, as accidentally stated.

GRAVESEND.—The new military establishment on the piece of land, in Milton, recently purchased by the Government, will shortly be in active progress, tenders for the erection of a new War Department. It is proposed at present to erect six blocks of soldiers' huts, one block of married men's huts, and one block of lecture-rooms. It is said that the Government authorities intend to erect sufficient buildings on this spot to accommodate upwards of 4,000 men.

THE NEW COURTS OF LAW.—A notice appears in the Gazette that her Majesty's Commissioners of Works and Public Buildings intend to apply to Parliament, in the session of 1861, for an Act to enable them to acquire, by compulsory purchase or otherwise, a site for the proposed new courts of law. The site will be bounded on the north and north-west by Carey-street, Lincoln's-inn-fields; on the south by Pickett-street, the Strand, and Fleet-street; on the east by Bell-yard, Temple-lar; and on the west and south-west by Yeates's-court, Clement's-inn, and the vestry-house of the parish of St. Clement Danes.

THE PRINCESS FREDERICK WILLIAM.—The Berlin Royal Academy of Arts elected the Princess Frederick William an honorary member at a full meeting a short time since. Her Royal Highness has accepted the election, and communicated her decision to the Academy in the following letter:—"I have received, with thanks and sincere joy, the intimation, from the Royal Academy of Arts of Berlin, that they have elected me an honorary member of their body. In this choice I see the acknowledgment of the warm and lively interest for the arts with which I am animated. In the wish to prove this sentiment, I willingly accept, after having obtained the approbation of his Royal Highness the Prince Regent, the election which has fallen upon me, since it brings me into closer connection with a corporation which possesses so important an influence over the cultivation and development of art in our fatherland.—VICTORIA, Princess Frederick William of Prussia, Princess Royal of Great Britain and Ireland.—Berlin, October 22, 1860."

PRIZE PLANS FOR LANDING-STAGES.—Prizes have been awarded by the Wallacey Commissioners, of 50l. for each of two plans for landing-stages at New Brighton and Egremont. The New Brighton plan is that of a raised platform or stage, supported by strong cast iron pillars at distances longitudinally apart 120 feet, with the spaces bridged by wrought-iron girders, and the roofing formed of planks laid upon transverse wrought girders. The stage thus constructed is proposed to be carried out on one level about 88d feet, and to terminate in a large rectangular space, supported by additional columns, and provided with stairs for landing and embarking at all heights of tide, with an ornamental lighthouse, &c. The whole cost guaranteed at 22,927l. The Egremont plan has a masonry slip, upwards of 60 feet wide, formed to a regular gradient of 1 in 22, and carried seaward so as to admit a steamer at low water. Upon the slips are laid three lines of rails. The movable stage consists chiefly of iron. It weighs 300 tons, and is 225 feet long, 48 feet wide, and divided into two parallel roadways, and mounted on strong wheels and axles, having a roof carried on columns. Two methods of moving the stage are laid down: two of these depend on hydraulic power, the third having its power in a counterbalancing weight fixed within a tower and well. The cost is estimated at 15,000l.

TENDERS

For new workshops at Colchester, Essex, for Messrs. Moses & Sons. Mr. N. S. Joseph, architect.— King ..... £225 0 0 Newman & Mann ..... 496 0 0 Furn ..... 479 10 0 Lee & Baker ..... 351 10 0 For the first portion of warehouses at Wapping-wall, for Messrs. Cooper & Aves. Mr. Wm. Reddall, architect.— Lawrence & Sons ..... £676 0 0 Asby & Sons ..... 629 0 0 Scott ..... 619 0 0 Blackburn ..... 596 0 0 Conder ..... 579 0 0 Holmes ..... 530 0 0 Case ..... 517 0 0 For a villa, to be built at Marden, Herefordshire: bricks, sand, and all building found by the proprietor. Mr. J. H. Ewins, architect, Hereford.— Edward Morgan ..... £212 0 0 Tew ..... 210 0 0 Mason & Crittenden (accepted) ..... 239 0 0

For the first portion of the Roman Catholic Church, Birkenhead. Mr. E. Welby Pugin, architect. Quantities supplied by Mr. Marples:— London Building Company ..... £1,623 0 0 Sherrin ..... 4,471 0 0 Farrell & Ledger ..... 4,129 0 0 Glalster ..... 3,451 0 0 Yates ..... 3,411 0 0 Waters ..... 3,333 0 0 Twist ..... 3,322 0 0

For the erection of a house at Huyton-park, near Liverpool. Mr. H. H. Vale, architect. Quantities supplied by Mr. John Longridge:— Barker ..... £2,378 0 0 Westmorland ..... 2,316 0 0 Campbell ..... 2,129 0 0 Lyon & Greenwood ..... 2,097 0 0

For building a house at Poplar-bank, Huyton. Mr. H. H. Vale, architect. Quantities supplied by Mr. J. Longridge:— Twist ..... £1,019 0 0 Barker ..... 987 0 0 Westmorland ..... 959 0 0 Campbell ..... 922 0 0 Lyon & Greenwood ..... 899 0 0

For sundry alterations and repairs at No. 31, Great Tower-street, City, for Mr. J. H. Machu. Mr. Robert Purris, architect and surveyor.— Turner ..... £2,498 0 0 Walker ..... 488 0 0 Rodkins ..... 467 0 0 Ashby ..... 461 0 0 George ..... 460 0 0 Porter ..... 442 0 0 Dale ..... 420 0 0 Prescott ..... 420 0 0 Ellis ..... 375 0 0

For Pinkley-park House, Lyndhurst, the seat of Mr. H. B. Powell. Mr. J. Baker, architect:— Hilary ..... £8,750 0 0 Lander ..... 8,726 0 0 Stevens ..... 8,630 0 0

For the erection of fifteen houses, to complete "The Company's terrace," Oxford-road, High Wycombe, Bucks, for the High Wycombe Land and Building Company, Limited. Mr. Charles Carter, architect, Great Marlborough-street. All Kils-Burnt Bricks.— Ward ..... £1,950 0 0 Goodchild ..... 1,725 0 0 Spicer ..... 1,725 0 0 If Stock and Place Bricks for Interior Walls. Siler.— Howard (accepted) ..... 1,612 17 6

For a new hall and other works in Cleveland-street and Howland-street, for Mr. Thos. Whitaker. Messrs. Shea & Jones, architects:— Knapp & Son ..... £1,782 10 0 Demison ..... 1,697 6 4 Perry ..... 1,676 0 0 Ashby ..... 1,610 0 0 Stevenson ..... 1,602 0 0 Kelly ..... 1,597 10 0 Duncannon ..... 1,547 0 0 Palmer ..... 1,543 10 0 Batter ..... 1,484 0 0 London Building Company ..... 1,428 0 0 Rudkin ..... 1,449 0 0 Walker ..... 1,398 0 0

TO CORRESPONDENTS.

Sir,—Will any of your readers kindly inform me what is the most durable process for fixing cast-iron dam-balls?—L. C. H.—I have no objection to your name being inserted in the notice (in private dispute).—R. O. (make the pit watertight; use the valve as described, and remove the result periodically for garden).—H. R.—E. S. P.—F. R.—J. W.—J. O.—J. C.—Mr. O.—Somerset.—J. P. E. (shall have attention).—W. H.—E. R. S. (in reply).—Peter (Hill).—J. H.—G. E.—H. & M.—E. C. R.—R. S. C.—E. J. W. (posted).—H. C.—L. B.—H. V.—J. F. P.—J. W.—3). R. P.—W. C.—Roadsiders.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and NOT to the "Publisher." Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

ARTISTIC DESIGNS FOR WATCHES.—"A number of new and artistic designs for the embellishment of watches have been invented and exhibited by Mr. J. W. Benson, of 33 and 34, Ludgate-hill, who has exerted himself with commendable success to provide, in this particular branch of manufacture, the union of taste and usefulness so striking in the productions of the French artificers. The recent progress in the art of watch-making in England is owing to the enterprise and industry of several gentlemen, who are now reaping a just reward for their ingenuity. Amongst these Mr. Benson holds a prominent position, and his designs may therefore be recommended to the notice of the public."—Daily Telegraph. Benson's Illustrated Pamphlet, post free for two stamps, is descriptive of every construction of watch now made. Watches sent by post to all parts of the globe.—Advertisement.

# The Builder.

VOL. XVIII.—No. 930.

British Building Stones and Bricks.

VERY useful, and indeed, important volume has just been published by order of the Lords of the Treasury.\* It consists of nearly 400 octavo pages, almost all condensed into a tabular form, and chiefly devoted to an embodiment of useful particulars in regard to stones and quarries in all the different countries in the three kingdoms; together with similar tables as to bricks and clays, and other mineral products. Although confessedly far from being a complete record, the amount of information, of the greatest utility to architects, builders, and con-

tractors, which this volume contains, is immense. The tabular condensation of statistical and other details as to building stones, which extends to nearly 250 pages, comprises a host of particulars as to,—the names of quarries,—nearest railway stations, or shipping ports,—names of freeholders and of quarrymen,—local names of stone,—geological formations,—buildings in which used or purposes to which applied, and remarks,—prices of stone at quarries,—and average annual produce. Some idea of the scope of the work may thus be realized; but we may take a running glance through its pages, picking up a few particulars by the way, in order to show more distinctly of what sort of matter it is made up.

Beginning with Cornwall, the first county on the list, we observe, for example, under the head of the Cheesewring Quarry, that Looe is its nearest outlet,—that the freeholder is the Duke of Cornwall, and the Cheesewring Granite Company are the quarrymen;—that the name of the stone, both locally and geologically, is granite;—that as to the buildings in which used, &c., it has been used in New Westminster-bridge, and at Copenhagen, Birkenhead, Southampton, and other docks, mangrod-bouse at Devonport Barracks, and various public works;—that the price of the stone, at the quarry, is 1s. 4d. per cubic foot, scappled; 2s. 3d. delivered in the Thames;—and that the average annual produce is 146,566 feet. Such is the manner in which the information is given; but, in the few further items which we may extract, we shall not strictly follow the entries as they occur, but shall merely note a few of the more salient details.

The Dundry-hill oolite limestone of Somerset has its chief outlet at Bristol. It has been used in many old churches in the neighbourhood of Bristol, as in St. Mary's Redcliff, and St. Stephen's Temple.

The Hamhill freestone, of the same county, has its chief outlet at Bridgwater and Yeovil. Some of it is a conglomerate of the red sand-

stone formation; other quarries are in the inferior oolite; and the stone is of a brown colour, weighing 134½ lbs. per cubic foot.\* Three quarries of this kind yield an annual average produce of 7,000 tons.

The Dean Forest quarries, in Gloucestershire, belong to the coal measures: their chief outlets are at Lydney, Coleford, Bream, and Yorkley. The local name of the stone is merely Dean Forest stone. Much of it is suitable for dock and railway purposes, builders, statuary, paving, &c.; grindstones, troughs, &c. It was used in the construction of Newland Church and other old churches, in some of which the carving on the oldest graves and pinnacles is as sharp, clear, and defined as when first worked 400 years ago. This stone was used in the construction of Newport, Cardiff, Gloucester, and Swansea Docks; South Wales, Taff Vale, and Western Valleys Railways; Gloucester and Berkeley Canal; Gloucester Over-bridge; Folly-bridge, Oxford; Cardiff Castle, and National Provincial Bank; Marlborough and part of Llandaff Colleges; Assize Courts, interior of St. John's and Exeter Colleges, and Taylor and Randolph's Buildings, Oxford; Eastnor Castle and Whitley Court, Worcester; Langton House, Oxford (steps 18 feet long, and landings proportionate); and the towns paved with it are too numerous to mention. It is also manufactured into field and garden-rollers, pillars, &c. On Birch-hill an unlimited quantity can be obtained for ages to come. About 150,000 cubic feet were raised in one of the quarries by Messrs. Hemmingway & Pearson for Cardiff Docks, a great portion of which came from quarries now in possession of Messrs. Grindell & Co. Blocks of any size possible to be removed are easily obtained here, as also steps, landings, and grindstones. The Birch-hill and other kinds are sold in blocks, rough, at 7s. per ton; if pecked or scappled, at 7d. to 8d. per foot cube; common building stone, 1s. per ton; flagging, from 2d. to 2½d. per foot superficial; troughs and cisterns, 6d. per gallon of 231 cubic inches; gravestones, 6d. per foot superficial; grindstones at 2d. per inch diameter, up to 3 feet high; 7 feet about 5l.

The Bath stone of Boxhill, and other similar Wiltshire stones, are freestones of the great oolite formation, and have their chief outlets at Box, Hindon, and Corsham. There are numerous quarries, and the prices at one of these,—the Box and Corsham quarry,—is 9s. per ton, of which 30,000 tons 16 feet per ton is the annual average produce; at other quarries there are kinds of Bath stone sold at 3½d. to 5½d. per cubic foot, and 4s. 8d. to 7s. 2d. per ton, to the extent of 97,000 tons,—1,566,560 cubic feet average annual produce. The uses of Bath stone are well known. Mr. Hunt says, "Messrs. Randell & Saunders quarry at Box and Corsham not less than 26,000 tons (of 16 feet). Value, before delivery charges are incurred, about 9s. per ton. A cream-coloured stone; weight of cubic foot, 123 lbs. The Baynton stone is employed in Laycock Abbey, in the front of Wilton House and of Windsor Castle. The Box and Corsham quarry has supplied buildings in Bath, London, Plymouth, Liverpool, Manchester, Birmingham, Derby, Nottingham, Leicester, Oxford, Dover," &c.

After ranging through such counties as Cornwall, Devon, Dorset, Somerset, Gloucester, Wilt, Hampshire, Sussex, Surrey, and Kent, all more or less supplied with useful stones of some kind or other, we arrive at one sad item in the heart of the country, all that is said as to which we may here quote:—

"*Middlesex*.—There are no quarries in this county. Numerous gravel-pits are opened, and the flints found in them are used for building. In a few cases the indurated sands of the tertiary beds have been employed for building (see Brick Returns)."

This is all that can be said of the whole county under the head of building stones.

The Ketton freestone quarries of the county of Rutland have their main outlet at Stamford. They belong to the lias formation, and the

stone is locally known as Ketton stone. The Ketton quarries "produce a freestone of very superior quality: they are extensively worked, and sent to all parts of the kingdom for building. St. Dunstan's Church, Fleet-street, was built of Ketton stone; the modern parts of Peterborough and Ely cathedrals." It is a dark cream-coloured stone; weight of cubic foot, 128½ lbs.

The Rowley ragstone of Worcestershire has its chief outlet at Dudley. It is a basalt, and is used to an average annual extent of 60,000 tons for pitching and macadamizing roads, for which purpose it is sent to the metropolis and many large cities. Messrs. Chance have employed it in the manufacture of artificial basaltic stone, a description of the process of manufacturing which is given by Mr. Hunt in the volume under notice.

Of the red, white, and yellow sandstones of Cheshire, used in Birkenhead, Liverpool, &c., and the limestones, sandstones, &c., of Lancashire, also used in Liverpool and elsewhere, various useful particulars, in regard to prices and purposes, are given, but they are too much detached and particularized for quotation.

The York flags of Bradford belong to the coal measures, and are sold, to an extent of 5,000 tons annually, at 7d. to 8d. per cubic foot. The cubic foot of these flags weighs 142½ lbs.: they may be obtained in blocks of ten tons, and have been used in the London and other docks and bridges: the colour is light brown.

The North Anston limestone of Yorkshire, used in the new Houses of Parliament, is sold at the quarry at 1s. per cubic foot, to the extent of 124,464 cubic feet annually: its weight per cubic foot is 144 lbs. This stone belongs to the magnesian limestone formation, and is of a yellowish brown colour, as every one knows who has been at Westminster.

Of the Kendal Fell limestone of Westmoreland, which belongs to the carboniferous formation, we are told that any persons owning property in Kendal have a right to this stone free of charge. The town of Kendal is built of it. The cost for rubble walling at the quarry is 5d. to 6d. a cartload, and refuse for lime-burning about 3d. a cartload: ashlar stones cost 6d. per foot, however, at the quarries.

The Craigleith stone of which the new tower of Edinburgh, and the university in the old town of that city, were built, sells in cube stones at the quarry for 1s. 1d. to 3s. 7d. per cubic foot, according to size: ashlar and long stones are sold at from 6½d. to 2s. 1d. per linear foot, according to size. The harder portions of the (carboniferous) sandstone at Craigleith are locally called liver rock.

The Aberdeenshire granite of which Covent-garden Market, the river-wall of the new Houses of Parliament, the Duke of York's Column, &c. were formed, is sold at 2s. to 5s. the cubic foot, shipped at Peterhead.

Of the Irish marbles some interesting particulars are given in Mr. Hunt's tables. The black marble of Angham quarry, near Galway, described as "of very superior quality, and capable of receiving a very high polish," can be obtained in beds from ½ to 1½ foot in depth, and of breadths and lengths up to 10 by 20 feet. Limestone of dark blue colour, with shells overlying marble, can be got in blocks of ten tons. The price of it at the quarry is 5s. 6d. per cubic foot: it is worked up in Galway for chimneypieces, columns, and other ornamental work, and is also exported in the rough state. Another Galway marble is the light green serpentine of Barnanoran, which belongs to the metamorphic schists, and is sold at the quarry for 6s. per cubic foot. At the Merlin-park Quarry, near Galway, there is "black marble of the very finest description, and capable of receiving the highest polish: it is sold at 5s. 6d. per cubic foot, and is worked up in Galway, as well as exported in the rough. The Gieveham dark green serpentine marble of county Galway is described as being "very sound, and free from shakes of any kind."

The Quarry Returns in all comprise statistics and other particulars as to upwards of 3,000 quarries,—1,504 English, 158 Welsh, 678 Scottish, 667 Irish, and 8 Jersey.

\* "Memoirs of the Geological Survey of Great Britain and of the Museum of Practical Geology: Mining Records: Mineral Statistics; being Part II. for 1853. By Robert Hunt, F.R.S., Keeper of Mining Records." Longman & Co., 1859.

\* There is a separate and valuable table in the volume, containing particulars as to the weights of many kinds of stone.

General Summary of the Production of Building and other Stones in the United Kingdom of Great Britain and Ireland.

	Estimated Total in Tons returned.	Computed Total of entire Production.	Value of Computed Total.
	Tons.	Tons.	£
England....	3,935,939	7,500,000	4,705,408
Wales.....	1,229,863	3,500,000	898,133
Scotland...	853,888	4,750,000	1,211,393
Ireland....	—	—	800,000
Jersey.....	—	14,200	7,900
Total.....	—	15,764,200	4,622,824

The returns of bricks, tiles, pipes, &c., show an estimated quantity of all kinds, manufactured in England, Scotland, and Jersey, amounting to 2,503,004,000, and an estimated value of all kinds, at mean average market-price, of 2,911,950*l*. The whole returns are English, except 55,000,000, valued at 68,750*l*., from part of Scotland, and 5,529,600, valued at 6,925*l*., from Jersey. The Middlesex returns are 107,500,000, value 118,255*l*.; the Lancashire, 108,000,000, value 129,000*l*., which is the highest; and next in amount is the Yorkshire, 100,000,000, value 125,000*l*., which return is the same in number and value with a joint return from Staffordshire and Worcestershire. Durham and Northumberland also go together for 96,000,000, value 120,000*l*.; South Wales, 93,500,000, value 116,000*l*.; North Wales, 86,250,000, value 107,000*l*.; all the other returns are in value below 100,000*l*. each.

“Until 1833 an excise duty was charged both on bricks and tiles (the latter being then exempted from the duty), so that their manufacture was placed under surveillance. It was ordered by 17 George III., c. 42, that bricks made for sale should be 8½ inches long, 2¼ inches thick, and 4 inches wide, on pain of forfeiting, for bricks of less dimensions when burnt, 20*s*. for every 1,000, and proportionally for a greater or less number. It was also provided that the size of the sieves or screens for sifting or screening sea-coal ashes, to be mixed with brick earth in making bricks, should not exceed ½ of an inch between the meshes. The duty was entirely repealed in 1850.

In 1821 the number of bricks, &c., paying duty were	899,178,510
“ 1840 “ bricks only “	1,677,811,134
“ 1847 “ “ “	2,193,829,491
“ 1849 “ “ “	1,462,767,154

This being the year when the oppressive nature of the duty on bricks was strongly urged, and the repeal expected, many large buildings were delayed, and consequently, as we see, the make of bricks diminished. From 1849 until the present, no attempt has been made to determine the value of the manufacture.

WEIGHT OF BRICKS.

Worcester, solid .....	8½ lbs. Machine made.
Do. perforated 6 “	Do.
Staffordshire, solid ..	9½ “ Hand made.
London Stock, solid 5½ “	Do.

A cubic yard of bricks is estimated to contain 384 bricks, and on the average about 373 bricks go to the ton.”

From the extensive and valuable information received from all parts of the country, the following proximate computation of the value of all the earthy minerals of this country has been derived:—

Clay unmanufactured:—this includes only the superior kinds of clay, and it embraces China stone .....	£. 285,846
Bricks, tiles, &c., estimated at the cost of production .....	2,911,980
Building and other stones.....	4,622,924
Sands .....	10,250
Coprolites .....	65,500
Rotten stone .....	750
Ochre, amber, &c. ....	5,450
Barytes .....	15,500
Gypsum .....	17,750
Fuller's Earth.....	13,500
Flour spar .....	4,625

Total value of the earthy minerals of the United Kingdom..... 7,954,075

By reference to Part I., it will be seen that the total value of metals, metalliferous minerals, and coals, produced in 1853, was 31,266,932

Thus we see that our annual mineral produce has the enormous value of..... £39,221,007

And with this general summary, which, as Mr. Hunt takes care to point out, can afford, as yet, but an approximation to the truth, we must now conclude, with a strong recommendation to our professional brethren, to owners of quarries, and the members of the building trades generally, to lose no time in procuring copies of this volume, and to aid by affording information in rendering the next edition of it even more valuable.

THE GUILDHALL, AND ST. PAUL'S CATHEDRAL.  
NOTES IN THE CITY.

SEVERAL correspondents express their anxious desire that the year of office of the Right Hon. William Cubitt, the present first magistrate of the City of London, should be distinguished by some permanent memorial bearing on his own peculiar calling,—architectural construction,—and tending to the improvement of the district over which he now reigns. The public, also, would doubtless view this with satisfaction. One such work, Wren's statue, was suggested a few weeks ago. Another presents itself to our minds, which, if well executed, would reflect lasting credit on all parties concerned, and prove a satisfactory memento of the civic supremacy of one of the craft. A popular head over municipal institutions wonderfully smoothes the way towards the accomplishment of works of utility and beauty, which otherwise linger on from the generation that proposes, to a remote succeeding one that carries out the idea; and, in the interim, the originating benefactors are forgotten.

Let us, then, endeavour to induce all the parties concerned to assist in executing some good work so effectively and speedily, that it shall stand as a mark of this very time.

What we propose is briefly this,—that the inappropriate ceiling which now disfigures the otherwise noble Guildhall of London shall be swept away into the dusthole, and be replaced by a handsome timber roof, in accordance with the style and fine proportions of this municipal and national edifice.

Do not let us quarrel as to the age of the suggestion; but, if it be desirable, as we believe, let us strive to have it carried out. Of its necessity, an inspection of the Guildhall is sufficiently convincing. The ceiling has been a reproach to the corporation for years, and a disfigurement to an otherwise fine hall full of interesting associations. We have ourselves often urged this before. The look with which a foreign architect, who had been taken to the dinner on “the 9th,” regarded it when his eyes had travelled up, if photographed, would have made a forcible illustration for these remarks.

The City architect did, we believe, once make a design for new roofing the Guildhall; but he would doubtless now feel himself in a position to go farther than he did then. Knowledge of Gothic architecture has made such rapid strides during the last few years, that nothing but a thorough work would satisfy the exigencies of the times. The great and wealthy corporation of London, in whose hands the responsibility of carrying out the alteration rests, must have the work completely and beautifully done, as Mr. Bunning knows so well how to do it, and so as to leave a noble memorial to the admiration of future generations. If, further, the Hall were properly decorated, one result would be the saving of a large sum of money now annually spent on the temporary adornment of it. A comparison of the present incongruous ceiling in the Guildhall, with the roof of that of Westminster, will save a world of argument and controversy.

There is a second work in the City that needs doing, the removal of the ponderous iron railing around St. Paul's Churchyard; and although this rests, we suppose, with the Dean and Chapter, the corporation could of course greatly aid in bringing it about. When we first urged this, some years ago, in the interest of the public and of the fame of Wren, our contemporaries of the press repeated our views far and wide, and the desirability of the removal was loudly expressed. But nothing was done. We need not, however, be discouraged. Nothing was done when we first called for the removal of the railings which were around and disfigured our public statues; yet at this time the chief of them have been freed from the disfigurement. The gain that would result to the public in respect of traffic and power of circulation, if the railing around St. Paul's were removed, would be immense, and was the original ground of our

argument. Beyond this, however, if the area were levelled and paved to within a few feet of the cathedral, the beauty and grandeur that would be added to the edifices can scarcely be overstated. A light and appropriate railing, placed at a short distance from the building itself, would not interfere with the view of the architecture, and would preserve it from any accidental injury. If there be any one who doubts the charming effect that would be produced—not content with Continental illustrations—let him note the open area in front of the Royal Exchange. Moreover, let him take the trouble to get inside the inclosure of St. Paul's Churchyard, go to the farthest possible spot from the cathedral, place his back against the railing, and then look up at the grand pile; surely he would exclaim that he had never seen St. Paul's till then. From within and without this huge grille, the cathedral is an entirely different structure;—in the one case dwarfed, disfigured, distant, and defaced; in the other noble, grand, devotional, and elevating. No man of taste can entertain a doubt as to the propriety of removing this iron mask, if he have taken these means of forming his judgment; and we strongly urge all who have any power to aid in bringing about during the present mayoralty what would so greatly improve their city. Rightly treated, a nobler space, and a grander temple to God's honour piled, could not be found in the whole world.

Let our children be able to say these two great improvements were effected when Cubitt was mayor.

FRIENDLY SOCIETIES AND THE SOCIAL IMPROVEMENT OF WORKMEN.

It is gratifying to note the efforts which are being made to improve the condition of the industrial classes in this country. Their increase of knowledge, the establishment of workmen's institutes, the opening of marts for the sale of provisions and wares, at cost price, the attendance at libraries, the establishment in connection with large manufactories of independent means of providing medical attendance in the time of sickness, are all marks of social advancement.

Societies which, about forty years ago, were looked at with suspicion by the Government, and with considerable contempt by the general masses of the people, have grown in wealth, numbers, and respectability. In the establishment of societies of “Odd Fellows,” for the purpose of enabling men to meet together in lodges, which were presided over by some of the most intelligent of them, the rules were and still are framed with good intentions. Arrangements were made for the purpose of giving assistance in the times of death and sickness; persons of bad character were not elected; and by means of these societies men in search of employment would be sure of a kind reception and help in strange towns. The name of this large and prosperous association seems now not to be appropriate. It may, however, at the commencement, have been significant of the idea at that time so generally entertained, that it was an odd notion for the English workmen to combine for useful purposes. Since the establishment of the “Odd Fellows,” the “Forerunners” have formed in vast numbers, and both in town and country other associations have been founded with advantage.

Mr. Tidd Pratt, the registrar, remarks that we have an account of an establishment of this kind at Athens, 280 years before Christ; and the first in England is ascribed to Daniel De Foe, in 1696.

About 100 years ago, in most towns in the kingdom, friendly trade societies were extensively formed, for the purpose of giving mutual aid in times of ill-health, to pay certain amounts at the death of members, their wives and children, and to allow certain annuities after the subscribers had reached the age of fifty-five or sixty years. Most of these societies were started at taverns and public-houses. At the time of their commencement the members chiefly consisted of young men, or those who had not reached the prime of life. Unfortunately, however, the payments were not sufficient to meet the risks and subsequent expenses; and persons who had made regular payments for twenty, thirty, and even more years, found, in their old age, after the payment of a sum so large that with good management a certain provision should have been made,—that the societies, as years passed on and members were becoming old, were hopelessly bankrupt, and had not a shilling left to pay expenses.

In such conditions the younger men seceded, and formed fresh societies, which in due course came to the same end. At the time mentioned

the chances of life and health had not been fairly calculated; and the managers and those connected with the life societies did not seem to be aware of the circumstance that, supposing a society to be established, its members being under 35 years of age, it would be found that comparatively little sickness would occur during the first ten years, and consequently that which was called a surplus was, as Mr. Tidd Pratt truly observes, no surplus at all. But considering the accumulation of capital which would be sure to arise as so much profit, this was from time to time divided; and hence one of the causes of the ruin which took place. It appears that since 1793 there have been 23,000 friendly societies established in England, of which 7,000 have ceased to exist. These figures show that after a period of 67 years about one-fourth of those establishments which have been formed are not now in existence.

It has been the practice to charge the working classes of this country with improvidence; and unfortunately this is, to a certain extent, true,—particularly in the large towns. It is a fact—stated by Mr. Pratt—that the number of members of friendly societies is 2,500,000. If we cannot take the male adult population of Great Britain at more than five millions, the above figures show that one-half of our male population who have arrived at the age of maturity are subscribers to friendly societies. If we exclude the number in the army and royal navy by whom little or no provision can be made; persons who have been too old to avail themselves of this provision; and the very large number whose inclination or circumstances do not lead to the use of the friendly societies,—it seems plain that a very large majority of the industrious portion of our population must be members of those friendly institutions.

On November 20th, 1859, the number of depositors in the savings banks was 1,479,723, and the amount deposited was 36,152,140*l*. Although it may be found that the depositors of the savings banks are not of the working classes to such a large extent as might be desired, it is known that large sums have been invested by servants, and young people of both sexes, whose means are limited.

Of the depositors at the above date there were—

213,473 who had an average investment of.....	20	5	0	each
291,739 Ditto.....	2	10	6	"
191,133 Ditto.....	6	15	4	"

Of benefit building societies, there were about 2,000, with a paid-up capital of not less than 8,000,000*l*.

It is gratifying to find that the friendly societies are now established on more sure principles than in former days. Mr. Pratt suggests that the best average rates of payments are 1*s*. 1*d*. per month, for persons between twenty-four and thirty years of age, in order to receive up to sixty years of age (in case of protracted sickness or incapacity), 10*s*. per week; up to sixty-five, 1*s*. 2*d*.; to seventy, 1*s*. 3*d*. There are other safe means for the use of those who are disposed to be careful; and we believe that the changed habits of the young workmen who are now rising up, the advance of education, the facilities of meeting which are in course of progress for young men, and the other agencies which are at work, will, year after year, add, to an extent which it is difficult now to estimate, to the amount of the savings of the working part of our population,—a circumstance which will give them a right position in the State.

When we refer to the plays and novels of about the commencement of the last century, and compare the pictures which are given in them and elsewhere of the usanners of the English nobility, and refer to the amusements, peculiarities, and prejudices of the same class which are described in various works,—when we reflect on the rude hospitality, and somewhat coarse manners and impudence of a large portion of the British agriculturists,—of the complete isolation, even antagonism, which existed between the gentry and the industrious communities in our large towns, it is pleasant and promising to see the efforts which are now made, by persons of rank and cultivated intelligence, to mix with, and amuse, instruct, and benefit the multitude.\*

\* Mr. J. Harris gives the numbers of Odd Fellows and Foresters as under:—

	Odd Fellows.	Foresters.
England.....	267,394	159,838
Wales.....	23,011	2,561
Scotland.....	3,977	823
Ireland.....	1,613	161
Abroad.....	10,566	2,098
	305,561	166,570

It is not without benefit further to glance at the homes of our farmers,—to compare the present with the past,—to note the pictures, books, musical instruments, and other signs of advancing taste; and, in looking into the dairies, gardens, fields, and stackyards, we find that instead of the produce of the land having declined in quality or quantity, by the improvement in knowledge and manners, crops are raised which would have been considered impossible by our grandfathers. The working classes have a hopeful future if they will earnestly strive for the social and intellectual advancement of their order. This can be best done by co-operation of all classes. On this point Mr. Bright remarks, "The workmen are great in numbers, growing in intelligence, and their power of combination is without limit. They will contend for themselves, by themselves, if condemned to remain a separate and suspected order in our social system; and this contest has in it seeds of future and tremendous evil, to them and to the great industrial interest of the country. I wish to unite all, to have no separate interests, to bind all in a common sense of common rights, and thus to give peace and strength where now discord and weakness too much prevail." The way best to do this is the question that needs solving.

ACCESSIBLE ARRANGEMENT OF GAS AND WATER PIPES.

MR. CHARLES BAXIS has published a plan for the arranging of water and gas pipes and telegraph wires, so as to be accessible for any purpose without incurring the expense of excavating the roads and pavements.

This object is sought to be effected by placing the pipes and wires in chambers composed of lengths of tubing, which may be of any suitable or convenient size and form, and joined together so as to form a continuous chamber, in which openings are made at the top. It is proposed to construct the chambers of cast iron or bricks, or tile arches in cement, or other suitable material, with an opening extending along the upper side of the chamber, which will be hollow, and form the kerf. The sides or edges of this opening are provided with grooves, in which may be slidden plates or frames to close up the chamber.

The plates will be composed of cast iron frames, into which flag-stones may be inserted. Strong sheets of glass may also, if desired, be let into the cast iron plates or frames, at intervals, to admit light to the chambers beneath.

It is proposed that a chamber under the foot-pavement, and being the larger and more accessible of the two, shall be devoted to the reception of telegraph wires; while, in the other chamber, to extend under the roadway of the street, it is proposed to place the water and gas pipes. The chambers are so constructed as to allow the upper surface of the kerf plates and the other plates or frames being brought flush with the pavement; and it is proposed that this part of the structure shall form the kerf of the roadway, and will present a stone surface to the passengers' feet, for which purpose, and to strengthen and protect it from the carriage traffic, a strong fill or projecting piece is to be cast along the outer edge. The long continuous chamber may also be strengthened internally by means of webs or ribs.

If the gas and water pipes are placed in the chamber farthest from the houses, then short transverse ways or spaces must be reserved, and taken out of the other chamber, in order to enable the supply-pipes to be passed through the chambers.

It is proposed that the principal water and gas main pipes shall remain in the centre of the road of the leading thoroughfares, and that one supply-pipe, say four or six inches in diameter, should be carried into the chamber at the commencement of each street. The projector thinks that as there would be only one supply-pipe from the principal gas main in each street, and the supply-pipes to the houses being connected with the supply-pipe in the chamber, and perfectly accessible, the escape of gas would almost entirely be prevented, as there would be scarcely any necessity ever to interfere, or disturb the principal mains, whilst the joints to the supply-pipes in the chambers could be made as secure as the gas pipes that are carried through the rooms of dwelling and other houses; therefore that the saving to the gas companies by the use of the chambers would be great. In the several supply water pipes in the chambers there could be inserted, at given distances, large taps with washers and waste, so that a leather or other hose might be screwed on, taken through

an aperture by removing one or more of the before-mentioned movable plates or frames, and be of essential service in case of fire or for other purpose.

There are obvious objections to the general adoption of the plan, as compared with the formation of more comprehensive subways—the interference with vaults as at present formed beneath the footway, and the retention of the mains in the road, with the multiplication of pipes. Nevertheless, for some situations it would be worth consideration. The enormous size to which gas and water mains are now reaching threatens to increase the difficulty of introducing subways of any kind.

THE PUGIN MEMORIAL AND THE OBJECTORS.

SIR,—The opinion of Professor Donaldson carries with it so much just weight, that his expression of dissatisfaction at the conditions of the Pugin Memorial cannot fail to be injurious to its success. I make no excuse, therefore, as one both privately and officially interested in the undertaking, in briefly calling your and Professor Donaldson's attention to some obvious considerations which I am surprised to observe, have escaped his view; but which in my opinion ought to neutralize his unfavourable judgment.

If we had any intention of casting a slur on, or impeding, the study of Continental architecture, no language could be too strong to brand such bigoted folly. But where is the evidence to be found of such an *animus* in our prospectus? Architecture, if studied in a large spirit, must be studied in a cosmopolitan one. But I have yet to learn that a cosmopolitan spirit means a spirit which excludes our own country while it includes all others. If I am right, it follows that the perfect architect, while he is at home when abroad, must not be abroad when he is at home. It seems very little to ask of our young architects that while they "get up" their Paris and Cologne, their Florence, Venice, Rome, or Athens, they should at the same time have devoted some one summer of their "prentice years to a personal survey of York, Lincoln, Durham, Ely, Sarum, Oxford and Cambridge, Tintern, Kitevaux, Chesham, and Conway, not to mention the numerous country houses of the sixteenth and seventeenth centuries, which are still in existence up and down our rural counties.

The most ambitious promoter of the Pugin Memorial does not expect to be able to do more than to raise funds sufficient to enable one student to take this tour each year. No other public provision for such a tour at present exists; and, unless Professor Donaldson can prove that it is likely to be injurious to the young man who embarks in it, I fully believe that he will forget his letter to Mr. Clark; and, with his accustomed generosity and kindness, contribute his influence and help to the good cause of the Pugin Memorial.

A. J. B. BEFFROSS, HON.

\* \* \* It is not, as Mr. Ilope supposes, an objection of Continental and home architecture with those who, like Professor Donaldson, object. The prospectus sets forth that the interest of the fund shall be expended by the recipient "in travelling in the United Kingdom, and in examining and illustrating its *Medieval* Architecture, Sculpture, and Painting." It is this limitation that is objected to. If the committee for the fund are disposed to remove the word "*Medieval*," they may at once get rid of the objection; and, practically, precisely the same object will be attained; the *Medieval* works preponderating so greatly in this kingdom as they do. Mr. Ilope, when he includes the "country houses of the sixteenth and seventeenth centuries," goes probably nearly as far as the objectors would desire,—certainly beyond the limits marked by the prospectus, and will probably be willing to assist in obtaining the desired change.

We have since received a copy of the reply which has been returned to Professor Donaldson by the hon. secretaries:—

"We feel that your letter of the 26th instant demands an official reply, as it appears to presuppose a feeling on the part of the Committee and subscribers to the 'Pugin Memorial' which we are sure that the majority of them would disclaim."

We have united together with a single and a very simple object,—to commemorate in the most appropriate, and at the same time the most useful manner which we could devise, a very eminent architect, a man of very extraordinary ability, and who was not only the most zealous and successful of those who have brought about a revived taste for and appreciation of the true principles of Polished architecture, but who, in carrying out that object, indirectly elucidated principles of the highest importance to our art in all its varieties. It is commonly the case that the most zealous agents in

any great cause lay themselves open to the charge of exclusiveness. It may, perhaps, be an inherent imperfection in the human mind that in carrying out any great movement exclusively in some degree a coalition of great access. There may be minds so great as to override this, but we think you will find that the revivers of Classic Architecture, whether in Italy, France, or England, were amenable to the same charge which you bring against Pugin.

Be this, however, as it may, it is unfair to charge this upon those who wish now to commemorate the services of this highly gifted man. We may do more, as individuals, agree with him in such of his views as you object to: many of us may agree with him to the full in his feelings towards Gothic architecture, without adopting his censures upon other styles; but, whatever may be the varieties of our individual sentiments (and they are, no doubt, pretty numerous in their shades), we feel sure that all are agreed in this—that in commemorating and doing honour to Pugin, we have no wish either to press our particular tastes and preferences upon others, or to imply any shade of censure upon those who may happen to differ from Pugin or from ourselves.

Holding, however, these views, we nevertheless strongly feel that to commemorate Pugin otherwise than in connection with that style of architecture to which he devoted his life, and in which all his feelings and aspirations were centered, would show a degree of sickly liberalism which would justly incur the contempt of persons of all shades of opinion. Pugin was devoted to the study and revival of Gothic architecture, and his memorial, to be a memorial at all, must be connected with that study and that revival. To make it other than this would, as it appears to us (to borrow your own expression), be "stupid and cowardly."

To commemorate a man, however, in connection with the pursuit to which he devoted himself, by no means implies exclusiveness. We wish to connect his name with a studentship in the Institute of British Architects, founded for furthering the study of that branch of our art in which Pugin was eminent. Surely there is nothing exclusive, in an objectionable sense, in this. Why, if it is not a month since Mr. Tite founded, in connection with the same Institution, a prize for 'Proficiency in Italian Architecture,' even specifying the individual artists whose works illustrate the particular variety of the style he meant to encourage. Did any Gothic architect object to this? If this view become general, there can be no specific teaching at all. Our universities and schools possess prizes, studentships, &c., for particular branches of learning or science; but these do not imply any censure upon any other branches. Why, then, if, as you frankly admit, the two great styles of architecture now practised amongst us are equally worthy of study and encouragement, should a studentship in our great Architectural Institute aid the study of one of these by connecting certain prizes with the memory of one of its leading revivers, be awarded before the public as either a reward or a distinction and emphatically disclaim any such principle or intention on the part of the supporters of the Pugin Memorial.

JOSEPH CLARKE,  
"THE FABRIC DEPT."

#### SIZE OF PIPES FOR COMBINED BACK-DRAINAGE.

##### THE SWANSEA SEWERAGE.

An important question is in course of settlement at Swansea. The town-surveyor, Mr. Cousins, having planned the sewerage of the town, in which he laid down a system of back drainage for combined blocks of houses with 6-inch pipes generally, Mr. Rawlinson was consulted as to the whole plan, of which, it is stated, he approved, including the 6-inch pipes for combined drainage. The local Water and Sewers Committee, however, having considerable doubts that the pipes so authorised were not of sufficient size for subordinate sewers generally, the surveyor (who still retains his opinion in favour of 6-inch pipes) was instructed to go over the plans again with Mr. Rawlinson. This has been done, and the result appears to be that Mr. Rawlinson has reported that 9-inch pipes ought to be applied to all combined back drainage. A controversy has thus arisen in the local Board of Health; and, after a good deal of discussion, it has been resolved that the Water and Sewers Committee be authorised, by personal interviews of the chairman and surveyor with the Local Government Act Office in London, or by such other means as they may think best, to ascertain the proper dimensions of pipes to be used for subordinate drainage in this borough, and to report thereon as speedily as possible.

There are some points in Mr. Rawlinson's recent and special report on the Swansea drainage which we must select on account of their general importance, as well as with reference to their special application to Swansea:—

"The plan of combined back-drainage will be most economical for the owners of property, and very much better and safer in a sanitary point of view for the residents in the houses." Pipes of 9 inches internal diameter will be sufficient for any group of houses in Swansea, as shown on the plan of the town. Pipes of 6 inches internal diameter will be sufficient for drains from the largest house; and pipes of 4 inches diameter for sink, house, and soil-pool drains. In using earthenware pipes they must be sorted and matched, so as to have even joints. Pipes of equal diameter should not join, but the lesser should part into the greater, and the tops should be level, not the inverted bottoms. Pipes of equal diameter may come to a same manhole. The invert of the tributary should be higher than the main. All inlets to drains should be protected, so that solida passing through may traverse the pipe. The places as undernamed have been surveyed and drained with earthenware pipes: Alwick, Northumberland, town of 7,000 inhabitants, pipes from 18-inch to

4-inch. The outlet sewer is upwards of a mile in length, and has a fall of 1 in 400. Alwick Castle, the seat of His Grace the Duke of Northumberland, earthenware pipes from 12 to 4 inches in diameter. The dairy and dairy-grounds of Alwick Castle, pipes from 9 to 4 inches have been used: stables, cowsheds, and piggeries are drained. In Alwick there are about 1,000 sockets in use: the works have been in operation some six years without complaint or inconvenience. At Carlisle some 3,000 houses have been drained with 6 and 4-inch pipes. At Wigan some 5,000 houses have been drained with 6 and 4-inch pipes. At Bowdoin, the seat of the Marquis of Lansdowne, earthenware pipes are used from 12 to 4 inches in diameter. Howick, the seat of Earl Grey, in Northumberland, is drained with earthenware pipes of 9, 6, and 4 inches diameter. At Worthing and at Workshop earthenware pipes are used, and with perfect success. Many other places could be named in which I have raised small pipes, as also in which other persons have used them with success. In pipe sewerage and drainage, care and truth in workmanship and materials must be aimed at. Herein consists the secret of success. An earthenware pipe of 9 inches in diameter, laid with a fall of 1 in 60, will deliver about 1,500,000 gallons of water each day of twenty-four hours. A small pipe, truly pointed, and evenly laid, is preserved clean with much less water than any pipe or sewer of larger diameter. If pipes and sewers are so large as to allow of deposition of solids, choking becomes a work of time. In small pipes, the water must remove the solids. I recommend that, for combined back sewerage, and for blocks of houses, pipes of not less than 9 inches diameter may be used; that house drains may be of pipes 6 inches in diameter; that branches on house-drains may be 4 inches in diameter."

In a recent report the town surveyor, notwithstanding this, says:—

"A 6-inch pipe with a fall of 1 in 60 will pass through 200 gallons per minute, equal to 420,000 gallons per twenty-four hours. This is equal to a volume of water due from thirty-one of the largest houses in the town."

In practice it is found that the same volume of water will more easily remove a deposit through a small pipe than a larger one. If, therefore, a 6-inch pipe be used to carry away all the water that can possibly come into it, it is evident that it is preferable to one of larger dimensions.

I have recommended 4-inch pipes for branches for house-drains, so that every inlet is of smaller size than the subordinate sewers into which they will discharge, and therefore any improper substance likely to choke a drain must pass through a length of 6-inch pipe before it reaches the subordinate sewer; and the fact of its having passed through a length of 1-inch pipe is a sufficient reason to suppose that it will not readily stop up a 6-inch pipe.

The use of 6-inch pipes for back drainage of blocks of houses is no new scheme, but has been adopted and carried out with success in several towns that have been drained with the last ten or twelve years.

After fully reconsidering the matter, I see no reason why I should alter my opinion as to the sufficiency of 6-inch pipes for such purposes as I propose to apply them. The chief object to be aimed at is to have the pipes truly and evenly laid, and to have a plentiful supply of water to flush them."

In our own experience, we may here remark, we have found 6-inch pipes to fail in such a position, and would therefore recommend the change to 9-inch pipes.

#### THE GROWTH OF OLD ENGLAND.

If the commencement of the Roman rule in England was, say, fifty years before the birth of Christ (or 1910 years ago) and each generation lasted on the average thirty years—rather a high rate of vitality probably in the Early and Middle Ages—we find that about sixty-four generations have gone to dust since then; and how much farther back we must look for the commencement of the English history it is difficult to say. The archeological information obtained of late years shows that at the time of the Roman invasion there was a larger amount of civilization in Ancient Britain than has been generally supposed. There seems to be good evidence that in addition to the knowledge of the old inhabitants in agriculture, in the training and rearing of horses, cows, and other domestic animals, they were able to work in mines, had skill in the construction of war chariots and other carriages, and in the manufacture of metals; and there is evidence that cheese and other British manufactures and materials were exported to certain parts of the Continent, probably in British vessels. The peculiarities of the specimens of the ancient coinage of this period which remain are well worthy of attention. To what country may the style of art be traced? To what people do we owe the mysterious circle of Stonehenge? [Mr. Fergusson and others say to the Buddhists rather than to the Druids;] and those other remarkable stones which still remain as memorials of the past, exciting, in the minds of the thoughtful, indescribable feelings of wonder and curiosity?

When noting the various circumstances to be found in connection with the Ancient British period, it would seem that probably 2,000 years before the Roman times there had been in Great Britain a certain degree of civilization, which, from various causes declined in extent. If Stonehenge may be considered as of the same antiquity as similar remains in various parts of the East—which are considered by good authorities to be 4,000 years old,—we had in

this country a degree of civilization which was contemporary with the prosperous period of the Egyptian empire; and, in times more immediately preceding the Roman occupation, we know that Britain was the grand source of Druidical illumination (whatever relation that may have had to a true civilization) to the whole of Continental Europe.

That the Ancient Britons, even after they were conquered by the Romans, had still a strength considered dangerous, is shown by the fact that upwards of forty barbarian legions which were the wards of the Roman standards were settled chiefly upon the northern and eastern coasts; and it is supposed that a force of about 19,200 Roman foot and 1,700 horse was required to secure peace, and the carrying out of certain laws in the island. It is calculated by some writers that a revenue of not less than 2,000,000*l.* a year was raised by the conquerors of Britain from the land-tax, pasture-tax, and customs, besides legacy duties, and those levied on the sale of slaves, auctions of goods, &c.; and it may be remarked that these customs were levied by the Roman governors in lieu of direct tribute, to which, it seems, the spirit of the Britons would not submit.

In the Saxon reign of Edward the Confessor, notwithstanding the strife and bloodshed which had reigned for a long period, the land-tax alone (exclusive of houses in towns, which were also rated) amounted in our money to about 390,000*l.* sterling. Other revenues would produce much more.

In the Norman period (1213), the duty on dyo stuff alone, used for native manufacture, amounted to about 600*l.*

In the reign of Henry II., Fitz-Stephen says that no city in the world sent its wealth to so great an extent and to so great a distance as the city of London, so that then our metropolis had begun to occupy the distinguished position which it still holds among the nations; and he enumerates amongst its imports gold, spices, and frankincense, from Arabia; precious stones from Egypt, purple cloths from India, palm-oil from Bagdad, furs and ermines from Norway and Russia, arms from Scythia, and wines from France. From various parts lead and tin were sent abroad in large quantities, and probably hides, skins, and woollen cloths; and so great was the quantity of silver in the kingdom that it could afford to raise 70,000 marks—equal in weight to nearly 100,000*l.* of our silver money; and some idea of the great value at that time of this amount may be formed from the circumstance that about 1135 wheat averaged only 4*s.* the quarter; sheep, about 5*d.* each; hogs, 1*s.*; cows, about 4*s.* 6*d.*; and breeding mares less than 3*s.* in 1205 the expense of building two arches of London-bridge was 25*l.*

In the twelfth century the revenues of the English monasteries alone amounted to 730,000 marks a year. In the reign of Edward III., the crews of the ships employed by that king at the siege of Calais numbered 11,151 persons. In 1354 the duties paid on the exports of wool amounted to 81,846*l.*; and the total value of the exports to 212,338*l.* 5*s.* Taxation was then very high.

In 1391 the customs duty on such exportation alone amounted to 160,000*l.*; and so opulent became the merchants, that one individual was able to lend the king, Edward III., 18,500*l.*

From that date to the present time the growth of trade, commerce, and manufactures in England has been marvellous to contemplate; and great as this has been, the powers now at work promise a result even greater.

B. & D.

#### GLEANINGS AS TO OLD LONDON, FROM VARIOUS SOURCES.

*The Ancient Shopkeeper*.—Proteus Redivivus—re-published in 1854—presents the following sketch:—"Methinks I see him, standing at his shop door, in cold weather, either blowing his fingers, eagerly waiting (if he be a young man) for a kick at the foot-ball, and betting his sides with his own hand, and so makes every cold day a Good Friday to chastise him for the sins he hath committed. If any person pass by him, and but look into his shop, he fondly imagines him a customer, and entreats for his own necessities by asking others what they lack. If any chance to step in, he hath hocus tricks enough to delude them, and rarely shall they stir out (like sheep engorged in briars) but they shall leave some feece behind them. Some have dark shops with false lights, which wonderfully set off a commodity; others (for want of that) make use of their own

\* Of this we are not quite certain, by the way.

longues, arrogantly commending their own wares, and protesting whatever they exhibit to view is the best in the town, though the worst in his shop. His words are (like his wares) twenty of one sort, and he goes over them alike to all comers."

The same authority says that the traders of his time have broken through a custom of their ancestors, and made Monday a general day for the settlement of accounts instead of Saturday, which the author says "is the melancholiest part of the whole week, not so much by reason of the poppish and humorous planet which governs it, but by reason of too many unsufferable dens, who tread the streets in terror; and that is the reason some citizens can as well be banged as keep out of nine-pin houses in Moorfields on this day, to be out of sight of these ghastly apparitions that haunt their ghost at the end of the week."

*Hackney Coaches* were admitted into Hyde-park before the year 1694, but were expelled at that period, through the singular circumstance of some persons of distinction having been insulted by several women, in masks, riding there in that description of vehicle.

"*Proclamation against Swearing Workmen.*"—During the building of St. Paul's, the commissioners for erecting that structure with Sir Christopher Wren issued the following very proper order:—"Whereas, among labourers, &c., that ungodly custom of swearing is too frequently heard, to the dishonour of God and contempt of authority; and to the end, therefore, that such impiety may be utterly banished from these works intended for the service of God and the honour of religion, it is ordered, that customary swearing shall be sufficient crime to dismiss any labourer that comes to the call; and the clerk of the works, upon sufficient proof, shall dismiss them accordingly. And if any master, working by task, shall not, upon admonition, refrain this profanation among his apprentices, servants, and labourers, it shall be construed his fault, and he shall be liable to be censured by the commissioners. Dated 25th September, 1695."

*Schools.*—Aubrey (MS. in the Ashmolean Museum) says, in 1678, "There were very few free schools in England before the Reformation. Youth were generally taught Latin in the monasteries, and young women had their education, not at Hackney as now, but in the nunneries, where they learnt needlework, confectionary, surgery, physic (apothecaries and surgeons being their rare), writing, drawing, &c. Old Jack, now living, hath often seen from his house of St. Mary's, Kingston, in Wilts, coming forth with the nymphs with their racks and wheels to spin, sometimes to the number of seventy, and of whom were not mus, but young girls, sent there for education."

*Houses.*—The same authority says, "Anciently, before the Reformation, ordinary men's houses, copyholders, and the like, had no chimneys, but flues like louver holes: some of 'em were in being when I was a boy."

"In the halls and parlours of great houses were wrote texts of Scripture on the painted cloths."

"In days of yore lords and gentlemen lived in the country like petty kings, had *juva regalia* belonging to seignories; had castles and boroughs; had galleys in their liberties, where they could try, condemn, and execute; never went to London but in Parliament times, or once a year to do homage unto the king; they always ate in their Gothic halls at the high table or orsille (which is a little room at the upper end of the hall, where stands a table), with the folks at the side table. The meat was served up by watchwords. Jakes are of but late invention: the boys did turn the spits, and licked the dripping for their pains. The beds of the men-servants and retainers were in the hall."

The *hearth* was commonly in the middle, whence the saying, "Round about our coal fire." Before the Reformation there were no poor rates: the charitable doles given at the religious houses and the church ale in every parish did the business. In every parish there was a church-house, to which belonged spits, pots, &c., for dressing provisions. Here housekeepers met, and were merry, and gave their charity. The young people came there, too, and lud dancing, bowling, shooting at the butts, &c. Mr. A. Wood assures me there were few or no almshouses before the time of Henry VIII.; that Oxon, opposite Christ Church, was one of the most ancient in England. In every church was a poor-box, the like at great inns.

"Glass windows in churches and gentlemen's houses were rare before the time of Henry VIII.:

in my own remembrance, before the civil wars, copyholders and poor people had none. In Herefordshire, Monmouthshire, and Salop, it is so still. About ninety years ago, noblemen's and gentlemen's coats were of the fashion of the beards' and yomen of the guard (*i. e.*), gathered at the middle. The henchers in the inns of court yet retain that fashion in the make of their gowns."

*Quakers' Meeting-houses, &c.*—After the Restoration the Quakers were much persecuted in London and elsewhere: many were sent to Newgate, which place, an old writer says, instead of being a den of thieves, became a house of prayer. On the 11th September, 1664, the Lord Mayor, Alderman Brown, the sheriffs, and several officers and watchmen, came to the Bull and Mouth meeting (whence, it should be observed, the congregation had before been expelled, and actually held their meeting opposite the door in the street). The Lord Mayor at his entrance expressed himself thus:—"You have been warned many times not to meet here; but, if it please God, I will try whether your obstinacy or the law shall take place." Then he ordered his officers to bring the persons assembled severally before him, and committed eighty-three of them to Newgate for the first and second, and twenty-two for the third offence. Amongst them was Mary Boreman, who, being asked by Alderman Brown what was her name, answered, "You may, instead of my name, write thus,—Afflict not the widow and the fatherless; and then, when you look over your roll, you may see your duty."

*First Methodist Meeting-house.*—About 1740, Wesley preached to many thousands of persons in Moorfields, at Kennington-common, and Blackheath. The first metropolitan chapel of this celebrated preacher was at the "Foundry," in Moorfields.

*Theatres.*—Charles I., observing the continual opening of theatres and other places of amusement on Sundays, passed an Act in the first year of his reign forbidding all theatrical amusements, or any of the inferior pastimes of the people, on Sundays. It, however, appears that, in the latter end of the year 1659, some months before the restoration of King Charles II., the theatres, which had been altogether repressed during the Commonwealth, began to revive, and several plays were performed at the Red Bull, in St. John-street, in that and the following year before the return of the king.

Charles II. granted patents to two distinct companies, — one to Sir William Davenant, and the other managed by Henry Killigrew; the company of the latter received the title of "The King's Servants," and acted at the Drury-lane Theatre: Davenant, that of the duke's company, he appropriated to the theatre in Dorset-gardens. The King's Servants were considered part of the royal household, and about ten of them had cloth and lace allowed to them for liveries. The Lord Chamberlain styled these "Gentlemen of the Great Chamber." It will be remembered that before this reign females were never admitted upon the stage.

*Cock-pits.*—With the following note of a London cock-pit in 1725, we must for the present close these extracts:—"A cock-pit is the very model of an amphitheatre of the ancients. The cocks fight in the area as the beasts did formerly among the Romans; and round the circle above sit the spectators in their several rows. It is wonderful to see the courage of these little creatures, who always hold fighting until one of them drops, and dies on the spot." In a journey through England in the above year it is mentioned,—"I was at several of these matches, and never saw a cock run away; however, I must own it to be a remnant of the barbarous customs of these islands, and too cruel for my entertainment. There is always a continued noise amongst the spectators in laying wagers upon every blow which a cock gives; who, by the way, I must tell you, wear steel spurs, for their surer execution; and this noise seems fluctuating backwards and forwards during each battle, which is a great amusement. . . . If an Italian, a German, or a Frenchman should by chance come into these cock-pits, he would certainly conclude the assembly all mad by their repeated outcries of six to four! five to one! ten pounds to a crown!—which is always repeated here, and with great earnestness, each spectator taking part with his favourite cock, as if it were a party cause."

THE RECENT EXPLOSION, ST. MARY'S, OXFORD.—Mr. Rosser wishes us to say, that the statement, that the gas-pipe was broken "in laying the hot-water pipes, has no foundation in fact."

## ARCHITECTURAL EXAMINATIONS AND THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held on Friday evening, the 23rd ult., at the House in Conduit-street. The President (Mr. Roger Smith), occupied the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were, on ballot, elected members of the Association:—Messrs. B. H. Jones, S. H. Vernon, Charles Harris, and — Henry.

The Curators (Messrs. Lewes and Harris) laid on the table a report respecting the property of the Association. The report contained a recommendation that an attempt should be made to establish a lending library of architectural works.

At the suggestion of the President, the report was received, and its consideration postponed until a future day.

### Architectural Examinations.

The President said that the next subject for their consideration that evening was that of architectural examinations. It had been discussed in the public papers, and in their Association; and, towards the close of the last session, the council of the Royal Institute of British Architects had brought it formally under the notice of their members. The council had also prepared the outline of a scheme of examination, upon which they wished to take the opinion of the Institute. A discussion on the subject took place on the 25th of June, which resulted in the passing of a resolution that it was desirable to afford an opportunity for a voluntary professional examination. Beyond this there was no expressed opinion of the Institute, and the consideration of details was postponed. During the recess the Institute prepared a circular, with the view of collecting the sense of the Provincial Associations, in which a request was made that they would consider the main question, and offer any suggestions which might occur to them, either upon the subject as a whole or upon the details. A copy of that circular had been sent to the Architectural Association, but it remained unanswered because it had been received when the Association was not sitting, and because it was considered undesirable to summon a special meeting at a period of the year when it would have been difficult to secure a large attendance of members. The present was, therefore, the first opportunity which arose for entering upon the subject. It might, he thought, be divided into two or three different branches, and it occurred to him that it might be desirable they should lay down a rule as to the specific manner in which they were to discuss it. With this view he would suggest that members who had any observations upon particular points to offer would reserve them until the subject to which they more immediately related should come on for discussion. This would save time, and enable them to arrive at a more satisfactory solution of the questions to be laid before them. He believed that some of their members would be prepared to move and second, in the first instance, a resolution to the effect that the Association agreed in the opinion expressed by the Institute, that it was desirable to afford an opportunity for a voluntary professional examination. This resolution would not pledge the meeting to details as to under what circumstances an examination should take place, and therefore he thought it might be desirable to pass it as an abstract proposition. If, however, any members were of opinion that an examination was altogether inadvisable, this would be the time to say so. But let them in the first instance consider whether it was desirable that there should be any examination at all. The next points would be in what subjects it would be desirable to have an examination, and who should be the persons examined. A second resolution would be proposed raising the question that it would be desirable that the examination should include such and such subjects; and a third resolution would have reference to the persons who should have the conduct of such examinations, for it was important that one of the resolutions should embody a suggestion as to the hands into which the matter should be left.

Mr. Arthur Smith said he was prepared to move the following resolution:—"That the establishment of an architectural examination, under competent authority, might be rendered advantageous to art, and improve the standing of the profession." There could not, he thought, be a second opinion as to the desirability of passing such a resolution; for, when they considered that auctioneers, valuers, and tradesmen, were endeavouring to obtain business which they were wholly incompetent to execute, it became necessary that some protection should be extended to gentlemen who had studied their profession



position of an all-wise Providence, the man and the knowledge were forthcoming to provide for the growing wants of society. On the introduction of railways, it was requisite that a vast amount of mental energy and of physical exertion should be employed, in order to render the development as rapid as possible. Mr. Locke possessed peculiar qualities of mind which secured for him the confidence of capitalists, by whom the construction of the Grand Junction Railway was entrusted to him.

At an early period of the railway epoch he became the engineer of the South-Western line, whence he almost naturally sought for and ultimately accomplished the extension of the system to France; where, in the construction of the Paris and Rouen and Havre lines, he introduced English capital, English workmen, and English contractors, and initiated the Continental railway system. He was thus the first who promoted the establishment of the present rapid communication between the great commercial capital of Great Britain and Paris, the fashionable metropolis of the Continent.

Returning to the field of his early labours, he undertook the extension of the lines from Preston to Carlisle, and thence to Glasgow, Edinburgh, and ultimately, to Aberdeen, thus becoming also the pioneer of the Scotch railway system.

Without entering minutely into the details of his professional life, which would be given in the official memoir, it would be admitted, from what has been stated, that Mr. Locke was entitled to be considered one of the great engineers of the period, and a distinguished pioneer in the introduction of the railway system.

There was a curious coincidence in the circumstances of the deceases of the three distinguished men who had been removed within little more than a year. Each one had departed on the eve of, or at, the completion of some great work. Mr. Brunel might be said to have died as the *Great Eastern* steamer commenced its trial voyage. Mr. Robert Stephenson was taken away on the eve of the completion of the great Victoria-bridge over the river St. Lawrence, Canada; and Mr. Locke's decease occurred on the completion of his long-cherished project—the extension of the narrow gauge line to Exeter, the capital of the west of England.

The President then remarked on the distinctive features which marked Mr. Locke's professional career, especially attention to financial results.

It was not, he continued, that Mr. Locke feared engineering difficulties; for, when they were inevitable he encountered and overcame them with skill; as, for instance, in the works of the Manchester and Sheffield Railway. But his great anxiety, and which secured for him the confidence of a large body of capitalists, was to attain his object by avoiding difficult and expensive works, from a desire that all the works on which he engaged should be commercially successful. The abnegation of professional renown, arising from the construction of monumental works, whilst establishing his reputation as an economical engineer, induced him to turn to the locomotive engine, and to tax its powers (in which he had, from the earliest period, the greatest confidence), for overcoming steeper gradients than had hitherto been deemed compatible with economy and safety. In this he was very successful; and, when viewed in conjunction with the previously-mentioned general features of his professional life, it must be conceded that the decease of Mr. Locke had caused a gap in the profession which would long be felt.

The discussion upon Mr. Scott's paper, "On Breakwaters, Part II.," which was commenced at the closing meeting of the last session but was not then concluded, was continued throughout the evening.

On the 20th ult., the paper read was "On the River Orwell and the Port of Ipswich," by Mr. George Hurwood, M. Inst. C.E.

#### CAMBRIDGE ARCHITECTURAL SOCIETY.

At the annual meeting, a report reviewing works in the county was read. The following notes occurred in it:—

"The Guildhall is fairly settled in its design, and a contract has been entered into to complete it by next October. However we may regret that a good Gothic design has not been carried out, we still rejoice that something is really being done to supply the town with better accommodation than the present rooms afford. We memorialised the committee on the question of style, but without any effect. Among architectural works in the county, of course, Ely Cathedral stands the first. Mr. Le Strange's work on

the roof of the nave has had another year added to it, but is still far from being completed. The planks of the scaffolding have lately been partially removed, so that some idea of the effect may be obtained from below. We do not like to criticise unfinished works, but this certainly promises to be one of the most successful of the kind during modern times. One effect of the work is to give the appearance of increased height to the nave. The tone of the colours is remarkably pleasing, which, together with the masterly conception and bold treatment of the whole, renders it particularly fine."

"The old gateway to the churchyard at Burwell, commonly called the Guildhall, no longer exists. We are sorry to add that such a work of demolition has been carried on in the most legal manner. The Inclosure Commissioners, the Charity Commissioners, the Trustees of the Burwell Charity Lands Charity, the Vicar and Churchwardens, are all implicated in this work of destruction. We much regret that no voice was raised to stop this demolition, because this gateway was the only example of the kind in the county, and as such ought to have been preserved."

"The Dean and Chapter of Ely have an interesting work in hand at Hauxton Church. This is one of the oldest churches in the neighbourhood, and has very many interesting points about it. On taking out the old wooden-framed east window, the fragments of a decorated window were found in the walls, and this has been re-worked in Ketton-stone. On further examination, the jambs of an E E triplet were discovered; and on examining the foundations, the chancel was found originally to have had a semi-circular apse."

"Before concluding this report, your committee wish to lay before you a scheme which has been set on foot for a memorial to the late Mr. A. W. Pugin. The plan proposed is, not to erect a monumental effigy to his honour, but to found Travelling Studentships, which, whilst it forms a valuable plan for increasing the opportunities for the study of architecture, is one founded on his own words. We think that this should meet with the support of all interested in architecture; and we hope that some will be found among the members of the University who have sufficient regard for Mr. Pugin and love of art to give liberally to so desirable an object."

#### COMPETITION: THE LEEDS MECHANICS' INSTITUTION.

ABOUT twenty sets of designs were sent in for the intended new building for the Leeds Mechanics' Institution and Literary Society, and School of Practical Art. The committee have decided in favour of the plans marked "M. I. B. A.," which have been prepared by Mr. C. Brodricke, the architect of the Town-hall. The committee selected Messrs. Perkins & Baskhouse's plans as the second best, and Mr. Shaw's as the third. We shall have more to say on the subject.

#### FOREIGN INTELLIGENCE.

At Plombières, recently, took place the inauguration of the asylum presented to the town by the Emperor. M. Malgras, Inspector of the Academy, presided at the fête, assisted by all the authorities, civil and clerical; the children, and the lady patronesses, &c. During the ceremony it was announced, amid cheers of "Vive l'Empereur," that the Emperor proposed adding a spire to the church out of his privy purse.

At Berlin, on the 5th of November, the statue of Thier was uncovered in the presence of several members of the royal family and most of the ministers. The model for this statue, 9½ feet high, was finished by Rauch. It bears the following inscription:—"To Albert Thier, born in 1752, died in 1825, founder of scientific agriculture, erected by his grateful country."

Explosions of steam cylinders and boilers occur abroad as well as in England. On the 26th October, says the *Echo du Loire*, a drying cylinder in a paper manufactory blew up with a terrific explosion. The accident happened in the establishment of MM. Tonnelier & Co., of La Combe, and caused much damage. The workmen had had a miraculous escape, if they had been but slightly bruised and scalded. The cylinder weighed nearly two tons, and such was the force of the explosion, that two months must elapse before the works can be carried on.

At Antwerp, a few days ago, a boiler explosion took place under singular circumstances. Three brothers, named Retsin, sons of a conductor of that name, proceeded to the *Tête de Flandre* to get up the steam in a small pleasure-boat belonging

to the family. The little steamer being aground on the shore, Louis Retsin landed again, leaving his two brothers to mind the fires till the tide came in. No sooner had he quitted the vessel than the boiler exploded, blowing the boat to atoms. The neighbours all rushed to see what had become of the two lads on board. One was found 10 metres off, mutilated and dead; the other was picked up closer by, severely, though not dangerously, injured. The absence of sufficient water in the boiler is stated to have been the cause.

#### PARLIAMENT BUILDINGS, OTTAWA CITY, C.W.

A CITIZEN of Ottawa writes.—You notice the laying of the corner stone of the Government buildings here, in your number, dated 29th September, 1860, but you are not quite correctly informed. H.R.H. the Prince of Wales laid the foundation stone of the *Parliament* buildings, of which Messrs. Fuller & Jones are the architects. These buildings form one of the longer sides of a quadrangle, the two shorter sides being occupied by the buildings for the Government offices, called locally the "Departmental Buildings," of which Messrs. Stent & Laver are the architects.

The exterior of the latter buildings has been made to harmonize with that of the *Parliament* buildings, which are by far the most important group, and equally ornamental, internally and externally, while the Departmental buildings are necessarily quite plain inside.

It is due to Messrs. Fuller & Jones, as architects to the building honours by the ceremony performed by H.R.H. the Prince of Wales, to make this statement.

I should add that Mr. Thomas McGrew is the contractor for the *Parliament* buildings; and Messrs. Jones, Haycock & Co. have the contract for the Departmental buildings.

#### SOCIETY OF ARTS.

##### INTERNATIONAL EXHIBITION OF 1862.

THE Society of Arts commenced its session on Wednesday, the 21st November, Sir Thomas Phillips, chairman of the council, in the chair.

Sir Thomas Phillips delivered an address, in the course of which he gave an account of the steps which the council had taken in order to the holding of a second Great International Exhibition of Works of Industry and Art, in 1862; and said, in conclusion of this part of his subject:—

"The council have seen no reason to relinquish the conclusion to which they came—that an International Exhibition of 1862 would elicit even more valuable results than were achieved in 1851—if managed with the same spirit and intelligence as its great predecessor. The great expansion of our commerce, as evidenced by the increase in our exports and imports; the former from 71,000,000 in 1850, to 130,000,000 in 1859, and 161,000,000 in the first nine months of 1860; the numerous inventions and improvements in our manufactures; the large increase in population and wealth; the extension of the means of locomotion by the multiplication of railways at home and abroad, and the desire for travel thus engendered; the more intimate knowledge of this country by foreigners; the spread of education; the growth of liberal commercial principles; an increased knowledge of and love for art, will each and all contribute to swell the numbers who will seek admission to the exhibition; whilst the manifestation of the marvellous progress of the last ten years in the staple productions of this and other countries will afford the most powerful stimulus to future improvement. The society may be congratulated on the eminent success which has attended the efforts of the council to provide an adequate guarantee fund. When their intention to promote the holding an International Exhibition in 1862 was first made known to the public, their resolution was regarded by many with apprehension and distrust, but the favourable opinion of the undertaking in various walks of active life afforded satisfactory proof that the council had interpreted aright the feelings of their countrymen. The same motives which animated manufacturers and inventors in 1851 will exist in full force in 1862. Men hitherto but little known will provoke rivalry and challenge competition, whilst men better known and established will not be left behind in the struggle for distinction.

The council therefore not only confidently expect to witness a successful exhibition in 1862, but by the success of that undertaking to ensure the establishment and Royal sanction of periodical International Exhibitions of Works of Art and Industry. The foundation of such exhibitions



DRINKING-FOUNTAIN, ST. GEORGE'S COLEGATE, NORWICH.—MESSRS. BENEST & NEWSON, ARCHITECTS.

as a permanent institution will form an appropriate distinction of the country in which an international exhibition was first conducted with entire success."

We now look for active steps on the part of the council.

#### DRINKING FOUNTAIN IN ST. GEORGE'S, COLEGATE, NORWICH.

This fountain is executed in Portland stone, except the basin, which is in veined marble, supported on an octagon pedestal, and lying in a cluster of water lilies. The octagonal canopy over the basin, with battlements and finial, has water lilies carved on its pendants, and the water issues from the centre of a lily. On each side of the octagon pedestal are arched troughs for dogs. Above the marble basin, and under the canopy, the following lines are engraven in old English characters on a marble slab:—

"Wayfaring man, for thee this fount was given,  
A channel to impart the boon of Heaven;  
Drink, and thank God! and in this water trace  
An earnest of His love, an emblem of His grace!"

Below are the initials of the donor and the date,—  
"J. C. B., 1860." The height of the fountain, to the top of the finial, is 9 feet; and the width, 5 feet. The canopy projects 1 foot 4 inches from the churchyard wall. The fountain was presented by Mr. J. C. Barnham; designed by Messrs. Benest & Newson, architects; and executed by Mr. Joseph Stanley, mason, of Norwich.

#### ALL SAINTS', BOYNE HILL, BERKS.

The church, parsonage-house, and schools at Boyne-hill, are the work of private founders. The original scheme was undertaken by two sisters, and the works were afterwards considerably enlarged by means of a benefaction given to the church.

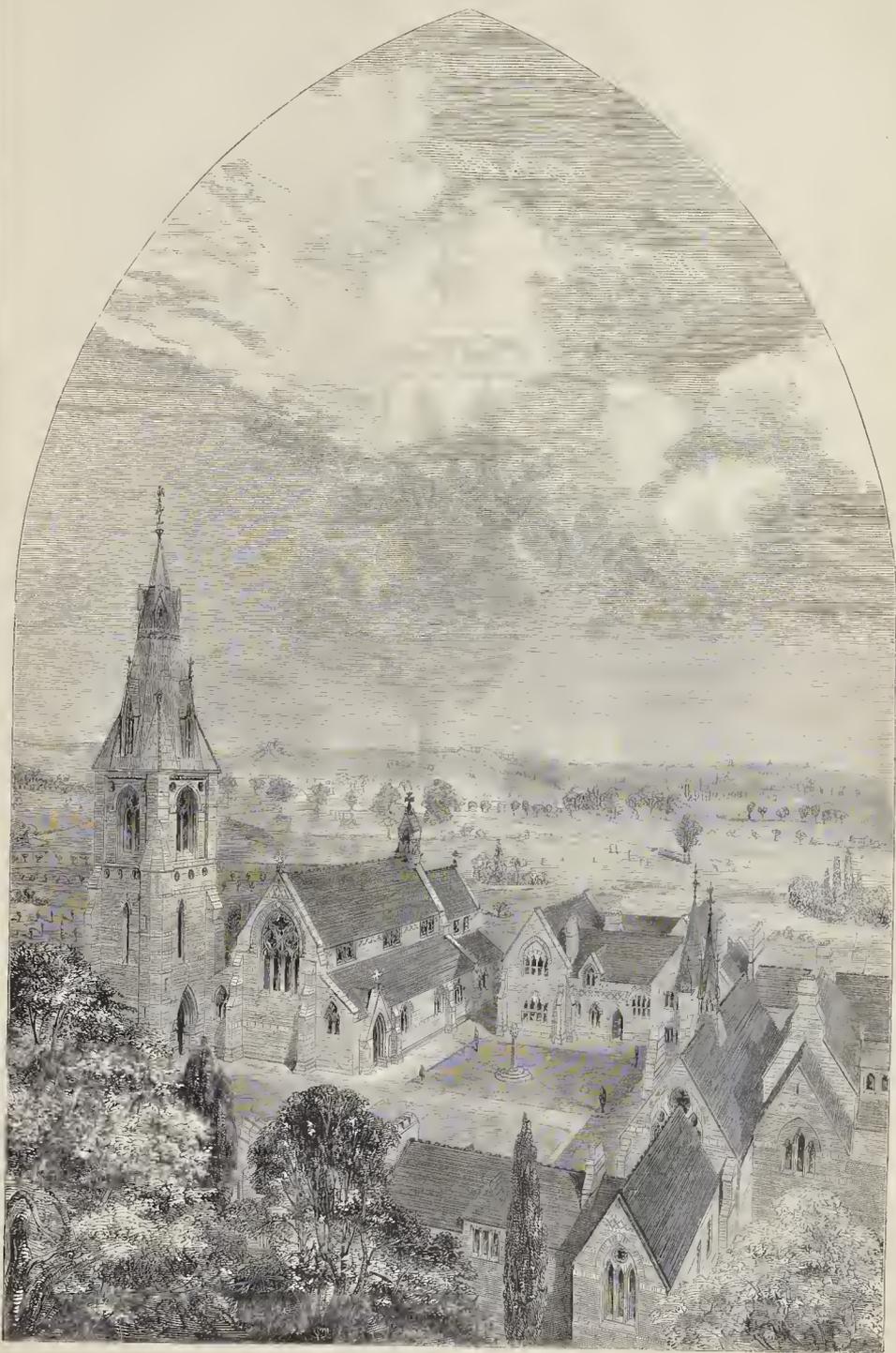
The buildings already completed form three sides of a quadrangle, and the tower and spire shown in our view will, it is hoped, in course of time, be erected. The north side of the quadrangle is occupied by the church. There is a

nave of four bays, with aisles, a chancel, and south chancel aisle. Most of the windows are of stained glass, those at the east and west ends being the work of Mr. Hardman. The interior of the church is finished in the same way as the exterior, with red brick and stone.

The chancel walls are further enriched with coloured tiles, and courses of polished alabaster. In the spandrils of the nave arcade are sculptured a series of "stations,"—subjects, from the Passion of our Lord; these, and the rest of the sculpture, were the work of Mr. Earp. The altar cloths, hangings in the sedilia, &c., are richly embroidered. The chancel screens are of stone and wrought iron.

The parsonage house is on the east side of the quadrangle, and is of considerable size. The south side of the quadrangle is occupied by schools for girls, boys, and infants, and a master's house.

The whole of the buildings, with the sculpture, glass, embroidery, &c., have been erected from the designs of Mr. Street. The church was consecrated by the Bishop of Oxford, in the autumn of 1857.



ALL SAINTS', BOYNE HILL, BERKS.—MR. G. E. STREET, ARCHITECT.



## INDUSTRIAL REFORM.

We are asked to state that the promoters of the Amended Combination of Workmen's Act (22 Vict., c. 34), the Equitable Councils of Conciliation Bill, and other measures, think it desirable a conference of delegates should be held in London, to consider the present state of the statute laws having reference to the settlement of disputes by arbitration, the payment of wages in all trades in the current coin of the realm, and not otherwise,—stoppages from wages under different pretexts,—the unsatisfactory state of the law relating to contracts, and such other statutes as press heavily and unjustly upon the freedom of action among the working classes: and those societies who agree to the foregoing propositions are requested to communicate with Mr. Thomas Winters, of 263, Strand, their secretary.

## IRISH BUILDING NEWS.

The Messrs. Martin have just completed their new shipping offices at the North Wall Quay, Dublin, from the designs of Mr. Charles Geoghegan.

The members of the Unitarian Church in Dublin propose to erect a new house of worship in Stephen's Green; and we understand that Messrs. Deane & Woodward, Lanyon & Lynn, and Raffles Brown, are amongst the architects who have been invited to furnish plans.

The total amount realized up to the present by the sale of the Bray "Commons" is 9,000l. The entire of the lower Commons has been purchased by Mr. O. Kelley Dease, for 1,800l., which amount is included in the above mentioned sum. The parts sold by auction for building lots have gone as high as 1,500l. per acre.

Rathgar, in the suburbs of Dublin, which but twenty years ago contained only a few houses scattered along the roadside, is at present assuming a considerable degree of importance. Four houses of worship are at present in course of erection there; streets are being added; and Kenilworth-square, which bids fair to rival any of the city squares in size and effect, is all but completed.

A new Roman Catholic church is in progress of erection at Rathgar. Plan is oblong, 132 feet by 45 feet in clear, with granite portico in front, and campanile over it. Mr. Byrne is the architect; Mr. Freeman, builder.

The foundation-stone of the new Turkish baths at Sligo was laid a few days ago, by Miss Jane Lyons, eldest daughter to the Mayor of that town.

The Clomel gas-works have been reconstructed by Mr. Anderson, of Leadenhall-street, London, who recently erected the Cork gas-works likewise. His patent system of heating retorts by tar alone is here carried out.

An "Athenaeum," with an exclusively Protestant directory, and "having for its object the moral, intellectual, and social improvement of young men, without religious distinction," has been opened at Dublin.

Mr. Hawkshaw, the commissioner appointed to inquire into the water supply of Dublin, has recommended that the river Vartry should be the source adopted for the improved supply.

Sir John Arnott, M.P., has undertaken, at his own expense and unolicitedly, to erect the necessary works for the supply of water to the town of Kinsale.

A harbour lighthouse is to be erected at the south entrance to the North Wall Quay, Dublin. Mr. Halpin, C.E. (to Ballast Corporation).

Shop-buildings in Dublin is rather brisk just now: old fronts are being demolished, and new ones (some of very incongruous design) erected instead. House-rents throughout the city, north and south, are increasing in value: the streets are being better paved and sewered, and altogether the general aspect is of an improving character.

Tramways are to be laid down by Mr. Train at Cork, from the Passage Railway Terminus on Albert Quay, through the South Mall, the Grand Parade, Patrick-street, and the Lower Glanin-road, to the Great Southern and Western, and Cork and Youghal termini, subject to removal at any period when required.

It is proposed to commence the works of the Derry and Letterkenny Railway forthwith.

The Liffey branch line for goods traffic, from the Midland Great Western Terminus at Broadstone to the North Wall Quay, is announced for contractors to tender for. This line will connect the shipping at Dublin by rail with Galway Harbour.

The Bagenalstown and Wexford Railway Company are about building a station-house and goods store at Ballywilliam, county Wexford.

A station is about being established at Foxrock by the Dublin and Wicklow Railway Company, and the requisite buildings will be commenced immediately, on plans by Mr. Wilkinson, architect.

In the same neighbourhood, at Kill, it is proposed to build a new church. This district is rapidly springing up; green fields are becoming towns, and streams of people have been moving to and fro during the summer months.

The new church at Toghdoo, county Kildare, is being built after designs by Mr. McCarthy, and has nave, 58 feet 6 inches by 21 feet; chancel 18 feet by 15 feet; tower and spire 75 feet high; upper part of timber, slated, at north-west angle, &c. At the east end is a triple lancet window, a two-light ditto at west end, and single lancets at sides. Roof timbers, open and stained. Mr. Beardwood is the builder.

A new Presbyterian church is to be built at Wicklow, after plans by Messrs. Hay, of Liverpool, architects.

## PUBLIC BUILDINGS IN THE PROVINCES.

*Bury St. Edmunds.*—In reference to the proposed new Corn Exchange, "a merchant," says the *Bury Post*, "whose name, if it were given, would command the attention of our municipal body, expressing his pleasure at the proposed erection of a larger market, observes that the consideration next in importance to space is that of light, as to which so many mistakes have been made, that great care should be taken lest it should be deficient. The best Corn Exchange in this part of the country, he says, is that of Lynn, the cost of which was 2,600l. There the entire roof is of glass, which gives all the light required, and that of the best kind. Side windows are objectionable, the light from them being partial. Unfortunately, he remarks, these buildings have often been spoiled for use by over-attention to architectural principles; but the Lynn, Hull, and other markets have proved that all that is wanted is, on the sides, walls of sufficient height; an entire glass roof; and let the architect do as he likes with the ends."

*Aldershot.*—A town-hall, board-room, cloak-rooms, &c., are about being erected in the market over the shops fronting the High-street (to which it has a frontage of 60 feet). This will supply a long-felt requirement of the town. An additional portion of the open area will at the same time be covered in with a roof, partly of glass, to meet the increased demand for stalls and standings. Mr. T. Goodchild, of Guildford, is the architect.

*Croydon.*—At a recent meeting of the Local Board of Health, Mr. Robins, the architect of the Cemetery Chapels, submitted to the Board plans for improving the Assize Courts at the Townhall, together with a plan of the courts as at present arranged. In reply to the Chairman, Mr. Robins said he roughly estimated that the first plan suggested, with the least alteration, could be carried out at a cost of 1,000l.; and his second suggestion, which, in his opinion, was the better of the two, would be about 250l. more. Mr. T. L. Robinson said he had had a good deal of conversation with Sir John Jervis, Baron Alderson, and the Lord Chief Baron, respecting the Assize Courts at Croydon. The late Baron Alderson was said to have the best idea of what an Assize Court should be of any judge of his time. He (Mr. Robinson) had told him that the inhabitants of Croydon were anxious to make their courts available for holding in them an annual assize. His lordship pointed out the various improvements that might be made; and, having communicated with Mr. Robins, that gentleman waited upon him, and he (Mr. Robinson) pointed out to him the various improvements upon which the plans now before the Board were founded. After some discussion the further consideration of the question was adjourned.

*Gravesend.*—The estimates for the harrack buildings to be erected in the field adjoining Lovelace have been sent in to the War Office, and it is understood that one of them has been decided on. The buildings will be situated at the upper part of the field adjoining Christ Church, and will cover a site having a frontage east and west of 383 feet, by a depth, towards the Parrock-road, of 540 feet. The principal entrance will be from Waterloo-street, opposite the Brewers' Arms. The guard-house will be close to the entrance, and the commandant's house about 50 feet eastward of the guard-house. The first contract for the works about to be commenced shortly will be for the accommodation of 300 men, and includes six blocks of buildings for single men and one for married men, besides a lecture-room. A gate at the end of Farrington-street is also marked on the plan.

*Marlow.*—A public hall is about to be erected in St. Peter's-street, Marlow, from a design by Mr. Charles Carter, architect.

*Birkenhead.*—A liberal offer has been made to the township of Birkenhead. Mr. Wm. Jackson, M.P., Mr. Brassey, Mr. John Laird, and other owners of property in Hamilton-square, are willing to give as a site for a town-hall the present gardens in the centre of the square, comprising about four acres or 20,000 square yards of land. The land, taken at its minimum value, is said to be worth not less than 25,000l. or 30,000l. In order that no time should be lost, Mr. Laird has taken upon himself the responsibility of giving the requisite parliamentary notices, in the *Gazette*, of the intention of the commissioners to apply in the next session for an Act conferring upon them powers to erect a town-hall, to purchase land in Hamilton-square, to levy rates and borrow money, and to amend the present acts. A new county court-house and offices are about to be erected at the corner of Pilgrim-street and Chester-street, and the foundation-stone has just been laid. Mr. Charles Reeve, of London, is the architect; and Mr. H. Fisher, of Birkenhead, the builder.

## SCHOOL-BUILDING NEWS.

*Grimsbury (Banbury).*—The foundation-stone has been laid of new schools in Grimsbury. The buildings will be erected nearly opposite to South-place. They are to be of the Pointed style of architecture. The contract for the building has been taken by Messrs. Davis, of this place. The amount of the contract is 1,260l.

*Long Ashton.*—The foundation-stone of new national schools has been laid at Long Ashton. The structure, the cost of which is estimated at nearly 2,000l., will be in the Early English style of architecture, and built of the Pennant stone of the neighbourhood, with freestone dressings and slated roof. It will be upwards of 90 feet in extent, and will comprise a boys' school, 53 feet by 23 feet, capable of accommodating 100 boys; also a girls' school, 46 feet by 18 feet, receiving the same number of girls; with a class-room for each department, and play-grounds, in addition to a dwelling-house for the master and mistress. Mr. J. Wilson, of Bath, is the architect, and the contract for the building has been taken by Mr. Tucker, of Ashton.

*Birmingham.*—New schools, of which the architect is Mr. Yeoville Thomason, of Birmingham, are about to be erected in connection with and adjoining the Congregational Chapel, Francis-street, Edgbaston. The foundation-stone has been laid. The new buildings will be in harmony with the architecture of the chapel, and will comprise a Sunday school (adaptable as a lecture-room), infants' school, and the usual rooms and offices. The larger school-room will accommodate 300, the smaller about half that number. The cost, exclusive of internal fittings, will be about 750l.

*Huyton (near Liverpool).*—A new school, with class-rooms and offices, to serve also as a lecture-room, to seat 300 persons, is about to be built in connection with the Congregational Church, Huyton, and at the sole expense of Mr. A. B. Walker, of Huyton-park. The buildings will cost about 800l., and are to be erected according to plans prepared by and under the superintendence of Mr. H. H. Vale, architect, Liverpool, selected in a limited competition (the unsuccessful competitors also being remunerated). Mr. R. Barker, of West Derby, is the contractor. A new organ, we may here add, is to be placed in the church, and the committee also contemplate the erection of a tower and spire, from designs by the same architect.

*Great Horton.*—The inauguration of the new National Schools at Great Horton has just taken place. These schools have been built from the designs of Mr. Samuel Jackson, architect. The style is Decorated Gothic. The building comprises three schools, namely, one for boys, another for girls, and a third for infants. Each school-room measures 60 feet by 20 feet, and each has a class-room, 17 feet by 14 feet, and a separate entrance. The schools are in the  $\perp$  form, the horizontal stroke being the front; and by movable partitions the three rooms can be thrown into one. They are heated by means of hot water. The roof of the schools is open, the wood being stained. At each end of the schools is a house, with three rooms on the ground floor, as residences for the master and mistress. There are two play-grounds.—The Primitive Methodist body at Great Horton have begun a new Sunday-school on a piece of vacant land, in the rear of their chapel, at Town End, Great Horton. The building is being erected from the designs of Mr. T. C.

Hope, architect. The building will be divided into a school-room, 40 feet by 27 feet, with gallery at the end, arranged to be used as a platform for public meetings, or for the infants; two classrooms, 11 feet by 10 feet 6 inches; and an infant class-room, 17 feet by 15 feet, with gallery at the end. The large school-room will be 16 feet high from the floor to the highest part of the ceiling, which will be in the form of a flat segment. The ceiling will be plastered, and divided into panels by curved moulded ribs. A ventilator will be fixed in the centre of each panel, communicating with the false roof, from which the foul air is carried away by means of two ventilators in the ridge of the roof, and one in the side gable. Fresh air will be admitted from the windows, the upper halves of which will be made to slide. The school will be heated with hot water, and the class-room by fires. The elevation will be in the Tudor style of architecture, having circular-headed windows and ornamental gables. The principal entrance will be in the centre of the end gable, having moulded architrave and raised quoins alternately. The following are the several contractors:—For the excavators and masons' work, Mr. John Priestley; joiners' work, Mr. Thomas Taylor; plumbers' work, Mr. John Schofield; plasterers' work, Messrs. J. and M. Bolton; painter, Mr. Hird; heating apparatus, Messrs. Jennings & Stott. The total cost of the building will be 450*l*.

**Hilgay (Norfolk).**—A new school was opened at Ten-mile Bank, Hilgay, on the 5th inst., through the liberality of the rector, Rev. W. J. Parkes, who has borne the expenses. It is of white brick, with stone and red brick dressings, and stone coping to gables, and will accommodate about ninety scholars. A louvred spirelet is constructed in the centre of the roof, in which the bell hangs: the roof is open and stained. The style is Italian Gothic, of a plain character. Mr. W. Lawrie, of Downham Market, was the architect; and Mr. Jno. Smith, Littleport, the contractor.

#### STAINED GLASS.

**St. Giles's, Cripplegate.**—The old church of St. Giles's, Cripplegate, has recently had put in two painted glass windows by Messrs. Rees & Baker, of London. The subjects are St. James, and the Evangelist St. John. They are enameled with decorated backgrounds, and are the gifts of the churchwardens.

**Felmersham Abbey Church.**—Five painted glass windows have been erected at the west end of Felmersham Abbey Church, near Bedford, by Mrs. Pain, as a memorial. The windows were executed by Messrs. Rees & Baker, of London. The chief subject is the Resurrection of our Lord, which forms the centre. Two side openings have Christ at Emmaus, and the Incredulity of St. Thomas. The two extreme side openings contain figures of the evangelists; the whole inserted in geometrical forms, with emblems. The backgrounds are filled in with clustered foliage, carried out after the same manner as the colouring to the large south transept window of St. Saviour, Havestock-hill, executed by the same artists, three years since.

**Aylsham Church.**—A stained-glass window, the gift of Mr. R. W. Parmeter, one of the churchwardens, has been placed in the east end of the north aisle. The subject is the Ascension. This makes the thirteenth coloured window placed in this church within the last twenty years.

**Louth Parish Church.**—In the design for the new east window of this church, by Messrs. Clayton & Bell, of London, the lower seven lights represent the principal events commemorated in Passion week, and are intended to show our Lord's Humiliation. The central light is filled with the Crucifixion: the figures immediately on the right of it exhibit our Lord before the High Priest; the next one the Denial of St. Peter; the side one our Lord before Pilate. The compartment on the left of the central one is filled with the Betrayal; the next one the Agony in the Garden; and the side one our Lord washing his Disciples' Feet. The upper seven lights represent our Lord's Glorification; and the central figure exhibits the Descention. The next two lights on the right show our Lord's Charge to St. Peter; and the western one, the Transfiguration. The two lights on the left of the central one are occupied with the Confession of St. Thomas, and the eastern one represents St. Mary Magdalene washing our Lord's Feet. The tracery in the upper part of the window is occupied by angels bearing shields with emblems. Through private subscription, the tracery, the two central, and the four side lights will be executed at once, and it is

anticipated that before many months are over sufficient funds will be raised to warrant the completion of the design by filling in the remaining eight lights. The entire work will, it is estimated, cost about 900*l*.

**Hereford Cathedral.**—Subscriptions were lately solicited by Archdeacon Freese to enable him to erect some suitable memorial to the late organist of the cathedral; and sufficient sums have been promised to defray the cost of the coloured glass now erected in the small window in the north aisle of the choir. It consists of eight medallions, containing representations of some early musical celebrities, the intervening space being filled with a simple pattern of a cross intersecting a circle in red and blue. It was executed by Messrs. Clayton & Bell, of London.

**Bedale Church.**—A memorial window has been erected at the west end of the north aisle of this church, by the Rev. J. J. T. Monson, M.A., the rector, in remembrance of his mother, the Hon. Ann Shepley Monson. It is in two compartments. The subjects are:—"Cast thy bread upon the waters, for thou shalt find it after many days;" "Her children arise up and call her blessed, her husband also and he praiseth her;" and at the top of the window, "The righteous shall go away into life eternal." Mr. Wailles, of Newcastle, was the artist.

#### ROMAN CATHOLIC CHURCH BUILDING NEWS.

**Farm-street, London.**—A chapel in honour of the Blessed Sacrament has just been erected from the designs of Mr. Henry Clutton. It stands upon the site of the chapel which was burnt down last Easter twelvemonth. The roof is groined, with ribs running parallel to each other, which rest upon a carved cornice, breaking around the marble columns, which are placed below the principal ribs. The work is executed in Caen stone. The east end is occupied by some French tracery, the design of which appears to be somewhat marred by the narrowness of the chapel. At present spaces are vacant, but we presume they are to be filled with frescoes or paintings. The walls are lined with polished alabaster, broken up by inlaid work. The chapel opens into the sanctuary through a colonnade of marble shafts, which forms a kind of sedilia, the caps of which are carved with considerable power and taste. The altar is composed of marble. The whole of the building has been carried out by Mr. Earp, of Lambeth. A heavy expense has already been incurred, and the work is still far from being complete.

**Chelsea.**—Contemporary with the above, another chapel for a similar purpose has been erected at the Roman Catholic Church, Chelsea, and will, we believe, be opened on the same day. It is from the designs of Mr. Welly Pugin. The chapel is divided into three bays, with groined intersecting ribs, having carved bosses at each intersection; the principal ones representing the Sacrifice of the Mass, the Resurrection, and the Virgin seated on a throne surrounded by angels. The ribs are supported on elaborately-carved caps, which terminate eight Galway green columns, rising from a polished alabaster base. The walls are formed of Sicilian and Devonshire marbles. The chapel is lighted from four hexagonal tracery windows, which break into the upper portion of the groin. The altar is a highly-finished work, in the centre of which, and standing immediately above the altar, is the tabernacle of polished alabaster, inlaid with spars and other coloured marbles. The cresting round the arch is formed of passion-flowers, interwoven with conventional foliage. Above this is a throne for the reception of the monstrance, round which, and forming a canopy too, is a vesica of angels, adoring and holding instruments of the passion. In the centre of the panel will be an I. H. S. in embossed metal-work, with rays and stars. The cresting is formed of angels interwoven with leafage. The upper portion of the reredos is supported by marble and porphyry columns, between which are carved clusters of foliage. The side panels are also adorned with angels. The principal portion is worked in alabaster. The altar frontal is wrought in Caen stone, the chief subject being the Adoration of the Lamb. The metal-work, we are told, is being executed by Messrs. Hardman. The chapel is connected with the present church by means of an areading supported by marble columns. The work is executed by Mr. Farmer, of Mead-place.

**Donegal.**—The New Roman Catholic Church of St. Johnston, county Donegal, of which we gave a view in a previous volume, is to be dedicated on the 9th instant. The entire length of the church

is 109 feet 5 inches, and its greatest breadth 56 feet 5 inches, and from the ground-floor to the apex of the roof the height is 50 feet. Its principal light is obtained from tracery windows in the four gables or extremities of the cross. In the interior the chancel arch forms an important feature, the central part of which rises from pillared corbels of marble, with sculptured heads of the apostles St. Peter and St. Paul. The arches leading to the side chapels, which are placed in the north and south transepts, have plain soffits, relieved with polychrome. From the chancel-arch five steps of polished stone lead up to the high altar, which has sedilia, piscina, credence-shelf, ambray, and reredos. The altar is built of Caen stone, and rests against a reredos of the same material, from the atelier of Messrs. Barff & Co., Dublin. The panels of the altar and reredos are enriched with mosaic and enamel work, containing suitable monograms and ecclesiastical emblems. The reredos is divided into seven compartments, the central one rising higher than the others, and forming a canopy over the tabernacle, terminating in a cross. All the windows are filled in with tinted cathedral and stained glass, in lead sashes. The stained glass has been all supplied by Messrs. Barff & Co. There is some carving on the spandrels and corbels of the west window, executed by Mr. Doherty, of Derry, a native artist. The entire masonry and tiling of this church was executed by a builder from the parish, Mr. Samuel McIlwee, of Carrigans. This church has been erected after a design by Mr. E. W. Godwin, architect.

#### THINGS WHICH OUGHT TO BE SET ABOUT AT ONCE.

A NEW street from the open space in Fetterlane eastward, down Stonecutter-street to the intended railway station on the Fleet prison site, over Farringdon-street by a viaduct. This, in connection with the proposed new street from Covent-garden to Carey-street, would take most of the West-end traffic to the new Kentish railway. A further improvement might also be effected by a short street from Newgate corner to the station.

The canal bridges over the canal in the Regent's-park and the Harrow-road have become a nuisance from their narrowness; and if the company cannot be compelled to rebuild them to meet the wants of the public, the parishes might, at a very moderate expense, take down the parapet walls, and carry a footway over the sides on iron brackets (notwithstanding a gentleman with an eminent name has pronounced against this plan at London-bridge). This question, in St. Pancras, seems to have died away. If the Canal Company are bound by their Act to keep the bridges in repair, I think that by law or equity they are bound to build new ones when the old become insufficient for the traffic over them.

The removal of the iron gates and railing in Harwood-place, Oxford-street, which would relieve the blockade of carriages at the Circus, and improve the property in the square.

Also the throwing back of the railing in front of the church in Langham-place to the first step, the ugly bosses of the hinges having been planned apparently to meet the eyes and nose of the passengers over the narrow footway.

Queer,—as to the new subway scheme, which has been begun in King-street, Covent-garden,—where is the money to come from? Q.

#### THE USE OF DRAWING TO WORKMEN.

A LECTURE on "The Use of Drawing to Workmen in the Building and other Trades" was delivered last week in the hall of the Mechanics' Institution, Otley, by Mr. Walter Smith, Master of the Leeds School of Art. After bringing before the notice of the audience some cases where drawing would be of especial use to workmen, and quoting from the *Builder* of November 3rd cases where the absence of the power acted prejudicially on the skilled workman's prospects, Mr. Smith concluded by saying that,—

"There was a grand old lesson taught us, in words which we often hear, and generally interpret in a very narrowed significance. They are these:—'Fight the good fight of faith.' I regard this as a sublime precept, because all really good work must be done in faith; and it is oftentimes a hard fight and a long one before we can see the result of our faith; but still it is pre-eminently a good fight. We will apply this precept to the conduct of a workman. The public, through the medium of the master, will pay an ordinary workman for his work, which he can do well or ill in the proportion of his faith. Every workman in this room at present knows that he could do his work in such a manner as would satisfy his master; and yet, if he choose to do so, he might scamp it and sliver over bits that are out of sight, and no one be the wiser. He

will be paid for his work as well as if he took infinite pains over it; and this is the galling part of the matter, and the point where the honest workman must fight the good fight of faith. His good work may be hidden in the middle of a stone wall, if he is a builder, or hidden away in the foundation of a house; but still his faith in good work must compel him to put the best work he can possibly execute in the hidden places as well as those open to the eye. It is the duty of the workman to do rather better work than he is paid for than worse, and it is his interest to do more than is expected from him than less. But this is a hard battle, for very many workmen do less than is expected of them, and not of the best quality, which men also get as well paid for, and are apparently thought as highly of, as the good workmen who do rather more than they are paid for. Here, however, let me urge you to fight the good fight of faith. Have perfect faith that, sooner or later, you will be the better for your conscientious work; or, to use an old saying, your corn will be measured to you in your own bushel. You will be casting your bread upon the waters, but it will return to you after many days.

A belief in this principle of action will lead you to employ all the means in your power for making yourselves good workmen; and, amongst other means, this one of drawing in cases where, as I have shown you, it would be useful. If it makes you, as I have tried to convince you, better workmen,—if it gives you a higher interest in your work than you previously had, and infuses into your labours a nicer taste, a greater discrimination between good and bad work, and encourages you to strive after improvement and perfection, it will do you a kindness, and amply reward the pleasant task of becoming proficient in the art."

SCHOOLS OF ART.

*The Southampton School.*—The annual prizes have been distributed to this school at the usual public meeting held for the purpose. The mayor presided. The master's report stated that "the school continues to extend its sphere of usefulness in this town, and in the towns of Romsey and Ringwood, where branches have been established." Of this, however, we have already spoken. The report also stated that, in the examinations, "hitherto those reaching 'good' have been rewarded with prizes; but, in pursuance of a notice issued by the Department of Art a year ago, the standard is now much higher, and 'excellent' must be reached in order to obtain a prize. 'Good,' however, is registered towards a prize studentship, and a certificate is given to the candidate. In the first, or lower grade, the exercise is of a similar kind, but much easier; and those who pass in this grade receive certain useful articles, such as a small drawing-board and T square, &c." The mayor distributed the prizes.

*The Wolverhampton School.*—It has been announced that this school will not be closed, as was expected, but will be carried on as usual.

*The Bath School.*—The distribution of prizes in this school has also recently taken place. The attendance was not large, and among those absent were several of the successful competitors. The mayor presided. The financial position of the school, he stated, was not so favourable as on the former occasion when they met; and it might become necessary that an appeal should be made to the public for support. No great amount would be required, for he believed that 40l. or 50l. would be sufficient to place the school on a firm footing. The Rev. E. D. Tinsling said that the school was hardly sufficiently appreciated. He saw by a paper on the table that there were seventy-seven students in the school at the present time. The ladies' class consisted of twenty-four; the mechanics', forty-five; and another class, held in the afternoon, eight. In addition to these there were nearly 800 children of the poorer classes taught in the different schools, including the Blue Coat, the Bathfurn, the Widcombe, and other schools in the city. He remarked that out of the 100 national medallions that were distributed through the kingdom, Miss Margaret Elmer had been successful in gaining one; and also mentioned that at the last examination as many medals were taken by students in Bath as in Liverpool, and more than in Bristol and some other places. The rev. gentleman distributed the prizes.

*The York School.*—A *conversazione* has been held in connection with the distribution of prizes to this school; Colonel Smyth, M.P., in the chair. There was an exhibition of drawings from the Shepherds' collection, at Kensington Museum, lent by the Art Department. The committee's report congratulated the meeting on the steady progress of the school. The average monthly attendance this year has been 147 instead of 134, was last year. At the last examination, 63 were decreed prizes, eight local medals, and one a national medallion. The payments by pupils amounted to 134l., being an increase of 18l. on the fees of the preceding year. The public school fees amounted only to 10l.; and, although this was a slight increase on last year, it must not be forgotten that other towns of smaller population obtain much greater sums from the same

source; Darlington, with a population of 12,000, receiving 32l. a-year, and Stourbridge, whose population is less than 8,000, as much as 65l. The subscriptions were 89l., being a decrease of 3l.; these have rarely been so low as at present, the average for many years being about 95l. The total income amounted to a balance of 12l., while the expenditure has been 251l., leaving a deficit of 9l. due to the treasurer. The committee earnestly appeal to the gentry, and the manufacturers of York and the neighbourhood, to strengthen their hands by giving them increased funds, so as to make the school thoroughly efficient for the object for which it was established.

DESTITUTE INCURABLES.

ALLOW me to introduce to your notice the following paper, which was read at the late Glasgow meeting for the Promotion of Social Science, on the subject of the Destitute Incurables in Workhouses. The scheme therein proposed was devised by a lady of much experience in workhouse visiting, and is no mere piece of speculative philanthropy, but a simple and practical expedient for mitigating the sufferings which none but hard hearts would refuse to alleviate, if they could only see how to do it. If you, who always hold out a helping hand to all practical schemes of usefulness, can do anything to promote this, it will greatly oblige those who have the matter at heart.

SIGMA.

"\*\* We have not room for the paper, which has already appeared in several quarters, but would gladly advance its objects. Rightly the estimable author of this paper says:—

"There needs no laboured appeal to convince us that the horrors of a death of dropsy or cancer need not the evils of poverty and destitution to aggravate them. The question is, what provision have we made to meet all this wretchedness? The answer is sad enough.

For curable patients we support 279 hospitals and infirmaries (besides dispensaries) open to every known malady, in every town in the kingdom.

For the incurables—for those whose diseases are the most agonising which human nature can endure, and who have not even the consolation of hope to support them—we have provided one hospital. For some 20,000 or 30,000 sufferers there are precisely 112 beds.

Of course the result of this state of things is, that the actual asylums for the destitute incurables in England are the workhouses."

The plan suggested is this—

1. That paupers suffering from acute and distressing diseases—such as dropsy, consumption, and cancer—should be placed, in each workhouse, in wards especially allotted to them, to be called the Wards for the Male and Female Incurables.

2. That in these particular wards private charity be permitted to introduce whatever may alleviate the sufferings of the inmates.

The granting of these two articles alone would secure a blessed change in the circumstances of these sufferers. Beyond physical comforts, the plan urged would obtain for the patients what they need even more perhaps than any such things, the consolation of the occasional presence of compassionate fellow-citizens.

BUILDERS' BENEVOLENT INSTITUTION.

YESTERDAY (Thursday, Nov. 29), this valuable Institution held its sixteenth election of pensioners at the London Tavern, Bishopsgate-street, Mr. George Plucknett in the chair.

The Chairman, in opening the proceedings, said, he found the list contained the names of eighteen candidates who were desirous of receiving the benefits of their excellent Institution. He was, however, sorry to say that from the want of funds, out of so large a number of applicants, they would only be able to elect two. All the cases were urgent and equally deserving, and called forth their warmest sympathy. He, therefore, regretted that they were enabled only to elect so few; but the position of the Institution was now most encouraging, and he hoped that the time was not far distant when most of the applicants who were before them that day would be entered as recipients of their funds. He believed from the progress they were making that that was not too much to anticipate. He found that they had elected since the establishment of the Institution, twenty-eight males and thirteen females, and he trusted that their funds would soon be in such a position as to meet the necessities of all the applicants.

The election was then proceeded with, and at the close of the poll Robert Clements, a builder and contractor for thirty years, was announced as the successful male candidate; and Sarah Cain, widow of a builder, the successful female candidate.

Mr. Joseph Bird, in the absence of the Chairman, said he regretted exceedingly that he had

not the pleasure of announcing more successful candidates than the two now elected; but he hoped that, by May next, by the careful doing out of the funds, with the well-known economy of the directors and officers, many more would be added to the list.

Mr. George Bird (treasurer), expressed his dissatisfaction at two only being elected out of eighteen of their poor and distressed brethren, leaving the remaining sixteen to go away despondent. He had laboured hard in the cause of the Institution for thirteen years, and found it all up-hill work. They had received no legacies, and none of their affluent or richer brethren had ever come forward with 100l. He therefore, in June next, intended to retire from his official duty, in favour of some gentleman who had more time on his hands, and probably greater favour.

Mr. T. Cosens, the founder of the Institution, spoke in a very cheering manner of their progress, which before the close of the year would be plainly seen.

The usual vote of thanks then closed the proceedings.

THE STAGE.

*The Lyceum Theatre.*—Madame Celeste has not been quite so fortunate in obtaining good pieces as she deserves to be. This remark, however, does not apply to "Adrienne, or the Secret of a Life," in which this admirable actress has an opportunity to display her peculiar ability to much advantage. Mrs. Keeley, too, always fresh, genial, and forcible, Mr. George Vining, and Mr. Neville, have also good parts. The duel in the mist, and the last scene, amongst the mountains, are very effectively arranged and painted. A delineator of Irish character new to London, Mr. John Drew, appears to be very successful in "Handy Andy."

*Gallery of Illustration, Regent-street.*—This Gallery is now occupied by Signor Poletti, a conjuror, or "illusionist," as the term now is, who performs a number of feats very neatly. Some of his tricks are quite as incomprehensible as the doings of the spirit-rappers, who, to the disgrace of our age, are still turning the heads of men and women who ought to know better. All that we hear of the proceedings is had and worthless; but the results in some cases have been so serious, and the evil is so widely spread, that authoritative steps should be taken to sift the matter to the bottom.

LECTURE ON "CO-OPERATION," BY MR. W. CHAMBERS, THE JOURNALIST.

An interesting and important lecture on this subject has been delivered by Mr. William Chambers, in Edinburgh, at the request of a large body of operative printers and book-binders there. The *Scotsman* of 20th November, gives a report of it, from which we quote.

Of all the systems hitherto fallen upon for improving the condition of the operative body, Mr. Chambers remarked, none was open to fewer objections, nor so likely to be attended with such marked success. He then referred to the failure of fanciful schemes, such as Communism and Socialism, and observed that the arrangements he proposed to describe had no such lofty aspirations, and had nothing to do with politics, neither did they at all interfere with religious belief. They took from no man his individual character, but, on the contrary, added to his personal responsibility, and made him feel that there could be no improvement in his condition without a certain measure of self-sacrifice. After quoting the opinion of Lord Brougham in favour of co-operation, the lecturer proceeded to describe its simple form, which aims only at the setting up of a store, such as formed the basis of the gigantic associations of Rochdale; and he remarked that, should the workmen of Edinburgh even go no further than that rudimentary condition, and take full advantage of it, a very great benefit to each and all of them would be the consequence. In his narrative of the progress of the Rochdale Society, he showed that it began in 1814 with only 25 members, and it had now 3,360 members. As illustrating its enormous progress, he gave the following comparison of its position in 1845, when its first balance was struck, with its position in 1859:—

Number of members .....	1845.	1859.
Amount of Funds .....	74	2,793
Business done .....	2,151	27,656
Profit made .....	710	10,412
	32	10,739

Nearly 11,000l. had thus been saved in one year by a body of working men, simply by buying things at a co-operative store instead of at shop

According to information he had just received, there were twenty-four members who held 100% of stock, while a considerable number had from 50% to 90%. Co-operative societies of one kind or another had now spread in all directions, but more particularly in Lancashire and Yorkshire. There were several in Scotland, and probably altogether about 200 in the United Kingdom. With respect to the moral and social consequences in Rochdale, he had been informed by one of the clergymen of that town that the co-operative societies had been of the greatest possible benefit in promoting self-respect, provident foresight, habits of temperance, and domestic comfort. It would seem that the whole factory population of South Lancashire and the West Riding of Yorkshire were becoming sensibly alive to the benefits of co-operation. A list had been published of thirty-one co-operative manufacturing companies either wholly at work or in progress of organization. Co-operation might therefore be called a truly gigantic movement, of which no man could as yet see the end. There was much less to surprise us in the wish to form these great co-operative concerns than in the capacity to organize and manage them with sound discretion. The Rev. Dr. Begg moved a vote of thanks to Mr. Chambers, which was cordially responded to. The lecture is to be printed.

#### SURVEYORS.

SIR,—If a surveyor wishes to connect himself with his profession, what institution or society is there that he can join?

An architect becomes a member of the R.I.B.A., a civil engineer of the Inst. C.E. Now I am neither an architect, nor do I pretend to call myself a civil engineer, although perhaps qualified to do so. There is a large class of men holding positions as surveyors to corporations and local boards of health, and others engaged in private practice; and it would be most desirable if they had some recognised head.

X. Z.

#### THE ARCHITECTURAL EXAMINATION QUESTION.

SIR,—It appears that at a late meeting of the Liverpool Architectural Society, of which I first saw a report in your columns, a letter which I had written to the president was commented upon as involving an inconsistency, in my regretting the absence, in the proposed architectural examination, of a test which I yet, according to the interpretation of the critic, held to be impracticable.

It would have been more to the point to have disproved my assertion that the Fine Art of Architecture is its essential element; as, until this, which I unhesitatingly reiterate, be negated, there can be nothing inconsistent in doubting the efficacy of an examination in architecture which will not embrace this its real essence.

The letter in question, in passages not included in your quotations, gave, I think, a sufficient explanation of my meaning; as I there stated that the course for architectural students in the Royal Academy seemed to me better fitted than that proposed by the Institute to test their powers of design; and that I thought the diploma work required from members of the Academy came nearer to a suitable ordeal for the matured artist than what is proposed as "the higher examination."

I question in no degree the value of the knowledge of which the proposed elementary course would afford some test; but it seems to me that it might be creditably passed by those who could never afterwards by any skill in design establish a true claim to be considered architects, and that others might fail on most points of such an examination, while possessing powers sufficient to gain them rank among true artists in this walk.

Unless the practice of architecture without a diploma be made penal by statute, a surely impossible contingency, I cannot think that the scheme proposed will accomplish its professed aim. John Martin was never even an associate of the Academy of Arts of his country, but his works contribute to that country's fame; nor do I believe that the lack of a diploma from the central body of British Architects could prevent the frequent recognition and employment of obscure architectural talent by those who can appreciate it, and, in so far, the defeat of the object of such diploma; and, on the other hand, there is the certain danger under such a system that the prestige of licensed mediocrity may raise an additional barrier to the engagement of unobtrusive genius for the direction of works of the kind and importance which place the selec-

tion of their architect beyond the range of individual judgment.

These considerations lead me to the opinion that the adoption of the course proposed would be "an attempt to systematize too far," and that a middle course, somewhat such as sketched at the close of my letter, and quoted by you, would prove more efficient and more advisable.

II. P. HORNER.

In response to the invitation in a late number of the *Builder*, I venture to offer some suggestions on the above subject; for, if the wise propositions of the Institute are not generally acceptable, as yet they are but propositions, and therefore susceptible of modification.

The first modification submitted by the council is, I think, unsatisfactory; and I would suggest the substitution of the following, as more in consonance with the previous announcement, viz. ;—

"That it is desirable to establish a compulsory professional examination in January, 1866, for all who shall present themselves for election after that date as members of the Royal Institute of British Architects."

"That an elementary examination be established for students (adopted so far as drawing is concerned at the Academy), a higher examination for associates, and a complete examination for fellows of the Institute."

Supplementary to this proposition I would suggest the immediate establishment of the proposed board of examiners, who should be empowered to grant certificates of competency to any member of the Institute desiring to receive that distinction, in the interim, by submitting himself to a voluntary examination.

As a consequence of the adoption of the proposed compulsory examination, the extension of the second proposition, to include the provision of special classes for the students, and other educational advantages, seems inevitable; and further, while it is desirable that the leading men in the profession should take the lead in the contribution of papers to be read at the ordinary meetings, the junior members should be encouraged to do the same. The premiums and medals of merit presented by the Institution of Civil Engineers are chiefly presented to the authors of the various papers read thereat, which has the effect of stimulating emulation to excel in the production of papers worthy of that distinction, and thereby lending additional interest to the ordinary meetings of the Institution.

E. C. R.

#### DESIGNERS FOR STAINED GLASS.

In your impression of the 10th ult., a correspondent addresses you on the subject of competition for stained-glass windows: his suggestion is a good one thus far, that persons wishing to have a good and artistic design should throw the same open to public competition; because it is just the want of the competition of design (for which, in the few instances where competition is resorted to, has been substituted the competition of price), that is the cause of the miserable trash, in the shape of painted windows, which we see daily created, to the disfigurement rather than the adornment of our sacred edifices.

A good stained glass window is, without doubt, a work of very high art; but in how very few modern windows do we see even a trace of art.

A designer for stained glass must be a man who is more than simply an artist, as witness the failures of Sir Joshua Reynolds, West, &c. He must have a perfect knowledge of architecture, and be thoroughly acquainted with the style and character of drawing in the works of art of the various periods from the twelfth to the sixteenth century. A searching and conscientious study of the master works of these centuries is of the first importance, because the bad copies of had specimens of these periods, which are in general circulation, give no idea of the real merits and beauties of the really artistic works of the time. He must also be well acquainted with the mechanical parts of the cutting, painting, and leading together of the glass, in order that the execution of his design may be practicable.

There are many men in this country who are thus qualified, and whose abilities competition for tend in a great measure to put a stop to the degrading system of copying German prints on glass at so much per foot; or rather, at so little, that the mechanics' wages, nor allow, even then, more than a limited time for making designs.

One of the worst consequences, however, of the present system is, that the art of glass-painting having degenerated into a trade, a person of vulgar taste who wishes to present a window to a church, not content with choosing his subject, will very

often dictate the whole arrangement, or change, to his own ignorant fancy, the drawing or coloring of the design. Imagine a retired butcher endowing a church, and insisting on his own bullock's-head ideas being carried out in the erection of the building. Would the architect submit? No! nor would the artist in stained glass. But the manufacturer of stained glass windows is obliged, because if he do not another will.

Under these circumstances how is it possible that the majority of windows placed in our churches and cathedrals should be other than a disgrace to the artistic taste of the English people?

I, therefore, approve your correspondent's idea, as I said in commencement, to a certain extent; but his notion that two or three artists, whose designs might be chosen for different good qualities, should combine together, one putting his idea, another his drawing, and a third his colouring, appears to me a very singular suggestion; as, in the first place, I doubt if you would find any artist to agree to it; and, in the second place, if you did, you would certainly make a miserable jumble, of which none of the parts would harmonize.

In conclusion, I would observe that with reference to any remarks I have made as to the present system of designing and executing painted windows, I do not of course apply them generally; on the contrary, there are several well-known establishments which produce good and artistic works, but these works are the exceptions, not the rule.

PETER.

#### THE VENTILATION OF HOUSES.

I DESIRE, with your permission, to offer one or two remarks on this important subject.

My experience has certainly been unfavourable to the Arnott valve, under circumstances perhaps different from those under which your correspondent "W." made use of it. In a comparatively small room lighted with gas I have found it necessary to remove an Arnott valve, because, whenever the gas was alight without a fire, and sometimes even when the fire was burning, the action of the valve was liable to become reversed, and sooty particles or smoke were drawn into the room. I have since tried a Sheringham valve in the same room with decided advantage. This valve is, as your readers are probably aware, one to be fixed in an external wall to admit the outer air, which it directs upwards against the ceiling. The Sheringham is less likely than the Arnott to become clogged, and consequently one can almost always depend upon its closing when a current commences to act the wrong way. I believe, therefore, that a Sheringham valve and an Arnott valve combined in the same room would form a very complete, safe, and simple system of ventilation, especially if the Arnott be cleaned occasionally, as your correspondent "W." suggests.

Years ago the Society of Arts offered a premium for the best system of ventilation applicable to dwelling-houses already built. The premium was awarded to a well-known member of that Society, Mr. Vanley, for an invention at once simple and workable, which provides, like the combination of valves I have above suggested, an inlet for external air and an outlet for vitiated air, and a ready means of distributing the one and collecting the other. It would be very desirable to procure from the inventor a description of this contrivance, which is a very inexpensive one.

In a Blue-book—"The Report on Barrack Accommodation for the Army,"—there is an account and an engraved illustration of a system of ventilation, adapted for use in rooms having two external walls, which has been introduced with the greatest success into barrack dormitories under the directions of Colonel Jebb. The plan is to establish a ventilating trunk, perforated throughout and running from wall to wall, with a division across it in the centre, and a metal valve at each end communicating with the external air: one half of the tube always acts as an inlet, and the other half as an outlet. I have been given to understand that the best ventilated of the wards at St. George's Hospital are fitted with an analogous apparatus.

There is a very old plan of withdrawing vitiated air from a room, which I have seen at work with the utmost possible success, namely, that of employing an inverted syphon, the short leg to communicate with the room, the longer one to run up the chimney flue. The syphon will act more powerfully, and will be more free from the possibility of a down current passing through it, than will the straight tube suggested by your correspondent, "M. G.," and it possesses this additional advantage,—that if the bend of the syphon be at

all accessible, so that the action could be set up in it by means of a gasket, or even a lighted piece of paper, it will then continue to act as long as the room is at all warm, whether there be a fire in the grate or not, though of course the fire will stimulate the action. This invention forms the subject of a long since expired patent. I have been informed that it has recently (and of course illegally) been again patented. The original patent was granted to Nathaniel Merriam in 1803, and has been printed and published by the Commissioners of Patents, and can be had for 6d.

In conclusion, as some of those interested in the subject may be unaware that a Parliamentary Report exists upon it, I may mention that there is a voluminous and, on the whole, valuable document published in 1857, and being the "Report to the General Board of Health by the Commissioners appointed to inquire into the Warming and Ventilation of Dwellings." The Report is signed by Messrs. William Fairbairn, James Glaisher, and Charles Wheatstone: a large portion of it is taken up with the question of warming, and much of what it says with regard to ventilation is more applicable to new buildings than to existing ones; but it will well repay a perusal. T. R. S.

**THE LINSEED OIL ADULTERATION.**

AFTER the correspondence which took place last year in your columns concerning "Adulterated Linseed Oil," I had hoped by this time we might have had a better article, but such is not the case: on the contrary, the oil has not improved in quality; for, directly the paint is used, the work seems in good order;—unnaturally so, for the paint is hard at the commencement, in distinction to that of former times, which, although soft at first, gradually hardened. But, with the present paint, though the work seems in good order for a few weeks, soon the whole begins to stick, and never properly hardens again; and when the ladies' wad dresses, or anything else, touch, the spot becomes quite black, and dust adheres to the paint every where: in fact, the work is spoilt. Formerly, in making paint for inside work, half oil and half turpentine were mixed: now, it matters not what quantity of either be used, the same unpleasant results follow.

In what was published last year, it was said some good oil could be procured at the higher class of manufacturers, who vend it genuine; "but I have tried to get some good, but in vain;" all the samples I have had have the same inconvenient quality, that of sticking. No reliance is to be placed on the sellers of linseed oil, as they run no risk, and are not responsible for the work spoilt by their rubbish, but the employers themselves.

The oil question is a matter of interest to the working man, and to all in general, as the damage done effects both low and high; because, with the present oil no honest man can recommend house painting, except in cases of extreme want; and when houses have been painted, and owners come to see the effects of the bad oil, they will have nothing further to do with it; and, what is worse, discourage their friends likewise from using it. Now, if by this article something could be done towards so important a subject, indeed it would be a boon to all. Are not searches made into different objects? Then why not examine the oil, and thus solve the mystery connected with it? We want to know the real facts of the question.

**A FRIEND TO THE UNEMPLOYED.**

**THE BOILER EXPLOSION AT KING'S CROSS.**

Sir,—The public have now before them the result of the adjoined investigation respecting the fatal explosion which took place on the Metropolitan Railway at King's Cross about four weeks ago.\* In the first stage of the inquiry, immediately after the occurrence, the coroner very properly declared, that it would be more satisfactory to himself and the jury, if, before recording their verdict, they were to hear the opinions entertained by practical engineers, who, after examining the remains of the

\* \* \* The jury sworn to inquire as to the cause of the deaths of George Wiggins and Charles Tamm, on the 1st November, 1859, find that their deaths were caused by the explosion of the fire-box of the engine Albion (the property of Mr. John Jay, contractor to the Metropolitan Railway), on which they were at the time employed, and that there is no evidence to show that any person is criminally responsible in regard to such accident. The jury cannot separate without expressing their great obligation to Mr. Anon, of the firm of Messrs. Easton & Anon, and to Mr. George England, for the scientific evidence they have furnished, and also to Captain Tyler, R.E., of the Railway Department of the Board of Trade, for his most elaborate report on the subject, and they respectively request that the coroner will be pleased to communicate that report to the Government, in the hope that Captain Tyler's valuable suggestions, as the means of guarding the public against similar accidents, may receive proper attention and obtain the publicity they deserve."

engine, would be better qualified by their previous experience to throw light on the *quæsitæ* as to the cause of the accident, than they, the jury, by their proceeding with the inquiry, with the insufficient means at their disposal, would probably be enabled to do. The justice of this determination was too evident to be controverted. Yet, whether a verdict might not have been delivered on the first occasion, if the report of Captain Tyler, the Government may be considered as anything but a waste paper, is by no means clear. By what process of reasoning the jury reconcile with their verdict the evidence given by Captain Tyler is best known to themselves. A locomotive engine, notoriously old, and individually defective in construction, explodes, killing on the spot two men, and seriously injuring another. The Government engineer, among others, is requested to report on the cause or causes of the accident, and states as follows:—"Looking at all the circumstances I can come to no other conclusion than that the boiler gave way in consequence of the weakness of its construction, at a pressure not very much exceeding that at which it was ordinarily employed, and at a pressure under which it ought to have been perfectly safe."

In the face of such powerful testimony as to the utter weakness and dangerous state of the boiler, how a verdict virtually exonerating from blame all persons connected with the unhappy affair could be recorded, it would be difficult to understand, were it not that, in one important particular, it did respect to the probable amount of pressure at the time of the explosion. Mr. England, a practical engineer, entertained an opinion decidedly antagonistic to that of the Government inspector. When the facts discussed shall be decided. To say, perhaps, can scarcely be censured, under such circumstances, for refusing the grave responsibility which would otherwise attach to them by registering a verdict in accordance with the views explained by Captain Tyler, but it is well thought that they ought to have expressed themselves a little more strongly against the carelessness, to speak mildly, that has undoubtedly been exercised by making use of an engine such as the locomotive in question, without first ascertaining and adopting suitable means to rectify the faults in construction which, in so leud a manner, were pointed out by Captain Tyler, whose valuable suggestions, which ought not to have been omitted, relative to the careful testing of steam-boilers, cannot be too strongly commended to the notice of the proper authorities. AN ENGINEER.

**COMPENSATION TO YEARLY TENANTS.**

Before William Griffiths, Esq., J.P., and Valentine Knight, Esq., J.P., at the St. Marylebone Court-house. *Bigrove v. The Metropolitan Railway Company.*—This inquiry was held on Friday, 10th November. Mr. Edward Roberts conducted the case for the claimants, and Mr. R. A. Withall for the company.

It appeared, from the opening statement and the evidence, that the claimant has occupied No. 1, London-street, opposite the Great Western Hotel, for fourteen years as a yearly tenant, from Michaelmas quarter, and carried on the trade of a coffee-house. She gave 260l. for the goodwill, and 200l. for the stock in trade. In 1856 she took a lease adjoining for additional sleeping rooms, and during her occupation had increased her business threefold. One feature of the case was, that the landlord raised the rent in 1856 from 90l. to 104l., thereby giving force to the argument, it was maintained, that a yearly occupation is continuous so long as the tenant performs the covenants, the only condition to be adjusted from time to time between the tenant and landlord being the amount of rent to be paid.

The profit of the trade, including beds, is now about 500l. a year. Mr. Daniels, one of the witnesses, stated that this lease would in the trade be worth three years' purchase, and that, knowing Mrs. Bigrove had been fourteen years a yearly tenant, he would give 500l. for the goodwill, at the risk of being disturbed by the landlord.

Mr. Withall said that the "Landlord and Tenant Compensation Act," that the justices were precluded from doing more than to allow for the value of the tenancy from the 1st February, when the company required possession, until Michaelmas next, when it would expire, and that no allowance should be made for any prospect of continuing the tenancy. He called the landlord to show that he intended to give notice to quit, and to build an hotel on the site.

Mr. Henry Barker, district surveyor, gave evidence to the effect that the claimant was not entitled to the expense or loss on removing her fixtures and trade furniture, as she would be compelled to do so at Michaelmas next by effluxion of time. He estimated the entire compensation at two-thirds of a year's purchase of 150l., which sum he considered to be the net profits, instead of the 500l. claimed.

Mr. Withall in summing up, said that the Legislature had intended that the Justices should have summary jurisdiction only in small cases, and referred to the clause giving jurisdiction to Justices in cases under 50l.

Mr. Knight held that the 121st section of the Act directed the Justices to give compensation for any damage and injury whatever sustained by the claimant, and if such damage were shown in this case, they would be bound to give full compensation.

Mr. Roberts replied upon the evidence for the defence; and the Justices awarded 300l., including costs. The claimant to take away all fixtures, &c. The case occupied upwards of five hours.

**Books Received.**

*Geological Treatise on the District of Cleveland, in North Yorkshire; its Ferruginous Deposits, &c.; with Observations on Ironstone Mining.* By JOS. BEWICK. London: Wreale, High Holborn, 1861.

ALTHOUGH Cleveland has only very recently become celebrated as an iron-producing district, its iron has been known in modern times for a good many years, and in ancient times it was evidently well known to the Romans, from the remains of their workings which have been discovered. It was only after the opening of ironworks in 1850, however, that the richness of the deposits became generally known, although a few energetic men,

such as Mr. Bewick, sen., appear to have been long preparing the way as pioneers to the ultimate renown of the district. In 1850 a seam of the enormous thickness of 16 feet was discovered, and one company alone turned out from their open quarries and mines the extraordinary quantity of from 1,000 to 2,000 tons of ironstone daily. The sensation and excitement in the public mind, in the north especially, which these operations occasioned at the time, are still fresh in recollection, and the richness of the seam, still fresh in the quarter was henceforth a popularly known fact. An immense increase of mining adventure in this district has taken place since then, and there is still every probability of its further and rapid extension. It is to the development of this district, and to the black band discoveries of Scotland, in no inconsiderable degree, that we are indebted for the cheapness of iron of late years. There is great and pressing need of improvement in the chief port of shipment for the Cleveland iron at Whitby, but the extension of railways, and the growth of the iron trade of the district, will probably soon force on what is requisite in this respect. In the same quarter, we understand, there is hope of finding coal.

The work under notice enters fully into the geological and mineralogical features of the Cleveland district, and is an important one to all interested in the iron trade.

**VARIORUM.**

UNDER the title of "Pre-Raphaelitism Tested by the Principles of Christianity,"—an Introduction to Christian Idealism," Mr. W. Cave Thomas has printed a pamphlet "for private circulation."\* The main purpose of the thoughtful writer appears to be to show—

"That the terms, 'earnest and conscientious endeavour,' are misapplied to that very prevalent, abject imitation of nature as it is, such imitation being mere slavish acquiescence in things as they are, a total abnegation of the faculty of judgment, of moral discrimination, of selection, which, instead of elevating human and other nature by cultivation, by those regenerative and reformative powers which science should command, tends to debase the former by a false aim, which enervates the judicial faculty, and the latter, by denying it the aid of human intervention and art."

Mr. Thomas combats the present meaning attached to the words *nature* and *truth*, and urges, ally, the importance of separating the transient from the permanent, the accidental from the essential, the special from the general, and so to realize IDEAL EXCELLENCE.—The first number of the new magazine, "Temple Bar," gives a considerable variety of agreeable writing for a trifling sum. Part of it is "smaller" than we expected, but time will enable the editor to strengthen his staff.

Mr. Hepworth Dixon gets a hearty piece of applause for his "Lord Bacon;" and the editor begins his travels in Middlesex. The Rev. J. C. Bellon contributes a paper entitled "Over the Labyrinth to Baalbek," which is unfortunately more about the journey than the goal. He gives a plan of the ruins from his "own measurements, and drawings on the spot," and notices two inscriptions on "the centre stones in the crowns of the arches" of the vaulted gallery under the great temple, one *Disio Vascii*, the other *Disio Charii*, the meaning of which he is unable to discover.

**Miscellaneous.**

SCULPTURES AND BOOKS.—Some of our readers may find it worth while to examine the works in terra-cotta, books, &c., collected by Mr. Casentini, which are to be sold in Hercules-buildings, Launceston, next week.

ARCHITECTURAL UNION COMPANY.—The ordinary general meeting of this company is fixed for Wednesday, 5th December, at three o'clock. The directors propose to pay a dividend of 10s. per share (5 per cent.), which will leave a respectable balance in hand.

"RICHARD THE FIRST"—This statue has, I think with you, been over-praised. The grand fault in it to me is this,—that the king appears to be sitting on his horse *quilty*, just as a groom does when without a saddle; whereas, as the attitude is supposed to be a *momentary* one, the figure should, with uplifted arm, have been raised in the stirrups. This would have given life to the figure, and would have connected it, as it were better with the horse. No man on a prancing charger would be lifting up his sword in a supposed dignified position with his feet dangling carelessly in the stirrups. The pedestal is shocking. G. T.

\* 23, Holles-street, Cavendish-square.

**GEORGE STEPHENSON AT OXFORD.**—A statue of the late George Stephenson, is about to be erected in the Oxford Museum. Mr. Woolner, the sculptor of the statue of Bacon, already there (the gift of the Queen), is to be the sculptor.

**PNEUMATIC DESPATCH.**—The Pneumatic Despatch Company are said to have satisfactorily completed their preliminary experiments at the Soho, Works, Birmingham, and will now proceed with the construction of the permanent tube intended to be laid between the General Post-office and Bloomsbury, a distance of a mile and a furlong. The tube will be 2½ feet in diameter.

**REVIVAL OF CITY GUILD.—THE PAINTERS' COMPANY.**—Mr. John Sewell, ex-master of the Painters' Company, has addressed a communication to each member of the Court of Assistants of that Guild, calling attention to the desirability of considering as to the initiatory steps to be taken towards the realization of another exhibition of decorative works of art. The matter is to be taken into consideration at the next Court.

**REMINGTON'S SPRING HINGES FOR SWING DOORS.**—Many springs used to keep swing doors in their place have the fault of being least powerful when the door is shut, and thus allowing it to be moved by the wind. Messrs. Remington & Son, of Skipton, Yorkshire, have produced a spring which is most powerful (if we may judge from the specimen submitted to us) when the door is closed. It works easily, opens both ways, and seems well adapted for any kind of doors, double or single. It merits attention.

**IMPROVEMENTS IN COVENT GARDEN.**—On the 22nd ult., the first festival was held at the new building recently erected in Hart-street, Covent-garden (for the benefit of the poor of this locality), at the sole cost of the Duke of Bedford. The sum expended was 2,000*l.* *The Athenaeum* says—340 children are being educated; women are brought together to receive help and instruction in respect to home duties; a lecture has been established; together with a Penny Bank,—the whole being under the immediate superintendence of the Rev. Henry Hutton, M.A., the rector. The savings collected amount to 400*l.* per annum. The necessity for these measures will be felt when it is stated that within a short distance of the new building there are 274 rooms, each of which is occupied by a single family.

**MANCHESTER ACADEMY OF FINE ARTS.**—The members of this academy have held their first annual meeting at the Royal Institution. Mr. J. A. Hammersley, F.S.A., the president, occupied the chair; and there was a pretty fair attendance of members, associates, and students. The Chairman called attention to the reasons why such an academy had been started. Its main object was, that the artists who were isolated and had no very enlarged or systematic opportunity of meeting together, might meet in social convalescence. This idea had been productive of much good, for artists had strengthened their intimacy by close and frequent inter-communication. Another object was, that there should be classes established for the study of details, both in the antique and from life. They had been numerously attended, and of a productive of good. The third object was that of seeking to have more control over the annual exhibition of pictures at the Royal Institution; and the exhibition this year would testify to the advantage of this arrangement. The hon. secretary (Mr. L. Brodie) read the report of the council.

**TIMBER SALE CUSTOMS.—CHALONER versus WRIGHT.**—From a case which recently came before the Liverpool County Court, it appeared that defendant had attended a timber sale at which plaintiff acted as broker. A log was offered for sale, described in the catalogue as "defective heart," being what is called "plugged," as then supposed, at one end only. Defendant purchased the log, and finding afterwards that it was "plugged" at both ends, refused to accept it. A re-measurement was then made by the plaintiff, who awarded what he considered was a fair allowance for the defect in question, but which was repudiated by the defendant. Afterwards plaintiff resold the timber at a loss upon the original sale, and charged the difference in price to defendant. Plaintiff was cross-examined as to the custom adopted in such disputes, and he stated that in all cases it was delegated to him to make a re-measurement, and adjudicate upon them without reference to any other person in the trade. The judge thought, that under the whole of the circumstances, defendant was bound to pay the difference, as claimed by plaintiff, on the resale of the timber. The question, as had been stated, was not one of pounds, shillings, and pence, but of principle; and it was no doubt desirable to have the opinion of the court upon it.

**DESTRUCTION OF THE KILBURN NEW TIMBER CHURCH BY FIRE.**—The new edifice situated in the Capton-road, Maida-hill, Kilburn, formed of timber with an iron roof, and over 100 feet long and 70 feet wide, has been entirely destroyed by fire. The origin of the disaster is unknown. The Rev. J. Irving, the rector, it is understood, was insured in the Sun Fire-office.

**THE STRIKE IN BRISTOL.**—At the adjourned meeting of the Master Builders' Association, on Monday, the following resolution was unanimously adopted:—"This meeting sees no reason to depart from the resolutions passed at former meetings respecting the present strike of the operative masons, and that this meeting, at its rising, stands adjourned until Monday, the 3rd of December next." Thus the vexed question at issue remains *in statu quo*.

**ACCIDENT WITH A GIRDER.**—A large girder fell recently from the scaffolding in front of the fifth floor of a tea warehouse in Worwood-street, London, owing to the breakage of the hoisting machinery at the moment the beam was about being landed on the summit of the building, where it was to be used in additional stories now erecting. The weight carried all beneath it to the pavement, but left about 100 feet of scaffolding standing. Fortunately the footway was hoarded off, which prevented the loss of life that must otherwise have occurred.

**A NEW CENTRAL METROPOLITAN HOTEL.**—Notice has been given of an intention to apply to Parliament in the ensuing session for an Act to incorporate a company for the purpose of erecting a hotel and other buildings, to occupy the space between the Strand on the south, and Wyck-street on the north, the west end of St. Clement's Church-yard on the east, and the east end of the church-yard of St. Mary, Wyck-street and the south end of Newcastle-street on the west, all in the parish of St. Clement Danes; the Act to empower the company to purchase and pull down the buildings at present occupying the required site.

**A DIRTY TRICK.—TENNY.**—A council meeting was held on the 13th ult., for the purpose of receiving the estimates for the furnishing of plaques, &c., required for the draining of the town: several estimates were sent in, the one from Mr. Burns, of Ely, being more in detail than the others, but rather more in the amount of money required for his services. It was resolved to profit by the labour of his brain—and the exercise of his genius—by sending a copy of his conditions to several of the competitors, to know for how much less they would perform the same amount of intellectual labour, an act of great encouragement to those who expect a committee to decide for the one that displays the largest amount of ability.—*Haverfordwest Telegraph*.

**MORE DEATHS FROM BAD DRAINAGE.**—An inquest has been held as to the deaths of twins, named Emma and James Read, aged fourteen months, who died from the poisonous effluvia arising through an overflowing cesspool, at No. 12, Boston-street, Shoreditch. There were two more children very ill, and in a dangerous state of health. The mother stated that she had lost two children about two years since in the adjoining house, and she attributed their deaths to the filthy and unwholesome condition of the house, for the room in which they lived was frequently overflowing with night soil. Mr. John Gay, the senior surgeon of the Great Northern Hospital, believed that the children had been poisoned from the foulness of the house, which was in a frightful state of filth. The jury returned the following special verdict:—"That the deceased died from poison, arising from effluvia, through bad drainage in the house where they resided; and the jurors further say, that the conduct of the landlord of the said house was highly censurable. The parish authorities were to blame for allowing the premises to be in such a dangerous condition to health."

**STATE OF NEWGATE-STREET.**—Sir: I wish to call attention to the present state of Newgate-street. At the further end, as you go towards Cheapside, some houses have been partly pulled down, and have remained in that disgraceful state for some considerable time, doing a great amount of injury to the trade and prosperity of the neighbourhood, not to mention the miserable aspect it gives to every thing around.

A PASSER-BY TWICE A DAY.

**TENDERS**

For the erection of a foreman's house, at the Gillingham Gas Works, for the Rochester and Chatham Gas Company. Messrs. J. H. Andrews & Son, architects.—  
Pankhurst ..... 239 0 0  
Gurrell ..... 387 10 0  
Stump ..... 378 0 0  
Clothier (accepted) ..... 313 0 0

For Victoria Hotel, Sheffield. For the whole of the work, except foundations, which are done, and bridge and approach to the Midland Railway. Mr. M. E. Hadfield (late Hadfield and Gollie), architect.—

Barter ..... 216,500 0 0  
Carr ..... 15,172 0 0  
Wade ..... 14,601 0 0  
J. & A. Craven ..... 14,515 0 0  
Fowler ..... 14,250 0 0  
Chadwick ..... 13,155 0 0  
N.B. The lowest tender, omitting the cast wing for the present, was accepted.

For Model Lodging-houses in Bethnal-green, for Mr. Charles S. Butler, M.P. Mr. William Reddall, architect.—

Stevenson ..... 21,420 9 0  
Levere ..... 14,114 12 0  
Noone ..... 14,000 0 0  
Tolley ..... 13,987 0 0  
Scott ..... 13,903 0 0  
Walker ..... 13,910 0 0  
Blackburn ..... 13,903 0 0  
Page ..... 12,995 0 0  
Wood ..... 12,833 0 0  
Howlett & Browne ..... 12,592 0 0  
George ..... 11,983 0 0  
Case ..... 11,887 0 0

For building house, No. 2, Osborne-street, Whitechapel, for Mr. Flowers. Mr. Joseph Lavender, architect. Quantities not supplied.—

Chapman ..... 2,783 0 0  
Brewster ..... 767 0 0  
Sewell ..... 767 0 0  
Stephens and Latta ..... 750 0 0  
Green & Son ..... 717 0 0  
Sutton ..... 715 0 0  
Greenwood ..... 1,903 0 0  
Ashby & Horner ..... 695 0 0  
Goodman ..... 640 0 0  
Wood & Sons ..... 553 0 0

For rectory house, at Shirfield, near Basingstoke. Mr. John Norton, architect.—

Thorne ..... 23,850 0 0  
Brown ..... 3,905 0 0  
Buddica ..... 3,401 0 0  
White ..... 3,200 0 0  
Whitehouse ..... 3,200 0 0  
Steele & Son ..... 3,150 0 0  
Carter ..... 3,073 0 0  
Barnes ..... 2,878 0 0  
Nichols ..... 2,872 0 0  
Chinnock (accepted) ..... 2,655 0 0

For the erection of a chapel and vestry for the Wesleyan Free Church, at Ordnance-place, Chatham. Messrs. J. H. Andrews and Sons, architects.—

Pankhurst ..... 2,376 0 0  
Collins ..... 359 10 10  
Jennings ..... 349 17 6  
Sampson (accepted) ..... 315 0 0

For dwelling-house at New Basford, Nottingham, for Mr. Lowther. Mr. Alfred Allen, architect.—

Cargill & Son ..... 347 0 0  
Dooock ..... 340 0 0  
Pearson (accepted) ..... 298 0 0

For four cottages at New Basford, for Mr. Ayre. Mr. Allen, architect.—

Smith ..... 2,380 0 0  
Cargill & Son (accepted) ..... 349 0 0

For house, to be built at Talford-road, Camberwell, for Mr. Alfred Perrin. Mr. Henry Jarvis, architect.—

Hardman ..... 2,930 0 0  
Deavin ..... 550 0 0  
Kent ..... 535 0 0  
Thompson ..... 524 0 0  
Crawley ..... 500 0 0  
Heath ..... 499 0 0  
Hart ..... 490 0 0

For painter's work, to be done to house, Streatham-hill, for Mr. John Southgate. Mr. Henry James, architect.—

Fisher ..... 2,235 0 0  
McLacklan ..... 233 0 0  
Wicks ..... 217 11 6  
Nixon ..... 212 0 0

For works to be done in repairs of house, No. 37, John-street, Bedford-row. Mr. J. Lavender, architect.—

Stiles ..... 2,235 0 0  
Brake ..... 213 0 0  
Green & Son ..... 177 0 0  
Sutton ..... 167 0 0  
Perry ..... 159 7 4  
Stephens & Latta ..... 119 0 0

For chapel and schools at Stowmarket. Mr. F. Barnes architect.—

	Rag Stone.	Taylor's Patent Bricks.	White Suffolk Bricks.
Betts & Co. ....	4,347 19 0	4,494 9 0	4,111 0 0
Worswick & Morfeys. ....	3,835 0 0	3,713 0 0	—
Hunt .....	3,715 0 0	3,730 0 0	3,565 0 0
Luff .....	3,569 0 0	3,561 0 0	3,569 0 0
Smith .....	3,421 0 0	3,421 0 0	3,421 0 0
Gibbons .....	3,333 0 0	3,440 0 0	3,189 0 0
	2,925 0 0	2,896 0 0	2,896 0 0

\* Accepted. The contractors to take old materials in present chapel and two houses.

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# The Builder.

VOL. XVIII.—No. 931.

Mr. Falkener's "Dædalus."\*



THE story of Dædalus, the Athenian, who, charged with the murder of his nephew, and imprisoned in the labyrinth he had built at Crete, in the time before history was, escaped, together with his son Icarus, by means of wings, made by him, and fastened to the body with wax, is known by all.

remember that Icarus flew so high that the sun melted the wax, and he fell into the sea and was drowned, while the more diffident and careful father, flying lower, reached Sicily in safety. Let it be, as some say, that the fable meant to show Dædalus had escaped by means of sails, of which he was the supposed inventor; as others, that it conveyed a series of lessons which should be borne in mind by those who would attain success,—that Dædalus did not build a temple to Apollo at Capua,—that his works in sculpture and architecture were not, though Plato calls them so, works of great value,—even that there never was a Dædalus; nevertheless statues were called after him, *δαίδαλα*, sculptors bore his name till the time of Socrates, and the city Dædala, according to the legend told by Alexander, was built where Dædalus, being killed by the bite of a water-snake, was buried. Mr. Falkener did very well, therefore, when he took Dædalus for his title, though few, we suppose, will agree with him that "a work on sculpture can bear no other name." Mr. Falkener is an enthusiast touching classic art, and very desirable it is that we should have a few enthusiasts in this respect rubbing to an extreme, and so helping to keep a just balance, or the rising generation of architects under the present teaching might be led to believe that the world was not made until the twelfth century, or thereabouts. We dissent from many of his inferences, but we have read the book with pleasure and advantage. It is scholarly and elegant. He has brought together a large number of quotations, more or less valuable,—so many, indeed, that he feels it necessary to remind the reader, as an apology, that the only way in which he could exhibit the genius of ancient art was by giving the opinions of the ancients upon the subject. These opinions he has endeavoured to classify and methodize, so that conclusions may be more easily be deduced from them. He believes, and we agree with him, that every tradition is pregnant with a meaning,—though, as he might have added, it is sometimes not a very weighty one.

An introduction of twenty-five pages and the frontispiece are devoted to re-setting forth, with reference to the Parthenon, the opinion of Quatremère de Quincy in respect of the temple of Jupiter Olympian at Elis, that the ceiling was of circular form. This introduction we printed in full some time ago,† together with a section of the Parthenon, showing the vault-formed ceiling. No positive proof can

be given that it had not such a ceiling, but we cannot find that Mr. Falkener has afforded any evidence that it had. M. de Quincy supports his theory by imagining that the arch



which is shown on many coins bearing Grecian buildings represents the vault of the temple, that the artist endeavoured to show in one view, the front portico, and the interior of the temple, with its statue and vault over. But then all these coins are Roman. Moreover, the author of "Architectura Numismatica" supposes that these conventional types of temples are mere baldachinos, instead of temples. Mr. Falkener's own argument may be thus stated. He considered that the interior had two colonnades, one above the other (as was doubtless the case). He made the size of the upper column arbitrarily about half the size of the lower. When this was done there was still considerable space to fill up, while on the other hand the utmost altitude was required in order to admit the statue. This space being just sufficient for a semi-circular arch, and the arch being the form which filled up the angular lines of walls and rafters with least sacrifice of room, "I did not hesitate to adopt it," he says, "particularly as I considered that this was the only form capable of admitting the colossal image, and that it was the only form in which the hypæthral opening could partake of a graceful character."

This reasoning, however, depends too much on supposition to be readily received. Consider the upper story sufficiently lofty, and a roof of three spans may be made to meet all the circumstances. That the arch had been used at this time there would seem to be no doubt; Egyptian and Assyrian monuments supply evidence of it; but in proof of the theory that vaulted ceilings were used in Greek temples we have not yet discovered any evidence. Mr. Fergusson's ingenious theory of an elevated clerestory with span-roof on each side, though not free from objections, seems more in accordance with the spirit of Greek architecture.

As an appendix, Mr. Falkener prints the opinions of several eminent persons who have given attention to the subject. Mr. Cockerell, Colonel Leake, and Mr. Bonomi, accept the vaulted ceiling; the latter saying,—“When I read your essay, and consulted the lexicon for such terms as *αψίδα*, *προρμη*, and *ψαλίς*, used by writers of the time when the roof of the Parthenon and other Greek temples were standing, it seemed to me impossible to withhold consent.”

On the other hand, M. Hittorff, Professor Gerhard, of Berlin, and Professor Donaldson, refuse to do so. The latter, apparently overlooking that the claim is for an arched wooden ceiling, says:—

“No concentric stones have been found in the ruins of the Parthenon. Could they all have escaped? Thirty years ago I entered upon the question in the supplementary volume to Stuart's 'Athens'; but I could make nothing of it, the Greek terms were of such doubtful interpretation, and so few monuments in Greek art, except the subterranean chambers, to reason upon. However, ventilating the question can produce no harm. Facts, they say, are stubborn things; but preconceived notions are stubborn, so you will have a hard fight to go through to overcome the established conviction of pure Greek architecture having been entirely treabated.”

M. Hittorff, in his letter, speaks of the publication of the completion of his first volume on the Ancient Architecture of Sicily, and concludes with words which may be English, “I ask from the Supreme Architect the favour to be permitted to complete my works upon the ancient remains of that beautiful and wonderful country, and I beseech Him, also, to

sustain you in your glorious endeavours to assist in the spread of a love for and more intimate knowledge of ancient art, which, whatever may be said and done, will always be the purest source whence modern art may draw.”

We must pass on to another part of Mr. Falkener's hook. When he comes to inquire into the causes of the high degree of excellence attained to by the ancient Greeks, he dwells on the fact that each man laboured for distinction, each man was content with glory. If the artist's design met with approbation, it became his object so to improve and perfect it, that the finished work should rank with the masterpieces of his age, and be treasured up by posterity as a sacred heir-loom. That it would be so treasured, if excellent, he knew full well. Cicero, in his oration against Verres, the Sicilian pretor, for his spoliation of that province, thus sums up his declamation by enumerating several of the most celebrated works of antiquity:—“What remuneration,” he says, “do you imagine, could compensate the Rhegians, now Roman citizens, for the loss of their marble Venus? What the Tarentines, if they were to lose their Europa on a Bull, their Satyr, and other works deposited in their temple of Vesta? What the Thespians for their statue of Cupid, for which alone strangers crowd to Thespis? What the Cnidians for their marble Venus? What the Coans for their image of that goddess? What the Ephesians for the loss of their Alexander? What the inhabitants of Cyzicus for their Ajax or Medea? What the Rhodians for their Ialysus? What the Athenians for their marble Bacchus, their picture of Paralus, or their bronze heifer by Myron? It would be tedious and superfluous,” he concludes, “to dwell upon all the rarities which attract strangers throughout Asia and Greece.” While the house of Socrates, including his furniture, was valued at 18*l.*, and the price of an ordinary house in Athens, was about half an attic talent, say 100*l.*, sixty talents (say 12,000*l.*) were offered for a painting by Nicias, the Athenian, which he refused, preferring to give it to his country.

“By the general interest thus excited, the artist felt that every eye was upon him, each man was able to appreciate or criticise his labours: his work was no offspring of private caprice, but looked forward to anxiously by the public eye. Nor was this all: he himself felt that he was as much a citizen as any other, that he was working for himself, and that he would be as much grieved as any one did the monument not answer to the expectations raised of it.”

It was, our author maintains, the excellency of their teaching, their seeing around them men distinguished by all that was great and glorious, and their beholding on every side the masterpieces of their art, at once serving for instruction and incentive, which enabled the Grecian artist to succeed in imparting a charm to everything he touched.

Each town desired to have the most perfect images of the several divinities, but especially of its protecting god. It was thus that each city became filled with works of art. The number of statues contained in Corinth surpasses belief. In Athens, after being so often plundered, Pausanias describes three hundred statues as worthy of particular notice. Altogether, Pliny supposes that there must have been three thousand in this city, and as many at Olympia. From Delphi, after having been ten times pillaged, and five hundred bronze statues had been carried away by Nero from the temple of Apollo only, there remained some hundreds more to be described by Pausanias. In short, such was the wealth of Greece in works of art that after three centuries of Roman conquest, Pausanias was able to describe two thousand eight hundred and twenty-seven statues, thirty-three of which were colossal.

When we come to consider in what the excellence of Greek art consisted, the first principle which we meet with is, that it sought always the beautiful.

“Nothing common or vulgar,” says Mr. Falkener, “was to be allowed: every object was to be exhibited in the most beautiful aspect of which it was capable. The ancients, says Aristotle, pronounced the beautiful to be

\* “Dædalus; or, the Causes and Principles of the Excellence of Greek Sculpture.” By Edward Falkener, Member of the Academy of Bologna, and of the Archæological Institutes of Rome and Berlin. London: Longman, Green, Longman, & Roberts. 1860.

† See p. 213, *ante*.

the good. And so Socrates,—Nothing is beautiful which is not good."

Which do you think, asked Socrates of Parthiasus, do men behold with the greatest pleasure and satisfaction—the representations by which good, beautiful, and lovely manners are expressed, or those which exhibit the base, deformed, corrupt, and hateful? The most beautiful of all spectacles, says Plato, for whoever wishes to contemplate it, is it not that of the beauty of the soul, and beauty of the body, united, and in perfect harmony with each other? The Greeks ever believed beauty, more especially of the female form and countenance, to be indicative of goodness.

"Every spirit, as it is most pure,  
And hath in it the more of heavenly light,  
So if the fairer body doth procure  
To habit in."—Spencer.

The sculptor sought to convey to the marble the hidden attributes of the soul, to awaken by bodily forms the secret operations of the mind; and this was not an occasional exercise, but a constant duty.

It is asserted by an ancient author, and we agree with him, that he who erects a monument unworthy of his country, has inflicted a wrong which will cease only with the destruction of the monument.

In the chapter on Ironic Polychromy, our author brings together much interesting information bearing on the fact, which must be considered settled, that many of the Greek statues were coloured. He considers that while colour was used most sparingly for the flesh, positive colour was probably used in the accessories; otherwise the marble might look dirty, and that it is, perhaps, through a neglect of this consideration, that modern attempts, by Pradier on the Continent, and Gibson in this country, to restore iconic-polychromy, have not been more successful. The coloured casts of the Elgin marbles, exhibited in the Crystal Palace, he considers can only be regarded "as a cannony upon Greek taste, as a gross libel upon ancient art." The much debated word *circumlitio* is of course discussed: he considers it to refer to the act of polishing. As to Polychromic architecture, he says,—

"It is sufficient for us to know that every monument of Grecian art, of puro style, whether of Greece, Sicily, Metapontum, Xanthus, or Itali-carassus, was adorned with colour; and if we judge by the evidences of colour on the monuments themselves, instead of by the unfounded 'restorations' by modern architects, we must, if capable of appreciating art, confess its heauty:—*"Il s'y avoit pas, dans toute la Grèce, un seul temple construit avec soin et avec quelque luxe, qui ne fût plus ou moins coloré."* Such is the remark of the diligent inquirer, the Chev. Bröndsted.

The same chapter treats also of chryselephantine sculpture, and is learned, interesting, and admirable.

In his review of modern sculpture, for which, nevertheless, he has few good words himself to say, he cautions others against injustice to the modern artist, and calls upon the ignorant critic to pause,—

"Before he proceeds to condemn a work which has entailed labour, thinking, and expense, united with a long study of the antique, and a constant analysis of modern wants, let him reflect that he is seeking to gain a transient reputation for his pen, at the permanent loss of reputation to the artist; that possibly his criticism may be false, and therefore, as the artist has no opportunity of being heard in defence, he is taking upon himself the part of a calumpniator rather than that of a critic."

So say we; and further, let not the artist be overlooked. Let him rather feel that it is a distinction and an honour to be an artist, and that such honour and distinction are recognized by the public. Quite true is the proverb, "Difficult are the beautiful." Mr. Falkener in this is fully with us.

There is an interesting and valuable chapter on Perspective, in the course of which our author's prejudice against Medieval work is curiously shown; for while he points to the figures in the west front of Wells Cathedral (which look well in their place, but are found to be disproportioned when brought down to the eye), as an illustration of the necessity of

representing proportions, not as they are, but as it is desired they should appear, he refuses to adopt the conclusion natural to be drawn from the premises here given; as otherwise he says, he would "have to attribute to these sculptures an amount of skill and refinement quite incompatible with the state of the arts in the Middle Ages."

Here, however, we must end. We have left ourselves only sufficient space to say, that the book is illustrated with a number of photographs and chromo-lithographs of classical sculpture, including the Minerva Borgheese, the Laocoon, Diana Agotera, the Apollo Belvedere, the Venus de Medici, and a beautiful mosaic of a female figure, in the museum of the Archbishop of Tarento. The work is, moreover, admirably printed and bound; and is altogether such a book as the man of taste and refinement, and the directors of libraries, should feel it a duty to purchase.

#### THE SEWAGE FOR THE SOIL. CROYDON.

The great question how best to bring town sewage and agricultural soil together, to the mutual advantage of both town and country, has now been pretty long agitated, and it is full time the question were settled. This is not to be done by opinion alone, but by practical experiment combined with rational theory; and, indeed, such experiment is in course of progress; and wherever there is any prospect of its extension, it is a pity to check it too severely by adverse and warning opinions and statements, unless there be some thing obviously and incontestably absurd or wrong in the particular experimental scheme to put a stop to which the attempt is made. Should the financial or economical, or even the sanitary, expectation be unsound, the error will, ere long, correct itself; and, in the mean time, in a question of vital and national importance, the public will be gleaming invaluable experience from almost all the practical schemes which may be devised or carried out.

These preliminary ideas have been suggested by the scheme which we lately announced for making use of the Croydon sewage in irrigating the land in the vicinity of the town, and by an interesting correspondence to which that scheme has led. In this case, for example, no disinfectant is contemplated. Now it is easy to get up a *diletante* outcry against any practical endeavour to solve the great problem without the use of (but too generally expensive and, in this case, impracticable) disinfectants—or deodorizers rather,—agencies which are so important and invaluable in town use; but it still remains to be fully proved whether, as we have long and repeatedly suggested, the earth itself may not be an adequate deodorizer of diluted materials such as town sewage, simply "irrigating, not drowning," the land itself. Wherever a feasible attempt is being made to try this great question, we say,—Give it fair play—do not forestall the conclusion by exciting the now wide-enough-awake public opinion as to want of "disinfection." The earth is a very potent deodorizer and disinfectant: there can be no doubt about it; and quite recently, if we mistake not, Mr. Spencer, of Liverpool, has incidentally been shedding some new light on this subject in what he has said of the magnetic oxide of iron and ozone\* in connection with the filtration of water through soils or strata, and the purification of the water thereby. The experiments of the Rev. Mr. Bowditch, of Wakefield, on the power of clay to fix sulphuretted carbon and other abominations of foul gas, also seem to bear indirectly on the same important subject. Let the power of the soil itself, then, in deodorizing the sewage of towns, why all means be fairly and fully tried, as it is about to be at Croydon, which,—once so notorious for ill-health, and now likely to become, from sanitary

\* Although we are here urging a fair trial for the soil itself as a great natural deodorizer, we are quite alive to the possibility,—nay, we had almost said the probability,—of some artificial deodorizer being after all found absolutely necessary in the disposal of town sewage, whether over the land or not. But either way it will be right to keep in view that another great natural deodorizer besides the soil is ozone, whether in the air or the earth, and whether naturally or artificially applied. If its artificial application be found requisite, there can be no doubt, we believe, that Schönbein, the discoverer of ozone, was right in pointing to permanence of power as a perfect or complete ozonizer, and hence deodorizer. It is this same agency that is known as "Condy's fluid," and with which some successful experiments we recollect were made some time since made at the metropolitan sewage. This, too, is the air test used at Manchester, and so much recommended by Miss Nightingale and others; and it is a test for purity in water as well as air.

experiment, no less celebrated for good health,—seems to have somehow assumed the peculiar distinction of being the "vile body" for more than one salutary "crucial experiment" of great as well as decisive importance to the public and the country at large.

An interesting correspondence, as we have said, has recently been going on (in the *Times*) on the subject of this Croydon sewage scheme, of which Mr. Shepherd, C.E., is the engineer.

Mr. Rawlinson cautions the public or the Croydon Sewage Company against this scheme, or rather against extravagant outlays on liquid manure irrigation-works (though decidedly in favour of *liquid* sewage) and other points of importance, implicitly applying them to this scheme; and he addresses the Carlisle experiment as the example which ought to be followed, or the criterion of what should be done. "At Carlisle," he remarks, "where there is a population over 90,000, the entire volume of sewage is pumped and applied to some fifty acres of land by means of surface irrigation. The capital sunk for such irrigation is under 1,000. I have not heard of any extravagant income from this speculation; but, on the contrary, I have heard of some difficulty in disposing of the grass when grown and cut." The capital of the Croydon Sewage Company is 30,000, and they propose to use the same quantity of sewage in the irrigation of a much larger surface of land.

Mr. Shepherd in his reply to Mr. Rawlinson, says:—

"The attempt of putting the sewage of Carlisle, with a population of 90,000 inhabitants, on fifty acres of land, and to expect that those fifty acres of land will pay all expenses of steam-engine, pipes, labour, &c., are results of sheer insanity; nor do I wonder at the proprietors not being able to dispose of the grass. For Mr. Rawlinson to say that all the sewage of Carlisle has been pumped on these fifty acres of land I think is mere 'figure of speech' on the part of that gentleman. For the information of Mr. Rawlinson, I beg to state the corporation of the town of Croydon (also 30,000 inhabitants) has taken not fifty but ninety acres of land; and, after irrigating nearly all these ninety acres of land with most astounding success, in the shape of abundant and healthy crops, only a small quantity of the sewage could be used, the vast bulk of it running to waste in the river Wandie."

Mr. Rawlinson had remarked that the crops on sewage-irrigated soil must be consumed quickly: this Mr. Shepherd denies, and states that at Croydon hay is made of the grass, rye-grass, and clover, and stacked, as are the oats; and that they are not, and do not require to be, consumed quickly. Mr. Rawlinson speaks of the cost of underground irrigation: Mr. Shepherd states that his plan is for surface irrigation. He thanks Mr. Rawlinson for suggesting a reduction of the Croydon Company's capital to 3,000; but fears that by doing this he should be only repeating what Mr. Rawlinson states is a failure at Carlisle.

Mr. M'Dougall, the engineer of the Carlisle works, and the manufacturer of now pretty well known disinfectants, next writes, stating that it is "unwise in any corporation or local authority to permit the application of sewage to land in the vicinity of towns without well-considered means for rendering the sewage permanently inoffensive." This of course bears directly upon the question of disinfectants, but, as we have already observed, it remains to be seen whether the soil itself be not sufficient for all purposes. The application of deodorizers in tanks or reservoirs where sewage is to be stored, or the covering up of these, is a separate question, however, well worthy of consideration. But it must be here noted that disinfection may be very requisite with much sewage on little land, while it is not so with the same sewage diffused and spread, and exposed to the disinfectant power *both of earth and air* on much land. The latter, too, looks much more like a natural and satisfactory solution of the problem on a great and national scale.

The next correspondent is Mr. J. F. Bateman, C.E., who corroborates Mr. M'Dougall's views as to disinfection, and gives his testimony to the success of Mr. M'Dougall's process at Carlisle. In the close of his letter Mr. Bateman says,—

"Very careful experiments, continued for a considerable period, and on a tolerably large scale, on the sewage of Glasgow and Edinburgh, which were conducted in conjunction with Dr. Thomas Anderson, led us both to the conclusion that no process of precipitation would be likely to succeed as a commercial speculation while a solvent or non-precipitating agent, like that of Mr. M'Dougall's, would most probably effect all that could be desired.

In conclusion, I will only add that the result of my investigations leads me to concur in the opinion of Mr. Rawlinson, that if the sewage, in its ordinary state, must be applied quickly and cheaply to be beneficial to the farmer. I do not think it will bear the cost of expensive works or distant transport, and it ought on no account to be used in the immediate vicinity of towns without being previously rendered innocuous to health."

Here let us repeat, lest we ourselves,—one of



which looks as if it could be executed for the money, and you would have your money's worth. The towers and spires of all three chapels are specially good. The mortuary is remarkable for a post-mortem chamber, and for an unusual treatment of roof, quite original, though not in harmony with the other chapels. The author must have been thinking of Norway churches or Chinese pagodas. The lodges on each side of the gates are simple and good. The piers are very poor and show evidence of haste; the gates and railings are not drawn in. The superintendent's house has a heavy tower with a Norway church roof. It seems unfortunate that the board should have required this clock-tower for the superintendent's house, as, independently of its superfluity when there are three towers for the chapels, it puzzles the architect's brain how to tack it on to the house. In almost every design exhibited, these unfavourable conditions and results are exhibited.

No. 6, "I labour with Hope,"—consists of eight funeral-looking drawings, drawn with care and labour, but this is all that can be said in favour. The Episcopalian and Nonconformists are to have a nave, with apsidal east end, transepts with apsidal ends, a place for coffin stands (far too crowded), with apsidal form of end, and urinals and water-closets opposite, also with an apsidal end; the tower of entrance in the centre of the side. The Roman Catholics' chapel is a long nave, with octagon altar end; south transepts for coffins, north transept for urinals; meeting-room and vestry in transepts at the west end. This is not a bad-looking plan, but all the seats in the long nave are fixed longitudinally. Externally the favourite style of the author is mixed Georgian and Batty Langley, with a dash of Milan Cathedral. The extravagant shape of the gabled apsidal chapels, precisely the same forms over chancel, transepts, space for the bodies and urinals, is notable. The entrance-gates resemble an enormous sarcophagus, supported by arched ways and piers. The mortuary is a small octagon room, roofed pyramidally with gables from each of the eight sides.

No. 7, "Hiram," nine drawings, occupies the post of honour in the room. The Episcopal chapel is to have nave and transepts, with the spaces for forty bodies where the chancel would be; a tower and spire at the south-west corner, and a carriage-way and waiting-room at the north-west side. The Nonconformists'—nave and transepts, with apsidal chancel, to be used for the space for the bodies: a carriage-porch, and porch under the tower on the north side, entering into the north transept. Here are no less than four doors entering this chapel, at all points of the compass—rather a draughty arrangement, we think, if the forty bodies and the mourners were being simultaneously conveyed into the chapel. Externally, the style is Flamboyant Decorated. The three towers and spires are good combinations of the Northamptonshire and Lincolnshire steeples; but too imposing and vast for the money to be expended. The Episcopal and Roman Catholics have a profusion of crosses and metal terminations, and the Dissenters a profusion of metal termination only. The general impression that is produced from examining the three elaborate perspective views in one frame, is that it would be impossible for any contractor to execute them faithfully for the money. The mortuary resembles a handsome school and offices; the superintendent's house, a handsome mansion: the lodge has a bell gable, and the entrance gateways a spire-like turret in the centre of them.

No. 8, a Triangle with Three Circles, eighteen drawings, is conspicuous for a polychromatic treatment by red and white bricks and stonework. The plan of the Nonconformists' and Roman Catholic chapels is peculiar. There is a space for the bodies at one end of a nave, and a corridor with an isolated tower at the other extreme end. The isolated positions of the towers and spires in all the chapels is unpleasant and unusual. We do not see the use, nor how it can be afforded, to have so many bell and other turrets, on the roofs and elsewhere, in addition to the bellies on the towers and spires. The style is consistently adopted throughout,—Early Decorated. The mortuary is square, and treated somewhat after the style of the abbot's kitchen at Glastonbury. The entrance-gates are remarkable for very tall lamp-post piers, and very lofty, inelegant gates.

No. 9, "Fidelitas" has twenty-nine sheets, and one with six views, framed, very carefully drawn, and elaborately designed. The chapels have Lincolnshire spires, hipped and gabled, costly form of roof (with superfluous bell-turret in the centre of the pyramidal roof, over the covered porch), the

general detail being of Lombardic character, with a free use of coloured bricks in bands. The mortuary, in plan, is provided with a post-mortem room and lavatory. We cannot comprehend this feature in two or three of the designs. Does the Board purpose establishing dissecting-rooms in connection with the mortuary? Externally, the character is that of a miniature cemetery chapel, with roof hipped and gabled back into the hips, in the same costly way as the chapel. The superintendent's house is similarly treated as to the roof, and would otherwise be good in design (the campanile with clock-faces excepted). There is an alternative Italian design for the superintendent's house, and an alternative Greek design for the entrance in this author's elaborate collection of drawings.

No. 10, "Faith," has a remarkably curious clerestory for the chapels, of about a hundred narrow lights.

No. 11, "Nec Timere, Nec Timide," is conspicuous for devoting two towers and spires to each of the Nonconformist and Roman Catholic chapels, and one spire only to the Episcopalian.

"Alpha," in several drawings bound up into a volume, has for the chapels an apsidal chapel for the bodies, with a corridor round it for monuments, the style adopted,—mixture of all the known styles of Gothic, with a little Swiss mixed up.

"Delta," in a series of dirty drawings, shows that the author had spasmodic attacks of "brilliant ideas," which were immediately jotted down, with no reference to any particular plot or plan.

"Look Again."—Another set unworthy of the importance of the subject, and shows evident signs of a careless or a pretence hand.

#### ON CHURCH AND CONVENTUAL ARRANGEMENT.\*

"C'est à la religion à relever la tête pour l'homme vers Dieu, c'est à Paris à le soutenir. Les architectes sont, après les prêtres, les co-opérateurs les plus efficaces de la grâce du Seigneur."—Pillé de Lisieux, in M. Trebutien's "Caen."

THE Upper Chamber of Jerusalem was an ordinary dwelling-room, built like many of the Norman houses, over store chambers. The first mention of a church occurs in St. Paul's Epistles; the next is of the early part of the third century. The word *εκκλησια*, or church, occurs first in the writings of the succeeding century.† The form adopted was that of an oblong, allegorical of a ship, a symbolism preserved in the name of nave (navis), as the spiritual church was described as "The Ark of Christ;" and the triple arrangement of the lower arcade, triforium, and clerestory, bear an analogy to the first, second, and third stories of the Ark. In the "Anecdotal Constitutions" of the fourth century, the direction is given—"Let the church be oblong, turned towards the east, with lateral chambers (*παροισακια*) on both sides, toward the east, as it is to resemble a ship; let the bishop's throne be in the midst, with the presbytery sitting on either side, and the deacons standing by."‡ The church of SS. Vincenzo and Anastasio, at Rome, built by Honorius I., c. 630, has its wall curved like the ribs of a ship. However, in the poem of St. Gregory Nazianzen, "The Dream of Anastasia," Carm. ix., Op., tom. ii., p. 79, mention is made of "a Christian temple of four parts, with aisles in the form of a cross."§ At Djemilah, in Egypt, Lenoir states that the foundations of a church, anterior to the time of Constantine, were discovered; it contained a square cella, inclosed by walls; a nave of five bays, with arcades opening on three colonnades, without a porch, but having a door on one side.

At Thebes,§ Baalbe, Philæ, Sebota, and Maharraka, mentioned by Belzoni, the Christians effected a new internal arrangement of the Pagan temples; a plan not uncommon, as we find in Eusebius, c. 380,|| and in Sozomen.¶ The atrium was roofed in and subdivided, as a nave, into aisles.

Eusebius,\*\* describing a church, or basilica, at Tyre, built c. 313—322, by Paulinus, mentions

in it a semicircular apse, having sacred inclosures, and forming a Holy of Holies. Stalls for the bishop and clergy ranged behind and around a central altar, with a wooden trellised screen parting it off from the nave, which was a square divided into three aisles; seats for the congregation; a lectern in the centre of the nave, flanked by singers and communicants; side porches, and a large vestibule; upper galleries for women; and lastly, a square court, surrounded with a trellised colonnade, and having a fountain in the centre. It is not difficult to recognize here the antitype of the Jewish temple, which contained a triple division, the inner sanctuary, preceded by an enormous porch, and subdivided into (1) the worldly sanctuary, (2) the holy of holies, and (3) the outer court of worshippers. From the fourth century a corresponding and uniform division of the Christian churches was made, and the two former appellations frequently were re-applied. A church at Edessa\* was thus modelled, c. 202. In the Church of the Apostles, built at Byzantium by Constantine, the rooms of the priests were built along the sides of the colonnade, as in the Temple of Zion, as the baptisteries were also circular, in imitation of Solomon's sea of brass.

A relic of this intentional correspondence may be traced in the entrance on the east in the old churches of Rome, St. John Lateran, St. Cecilia, Quattro Coronati, St. Peter, St. Clemente, and originally in those of St. Paul and St. Lorenzo, an arrangement that re-appears in the decline of Gothic art at Seville, although another assignable cause is the original ground-plan of the basilica having an entrance on the east.

The Parthenon and Temple of Theseus were exceptions to the rule of orientation observed by the Greeks, and according to Hyginus and Plutarch, by the Romans. Paulinus of Nola, ep. xxxii., ad Severum, mentions that the church there was a similar exception. Sidonius Apollinaris, speaking of the church of Lyons built by Bishop Pothin, faced the east; so also did St. Mary's, Antioch; and that of Tyre, both built by Constantine. Walafrid Strabo says that the principle of orientation was introduced only after a considerable lapse of time. Tertullian (Adv. Valent., c. 2), c. 200, speaks of the church facing the east.

The Byzantine arrangement was of three kinds. 1. The circular, as at Jerusalem, imitated in the round churches of the west. 2. The basilican, with apsidal termination to the transepts, as at Bethlehem, imitated at Noyon, Soissons, and Bonn. 3. The so-called Greek cross, as at St. Sophia, Constantinople, imitated in Provence, owing to commercial relations with Greece and Constantinople; in the west of Aquitaine through the intermediate seat of St. Mark's, Venice, owing to Venetian settlers; and on the borders of the Rhine owing to the support given by Charlemagne to Oriental art.

The circular form of the Holy Sepulchre built by the Empress Helena at Jerusalem, rebuilt by Charlemagne in 813, was caused by its erection round a tomb: octagonal churches, such as those of Antioch and Nazianzum, like baptisteries, were built on symbolical designs. The church erected on the Mount of Ascension powerfully affected the Eastern mind, and became a model for similar buildings; the domes of which were inscribed with the grand words of the angelic salutation to the Apostles.‡ The dome was a necessary constructional development as the fittest covering for a round building. Constantine built the first round churches in the west, those of St. Constance, and SS. Peter and Marcellinus at Rome. In the interior of the latter and of St. George, Salomica, built by him, with its seven trigonal chapels; in those of the Holy Sepulchre; and in the eight little apses of the Church of the Apostles, at Athens; and of S. Vitalis, at Ravenna, built by Justinian; we observe a singular resemblance to the chevet with its radiating chapels.

An octagonal church, internally circular, occurs at Hierapolis, of an early date. Circular and polygonal churches are also frequent in Armenia. That of Etchmisdzin is a square, with a central dome and apses to each arm of the internally marked cross.

In the Church of the Apostles at Constantinople, Constantine adopted the form of the Latin cross, as in the church of S. John Studius, and a central dome above the sanctuary;§ the nave had a timber roof. However, the necessary construction of four pillars to carry the dome, and of vaults to

\* Read by the Rev. Mackenzie E. C. Wallcut, M.A., Membre de la Société Française d'Archéologie, as elsewhere mentioned.

† Lamprid. Vit. Sev., c. 49; Chron. of Edessa, ap.; Asserian. Bib. Orient., tom. i., p. 57. Ferr. de Holo., c. 7; Adv. Val., c. 3; De Cor. Mil., 3; De Pud., c. 4; Cyprian Ep., lv. 33; Greg. Thaum. Ep. Can., c. 11; Greg. Nys. in Vit. Greg. Thaum.; Dionys. al. Ep. Can., c. 2; Lactant. Inst. Div. l. v., c. 11; De Mort. Persec., c. 12, 45; Ambros. in Ep., iv.; Euseb. H. l. viii., c. 1, 13; Optat. de Sch. Don., lib. ii., c. 4.

‡ Ap. Const., l. ii., c. 57.

§ Lord Lindsay, i., p. 11.

¶ Hist. Eccles., iv., 24.

\*\* Hist. Eccles., vii., 15.

†† Hist. Eccles., x., 4, 21, 43. See also S. Paul, Op. ed. Muratori, c. 293, in col. 912; and Faber's Vigilantius, p. 177.

\* Note of Michaelis; Rose's "Neanther," l. 246.

† Socr. Hist. Eccl. lib. v. c. 22.

‡ Acts i. ii.

§ Eusebius; S. Greg. Naz. Somn. Anast., c. ix.; Prop. de Edif. Just.

the nave and transepts, led to the abandonment of the flat ceilings and roofs of the Latins.

The circle or polygon was thus combined with the Latin cross; and the Gammad, or Greek cross, arose from the combination of four gannas, the numeral designating the Holy Trinity. Arculphus describes a church of this form at Siehem, in the seventh century. The cupola in time was extravagantly developed, and the aisles reduced to narrow passages in the time of Justinian. S. Sophia, consecrated A.D. 537, of which the Emperor Justinian said, with a burst of emotion, "I have equalled thee, O Solomon!" forms a square with an eastern apse and a central cupola, and the form of the cross is formed internally by two square halls on either side of the dome; a portico ranges along the entire front of the building, as at S. Vitalis, Ravenna. Sometimes doors only mark the form of the cross. Cupolas erected over each of the four arms served the same destination. After the reign of Justinian, the Eastern churches received a better arrangement, a central dome, a nave with aisles (there are five in the Panagia Nicodemi, at Athens), an inner porch, and three apses to the choir, as at Mistra. In the Benedictine Church of Daphnis, near Eleusis, probably built by the Venetians, the ground-plan is a Greek cross, with central and eastern cupolas, an apsidal choir, aisles, and square lateral chambers. The dome at first flattened, as the builders grew bolder was afterwards elevated, after it had received the addition of a supporting arcade, pierced with windows. The latter were round-headed, and sometimes arranged in triplets; and were closed with trellises of stonework. Belfries were of late introduction in the East, by the Maronites, in the thirteenth century,\* as the wooden clappers were long retained, and did not appear until the Franks began to exercise ostensible influence. There is one of the pointed period at Mistra, and a central tower occurs in Tenos. Chisels seldom occur until the fifteenth or sixteenth centuries. After the Turkish invasion, domes fell into desuetude, and the Latin cross was adopted. The central apse formed the sanctuary, with the altar in the chancel; that to the north the prothesis, or place of the eucense; the southern was the sacristy or diaconicum; the choir was arranged under the dome, and separated from the altar by the iconostasis, a solid screen with a central door, hung with curtains; in the men set below, the women occupied galleries. The chancel screen, *καθλίς*, is first mentioned by Theodoret.† Sometimes the men were on the south, and the women on the north side. The choir sat on either side of the *αμβών*,<sup>‡</sup> or pulpit, which had a little desk attached to it for the use of the reader. A long, narrow wand-like colonnade (the narthex) before the west front, imitated in the porches of S. Mark's, Venice, of a later period, had three doors,—the central for the clergy, the north for women, and the south for men. It was at once a baptistery, chapter-house, vestry-room, and lych-gate; and was occupied by the catechumens and penitents. It contained a *stoup*\*\* for washing. It was sometimes provided with an inner narthex. St. Chrysostom and St. Augustine used to preach from the altars.

The cross was not set up in churches until the middle of the fourth century; and towards its close, pictures of saints and martyrs were introduced. The earliest sculpture is that of the Good Shepherd, carved upon a chalice, as mentioned by Tertullian.

I may mention in passing, that the first notice of a formal consecration of a church occurs in the fourth century: that Venantius Fortunatus, makes the earliest mention of the use of glazing, when speaking of the cathedral of Paris, and the custom of burials within the church, may be referred to the interval between the seventh and tenth centuries, and was of gradual introduction.†† S. Gregory, of Tours, says it was a Frank custom to hang tapestry round the altars of martyrs.

The Byzantine style, which has been called a combination of the Latin basilica and the round chapel of martyrdom, the latter being derived from that of the catacomb; or, more probably, the round church of Jerusalem, exercised a widely-extended

influence, seen not only in the flat cupolas of the Saracen, the apse of the Armenians, and the bulbous domes of Russia. The Catholic Cathedral at Athens, probably the oldest Greek church remaining, and perhaps anterior to the time of Justinian, is nearly identical in ground-plan with that of St. Basil, Kieff, of the close of the tenth century. The cathedral of S. Sophia, in that town, of the eleventh century, consists of seven apsidal aisles, with broad lateral and also apsidal additions. The Russian type was a square ground-plan, a central dome surrounded by four cupolas, three apses, and a narthex, according to Mr. Fergusson, and found in the fifteenth century in the church of the Assumption, Moscow, built by a Bolognese; but the lateral eastern apses are parted off by screens into chapels. It is also perceptible in the West, in the Byzantine cupolas, introduced primarily owing to the influence of Venetian commerce and colonists; at S. Front de Perigueux, built 984—1047, on the plan of St. Mark's, and presenting a narthex; in the cupolas of Cahors and Angoulême, at the beginning of the twelfth century; at Souillac, Saligues, St. Hilaire de Poitiers, and Fontevrault; in the chapter-house of S. Sauveur, Nevers; in the three eastern apses and the porch of Autun, c. 1150; at S. Medard de Soissons, built 1158, in imitation of Santa Sophia; all buildings of the eleventh and twelfth centuries; and up to the twelfth century in the churches of Normandy, Aquitaine, Poitou, and Anjou; while the Basilican and Byzantine forms are united. It is seen in the round churches of S. Constance, built by Constantine at Rome; St. Stephen, of the fifth century, on the Cælian Mount; St. Martin's, at Tours; St. Benignus, at Dijon, of the seventh or eighth century; at Aix, built by Charlemagne; a church, initiated in the twelfth century, at Ottmarsheim; at S. Germain Auxerrois; at Perugia, Bergamo, and Bologna, in the tenth and eleventh centuries; at Charroux, in the twelfth century; at Segovia, Montmorillon, Leon, Metz; in England, in the temple churches (that in London was consecrated by Heraclius, Patriarch of Jerusalem); in the foliated octagon of Justinian in S. Vitalis, Ravenna, bearing a marked affinity to S. Sophia, and the earliest Byzantine church in Italy; in the apsidal terminations to the transepts of S. Martin's, Cologne, c. 1035, S. Maria del Capitulo, in the same city, of the eighth or thirteenth century; at St. Germainy des Pres, built 807, as at Bethlechem, and at Noyon, of the twelfth century; in the ground plan of St. Tibertius, at Rome, of the time of Constantine; of St. Cyria, Ancona, of the close of the tenth century; St. Cesar, at Arles; SS. Vincent and Anastasius, Paris; at Torcello; and lastly, in the superb cathedral of S. Mark, completed in the eleventh and twelfth centuries, which contains the pulpit and iconostasis of Santa Sophia, as well as a rood-screen.\*

In the East, the clergy-house (*παιδοφορία*, Sept. transl. Ezek. xl. 17), libraries, a guest-house, and decanica or prisons adjoined the church.†

These outer buildings were known as Exedrai, and the garth, which succeeded to the Pantheon temenos, as the perihotos, tetrastion and peristation †

The Pagan temples in the West were, from their small size and peculiar arrangements, not readily convertible into churches; the earliest so transformed was, probably, the Pantheon, consecrated as All Saints', in 610; the next, perhaps, St. Urbano Alla Caffarelli, in the suburbs of Rome. The Parthenon of Athens was transformed into St. Mary's.

When the Christians obtained the right of toleration and open celebration of public worship, they took as their model, or rather actually occupied, the basilica, tribunal, exchange, and hall, which, by their form and dimensions, were admirably adapted for the purpose; they retained the name of basilica, understanding it in the sense of the "palace of the great king." The name may be traced back to the Stoa Basilicæ of the Archon Basilus; the Basilica, the first built at Rome, was erected 210 B.C. by Porcius Cato. The judgment-hall of Pilate was a basilica, and its gabbatha or pavement the raised tribune. St. Paul, apparently, was a prisoner in the crypt of Herod's basilica. The atrium remains perfect in St. Clemente, which, though rebuilt in the ninth century, is a complete specimen of a basilica of the fourth or fifth century; also at St. Laurence Without, St. Agnes, St. Praxedes, and St. Cecilia. In St. Ambrogio, Milan, rebuilt in the twelfth century, is an apsidal

basilica, fronted with a large atrium. The apse, with one of the western towers, dates from the tenth century. At Segovia, St. Mellan has lateral exterior galleries, a feature common to this part of Spain and Germany, being the peristyle turned inward, in a transitional state to the cloister. Constantine converted the Vatican and Lateran basilicas into churches, and these formed a type for subsequent structures. The plan was the following. In front of the church was a court, atrium, or paradisus, like the court of Gentiles in the Temple; and the prototype of the future cloister, surrounded by a colonnade; entered by a vestibule (*prothrum*), and having a fountain (*cantuarus*) in the centre, covered by a cupola, at which the faithful washed their hands before entering the church. This court served as a cemetery, and station of penitents, catechumens, and neophytes. Where the court was wanting, they assembled in the narthex, a porch in front of the church, into which the doors opened; on the left side of it was the font.

The basilica itself was a parallelogram, forming with its pronos and alæ a nave, divided into three, or sometimes five, alleys. The central body had sometimes an upper gallery or triforium for women auditors. The aisles on the right hand were allotted to men, those on the left side to women, the tribunes and galleries on the left being given up to widows, and on the right to young women who had undertaken a religious life. In Trajan's five-aisled basilica, 360 feet by 180 feet, and 125 feet high, there was a gallery of this description. In the centre of the platform of the apse the prator or questor had sat, and on either side, upon a hemicycle of steps (which on the ground plan is subdivided like the radiating chapels of a Gothic minster), had been ranged his assessors. In the chancel of the apse had been the altar of libations. In the three-aisled basilica of Maxentius, built three centuries later, we find a lateral apse, resembling that of Germigny de Prés. The chalcidice, the transverso aisle, occupied by the advocates, became the transept, as at St. Paul's, c. 386; and St. Maria Maggiore, c. 432; and the five-aisled basilica of St. Peter, c. 330, where in the latter case it extends beyond the line of nave, to connect it with two circular tombs on the north side, which, possibly, covered the apostle's place of martyrdom, and may have suggested the round tomb-houses of a later period. At St. Apollinare, Ravenna, c. 493—525, the transept is wholly wanting, but a rectilinear compartment, inserted in front of the great apse, offers the first approach to a modern chancel. At Pisa, towards the close of the eleventh century, we find the transept thus developed, with an apse extended into a choir. The triforium gallery under the aisle roofs is found at St. Lorenzo, c. 580, and St. Agnese, c. 625; and IV. Santi Incoronati, c. 625. But the system never came into general use, owing to the preference for a long entablature covered with pictures or mosaics. At Conques and Fontfroide galleries were constructed in the nave aisles. In the early German churches near Bonn, a manner-chor—a gallery for young men—is found in the triforium.—(Whevell, Germ. Arch., p. 91.) At Parenzo, c. 512, and at Autun, c. 1150, there are three, and at Torcello, five, of the beginning of the eleventh century, eastern apses; at St. Miniatto, begun 1013, there is but one. At Romain Mortier, c. 753, the plan included a stunted transept, three apses, a narthex of the tenth century, and a west porch like a small galilee of the eleventh or twelfth century. Ara Culi, at Rome, had a cruciform shape.

The dais of the apse was raised off by amcelli for a presbytery or hem, where the bishop occupied the questor's chair (cathedra), remaining at Parenzo, San Clemente (of the ninth century), San Agnes, SS. Nereus and Achilles, Rome; and the priests the seats of his assessors (*exedra*).<sup>‡</sup> A choir was added constructionally, which reached into the nave, from which it was separated by a marble balustrade (*septum*) for the chorists, acolytes, &c. Ambones, or pulpits, were erected on either side of the chancel arch or door; one (*amalgion*), for reading the Epistle; the other (*ambo*), for reciting the Gospel, serving also as a pulpit, with the paschal candlestick placed on a stand beside it, reproduced in French cathedrals, as at Paris and St. Denis, at the top of the sanctuary stair. A triumphal arch (*porta sancta*, or *regin*) formed the entrance to the sanctuary, which contained the altar covered by a *ciborium*,—a *cibo sacro*, from the reservation of the Host, or from the shape of its cupola resembling the Egyptian bean,—a pavilion raised on columns, and standing above the crypt or confession. The theory

\* Fleury, lxxiii. 46.  
† S. Chrys., Hom. 3, in Ep. ad Ephes., Evagr., Hist. Eccles., v. 21; Paul. Nol. Nat. Felix, lib. 9.  
‡ Greg. Naz. Carm., ix.; Evagr. Ecc. Hist., iv. 31.  
§ Hist. Eccles., v. 18.  
¶ Const. Apost., li. 57; Cyril Hier. Pro Catech. 8; S. Aug. de Civ. Dei, li. 20; S. Chrys., lxxiv.; Hom. in S. Matt.; Bona de Reb. Liturg., tract. Pnlo.; S. Ambros. de Virg., &c. Origin in S. Matt., tract. xxvi.  
\*\* Conc. Laod., c. 15.  
†† Tert. de Orat., c. xi.; Euseb. Hist. Eccles., x. 4; Chrys. Hom. in Ill. in S. Matt.; P. Ex.; Synes. Ep., 121.  
†† Cap. Theod., A.D. 693, c. 3; Canons, A.D. 960, c. 29.

\* Viollet le Duc, i. 135, 171-2, 219, 216; Le Noir, Arch. Mon.  
† Euseb.; S. Aug.; S. Jerome.; S. Basil.  
‡ Euseb., Hist. Eccl., x. 4.

\* Vide Gally Knight, passim.

was that every church (as St. Agnes, St. Lorenzo, St. Martino, and St. Praxedes) was crected over an actual catacomb; where this was impracticable a crypt was made, and the ciborium or tabernacle was an imitation of the sepulchral recess of the catacomb. There were two tables of proposition, one for the elements, and one for the vessels used in the office: one remains at San Clemente; two at SS. Nereus and Achilles, Rome, c. 800. Where there were secondary or eastern aisle-apses (*postoforia*), that on the left (*diaconicum minus*) served as the sacristy, library, and monument-room; that on the right (*prothesis*) as the vestry and credence-chamber.

St. Peter's at Rome had two aisles on each side of the nave; a transept on a level with the nave; and an apse on the west side, with a floor raised to a height of 5 feet, forming the platform of the presbytery, which extended about 9 feet into the transept. The entrance was at the east end. At the extreme west point was the pontifical chair, raised on a platform above the level of the presbytery; on the right and left of the chair the walls of the apse were lined with the seats of the cardinals. At the edge of the platform stood the high altar, under a ciborium or canopy: it was raised by steps above the level of the presbytery. On each side a flight of five steps led down into the transept. Beneath this platform was a semi-circular crypt, close to the walls of the apse, used as a burial-place of the popes. The entrances were at the junction of the choir and transept. In front of the high altar was the entrance to the confessional, the subterranean chapel of St. Peter, containing an altar. In front of the steps were twelve columns of marble, in two rows, said to have been brought from Greece or Solomon's Temple; and, being enclosed with marble walls breast high, and lattices of metalwork, formed the vestibule of the confessional. At the beginning of the thirteenth century the stairs to the confessional were removed and the entrance blocked up. The nave was divided from the transept by the triumphal arch, under which a beam was fixed, and in the space between, a cross—an arrangement corresponding with the roof-beam on the south side; and nearly under the arch was the ambo, from which the Gospel was read. The choir of the canons was a wooden structure in the nave. (Willis, Cantabr. Cath.)

In the churches of Bethelchem, St. John Studios, Constantinople, in Asia Minor, and Syria, we find the basilican form.

At Athens there is a very ancient church in ruins, apsidal, and with three lateral distinct naves (those on the sides being designed, probably, for women), an area, and central fountain.

In Asia Minor the Byzantine style exhibits one class of domed buildings resembling S. Sophia, and a second like a modification of a basilica, as at Pitzounds (probably built by Justinian), St. Clement Ancyra (slightly later), and Hierapolis. In the former the circular buildings, found detached at Pergamus and Trabala, are incorporated, forming eastern lateral apses.

Pergamus church, c. fourth century, was an aisleless basilica, with galleries, eastern apse, transept, and two round buildings, one on each side of the transept, serving for a tomb-house, a sacristy, or a baptistery. The same principle may have induced the construction of apsidal ends to the transepts.

The Roman basilica of St. Peter, built by Bishop Agrippinus in 328, forms the central part of the cathedral of Treves; it is the only remaining example on this side of the Alps. Schmidt has shown that it was a square, divided into three aisles, and with a central apse on the east. It probably had a portico with five doors on the west.

The gradual development appears to have been the following:—First, to remove the inner narthex and the women's gallery, seating the congregation on one plane; and to build apses to the aisles, as at St. Saba, Rome; St. Cecilia, St. John and St. Paul, St. Peter's-ad-Vincula, and at Torello. Secondly, to build in front of the sanctuary (as at St. Paul's, Rome), a wall parallel to the principal front, which was the origin of the transept. Thirdly, to develop the apse by prefixing to it a parallelogram, as at St. Apollinaris, Ravenna. Fourthly, the construction of a triforium, like the upper colonnade of the earlier basilicas, with an external wall passage or arcade forming a communication between the transepts and choir, as at St. Sophia at Padua. The font, in Italy, was transferred to the nave in the eleventh or twelfth century from the baptistery, but at an earlier date in Rome.

The sepulchral cell of the catacomb formed the model of the memoria, or funeral chapel; the

tomb of the dead was the first altar, the catacomb the earliest church at Rome.\*

"I was accustomed," says St. Jerome, "to visit the sepulchres of the apostles and martyrs, and often to go down into the crypt dug into the heart of the earth, where the walls on either side are lined with the dead." These catacombs were quarries for furnishing the volcanic sand which forms the subsoil of Rome, and was well adapted to form long galleries; and, it is of interest to remember that a common punishment of the Christian was to work as a sand-digger. One of our Homilies (Peril of Idolatry, p. iii), says,— "Vaults are yet builded under great churches to put us in remembrance of the old state of the primitive church before Constantine."

Wherever a space intervened in the passages closed by a blank wall, lateral recesses were hollowed out for the reception of sarcophagi; the roof was curved like a dome, and the upper part of the tomb was the altar, as in the early church of San Sebastian. The crypt was known as the martyrdom or confession. It had three arrangements:—First, when a church was built over a catacomb, the old entrance was preserved, as in San Lorenzo and San Sebastian, with steps to descend into it. Secondly, if the tomb was on the ground, then a crypt was built round it, and steps were made, while the sarcophagus was replaced by an altar tomb. Thirdly, when a martyr was translated, then the crypt was made to harmonize with the church. In the church of Santa Sabina, the large stair is in front of the altar, at St. Paul's behind it; at St. Saba's, the stairs are in the nave aisles, and the crypt, forming a narrow passage, is reached by corridors, reminding us of the crypt at Ripon. At the Quatuor Coronati, a round stair leads down into it from the benches of the presbytery, as at Torello, where there is a double wall in the apse. St. Mark's and St. Praxedes, Rome, have narrow galleries like the passages of the catacombs leading to it: there is a subterranean church at St. Martin des Monts and St. Mary, in Cosmedin, c. 790. At Inkermann there is a rock-cut church, apsidal, with square-ended aisles.

Rock hermitages occur at St. Aubin (near St. Germainy de la Rivière), St. Antoine de Calumies (E. Pyrenees), St. Baume (Bouches du Rhône), Monserrat, Warkworth, and the Roche Rocks, Cornwall; and in the grotto of Fontgamhand, near Blanc.

In some instances a martyrdom was built like a little crypt, under the altar, with a shrine fenced off by a screen, or perforated marble, as at St. George's, Velahro, and SS. Nereus and Achilles. Sometimes a small hole (jugulum) permitted the head of the devotee to be inserted, or the passing of a cloth to touch the relics. Crypts remain under the eastern apses of Spire, Mayence, Besançon, and Strasburg.

The round church was, probably, peculiar to towns either unimportant or of a limited population.† The baptistery of Florence, built by the Lombardic queen Theodelinda, was the old cathedral, and, until the eighth century, was the church of St. Lorenzo, of the time of Justinian, was the cathedral of Milan. An octagonal building, to the east of it was, possibly, a chancel. A baptistery stood on the south. The baptistery of St. Agnes, and the tomb of St. Helena, St. Stephano Rotunda, Bologna, of the fifth or sixth century, and the tomb of Theodor, now St. Maria Rotunda, were circular. Again, we have also octagonal buildings, such as the Lateran baptistery, and mention is made by Eusebins of an octagonal church at Antioch, built by Constantine. The tomb, however, of Galla Placidia, at Ravenna, built before 460, is cruciform. The circular form had been adopted for the mausolea of Augustus, Cecilia Metella, and Adrian, and the temples of Vesta and the Sun. Almost all the German churches of the time of Charlemagne, as at Aix-la-Chapelle, Nimeguen, and Magdeburg, were circular. In England, and frequently in Germany, as in Spain and Italy, a choir was added to the round church. At Bonn, an oblong nave, as in France, was built in conjunction with the circular building.

In the eleventh or twelfth century circular churches began to disappear. In England and Germany the nave was of this form; but in France, the choir, as at St. Benigne's, Dijon, of the seventh or eighth century, and partially reconstructed in the beginning of the eleventh century, St. Martin's, Tours, of the fifteenth century, and Charroux. At Perugia, Bergamo, and Bologna, of the tenth or eleventh century, the nave was round, and the choir oblong and apsidal. The

round nave of the Templars' Church, at St. Segovia, c. 1204, has a choir and aisles terminating in apses.

Round churches are found in the island of Bornholm. At Wisby a two-storied church has an octagonal nave and rectilinear choir.

The public baths of the Romans, in some cases, became converted into baptisteries: the piscina was the ordinary cold bath of a Roman villa. After the conversion of Constantine, distinct buildings of an octagonal shape were built in front of churches, as at Rome, Nocera, Piacenza, Torello, Novara, and Ravenna, a plan perpetuated to the thirteenth century by the Lombard architects; but almost universally, with this exception, were no longer built after the eleventh century, when parish churches were permitted to have a font. The western baptistery became, after a while, merged in the western apse in Germany. In Italy it served still as a baptistery or a tomb-house.

The basilica was a parallelogram, with an internal transept, and apsidal termination at one end, and a porch at the other extremity. The Byzantine church subordinated nave, choir, and transept, as the supports of a central dome; which was the development of the vault, as the vault was of the arch: the ground-plan at first was a round or octagon, became a square, rendered cruciform by the four limbs rising above the angles round the cupola; three semicircular, latterly polygonal, apses formed the east end.‡ The Lombardic, which lasted from the seventh to the thirteenth centuries, comprised both these types.† It had a long nave, triforium, a central octagon, and cupola, set on a square base, making an internal dome; an east end terminating in three apses; sometimes an octagon and an oblong were arranged to form a church.

The eastern aspect of the sanctuary and the cupola are its Byzantine features: the Latin cross, the lengthened nave, the apsis and crypt, the latter becoming spacious and lofty, are Roman characteristics. Triforia, or galleries, for women, are built along the aisles of the nave and transept; pillars are grouped; and the roof is of stone, vaulted; but the narthex disappears, to be resumed in the eleventh century as a porch. The baptistery and campanile are nearly invariable, but detached adjuncts. The earliest Lombardic church existing is that of St. Michael, at Padua, built 661. Conventual buildings became prominent and numerous, such as the cloisters of Verona, St. John Lateran, Rome, and Subiaco, of the twelfth and thirteenth centuries. At Colhenz, in 836, and at Cologne, the Lombardic style established a home, reaching France in the beginning of the eleventh century, and England in the latter part of the reign of Edward the Confessor.

The addition of towers, which were rare until the eleventh century, exercised a very marked influence upon the ground-plan of churches.‡ They possibly were suggested by the pillars of the Romans, and originally were designed as landmarks to point out the position of the church, and as an ensign of power, rather than as helms, as the bells were for several centuries but small, and St. Bernard forbade their construction, as they were not for use, but for pomp.

The first tower attached to a church was built by Pope Adrian I., elected 772, in front of St. Peter's at Rome.§ One of the time of Justinian, a circular building, was attached to St. Apollinaris at Classe, at Verona; two ancient round towers are found at Verona, one dating from 1017; another, of the same date, remains at Bury, near Beauvais; a third, of a later period, at St. Desert, near Chalons-sur-Saône; while square towers are found in Italy in the eighth and ninth centuries, as at St. Paul's and St. John's, Rome; and one at Porto, near Rome, built 830.

Towers originally built in the close, as at Verona and Toscella; and before the church doors, as at St. Maria Toscanella and St. Lorenzo, in Italy, however, never forming integral parts of the design, were at length attached to the west front of the church, singly as at Lyons, St. Martin at Tours, Poissy, St. Benoit-sur-Loire, Puy, Limoges, St. Savin, and St. German des Prés, and at Paris in the thirteenth century. In the south of France, until the middle of the thirteenth century, in Italy and Spain, they remained generally isolated.

Two sometimes flanked the west front, as at Jumièges, and St. George, Bocherville, with a porch in the centre. In German churches they were frequently connected by a gallery. At Germerode

\* Vide Ciampini, 1693; Fontana, 1694; Bunsen; D'Aplacourt, &c.  
† Hope, l. c. xi.

‡ Comp. to Gloss. iii. p. 3.

§ Hope, l. c. xxii, xxxi.

¶ Hope, l. c. xxix, p. 243; Viollet de Duc, iii. 392.

‡ Comp. to Gloss. iii. p. 14.

and Worms two round towers flank the western apse.\* Rouen has six towers. At Clugny there were seven, each bearing the name of ecclesia, in imitation of the seven churches. Laon, like Chartres, was designed to have as many. Rheims had six, and a central fane. Five towers occur at Tournai (Schayes, iii. 11). Round towers are found in East Anglia; and in Ireland, erected between the fifth and thirteenth centuries, tapering upwards, a form employed owing to the peculiar material of each district. There are also round towers at Brechin and Abernethy, and at Tchernigov, near Kiev, c. 1024. The French round towers appear to have come from the north of Italy, as they are found at St. Mary's and Vitalis, Ravenna; and reappear in the ninth century at Centula, Charroux, Bury, and Notre Dame, Poitiers. Towers were sometimes used as record chambers, or as courts of justice.†

At Germigny, built 806, there is a central tower; and at St. Alban's it was added c. 1077-1093. In the province of Toulouse, the earlier churches had a single west tower as Limoges, in the eleventh century and Alby, built in the fourteenth century, had. The larger monastic towers appear to have been built partly for purposes of defence, partly out of emulation, with the castles, the abbays being equally with the nobles great feudal lords. The belfry story and the spire, however, formed the characteristics of the church tower. The cathedral towers of the eleventh century served also as municipal belltowers. M. Viollet le Duc has traced two schools of towers, one of the West and the other of the East, at Perigord; the one introduced probably by the Venetians, the other derived from the banks of the Rhine, which gave place to a national school in the middle of the twelfth century. In the west of France conical spires appear in the eleventh and twelfth centuries, some being supported on an octagonal belfry, rising from a square tower. Normandy was distinguished by its central square towers.

One of the earliest instances of the Pointed style is St. Andrea, Vercelli, built by an Englishman in the thirteenth century. It has a square east end and two polygonal chapels attached to each transept, like the ordinary type of Cistercian abbey. The west end is flanked with towers, and there is a central octagonal dome. At Sienna, begun 1243, we have the triple-gabled front, circular window, and three portals of the characteristic Italian type; a square east end, with the central apse having a niche-like apse in the wall, three aisles throughout the church, with eastern square chapels to the transept, and to the south wing a belfry attached, and a central dome. Florence, begun at the extreme close of the thirteenth century, is triapsal, like the early churches of Cologne, and a central dome. Milan, commenced 1385, has a five-aisled nave, a shallow transept with aisles, and a triapsal apse. The cathedral of Bari, a three-aisled basilica of the twelfth century, has a circular apse flanked by sacristies. A western transept is found, in conjunction with an octagonal tower, in the centre of it, at St. Antonio, Piacenza, c. 1014; and two western towers, like a quasi transept, appear with a western cloister, at St. Ambrogio, Milan, rebuilt in the twelfth century.

In the double church of Assisi, finished in 1230, the upper is a Latin cross without chapels; the lower with a nave lined with chantries, and the shrine of St. Francis in the centre of the transept, standing above a crypt. It was the work of a German architect; and a double church occurs at Rheindorf, consecrated in 1151. The design was to accommodate two congregations, as in the two-storied chapels of the castles of the period; and the double church of Pakefield, two aisles under one roof,—which was used by two distinct parishes, Wisby is a double-storied church. The Duomo of Milan, and the church of St. Giovanni, at Naples, were built by German architects in the Gothic style, but there to remain, with a few others, as isolated specimens among the structures of the new school of Pisano. The development of Lombardic into Gothic architecture is marked by rapid changes, the crypt and Latin cross remain; but a spire rises over the central lantern, lateral towers flank the west front, the baptistery shrinks into the font, a lofty screen rises before the choir, which is lengthened out, and porches over the entrance doors.

The formation of the western apse, the construction of an eastern aisle, the development of the choir, the formation of the ante-choir, and the double gate at its entrance with the altar of the Saviour, were probably innovations of the northern

architects. The next great change was the erection of a central tower upon four pillars, like the Byzantine dome.

Charlemagne constructed the central dome of his churches on eight pillars, introducing a still more important change—isolation, a passage on every side, a method of central junction by means of arches, and an advance to a loftier method of construction. Four central pillars, a development of this primary idea, are found at St. Martin d'Angers, built by the Empress Hermengarde, not long after Germigny, and in all English churches of the period; also at Hitterdaal, a timber building, in Norway; and at St. Savin, Aquitaine, begun 1023. At Germigny the choir occupies this central space, and at Vignory, a square in a similar position, before the tenth century, marked out by pillars. In the church of St. Savin, Aquitaine, begun 1023, we find four central piers, a transept with an eastern apsidal chapel in each wing, and five semicircular chapels ranged round the choir, which is an arrangement never found in the south. To the necessity for strengthening the central supports, we may refer the construction of engaged shafts, as in the church of St. Miniato, at Florence. At Vignory, before the tenth century, there was a square of six pillars, inclosing the choir with a processional path opening upon six chapels.\*

BRITISH ARCHÆOLOGICAL ASSOCIATION. PAINTINGS IN SOUTHWOLD CHURCH.

The opening meeting was held on Wednesday, the 28th ult., Mr. T. J. Pettigrew, F.R.S., in the chair, when twenty-five new associates were elected, making sixty during the year.

The Rev. Mr. Ridgway communicated notes by Mr. Christopher, architect, on the Lübeck brass, which we may print on another occasion.

Afterwards, Mr. Blackburne exhibited representations of the paintings in Southwold Church, and the following remarks by that gentleman were read:—

The accompanying figures are from the panels of the chancel and north aisle screens at Southwold, in Suffolk. Those representing the apostles are from the former. The latter has representations of the nine orders of angels, two among the number of which are shown in the framed drawing, with two angels bearing respectively the emblems of the blessed sacrament and the Holy Trinity. These occupy the end panels, north and south of the aisle screen, and have a very appropriate reference to the dedication of the chapel which the screen encloses, viz., to the Holy Trinity. There is a similar screen at the east end of the south aisle, dedicated in honour of the Blessed Virgin. The panels here had originally the greater and lesser prophets painted on the panels. A very few of these only are now discernible to any extent. The figures of Moses and David are the most perfect, though the names of the others are still traceable. The chancel screen has the twelve apostles, of which the drawings give the most perfect, though all the others remain more or less so. The order in which they appear is as follows, St. Peter and St. Paul occupying their accustomed positions right and left of the doorway:—

St. Philip.	St. Matthias.	St. James Minor.	St. Thomas.	St. Andrew.	St. Peter.
St. Paul.	St. John.	St. James Major.	St. Bartholomew.	St. Jude.	St. Simon.

Taking the three screens, there are, altogether, thirty-six figures, the whole very richly painted in gold and colour. Those of the centre or chancel screen are particularly so, and the execution is far superior, artistically considered, to the majority of existing examples. The grounds upon which the figures of the apostles are painted, or rather which finish the portions of the panel not occupied by them, are diapered in relief in a kind of mosaic and gilt, and in places picked in in colour, to lighten the same. The diaper of the dresses is simply painted in gold and colour. These, and the ornamentation of the nimbi are very interesting.

The mosaic enrichment is continued all over the chancel screen. There is hardly a moulding of it that is not so ornamented. The buttress faces are almost entirely covered with it, the design of the enrichment including in it small figures under canopied niches, some of which have been protected by glass, looking like so many small framed pictures. The tracery of the leads of the six main compartments of which the screen is composed is remarkably beautiful. It is double tracery of exceeding lightness, composed of a small gilt bead and cusped, placed between a parti-coloured ogee, and a hollow alternately green and red, studded with relieved flowers at intervals. The screen is altogether one of the richest and best preserved examples to be met with.

The side screens are less rich in the decorations, but still very beautiful and interesting. Mosaic relief is here also adopted in the hollows and on parts of the buttress faces. The tracery of the beads is of the same description as that of the chancel screen. The grounds of the panels are here in colour, powdered with stars and flowers,

and the tracery leads of the panels have alternately red and white hollows and gold fillets, the former ornamented with flowers.

The date of the screens is circa 1460. In connection with the chancel screen, or rather with the roof figures which anciently stood above it, there is a very richly-painted ceiling, representing in its panels angels holding scrolls and the implements of the Passion. It appears to have been a common practice to more highly ornament the bay of the church roof which was immediately over the rood. There are several instances of it in Suffolk.

THE ARCHITECTURAL MUSEUM COMPETITION.

THE prizes annually offered to artist-workmen through the council of the Architectural Museum have this year been responded to by twenty-five specimens, viz., eleven for the prizes for modelling in clay, given by the council of the museum and Mr. S. C. Hall; three for the wood-carving prizes, supplied from the same source; seven for the prize given by the council of the Museum for a cartoon for painted glass; and five for the prizes for coloured decoration offered by the committee of the Ecclesiological Society of Loudon and Mr. Beresford Hope. The specimens, many of which are very creditable to the competitors, are now exhibited in the gallery of the Architectural Museum. It is proposed to distribute the prizes in March next, in connection with a course of lectures to which we have already alluded.

STAMFORD TERRA-COTTA WORKS.

A LARGE statue of Diana has been recently manufactured in terra-cotta by Mr. J. M. Blashfield, of Stamford. The height of the statue is 10 feet 6 inches, and of the pedestal 5 feet 6 inches. It has been copied from the antique statue, the Diana Borghese. Among the works just finished is a new and original statue of Erin. The figure is life-size and semi-nuda. This piece of sculpture has been designed at the works, and executed to order for R. N. Newcomb, esq., proprietor of the Stamford Mercury; it has been wrought by Mr. Hale. Among other works recently removed from the kilns, are two vases made to order for the Hon. G. W. Fitzwilliam: one is a copy of the celebrated Warwick vase, modelled from the original at Warwick Castle; and the other is a copy of the Alliano vase, from the Louvre, at Paris. A fountain has just been executed for Earl Ducie, composed of a large fish-pond basin, 16 feet in diameter: the rim is divided into four parts by plain block pedestals for statues. In the centre of this large basin there is a tazza from an antique form at Rome 12 feet in circumference, adorned with masks of river gods.

WATER FOR ST. HELLER.

It was announced some months back in the Builder that Mr. James Easton, C.E., had made surveys and plans for the supply of water to the town of St. Heller, Jersey. A company is now formed to carry out that object.

To the numerous vessels daily sailing from the harbour, to the extensive garrisons and fine public institutions, as well as to the large houses of business and widely-spread mansions, this project will prove not only a great accommodation, but a stride in advance towards economy and sanitary improvement.

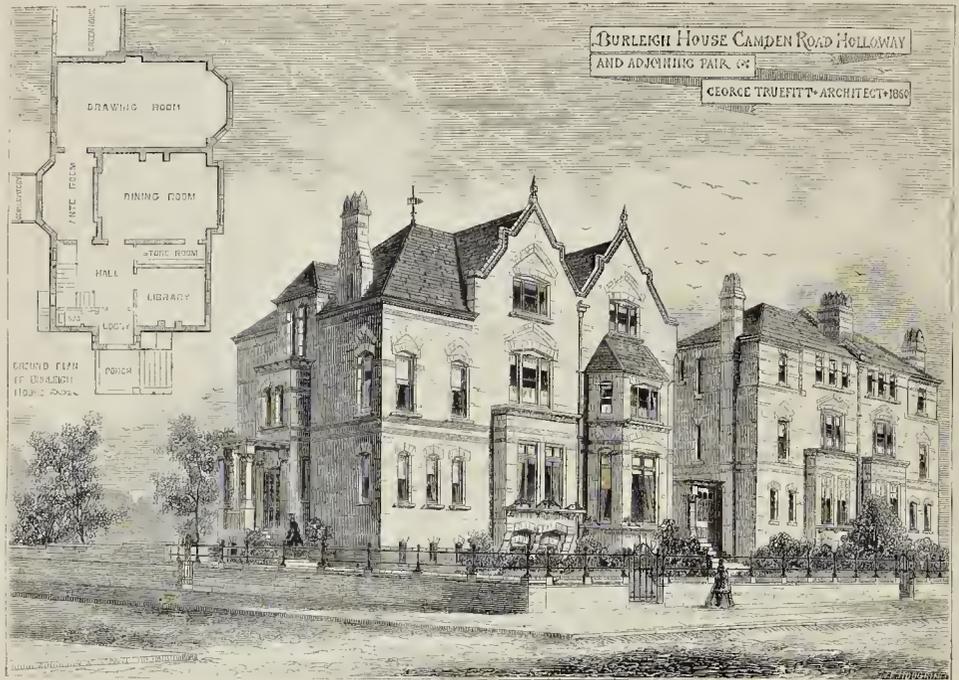
In all populous and business towns the presence of fire-mains is of the first importance. The service by gravitation to the upper stories—the softer and purer quality of the water, which insures immense aggregate savings—the supply of fountains and markets—the avoidance of cost incurred for cartage of water (first pumped by hand), to considerable distances—all these advantages are attained by the modern system of pipe water service. And at the same time, the irregularities and expenses of sinking and repairing pumps are avoided, the perfect system being also the cheaper.

The formation of joint stock companies of limited liability, hitherto not sanctioned by the legislature, is now under consideration of the States of Jersey, and the essence of the Act 19 & 20 Viet. is likely to be adopted.

ROTHERMITH, SURREY.—At a meeting of the board of guardians of this parish, on the 29th ult., in the new board-room, Mr. George Legg and Mr. John Davis Paine were appointed to prepare the intended new Surrey map and valuation. Rothermith comprises about 2½ miles of wharf and river frontage, the Grand Surrey and Commercial Docks, railways, gasworks, and upwards of 4,000 miscellaneous properties. The former survey was made in 1812, by the late Mr. George Allen and Mr. Porter, of Bermondsey.

\* Viollet le Duc, i. 208.  
† Viollet le Duc, i. 259.  
‡ Viollet le Duc, iii. 363.

\* To be continued.



#### HOUSES IN CAMDEN ROAD, HOLLOWAY.

The accompanying engraving represents some houses lately erected in Camden-road, Holloway, from the designs of Mr. George Truefitt. The corner one, built for Mr. R. P. Harding, has been well finished. The drawing-room has been decorated by Mr. Sang, from the architect's sketches: the gas-chandeliers, brackets, &c., were executed by Johnston, Brothers. We find here hot and cold water throughout the house; Hobbs's locks; no lath-and-plaster partitions, all internal divisions being 9-inch or 4½-inch brick in cement. The same also in the adjoining houses. The porch is glazed with large squares of plate glass, as are the windows of principal rooms. The basement is out of the ground, *i.e.*, level with it. At the front is a green bank; another at the back, with a double flight of steps leading down to the garden. The basement windows have all bars;—no shutters anywhere in the house, except revolving ones to the door from ante-room to conservatory. The hall is paved with Poole Pottery tiles, as are also the fire-places and hearths, on which stand dog grates, with fire-bricks backs in all the sitting and bed rooms.

#### THE FIRST STEP OUT OF DOORS IN AID OF THE EXHIBITION OF 1862.

We have reason to believe that the council of the Institute of Architects propose immediately to take into consideration what course shall be adopted that architecture may be completely illustrated, and construction fully represented, in the Great Exhibition proposed to be held in 1862.

#### THE PUGIN TESTIMONIAL.

The following rejoinder has been addressed to the Honorary Secretary:—"I am favoured with your and our friend Talbot Bury's official remarks on this matter, which fairly state your feelings on the subject. I have also read Mr. Beresford Hope's candid letter in the *Builder*, and am ready to accept his interpretation of the term 'Medieval,' as to the period to which he so frankly extends it.

It is a striking fact, that in the passage quoted from the 'Apology for the Revival of Christian Architecture in England,' in your appeal, Welby Pugin does not use the word 'Medieval,' and he names certain of our Gothic edifices, (without, however, restricting the study to those only,) as volumes of ancient art open for all inquirers.

Let the committee, therefore, omit the word, 'Medieval,' which is not used by Welby Pugin, and adopt the period named by Mr. Beresford Hope. Let the terms run thus:—"In examining and illustrating the antiquities in Architecture, painting, and sculpture of the United Kingdom to the end of the sixteenth century inclusive," or "to the beginning of the seventeenth century exclusive." The objection of a numerous body of the profession would, I conceive, be removed; the sectarian 'Shibboleth,' or party cry avoided, and the testimonial would become a general, instead of a partial, tribute to the merits of a very distinguished man in our art.

THOS. L. DONALDSON."

#### ARCHITECTURAL COMPETITION, AMSTERDAM.

The *Société d'Architecture* of Amsterdam offer a premium for the best design for a group of buildings necessary for the University of a large town, to include accommodation for the five faculties—theology, jurisprudence, philosophy, the natural sciences, and medicine. The number of students to be 600. The whole is to be Monumental in style, with ornaments of painting and sculpture in harmony with the destination of the edifice. The competition is open to foreign architects, and a premium of 500 florins "*de Hollande*," with a certificate of honour, will be given to the author of the selected design.

The conditions, which are published, state that the designs must be sent to the secretary of the Society (Herr A. N. Godfroy), Oude Thuismarkt, B. 56, Amsterdam, before the 1st of November, 1861.

#### LONDON STREET ARCHITECTURE.

WAREHOUSES FOR MESSRS. SAMUEL COURTAULD & CO., ALDERMANBURY.

The buildings represented in our engraving occupy a site opposite the church of St. Mary, Aldermanbury, on land the property of the parish, with a frontage of about 65 feet by an average depth of about 104 feet, giving a superficial area of 6,760 square feet. The floor area of the whole of the stories amounts nearly to 30,000 square feet, and the cubic contents of the whole of the buildings are about 360,000 feet. There are two distinct warehouses. No. 18 occupying the whole of that portion of the buildings fronting Aldermanbury (with the exception of a part on the

ground-floor story) is in the occupation of Messrs. John Wroford & Co. No. 19, comprising the remaining part of the Aldermanbury front on the ground-floor, and the whole of the back portion of the premises, are occupied by Messrs. Samuel Courtauld & Co., for whom the whole of the premises were built. The entrance to this warehouse is by the central doorway in Aldermanbury, and a corridor of ornamental character, with the counting-houses on the left, conducts to the spacious ground-floor area of the warehouse, with wide galleries above; the whole lighted by a skylight of great size, receiving only the pure northern light, so necessary for the purposes of the business carried on here. Light is transmitted to the basement story from the same source without the employment of an open well-hole: none of the valuable ground-floor space is thus sacrificed.

The upper stories of Messrs. Courtauld & Co.'s occupation comprise dining and bed rooms, kitchen and other household accommodation for those employed upon the premises. This part is mainly supported across the area of the warehouse on a wrought-iron box girder of great strength. This material has also been largely used in other parts of the structure, especially in the formation of the fire-proof floors which separate Messrs. Courtauld & Co.'s counting-houses from the other part of the premises. The elevation next Aldermanbury is ornate, but business-like, in character; the ground-floor, with its moulded piers and arches, carved frieze, &c., being executed in Portland stone, the remainder in white brick, with Portland cement dressings.

One of the buildings formerly standing upon the site of the new warehouses was once the mansion of the celebrated Judge Jeffries. Medieval coins, a dagger, and other relics, were discovered in excavating for the foundations, as also a stratum of charred remains, probably deposited after the Great Fire.

Mr. Edmund Woodthorpe, of Basinghall-street, is the architect; and Mr. Wm. Brass, of Silver-street the contractor for the works.

THE ROYAL ACADEMY.—It may have been seen in our advertising columns last week that, at a meeting of the Royal Academicians, held on Wednesday evening, the 28th November, Mr. George Gilbert Scott was elected an Academician in the room of Sir Charles Barry. We desire, however, to record the satisfactory event in this portion of the paper.



WAREHOUSES, IN ALDERMANBURY, LONDON.—MR. EDMUND WOODTHORPE, ARCHITECT.



THE "HASLAM."  
THE ANGLESEY STATUE.

ALL persons who read the account of the ingenious manner in which the colossal statue of the Marquis of Anglesey has been raised on to the gigantic column, erected by public subscription in 1816, close to the Menai Bridge, must have been extremely interested with the narrative, and must greatly regret that the clever young engineer who planned the efficient and inexpensive substitute for the usual cumbersome paraphernalia of scaffolding should have been so early snatched away from a profession he was so well qualified to adorn.

The statue is by Nohle, and is 12 feet 4 inches high. It is of bronze, weighing 25 tons. The arrangement is thus described:—

Two balks of timber, about 70 feet long, were placed vertically at the foot of the column, and formed a sort of double mast, on which were placed what sailors term cap and cross-trees, to admit of a topmast, which was hoisted up and secured between the two lower masts, the whole attaining a height of 120 feet, giving a clear 20 feet above the column itself. On the capital of the column a shorter mast was erected, and between these two masts a large pair of traverse beams was laid across, on which a small travelling truck was placed: the whole were firmly bolted together and secured with several pairs of shrouds. The structure looked of so slender a nature, that when the great mass, weighing 25 tons, which was about to be lifted into mid-air to an elevation of 120 feet, was seen, every one felt considerable misgivings. The hoisting apparatus consisted of a large hawser carefully attached to the statue, and leading through rollers on the travelling truck along the traverse beams, and down on the opposite side of the column, and attached to a heavy three-fold tackle, forming the principal purchase. Besides this, two other tackles, likewise attached to the traveller on the summit, and thence to the statue, were used as supports to the main hoisting apparatus.

I will not occupy space by describing the operation: suffice it to say, that, when the statue had reached the summit, it was slid by means of the main purchase, checked by two tackles at the opposite end of the truck, until it was poised over the column: the preventer tackles were then un-racked, and it was lowered into its place amid the cheers of the bystanders.

So far the event, this brief account of which the *Builder*,—ever ready to bestow the laurel wreath where due,—will not decline to print.

I cannot say I advocate the St. Simeon Stylites fashion of perching our heroes on columns, midway between earth and heaven: it removes them too much from our daily acquaintance, and from our affections; although it certainly has the good effect of making them more notable as landmarks to society, examples to be followed. But the merits or demerits of the custom we have not now to discuss. The work had to be done, and the only question was, how to accomplish it in the most successful and inexpensive manner. It was a hazardous undertaking, and the late Mr. J. Haslam most signally conquered the difficulty; while, in addition to the present success, he has bequeathed a new arrangement to those who come after; thus enriching his profession and his country with a servicable idea.

On this ground, I would respectfully submit, to the members of the Institution of Civil Engineers, that, if they would ordain that the skeleton scaffold used in this engineering exploit be named "The Haslam," in memory of its youthful inventor, they would greatly gratify a large circle of appreciative lookers-on, and would be paying only a just tribute to him who was called away ere he could witness the triumph of his bold and ingenious conception. \* \* \*

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary meeting of members was held on Monday evening last, at the house in Conduit-street.

Mr. Godwin, V.P., occupied the chair.

The minutes having been confirmed,—

Mr. T. Hayter Lewis (hon. secretary) announced several donations to the library.

Mr. Penrose (hon. secretary for foreign correspondence) said that he had to acknowledge on behalf of the Institute two presents from M. César Daly, of Paris, to whom they were already indebted for many valuable contributions. The first was the "Revue Générale d'Architecture et des Travaux Publics," which, he might observe in passing, contained drawings of a certain class of building with which we were unfortunately too cognizant in England, namely, a poor-house, intended to be built in France. With regard to the other present, he had received a letter from M. Daly, in which that gentleman requested that the Institute would do him the honour of accepting the first portion of a new work, entitled, "L'Architecture Privée au Dix-neuvième Siècle

sous Napoléon III.: Nouvelles Maisons de Paris et des Environs." The work, when complete, would contain 200 plates, comprising the best specimens of the private or domestic architecture of Paris and its neighbourhood; showing the ingenious contrivances for which the French appeared to have such an aptitude; and also great beauty of design and elevation. He had also to announce with deep regret the death of one of their most distinguished foreign members, the Chevalier Bunsen. He was educated at the University of Göttingen, under Heine, and subsequently repaired to Rome, where he obtained an appointment on the staff of the Prussian minister. In the year 1835 he succeeded that minister, and represented the court of Berlin at Rome until 1839, when he was recalled in consequence of the vigorous part which he took in defending the King of Prussia against the Papacy in the matter of the Archbishop of Cologne. While at Rome he studied architecture with Canina, and he succeeded in solving what had long been a vexed question, namely, the direction which the Forum took, which he pronounced to be towards the Arch of Titus. Subsequent excavations proved that he was perfectly correct in his diagnosis. After he became Prussian minister at the court of St. James's he published his celebrated work on Egypt, and in 1848 his other important work, entitled, "The Church of the Future." He died at Bonn, in the seventieth year of his age; and his death would be not only deplored by his friends, but he felt as a heavy loss in most literary and artistic circles, of which he formed a prominent ornament. Personally, he (Mr. Penrose) had to thank the chevalier for many kind introductions in Rome and elsewhere.

Mr. H. B. Newton observed that, with regard to "L'Architecture Privée," by M. César Daly, it was originally the intention of that gentleman to publish drawings of all the private villas, &c., which had lately been erected in Paris and its immediate neighbourhood. This project he had, however, for obvious reasons, abandoned, and the work would now contain selections of the best designs. With regard to the re-distribution of sites the work would be found to contain a great deal of information, and also many valuable hints of great interest to the architect generally. The work would be published in fortnightly parts.

The Chairman said he was glad that attention had been called to the subject and to M. Daly's merits, and he hoped it would lead to the purchase of the work in England. His "Revue" deserved to be better known than it was. No one could be more competent to conduct such a work than M. Daly, as he had not only travelled in England, Scotland, and Ireland, but had visited the most remarkable places on the Continent; and had ultimately carried his investigations across the Atlantic, where he had explored the hurried cities of America. He (the Chairman) then added that he wished to avail himself of the present opportunity to state that the Council of the Institute felt it desirable again to postpone the consideration of the question of architectural examinations. The ground upon which the council had arrived at this conclusion was that, as other architectural bodies were still discussing the matter, they thought it undesirable that it should be brought under the notice of the Institute until they were in possession of the resolutions agreed to by the other bodies.

Mr. Kerr inquired how many architectural societies were still discussing the subject.

The Chairman said that the council were mainly waiting to hear from the Architectural Association and the Scottish Society.

Mr. Kerr apprehended that the Architectural Association might devote a long time to the discussion of the subject, and expressed his opinion that the Institute ought not to wait an indefinite time for any other society in the country.

Mr. Newton inquired whether the council had postponed the subject indefinitely.

The Chairman replied that the council at their meeting that evening had not fixed any particular day for bringing the subject before the body generally, because they were of opinion that it would be premature to do so until they were in possession of the resolutions agreed to by other societies. He had, however, no doubt that the council would fix the earliest possible period for the discussion.

Mr. Kerr submitted that the council had no power to postpone the subject *sine die*. On the former occasion when an evening had been fixed for the discussion a resolution was moved to postpone it to another day then named (the 10th of December), and he thought that the proper course would be to move a similar resolution appointing some given day for the consideration of the question.

The Chairman said that if Mr. Kerr thought that his proposition would be more consonant with the feeling of the meeting than the simple intimation on the part of the council, he would take a resolution from him to that effect.

Mr. Brandon observed that, in his opinion, the matter was not of such pressing consequence that it could not be postponed for a month, or perhaps two. It was necessary to bear in mind that other societies were quite as much interested in the subject as they were, and that full deliberation was absolutely necessary. He hoped that, when the question came on for discussion, it would receive the calm and deliberate consideration of the Institute; and, to secure that object, he would move that the subject be adjourned until such time as the council might appoint.

Mr. Hausard, in seconding the motion, reminded the meeting that, when the council first mooted the subject, they had expressed their anxious desire to receive from all the information which the other societies could give them. The question was in very good hands when left to the discretion of the council, and he for one did not participate in the apprehension which Mr. Kerr appeared to entertain, that it would be shelved by them.

Mr. Kerr said, the Architectural Association was, in point of fact, the only body for whose decision they were waiting, but that the Association did not expect to be able to dictate to the Institute. The Association was composed of young men; they were only expressing imperfect views; and they knew them to be imperfect. Under these circumstances, he thought it would be unadvisable for the council to postpone the consideration of the subject *sine die*. He would move, as an amendment, that the subject be postponed for a fortnight; and he put it to the good sense of the meeting whether his proposition was not reasonable.

The Chairman said, that as the present proposition for an architectural examination as a test of professional fitness had originated with the council of the Institute, it was extremely improbable that it would allow it to drop, at the same time, as the Institute had invited the opinions of the other architectural bodies, they were bound to wait a reasonable time for them. The amendment now being seconded, he would put the original motion proposed by Mr. Brandon.

This was carried unanimously.

Thanks having been voted to the donors of contributions to the library,

The Rev. Mackenzie Walcott read a paper "On Church and Conventual Arrangements," which we shall print in full. Part of it is given in our present number.

At the conclusion,

Mr. Fergusson, in proposing a vote of thanks to the reverend gentleman for his interesting and erudite paper, said that the author had so thoroughly exhausted the subject, that very little remained to be said. One point, however, struck him (Mr. Fergusson), and that was that Mr. Walcott did not appear to have sufficiently observed the original use of the basilica and the round church. In his (Mr. Fergusson's) opinion, the basilica was a place of assembly, or a parliament, in which the bishops were in the habit of ruling the Church, and that the ceremonial church was the round church. They subsequently became amalgamated, but in the early times of the church they were separate, the one being secular, and the other wholly ceremonial. This was the only point which it occurred to him to notice; for really Mr. Walcott's lecture was so full and complete, that little further could be said upon the subject. He had, therefore, only to express his gratitude to the author for the information which he had afforded; and, when the paper was printed, they would be able to give it that attentive study and consideration which its great merit unquestionably demanded at their hands.

Mr. Penrose seconded the vote of thanks, and expressed a hope that when the paper appeared it would become a book of general reference. With this view he wished to call Mr. Walcott's attention to the necessity of providing an index of names and subjects, to accompany it.

Mr. Ferrey wished to add his voice in praise of the zeal, research, and learning which Mr. Walcott had brought to bear on his task. The subject was, in fact, so comprehensive, that it would be impossible to follow it off hand in all its vastness. A point, however, had occurred to him, with which Mr. Walcott did not appear to be so familiar,—he alluded to those churches of the Rhine where a church was found above a church. There were, he believed, also several specimens of this peculiar style in Russia, but they did not

appear to have entered into Mr. Walcott's classification. In his remarks upon gallees porches, also, he had omitted mentioning that at Snettisham, in Norfolk, which was the only porch of the kind in England belonging to a parish church. Neither had he made any allusion to the orientation of churches. As it was desirable that nothing should be wanting in so admirable a paper, he took the liberty of suggesting that Mr. Walcott should add a few notes in reference to these subjects.

Mr. Kerr remarked that Mr. Walcott had referred to "Tombland," in Norwich, as if the name had been derived from Mediaeval times. He (Mr. Kerr) thought it not improbable that the name originated from the circumstance that, at the time of the plague, the bodies of persons dying of that disease were buried there. Such, at least, was the tradition in the locality; "Tombland" being a place or square outside the precincts of the Cathedral. Then with regard to the western towers, did Mr. Walcott mean to infer that they were raised as defences by ecclesiastics against the worshippers when in a state of *émeute*? for if so, it was a new reading of their origin. Again, with regard to the cellarer's apartment, he was not aware of a reason for assigning a separate apartment in cathedrals for the use of that functionary. He (Mr. Kerr) merely asked these questions for information; for he agreed with former speakers that Mr. Walcott's paper exhibited learning, research, and application.

Mr. Papworth said the western towers were intended not to protect the ecclesiastics from an *émeute* among the worshippers, but to protect the property of the parishioners from attacks; and there were not wanting instances in history (especially among the Pyrenean churches), where they proved useful in that way. With regard to the paper itself, he wished to point out the use which might be made of it. It required to be indexed; and this being done, he would recommend it, not only to younger students in architecture, but to all the members of the profession, as a common-place book to be interlarded and carefully noted. If there was one suggestion he might be allowed to make, it was that Mr. Walcott would append authorities for some of his statements (which certainly appeared striking), as it was desirable in such cases to have chapter and verse.

Mr. Seales and others having spoken,

The Rev. Mr. Walcott, in reply, said that the only answer he could make was that of Sebastian in "Twelfth Night,"—"Thanks, thanks, ever thanks." With regard to the galleried porch in Snettisham Church, he would hear in mind the suggestion of Mr. Ferrey, reminding that gentleman, however, that he had confined himself to monastic churches. With respect to the round churches, as distinguished from the basilica, what he had stated was, that the former had been used as the baptistery; but the observations of Mr. Fergusson on the subject were so striking and full of interest, that he would endeavour to throw some light on the distinction which he had drawn. With regard to double churches, the subject had not escaped his attention, but he was necessarily obliged to leave out many points, and content himself with throwing them into notes and illustrations. He hoped, however, that Mr. Ferrey, having started the point, would himself carry it out. With respect to the western towers, he could not call to mind any instance in which they had been used by the clergy as places of protection against an *émeute* among their parishioners. He did not believe they were built with any such view, but that they were intended as defences against foreign invasion; such, for instance, as the invasions of the Danes, the Saxons, and the Normans, which were not infrequent. He could not, however, lay claim to this solution as original, as he had adopted the views of others, which appeared to him to be based on probability. The only manner in which he could account for the cellarer having a separate room was that the ecclesiastics probably fancied that, if the cellarer had a dormitory under the same roof with them, he would be at hand to draw them any wine or beer which they might require after a hard day's work. The name of "Tombland" at Norwich he imagined to have arisen from the fact that a chapel and convent were built at the entrance of the place, and that it had been used as a place of sepulture. In this conclusion he was fortified by the circumstance that, when Mr. Ferrey was restoring Christ Church and others, he found a crypt full of human bones similar to that discovered at Hereford, which proved that in these times, instead of carting off bones in cart-loads, as we do now, they deposited them decently and reverently in a crypt. With reference to the calcifactory, he had mentioned it not only as a place in

which the fire was kindled for the incense used at the altar, but as a sort of sitting-room or parlour, in which the monks could sit in cold weather. Mr. Papworth had suggested the desirability of appending notes in certain cases where opinions were advanced of an unusual character. He had not, however, overlooked the propriety of this course, and he had carefully appended notes in all cases in which his own authority might be brought into question. With regard to orientation, he could only say that he had devoted six or seven weeks to the examination of the churches in Caen, and that he had not been able to find any attention had been paid to it. He had stated that in the generality of cases the earlier churches faced the east, but neither at Caen nor at Rome had he found it to be the case as a rule. He begged, however, to remind the meeting that he had endeavoured carefully to keep within bounds as an archaeologist, and that he had not attempted to obtrude upon their notice as an architect, having no claim whatever to that definition. He felt gratified by the comments which his paper had elicited from so many eminent members of the profession, and all he could say in conclusion was, that he felt at that moment very small indeed, for he feared that he had given but brass and had received gold instead.

The Chairman, in putting the vote of thanks, observed that there were several cases in history in which churches had been attacked. The old tower of Bow Church, for instance, had sustained a siege, when Longbeard, Lord of London, took refuge in it. The received theory appeared to be, that the round towers of Ireland were built as a means of protection. There was only one observation with which he would trouble them before putting the question, and that was a practical one. It had been made quite evident that, whether the builders of the old churches were Benedictines, Cluniacs, or Cistercians, they placed their buildings where they were the most convenient, and they arranged their churches to suit their wants and rubric. If we in our turn adopted the same principle, rather than copying exactly what they did, we might sooner arrive at a nineteenth century architecture than some people seem to imagine. The vote of thanks having been unanimously accorded to Mr. Walcott.

The Chairman announced, that at the next ordinary meeting, on Monday, the 17th inst., a paper would be read, "On Acoustics," by Mr. T. Roger Smith.

The following gentlemen were balloted for, and declared duly elected Fellows of the Institute.—Mr. Robert Howard Shout, of 1, Deane-street, Portland-place; Mr. Sidney Godwin, of 24, Alexander-square, Brompton; and Mr. Charles Edmund Giles, of 24, Westbourne-park-road.

Mr. Henry Marley Burton, of 6, Spring-gardens, was elected an Associate.

#### THE ARCHITECTURAL UNION COMPANY.

The third ordinary general meeting of shareholders was held on Wednesday last at their premises in Conduit-street.

In the absence of Mr. Tite, M.P., the chair was taken by Mr. Charles Mayhew.

The secretary (Mr. Moody) read the report of the directors, of which the following is a copy:—

"The directors have much pleasure, in submitting their third annual report to the shareholders, to be enabled to congratulate them on the continued success of the undertaking; all the tenants named in the last report still occupy their holdings,—and since then the 'Society for the Encouragement of the Fine Arts,' the 'Architectural Photographic Association,' and other kindred societies, have become their tenants.

The capital account approximates to a close, the only business in hand not completed being the granting of a new lease by the Corporation of the City of London, which it has undertaken to do, of that portion of the property at present held by the Company by virtue of several leases granted to Lord Macclesfield, which leases comprehend other property not purchased by the Company, and which the directors have agreed to exchange for one lease comprising the whole direct from the Corporation. This sum of 212*l.* 8*s.* 3*d.* to meet the same and the costs of their solicitor, and have placed the amount as a deposit at the Company's bankers, bearing interest.

The directors have taken a sufficient number of additional shares to close the capital account, as at present stated, and there are now 1,637 shares in the register, on which 1*s.* 8*d.* have been paid.

The Board deeply lament the death of Sir Charles Barry, their chairman, and have to report that they have elected William Tite, esq., M.P., F.R.S., F.R.I.B.A., &c., &c., their late deputy-chairman, to succeed him; and Charles Mayhew, esq., F.R.I.B.A., to be their deputy-chairman.

The following directors retire by ballot:—Sancton Wood, Robert Hesketh, H. B. Garling, Sydney Smirke, W. G. Habershon, J. M. Lockyer, and John Whiteford, esquires,—and are eligible for re-election.

James Lockyer and Frederick P. Cockerell, esquires, retire from the office of auditors; but, being eligible, offer themselves for re-election.

The revenue account is made up to the 26th day of September last, and the directors propose forthwith to pay a dividend of 1*s.* per share, which will amount to 21*s.* 10*s.*, leaving a balance in hand of 19*s.* 8*s.* 7*d.*"

The balance-sheet showed that the total receipts for the financial year ended the 26th September last, amounted to 1,084*l.* 10*s.* 3*d.*; and the expenditure, including interest on mortgage of 4,000*l.* and all incidental charges, amounted to 406*l.* 11*s.* 8*d.*; leaving a balance at the bankers' of 677*l.* 18*s.* 7*d.*

The Chairman moved, and Mr. Jennings seconded, the adoption of the report and accounts.

In reply to questions from a shareholder named Williams,

The Chairman explained that the capital account was now considered closed, and that, in order to effect that desideratum, the directors had themselves taken the necessary number of shares. The actual cost of the building, conveyance, &c., amounted to 14,960*l.* 2*s.* 7*d.*; and the only liability undischarged was on account of law expenses; but to meet these the company had reserved 212*l.* 8*s.* 3*d.*, which they hoped and believed would be sufficient.

Mr. Mair complained of the enormous law expenses, and stated that the company had paid, or would have to pay, 500*l.* legal charges.

Mr. Edmeston (honorary secretary) said that the company had paid 57*l.* that day to the City Solicitor for expenses in connection with the conveyance of the property, and that all that now remained to be paid were the charges of Lord Macclesfield's solicitor and those of their own.

Mr. Nash inquired whether the 4,000*l.* raised upon mortgage was to be considered as a permanent debt, or whether it was intended to liquidate it by the creation of a reserve fund?

The Chairman said that the directors hoped to be able to reduce the interest upon the debt from five to four per cent., and that in such case it would be better to allow the debt to become a permanent charge.

Mr. Jennings expressed his opinion that it might be more prudent to limit the dividends to 4 per cent., until the mortgage debt was paid off; at the same time he was quite willing to leave the matter in the hands of the directors.

Mr. Haywood inquired whether the 212*l.* 8*s.* 3*d.* reserved to meet law expenses was the actual amount which the company would have to pay, or merely an approximate estimate.

Mr. Edmeston replied, that it was an approximate estimate, but that he believed it was quite sufficient to meet any demand that was likely to be made upon the company, in respect of law charges.

The motion for the adoption of the report and accounts was then agreed to.

On the motion of Mr. Haywood, seconded by Mr. Edmeston, the retiring directors were re-elected. Messrs. James Lockyer and F. P. Cockerell were re-elected auditors, and votes of thanks were passed to them, as also to the directors and honorary secretary for their services.

A vote of thanks was also passed to the Chairman, and the meeting separated.

It was stated that in all probability the dividend warrants would be issued before Christmas.

#### LIVERPOOL ARCHITECTURAL SOCIETY.

At the fifth meeting of the session, held on the 29th ult.,—Mr. Stubbs, vice-president, in the chair,—

Mr. Boulton announced that works intended for the forthcoming architectural exhibition in London could be sent to him, and he would be glad to forward them.

Mr. G. A. Audsley delivered an address to the student members; at the close of which he said, to give proof of the interest he felt in the progress of the student in architecture and its sister arts, and with the concurrence of his brother, he begged to present to the society a copy of their illuminated work, "The Sermon on the Mount," value six guineas, which would be published next year, to be given to the successful competitor in a contest thrown open to all the student members of the society still in their pupillage.

Mr. Andsley then read a paper on "The Rise and Progress of the Art of Illuminating during the Middle Ages, and its useful Application in the Nineteenth Century to Architecture and Art Manufactures." He traced its rise in the schools of Greece and Rome, in Egypt and the Eastern nations, and showed that it had become known in Ireland at a very early period. Certain it was that whilst the Continent of Europe was bathed in profound social darkness, a steady light of civilization was burning in that little island of the West,

and there the art of decorative illumination was known and practised, as many wonderful memorials remained to testify. He held it necessary for him who would be a true architect to be conversant with all the arts in connection with architecture and their æsthetical principles of design. Who could depreciate the value of the union of architecture and painting? yet how very little it was encouraged amongst us! Where did they see it shunned as it apparently was in matter-of-fact England? And it was a fact beyond dispute that this country as a nation was far behind in the appreciation and application of colour in architectural works as well as in manufactured articles of all kinds. He was puzzled to tell how a reformation could be accomplished; but it was satisfactory to know that many eminent men were doing their best for the advancement of architectural art. The correct decoration of buildings would form an educational medium whereby public taste would be advanced. Ecclesiastical or Gothic buildings admit of the most complete system of decoration, and the leading features of illuminated works may be exactly reproduced on them. Referring to the art of glass-staining, he described it as being at the very lowest ebb; although, as a decorative art, it should take its stand in the foremost rank.

#### THE OXFORD ARCHITECTURAL AND HISTORICAL SOCIETY.

The third meeting of this Society was held on November 28; the Rev. the Master of University College in the chair.

The officers for the ensuing year were elected. The Rev. J. W. Burgon then delivered a lecture upon a series of rubbings which he had made of inscriptions on the marble and stone slabs which covered the graves of the early Christians in the catacombs. He considered the date of the greater number of them to be about the time of Constantine. He began with the simple inscriptions of the three bishops, Eutychius, Anteros, and Fabian, but suggested that in some cases the inscription was probably added some years after the decease of the person it commemorated. He then proceeded to some of the more curious Jewish inscriptions, on which the commonest symbol was the seven-branched candlestick. To one of these, in which the inscription was both in Greek and Latin, a few Hebrew words were added, one of which he showed was the precise equivalent of the "In pace;" and no doubt the origin of this most common termination of an inscription was Jewish. The D. M., *i. e.*, the Dis Manibus, he remarked, was very common on even Christian tombs, but meant nothing more than now is meant by reference in poetry to urns and shades. On one of the tombs the word *kuppela* occurred, signifying clearly a grave, and he would venture to suggest the connection between this word and the chapel, because where there were graves there was probably a place of worship.

#### CHURCH-BUILDING NEWS.

**Gainsborough (Lincolnshire).**—A commencement has been made to improve the internal appearance of the parish church here. A portion of the old high square box-pews has been removed, and substituted by carved oak benches: other improvements are to follow. The architect is Mr. Alfred Allen, of Newark; and the builder, Mr. Jabez Taylor, of Gainsborough.

**Stowmarket.**—In consequence of the old and dilapidated condition of the present Congregational chapel, and want of accommodation for the Sunday school, it was decided some time since to erect a new chapel, with class and school rooms. A building committee was appointed, and Mr. Barnes, of Ipswich, was chosen architect. Tenders were advertised for, and given in, and Mr. H. B. Smith, of Ipswich, was selected as the builder. The tenders appeared in last week's *Builder*. The new chapel is to be built of Kentish rag stone, with Caen dressings. Its site will be that of the present one, the burying-ground being arched over. Three old houses, which hide the present chapel from view, are to be pulled down, and Ipswich-street will be improved in appearance.

**Ipswich.**—St. Mary Elms Church has been in the hands of the builder, and the whole of the old square high paving has been removed and new open benches substituted. The altar-piece, altar-railing, and pulpit, all of a bastard classical design, have likewise been swept away, and a new railing, and a pulpit of ecclesiastical character and carved, provided in lieu of them. The east wall, where the altar-piece stood, has been lung from the floor to the under side of the window, and also

round the north and south walls, as far as the altar railing incloses, with green cloth, on which is a diaper of amber-coloured *fleur-de-lis*, the whole having an edging of moulded polished wood. The whole of the henching, &c., is executed in pine, slightly stained and varnished. The floor of the chancel is laid with encaustic red and black tiles, and the nave and north aisle with *terro metallica* ware of the like colours. The tower, which has been for some years blocked up and made a receptacle for rubbish, is now thrown open. Iron pipes, beated with hot water, are laid below the level of all the passages, and covered with open gratings. The additional accommodation secured by the benching amounts to upwards 100 sittings, including the children's seats. The architect, Mr. Phipson, proposes (funds permitting) to case the outside of the church with red and grey brick-work similar to the western tower. The work has been executed by Mr. Seager, of Ipswich, and the expenditure up to the present time amounts to about 320*l.* The church has been re-opened.

**Hadleigh (Suffolk).**—The works of restoration have been confined at this church. The fine old roof and other portions of the chancel were restored last year. A *recedo*, carved by Mr. Farmer, has also been erected from the design of Mr. G. E. Pritchett, architect, it being chosen by the committee in a select competition. The additional works have been carried out by the same architect.

**Canterbury.**—A movement has been set on foot to repair St. Mildred's Church, in this city, and the estimated expense is 1,000*l.* Towards this sum subscriptions, among others, have been received from the Archbishop of Canterbury, 10*l.*; the curate of the parish, 105*l.*; Archdeacon Harrison, 100*l.*; the Dean of Canterbury, 25*l.* We trust the public generally will co-operate in this praiseworthy undertaking, as the parish is a poor one, and that the contemplated repairs will not be delayed for want of liberal and generous support. The parishioners are doing their utmost. Subscriptions may be paid into Messrs. Hammond & Co.'s bank, in this city, and to the curate of St. Mildred's, Canterbury.

**Southampton.**—St. Luke's Church has been re-opened, after being enlarged. By the erection of a new aisle, which has completed the architectural design, 330 additional sittings have been provided, and, by continuing the north gallery across both aisles, 160 more, thus making a total of 820 free seats, besides 520 for renting. The work has been executed by Mr. G. Brinton, builder, the architect being Mr. G. Elliott.

#### DEATHS FROM BAD DRAINAGE.

Under the title of "The Death Drains at Brighton," a letter, as many of our readers are probably aware, recently appeared in the *Morning Post* and *Lancet*, from Mr. W. Acton, M.R.C.S., a resident of "one of those fine eastern terraces facing the sea at Kemp-town." In reference to the taking of this house he remarked,—"The abundant rain which had fallen probably prevented me from detecting any disagreeable smell at the time, and the agent, in reply to my inquiries, told me that the drainage was excellent. In the course of a fortnight, however, I began to be annoyed by foul effluvia from the drains, and soon afterwards the cook was prostrated with fever, and confined to her bed during a space of ten days. My children and servants sickened in succession, and were attacked with headache, sickness, and febrile derangements, clearly attributable to poisonous atmospheric agency. Examination showed that the drainage of the house was wretchedly imperfect. My youngest child did not, unhappily, escape so lightly as the rest of my household, and I have just brought her back to London, suffering from a most severe form of diphtheria, which I need not tell your readers arises almost invariably from bad drainage."

I sought an interview with the late mayor, who is a fellow-practitioner, and asked his assistance. He told me there was no officer of public health at Brighton. He admitted the objectionable state of the drainage of the town, and told me he had been for years urging the subject on the attention of the town council, but in vain. . . . All agree that as long as Brighton fills, and the profession recommend it as an autumn residence, the rate-payers will not incur the expense of making sewers in place of cesspools, nor will individual landlords even trap the old ones. I regret to see in the obituary of the *Times* the death of a distinguished officer from diphtheria at a house in Brighton, only a short distance from my late residence." Alarm has been felt, by those inter-

ested in the prosperity of Brighton, in consequence of such renewed complaints; and it has been urged that the evils alleged are not general; but the admission of the mayor himself is not to be easily set aside: it is strongly corroborative of our own repeated warnings as to the state of the Brighton drainage. It is so far satisfactory, however, that the Health of Towns Act has at length been adopted by the town council,—whether for the sincere purpose of amendment, or for a mere blind, we do not know. The borough surveyor, Mr. P. C. Lockwood, C.E., in coming to the rescue of the council and their constituents, the lodging-house keepers and house-agents, has only aided in proving how essential it is that thorough drainage should be carried out. A correspondent of a local paper announces a "Brighton Inland Sewage Company," with "an air-tight vehicle, with pumps and hose," to carry out a system of cesspool cleansing, which may be all very well as a temporary measure, but cannot for a moment be put side by side, as is done, with systems of drainage as a substitute for any or all of them. In the *Times*, Mr. Acton, in a long letter reurging and defending what he had previously stated, alludes to Mr. Hawksley's examination of the Brighton sewerage; but it is to be hoped, as we have before said, that a system which proposes to discharge the Brighton sewage into the sea, straight in the face of the town and in the midst of the bathing ground, will not be carried out. The proposal of Mr. Rawlinson to carry it off obliquely to some distance, whether for utilization in the country or for final disposal in the sea, seems a preferable one in these respects.

At Tottenham-court-road, a coroner's jury, sitting on the body of a child, nine months old, who died in 23, Draper's-place, Burton-crescent, have returned the following special verdict:—"That on the 21th of November, John Sparrow did die from the mortal effects of congestion of blood on his brain and disease on his lungs and air passages, and that the said diseases and the death of the said John Sparrow were accelerated by the unwholesome condition of the locality in which the said John Sparrow had lived." A surgeon, who visited the place, stated that the stench from the bad drainage was most abominable, and one woman told him she had to keep her slop-pail three or four days till she could find a place to empty it. The house was situate in a paved court at the back of Burton-crescent, and at the rear of the house in question a man was in the habit of drying lacon cloths, which emitted a frightful stench. The house itself was in a most dilapidated condition, the stairs being almost unsafe to ascend.

#### STAINING WOOD.

In reply to "An Architect," who wishes a little information on staining woodwork, allow me to inform him that in using stain on any description of wood, the stain should always be allowed to get quite dry before sizing, as that gives it a fair chance of striking into the wood. Glue-size is the best for stained wood, made so thin that there is no fear of putting it on in patches. After the size is quite dry also, varnish; and if the first coat does not stand out quite sufficiently to please the eye, give it a second. Some people use stain and varnish together, doing away with size altogether; but this is a very poor method, for should the wood get scratched or damaged in any way, the varnish and stain come off together, leaving a white place, if it be white wood that is stained. Now, in using it as I have informed him, it will stand any weather; no matter how hot, cold, or wet.

#### IMPROVEMENT OF IPSWICH.

DOUBTLESS you have a knowledge of the flourishing town of Ipswich, and many readers of your publication, who by a vast number are not all architects or builders, know that it is not only renowned for its bricks and, in common with the rest of its county, for (as the poet Bloomfield styles it) Suffolk hang, but also for its crooked streets. This may be accounted for by its being a very ancient town, and most of its business streets not more than two centuries ago were country lanes. There are in the heart of the town two good streets, viz., Northgate and Brook street, both having the same width, and these would, if a small piece of property about 5 yards by 60 yards were removed, be in one continued straight line, which would then be the largest, straightest, and finest street in the town. I think that now is the best time for the Corporation of the town to buy it,

because the land is cheaper than it will be in a few years' time, and the property is in a bad condition. Pray urge it upon them.

A RESIDENT.

#### THE BROMPTON v. BRITISH MUSEUM.

In taking up a visitor's guide to the metropolis, I was greatly struck at the contrast between the hours of admission to both of these highly valuable institutions; South Kensington accessible on all days (Sunday excepted), and at most hours; the British Museum, by far the most central, numbers its hours "eighteen per week;" Thursdays being exclusively given up, I may say (and I speak as an old student), to about a dozen youths. An important educational establishment like the British Museum, in these days of progress, remaining closed as of old, when Charlies, oil lamps, and hackney coaches, for and far between prevailed. Should this be? Can it continue? The sums voted for the Museum are enormous, considering the admission value the public receive in return. Day and night should such an Institution be accessible; even if on students' days a small charge of admission were made available for payment to the officers for additional services. Thousands now are entirely excluded from its advantages, and tens of thousands would be benefited by its enlarged hours, and extended usefulness.—E. R.

#### A REGISTRATION OFFICE.

Sir,—Allow me to bring very strongly under the notice of your new creations, in the offices of architects, engineers, and builders, the great want of a Registration office. Such an office, if properly carried on, would prove a great boon not only to draughtsmen, but also their employers, and would gradually become an institute worthy of notice, besides facilitating the re-employment of those who sought appointments.

I cannot pretend to enlarge here on the advantages to be derived from such an office; but this I can say,—provided fifty others will subscribe a sovereign a-piece, I will put mine in too. It only wants some energetic man to take it in hand, and he will receive a vote of thanks from more than a hundred ere twelve months elapse.

T. SQUARE.

\* The want is partly met by the Architectural Association, Conduit-street, who keep a register, which might easily be extended.

#### HOUSE VENTILATION.

With reference to your correspondent "Salus," and those who have followed him, let me mention to them Dr. Chowne's air-siphon ventilator.\* I have for several years made use of the system both in old and new buildings with signal success. The cost in the former is necessarily greater than in the latter, but in any case the first cost rarely exceeds thirty shillings for each ventilator, and is subject to no further expense, being self-acting.

With Arnott's Ventilators, the common complaint is that the smoke, more or less, is emitted into the rooms; but with Chowne's, where it is inserted in the smoke-flue, this is not the case.

The idea, however, that ventilation means simply providing an exit for foul air, is so prevalent, notwithstanding your continual exertions to subvert it, that I will venture to repeat, that unless the means of admitting fresh air be provided, as well as the means of discharging foul air, it is vain to expect any benefit from either the one or the other. It is not generally known that fresh air admitted vertically will ascend several feet without spreading materially. If, therefore, it be allowed to enter our rooms from inside the window sills, or from behind wall linings, or from pedestals, brackets, or any decorative features above the heads of the persons seated, it will diffuse itself regularly, and without any appreciable current or draught. This is the mode adopted in some of the French military hospitals; and I can personally answer for its success here, in my own works, both in bed-rooms and reception-rooms. This inexpensive arrangement, not subject to patent charges, in combination with Chowne's siphon, I for one pronounce to be, without exception, the cheapest and most effectual self-acting system in operation in this country.

EDWARD ROBERTS.

#### THE STAGE.

Royal St. James's Theatre.—Some years ago, when Mr. Wigan undertook the management of the Olympic, we expressed our gratification on the part of the public, on the ground that, besides being an actor of eminent merit, he was a gentleman, with scholarly taste and feelings. We were not misled in our estimate. After a time ill-health forced him to resign his position there, to the loss of the public, for since his retirement, notwithstanding the ability, as an actor, of the present manager, then one of Mr. Wigan's staff, the Olympic has not been what it was. Once more Mr. Wigan, strengthened by repose, undertakes the duties of management, this time at the St. James's Theatre, and once more with added warmth we offer him our good wishes, and call on those who regard the theatre as a teacher to whom the multitude will listen,—a teacher whom they will love,—and who should therefore be of the right character,—to support him in his under-

\* Messrs. Holland and Messrs. P. Anson are, I believe, licensees of the patent.

taking. More especially it is health we should wish him, and success would he found his best preservative doctor.

Recently he has introduced to the London public a young actress and dancer, said to be from Servia, of very remarkable ability and attractiveness, Madlle. Albina di Rhona, who, while thoroughly mistress of the poetry of motion, is at the same time competent to the expression of poetry of another kind.

In the clever little ballet-vanderwie in which she acts, "A Smack for a Smack," she is very well supported by Mr. Belmore, a low comedian new to this end of the metropolis, and promising good things.

#### Books Received.

*Paradise and the Peri, from the "Lalla Rookh" of Thomas Moore; illuminated by Owen Jones and Henry Warren.* On stone, by ALBERT WARREN, Day & Son, Gate-street, Lincoln's-inn-fields.

THIS is a remarkable specimen of ornamental design, and chromo-lithography. The text is printed on a golden panel on one page; and, on the opposite, a similar panel contains figures "illuminating" the text. Both are surrounded by continuous borders, sparkling with colour and gold; and these are the great feature of the book. For the figures themselves we have not much to say: the best are those illuminating the lines,—

"She saw a wearied man dismount

From his hot steed, and on the brink

Of a small inn's rustic fount

Impatient fling him down to drink,"—

and those beginning,—

"Best tears of soul-felt penitence!"

but in the borders the designer and compiler displays, not alone his great facility in the production of such forms, but his skill in the harmonious arrangement of colours. It is difficult, without circumscription, to point out particular pages; but amongst the most beautiful are certainly those in which black, green, and gold are made to concur. A graceful "Finis" in foliage of blue, red, and gold, and very elegant binding, involving the foliage which Mr. Owen Jones may call his own, extort admiration at the opening and the shutting of the book.

*Specimens of Encaustic Tile Pavements, Manufactured by Maw & Co., of Bentham Works, Broseley, Shropshire.* London, 1860.

MESSRS. MAW'S new book contains some very good designs, and shows the continuance of endeavours on their part, of which, before now, we have offered commendation.

The patterns are all of ecclesiastical character, most of them adaptations from ancient Mediaeval pavements, occurring in this country and on the Continent.

Lord Alwyne Compton designed No. 206 for them, and the remainder are mostly by Mr. Goldie, Mr. D. Wyatt, and Mr. Gurling. The volume contains, further, a price-list, made as intelligible as may be.

#### VARIORUM.

IN the second edition of a pamphlet issued by Mr. Weale, of High Holborn, titled "On the Construction of Horse-railways for Branch Lines, and for Street Traffic," Mr. Charles Burn, C.E., reurges the construction of horse-railways in England and the Colonies, and shows the advantages of this system for the intercourse of agricultural and mineral districts; also for branch lines to small towns and large villages; so as to place them in communication with the existing network of railways; and for the streets of towns, with a description of the various models of construction, illustrated by diagrams. After the country had been pretty well intersected by trunk and branch railways, we frequently took occasion to remark, that without milder and more ramified feeders, our railway system resembled a tree without leaves, or with little else but bare trunk and branches, and that it was impossible for the system to flourish as it would do were such a ramification once effected. The using up of the old deserted roads, and the advisability of economy in the construction of the more slender and numerous feeders to the great trunk and branch system, were also urged. It is not "lately" therefore, only, that "many articles have been devoted by the *Builder* to a consideration of the subject," as Mr. Burn seems to infer. The fact is that our journal is so per-

petual a pioneer, and often so far ahead in most improvements, that its suggestions and its efforts are lost sight of in the distance; and, when reverted to for a moment, as time flies, they are apt to be undervalued or discredited. Many of our readers must well remember the time, however, when scarcely a single issue of the *Builder* ever appeared without a lengthened article on the progress of our railway system, in which all sorts of suggestions for its improvement and advancement were constantly being made. The issue of a second and enlarged edition of Mr. Burn's pamphlet denotes a growing interest throughout the country in the question of horse-railways, whether as branch feeders, or for town streets; and it is satisfactory to observe so many Parliamentary notices as to the formation of minor branches and junctions connected with the railways already formed; because, as we have often said, it will only be when the tree sends forth its twigs and leaves throughout the land that its vital circulation and its prosperity will be fully established.—A very full report (the fourth) of the Chelsea Parish Vestry, under the Metropolitan Local Management Act, 1855, has been issued, in which Mr. Lahee, the Vestry Clerk, remarks that,—

"In order that the incipient borough may take its proper place in the municipal scale, and that its sanitary and social regulations may vie with those of the enlightened boroughs and towns throughout the country, the vestry have given their attention, amongst other things, to the improvement of the parson's fire engines, and the introduction of fire escapes; to the establishment of bath and wash-houses; to the provision in their new vestry-hall (just opened, by the way) of rooms for reading and music; to the prevention of dangerous buildings, and the occupation of underground rooms in the dwellings of the poor; to the amendment of the law relative to vaccination, as a check to the dire scourge, small-pox; to the enforcement of the law with regard to dangerous buildings, and obstructions and offences upon the highways; to the erection of trials, and the removal of brothels; to the naming of the streets, and the numbering of the houses; and, lastly, though not least in importance, to facilitating the success of a cheap local press, by permitting the publication of the reports of their proceedings."

On sanitary subjects, it is stated, that "the large expenditure of the board, at the outset of their career, in the sanitary improvement of private dwellings, nearly all of which has been repaid either voluntarily or by compulsion, has had the effect of making this a very small item this year." In reference to the delay in erecting the drinking-fountain in Sloane-square, it is stated that "Mrs. Gurney having given the sum of 100*l.* to the Association, to be expended as they pleased, they had determined to erect at that spot a more expensive fountain than that previously selected." It is to be hoped taste as well as mere expense will be looked to.—"Our Winds and Storms; with an Essay on Weather and its Varieties." By Thomas Hopkins, M.B.M.S. (Longman & Co.) is a well-argued and ingenious theory, in which the influence of the sun in the evaporation of moisture, and the reverse process of the recondensation of that moisture, are shown to have much to do with the production of winds, through the liberation of heat occasioned by the condensation, and the absorption of heat (or liberation) of cold, as we may conversely call it) occasioned by the evaporation. We suspect the author labours too much, however, to disprove the present views as to the direct action of the tropical sun, and of the polar colds, upon the atmosphere itself, in disturbing its equilibrium, and causing a flow of rarified air above from tropic to pole, and of cooled air below from pole to tropic. The true theory probably involves the action of both air and moisture in the production of winds. It is, nevertheless, always pleasing and suggestive to find some more prevalent doctrines assailed with ability, whatever may be the upshot: it prevents that stagnation in the scientific air which frequently renders it at length supercilious and offensive towards all attempts at progress, when allowed to go on too long without an occasional breeze to keep it in a wholesome state.

#### Miscellaneous.

IMPURE WATER SUPPLIED AT INVERNESS. — Complaints have been frequently made of the water of the Ness, as it runs through Inverness, as unfit for culinary purposes. Between the old and new bridges all the fill of the town—from water-closets, ash-pits, and public sewers, &c.—is poured into the river. The local public have moved the authorities for a large pipe to run along either side of the river, for the purpose of carrying off these abominations, in order to insure wholesome water for the town, and to improve the air in the locality.

**THE CHAPEL IN FARM-STREET, LONDON.**—Mr. G. P. White, of Vauxhall-bridge-road, informs us that the first portion of the work here, including lining the walls with alabaster, was executed by him. Some of the figure sculpture was done by Mr. Phylers.

**INSTITUTION OF CIVIL ENGINEERS.**—On the 27th of November, Mr. Hawshaw, V.P., in the chair, the paper read was "On the Maintenance and Durability of Submarine Cables in Shallow Waters," by Mr. W. H. Prece. The following Tuesday evening was occupied in the discussion of it.

**NEW ASPHALT PAVEMENT.**—A new species of pavement, which attracts much attention, is now being tried in the Rue Neuve des Petits Champs, one of the most crowded thoroughfares in Paris. The system consists in a new application of pure asphalt. In place of melting it with a mixture of bituminous matter, the asphalt stone is pulverised and then heated in an oven, so as to render it adhesive. When it is sufficiently heated it is spread over the road to the thickness of 3 inches. The road is previously prepared with stone and mortar. When spread over the road the asphalt is rammed down with hot iron rammers. When this preparatory work is concluded a large heavy roller, heated by steam, is drawn over the road by two men.

**STEEL IN NEW ZEALAND.**—We are told of the existence in New Zealand of a large extent of sand, which when smelted yields 66 per cent. of pure steel, and that half a dozen persons in London have subscribed the requisite capital to work a grant of the district which has been obtained. Some experiments have been tried with samples, and it is stated that a ponton made from the produce was driven through two penny-pieces, one over the other, without any injury to the edge. One fear to be entertained in such cases is lest the mass should not be found the same as the transported samples, but as in this case the public are not being appealed to for the formation of a company, our caution is unnecessary.

**FIREPLACES IN CHURCH TOWERS.**—In reply to inquiries on this subject, a writer in *Notes and Queries* says.—Till the reign of Elizabeth, baptism was always given in this country by immersion, no matter however cold and chill might be the weather. The use then of a fire, before which to dry the wet child and dress it, became a positive want in a climate like ours; and the very best place wherein to supply it, was the western tower. The spot upon which to set the baptismal font is, for symbolic reasons, at the entrance of the church, near the south-west door, hard by which in most places stands a bell-tower; from the font to this tower is but a step or two, and, once within this tower's thick walls, and its door shut, the child's cries—and most children cry loudly when baptized—were thus hindered from breaking in upon the public services, were any going on, or wounding the ears of the people at their devotions. By the fire in the western tower the baby, that sometimes had to be carried home a long way, might be leisurely dried, dressed, and, if need were, suckled too; and the godfolds could becomingly wash their hands, as by the rubric they were told to, before they left the church.

**IMPROVED PERMANENT WAY FOR RAILROADS.**—At Wormwood Scrubs, on the Great Western line, is laid Seaton's patent safety saddle rail, which has been under trial for upwards of two years and a half. The alleged superiority of the patent safety rail and the sleepers consists in the fact that the latter is cut diagonally instead of rectangularly from a square balk of wood. The two triangular sleepers which are thus produced from the balk are laid longitudinally with the base downwards, the apex being crowned by a saddle rail, of which the flanges cover a portion of the sides of the triangle. Chairs, fish plates, and turnals are all done away with by the new system. The first cost per double mile on the London and North-Western Railway, exclusive of wages, is 4,146*l.*, while under Seaton's patent the prime cost, it is said, would not be more than 3,300*l.* The cost per annum for maintenance on the North-Western Railway is stated to be 317*l.* per mile, whilst the maintenance under the new system is computed at 188*l.* A scientific inspection of the patent way on the Great Western took place recently, when the new line was found, it is said, to present a perfect even and level surface; the rails undisturbed, although from 50 to 60 trains pass over them, and the fastenings both longitudinally and to the "ties" perfectly tight and undisturbed, the line being in exactly the same state as when laid down upwards of two years and a half since.

**MONUMENTAL.**—Mr. Bacon is now engaged on a bronze statue of the late Sir John Franklin, proposed to be erected at Spilsby, Lincolnshire, his birth-place.—Mr. Muoro has been commissioned to execute a monument in honour of the late Mr. Ingram, of the *Illustrated News*, which that gentleman's admirers at Boston, Manchester, and elsewhere, propose to erect.

**A MOSQUE AND CARAVANSERAI, IN PARIS.**—It is proposed to construct in Paris a magnificent Turkish mosque, and a Turkish hotel or caravanserai. The object of these constructions is to attract to Paris as many Mussulman travellers as possible. It is further proposed to erect a school close to the mosque for the education of children of the various followers of Mahomet.

**ASSOCIATION OF ASSISTANT ENGINEERS AT GLASGOW.**—A numerously attended meeting of gentlemen connected with the engineering profession has been held at Glasgow, with a view to the formation of an Association of Assistant Engineers there. Mr. J. M. de Conceicao was in the chair. It was resolved that such a Society be formed, and a constitution was agreed upon. A committee was also appointed to carry out the necessary arrangements. Upwards of forty members were enrolled.

**THE SWANSEA SEWERAGE.**—After a consultation with Mr. Austin, C.E., of the Local Government Act Office, it has been finally decided that, although the smaller pipes for combined back-house drainage be used wherever they can possibly be so with safety, the larger ones, where circumstances render them necessary, should be substituted. A list of subordinate sewers to be altered from 6-inch to 9-inch has also been specified, and the whole difference of cost beyond that contemplated by the surveyor's plan will, it is said, be only about 80*l.*

**RAILWAY MATTERS.**—The North London Railway Company have given Parliamentary notices for a Bill to authorize the construction of a branch from Kingsland station to Liverpool-street, Old Broad-street, City. The estimate, including three lines of rails, is stated not to exceed 1,000,000*l.* The history of the North London Railway, says the *City Press*, is a curious one. Originally constructed solely with a view to goods traffic, it has, by a system of quarter-hour trains and cheap fares, become one of the most frequented passenger lines in the world, the number of tickets issued in the year 1859 having been, it is stated, between 6,000,000 and 7,000,000. With such a traffic, the saving of time and distance which would be effected by the new project must be regarded as of the utmost public importance. The annual number of passengers at the London-bridge station is, however, not less than 11,000,000 to 12,000,000, and the number of trains daily during the busy season, exclusive of empties, is 365. The traffic returns of railways in the United Kingdom for the week ending November 17 amounted to 499,740*l.*, and for the corresponding week of last year to 474,245*l.*, showing an increase of 25,495*l.* The gross receipts of the eight railways having their termini in the metropolis amounted to 204,553*l.*, and for the corresponding week of 1859 to 209,814*l.*, showing an increase of 739*l.*

**BUILDING ACCIDENTS.**—A mill that was in the course of erection in a field near Burley-brow, Oldham, has been blown down. The mill was three stories and an attic high, ten windows long, and three broad. The roof was on, and all the windows were put in except those of the lower room; and that portion of the mill faced the wind, which was blowing with great violence. In consequence of the roughness of the weather, all the men employed about the building had left except two, who had a narrow escape, one being injured. The mill was being built by Mr. George Purday, of Hollingwood. It was supposed by some parties connected with the building trade, who went to the place immediately after the accident, that the foundation had given way on one side; but the men who had worked there considered the mill had been blown down in consequence of the wind obtaining admission by the lower windows.—At Shipston-on-Stour, a few days since, the floor of a newly-erected granary gave way under the pressure of fifty bags of corn. This building has recently been erected under Government contract.—A scaffold accident has occurred at buildings in erection by Mr. Meader, at St. John's park, Ryde. It appears that several men arrived on the scaffolding together, and simultaneously discharged hods of stone, the weight of which had the effect of causing a piece of timber placed across two projecting portions of the building to give way. In the fall consequently sustained one of the men was severely injured, and all the others were more or less hurt.

**CITY OF LONDON GAS COMPANY.**—A difficult erection of gasometer column and framing has been completed at this company's works, Dorset-street, Salisbury-square, by Messrs. Westwood & Wright, of Dudley. The machinery was planned and arranged by Mr. T. Wright, one of the firm, and his foreman, Mr. Wm. Werry. The spot is surrounded with houses and buildings. The Gas Company provided the men with a supper at the Rose and Crown, Dorset-street, presided over by the company's secretary.

**A NEW GENERAL POST-OFFICE FOR THE WESTERN DISTRICT OF LONDON.**—A new General Post-office for the western district of the metropolis is being opened in Vere-street, Oxford-street. The Oriental Hotel having become vacant, those premises, which occupy a very large area of ground, extending from Vere-street to Chapel-place, in the rear, have been fitted up for the purpose, and will replace the office in Cavendish-street, Cavendish-square.

**CESSPOOLS AT BATH.**—Some residents in the parish of Walcot, Bath, have complained to the Home Secretary as to certain cesspools which have been sunk at a higher level than that of their residences, in connection with two large colleges or schools and a number of villas recently built in the adjoining parish of Charlcombe. The memorialists apprehend the occurrence of evil from the pollution of their wells and of the air in their vicinity, and pray for inquiry and relief. The Home Secretary has forwarded the memorial to the Privy Council as the authority, under the Public Health Act of 1858, having power to direct sanitary inquiries.

**THE SHEFFIELD "SURVEYORSHIP."**—Mr. Jackson, the local chief constable of police, has been appointed to act as surveyor to the Sheffield Improvement Commissioners, in the place of the late Mr. Raynor, at a salary of 105*l.* per annum; Mr. Jackson still holding his position and salary as chief constable. The duties of the new surveyor being described as "attending to the sweeping and cleaning of the streets, and to see that the town is properly lighted, and the accounts kept;" he appears, in fact, properly speaking, to be the "inspector of nuisances," and the title of surveyor is therefore a misnomer, unless this title, like the also highly respectable one of "professor," be now destined to go astray altogether from its proper meaning, in order to denote any one who professes to "survey" any thing, from broadcloth to turpentine roads.

**THE DROWNED WALLSEND AND OTHER COLLIERIES OF NORTH TYNE-SIDE.**—Three years or so ago, we directed attention to the condition of some of the most valuable coal-mines in this district; and mentioned that the once far-famed Wallsend and other pits were rendered inaccessible, in consequence of the flood of water which had collected in the various workings. We are glad now to learn that arrangements have been made, so that, by the joint expense and exertions of those concerned, powerful steam-pumping engines will be erected, which it is hoped will be the means of causing this valuable description of coal to be brought again into the market. It may be worth while here to mention that the Wallsend colliery which rendered the "Tyne-side" coals so famous is situated close to the eastern extremity of the Roman wall,—hence the name Wallsend coal. There is no real Wallsend coal now in the market, although we have "Hetton Wallsend,"—from Hetton, a place perhaps ten or eleven miles distant; and from other parts of the county of Durham, and even from Yorkshire, we receive "Wallsend" coals for the metropolitan market. We are glad to hear that the "real original" Wallsend is again likely to be brought into use.

**NEW CHURCH AND SCHOOLS IN ST. JAMES'S, CLERKENWELL.**—A public meeting has been held for the purpose of promoting the erection of a district church and schools in the parish of St. James's, Clerkenwell. Some time since a temporary church was erected, and a congregation gathered. It is now proposed to erect a new church capable of holding 1,200 persons. Of the sittings, 500 are to be free. Schools in connection with the church, to educate 400 children, are also to be erected. A site has been obtained in Allen-street, Clerkenwell, at the cost of 1,200*l.*, which is half the market value of the ground. The sum of 1,000*l.* has been promised by the Diocesan Church Building Society, and it is expected that a special grant for the schools will be obtained from the Privy Council. The church is to be called St. Paul's, and it is to obtain an allocation of 3,000 of the population. The sum obtained or promised at the meeting, including the 1,000*l.* from the Diocesan Church Building Society, was about 1,900*l.*

BUILDING SOCIETIES.—It seems from a statement made by Mr. Tidd Pratt that there are now about 2,000 of them in existence, and that their paid-up capital is not less than 8,000,000.

A FREE LIBRARY FOR SUNDERLAND.—The Town Council have resolved to levy a rate for the establishment of a free public library. A presentation has been made to the town, by Mr. Candlish, of 4,000 volumes which lately belonged to the local Literary and Philosophical Society; and it is for the maintenance of this collection for the benefit of the inhabitants that the rate has been levied.

CAMPESE ASHE, SUFFOLK.—The Elizabethan house, the seat of J. G. Sheppard, esq., is now undergoing extensive additions and restorations under the directions of Mr. Salvin; and on the 23rd ult. Mr. Sheppard gave the whole of the workmen employed an entertainment at the Talbot Hotel. Fifty-six sat down to dinner, the chair being taken by Mr. W. Oldrieve, the clerk of the works.

CHELSEA NEW VESTRY HALL.—We learn from the daily papers that the new Vestry Hall for Chelsea is finished, and has been inaugurated with a dinner. Our readers will remember that designs were submitted in competition, and that their merits were discussed at some length. The cost of the building which has been erected is stated at 7,000l. The architect was Mr. Peacock, and the builders were Messrs. Piper & Son, of Bishopsgate-street.

SCULPTURE, BATH MINERAL-WATER HOSPITAL.—The front of this new building has just been cleared of the scaffolding. Messrs. Manners & Gill are the architects, and Mr. G. C. Mann is the builder. Some sculpture in the pediment, "The Good Samaritan," designed, modelled, and sculptured by Mr. H. Ezzard, jun., of this city, is well spoken of in the local papers. The figures are considerably larger than life. The caps were carved by the same artist.

MICHELANGELO IN LILLE.—A correspondent writes from Lille.—We have seen what was said at the Institute about the drawings ascribed to Michelangelo in the Wear Collection, but those who are concerned do not feel inclined to discuss the question. In the collection they found Michelangelo's original sketch for the staircase at the Vatican, and other proofs, that convince them they are perfectly correct in ascribing the other drawings to him. However, they don't seem disposed here to open the subject.—M. G.

THE STRIKE IN HALIFAX.—The strike of masons for nine hours a day, which took place on the 7th of August, may now be considered at an end, and we are told, for this season at least. The two great works which were at a stand—namely, the New Town Hall and Mr. Riley's new warehouse in Horton-street—have been resumed. The strike has not been formally terminated by the society men, but sufficient men have started to carry the works on at the old rates.

BUILDING BY CO-OPERATION.—Another great stride has been made in local co-operation by the initiation of a Co-operative Building Society, whose objects are to build, buy, and sell houses, mills, and workshops; to purchase, lease, and rent land for building purposes; and to transact other business connected with building. A rather wide range, truly; but, as the main intention is to build cottages on a new and improved principle, and such new and improved principle in building is a local desideratum, we wish the company success. The shares are to be £l each; the number held by one person is to be limited to a hundred, and the buildings purchased and erected are to be the property of the company.—*Zochdale Post.*

ELECTRO-TELEGRAPHIC PROGRESS.—The works of the United Kingdom Electric Telegraph Company, which proposes to reduce telegraphing to a uniform shilling rate, have been commenced by the planting of three poles in the Uxbridge-road, London. At a dinner in celebration of the inauguration of the works, it was stated that the system proposed to be adopted here had been successfully tried in Switzerland and Belgium. The lines of electric wire are to be carried along the various canals which intersect the country.—Mr. Reuter proposes, in connection with the private telegraph company, to telegraph information from his office to the offices of the newspapers, instead of, as at present, employing messengers. The company offer to connect these offices with Reuter's establishment in the Royal Exchange, and to let the wires to the newspaper proprietors at a small rental. By Professor Wheatstone's new invention, a person can be taught in half an hour the language of the telegraph, and thus the newspapers would have the news a few seconds after Mr. Reuter received it.

ALMSHOUSES AT JERUSALEM.—A private letter from Jerusalem states that an American Jew, at New Orleans, has bequeathed 10,000l. for the building and endowment of almshouses there for the infirm and destitute Jews.

THE SESSIONS HOUSE, CLERKENWELL.—A report, presented from the committee on the alteration and improvement of the Sessions House, shows that the cost had been 13,700l. We gave a view of the hall as altered, some little time ago. Gas.—The Swindon Gas and Coke Company have reduced the price of their gas to 6s. 6d. per 1,000 feet.—The small town of Pewsey is to be lighted with gas: a company is being formed for carrying out the undertaking.

A HORSE RAILWAY IN PERSIA.—There is some talk, according to the Russian journals, of a horse traction railway in Persia, from Teheran to Tauris, to facilitate the means of transport for passengers and merchandise towards the Black Sea, with extension to Trebizond, or by Erivan and Tiflis to Poli. BATHS AND WASHHOUSES FOR THE CITY OF LONDON.—I would ask you to persevere in your endeavour to obtain some public baths and wash-houses within the City boundaries, as it really is too bad that the capital of the town should be so long without such extremely useful institutions, nearly every parish in the metropolis and country towns having long since adopted them.—G. S.

FALLING IN OF A RAILWAY TUNNEL.—An accident has occurred on the Severn Valley Railway, on a new line in course of construction from Shrewsbury to Stourport. Close to Bridgmont an extensive tunnel is in course of excavation, which will partially run under the town. Above the entrance, and for some distance into the tunnel, there was a thickness of some 30 or 40 feet of soil, in which large trees were rooted. The usual props and supports had been used to keep up this mass while the brickwork was being executed. Sixteen men were employed in the tunnel, and these had only left work about an hour when the superincumbent mass fell in, choking up the tunnel with earth, rock, and trees, for a distance of 50 feet.

ESCAPE FROM FIRES.—In reference to the fearful calamity in Kildare-street, Dublin, Mr. Charles Gough, of that city, architect, has written to the Irish papers directing attention to the necessity of each house having a fixed step-ladder and glass-dormer door to the roof as a means of escape. In the Kildare-street case, there was a dormer ladder, but it was tied up. Mr. Gough says.—"I have in some houses constructed a narrow staircase from the head of the principal stairs direct on to the roof, for security or inspection, with most satisfactory results; and have always found the most perfect means of ventilation, in warm weather, by simply leaving the glass dormer open. When the escape from danger may be rendered so easy, neglect must be regarded as criminal, and were such provisions made compulsory by the statute, we should seldom have to deplore such a fearful tragedy as that which has recently so shocked every feeling of humanity."

INSTITUTION OF ENGINEERS IN SCOTLAND.—The report of the proceedings of the first meeting of the session 1860-61, held at Glasgow on 31st October, has been printed. The president delivered an introductory address, in which various subjects of interest, such as the use of iron in naval architecture, and the advisability of having street horse-railways in our towns were dwelt on. The president afterwards drew attention to a small American air-engine, on Captain Ericsson's principle, which was exhibited at work, and of which illustrations are given in the printed report. It appears that for limited purposes these engines are here and there coming into use: a member had seen one a fortnight before at Berlin, driving a thrashing-machine, and another had seen one (going very slowly) in Hamburg.—At a recent meeting of the Institution, papers were read "On the Use of Transversals in Ranging and Measuring Straight and Curved Lines in the Field," by Professor W. J. Macquorn Rankine; and "On Setting out Railway Curves," by Mr. William Froude, communicated by Professor Rankine; and a short discussion followed, which, however, was adjourned.

NORWICH.—The project of erecting a Masonic Hall for this city and province has been mooted among the Freemasons, and support promised from various quarters. A committee has been appointed, and a sub-committee, to make inquiries respecting a site. It is contemplated to provide such a room as could be used for balls, concerts, and entertainments—smaller than St. Andrew's Hall, and more spacious and convenient than the Assembly-rooms. It is also proposed that the building be used as a Masonic club-house.

TENDERS

For house and shop in the Whitechapel-road, for Mr. Thomas Paddon. Mr. A. Wilson, architect:—  
Blachburn ..... £1,810 0 0  
Hill ..... 1,663 0 0  
Ennor ..... 1,895 0 0  
Palmer ..... 1,590 0 0  
Tarrant ..... 1,573 0 0  
Wilson ..... 1,855 0 0

For two shops, Ha'ifax, for the Co-operative Industrial Society. Mr. Richard Horsfall, architect:—

Masons.  
Cockroft & Sons ..... £1,125 0 0  
Pratt ..... 1,100 0 0  
Foster & Co. .... 1,075 0 0  
Hanson & Drake ..... 1,030 0 0  
Charneck & Booth ..... 957 0 0  
Nicholl and Carey ..... 854 0 0

Joiners.  
Pulman ..... £625 0 0  
Mitton ..... 599 0 0  
Dyson & Son ..... 581 0 0  
Scott ..... 555 0 0  
Tuley ..... 537 0 0  
Noble ..... 508 0 0  
Hall ..... 490 0 0

Slaters and Plasterers.  
Wardsworth ..... £102 0 0  
Taylor ..... 98 0 0  
Whitehead & Nicholl ..... 84 10 0  
Lister & Pickard ..... 82 0 0  
Ambler & Taylor ..... 73 10 0  
Bancroft & Son ..... 69 12 6

Plumbers and Glaziers.  
Dyson ..... £191 10 0  
Holdsworth ..... 174 0 0  
Lees ..... 155 0 0  
Horsfall ..... 143 0 0  
Walsh\* ..... 134 0 0

Tenders for the whole of the Works.  
Pratt ..... £1,839 0 0  
Dyson & Son ..... 1,805 10 4  
Charneck & Booth ..... 1,800 0 0

For chimney-shaft, &c., for Messrs. Friebech & Mogge, Denmark-street, E. Mr. Andrew Wilson, architect:—  
Moreland ..... £610 0 0  
Langtrec (accepted) ..... 471 0 0

For alterations and additions to Messrs. Read & Co's premises, Commercial-road, E. Mr. A. Wilson, architect:—

Ennor ..... £1,116 0 0  
Hill ..... 1,089 0 0  
Wilson (accepted) ..... 1,665 0 0

For new shop-front to No. 10, King's place, Commercial-road, E., for Mr. Evans. Mr. A. Wilson, architect:—  
Hearle ..... £137 10 0  
Warkitt ..... 186 0 0  
Hicks (accepted) ..... 170 0 0

For house at Dulwich-wood, Surrey, for Mr. Henry Baily. Mr. Charles Baily, architect. Quantities supplied by Mr. Charles Baily and Mr. James Marsland:—  
Corder ..... £1,414 0 0  
Cannon ..... 1,398 0 0  
Patrick & Co. .... 1,392 0 0  
Ashby & Horner ..... 1,390 0 0  
Thompson ..... 1,388 0 0  
Marsland ..... 1,339 0 0  
Heath ..... 1,389 0 0

The above tenders do not include the founder's, plumber's, painter's, glazier's, nor ironmonger's works.

Tenders received for congregational chapel, Mile-end New Town. Mr. R. Moffat Smith, architect, Manchester. Quantities supplied by Mr. Thomas M. Rickman:—  
Piper & Son ..... £2,484 0 0  
J. & C. W. Todd ..... 2,396 0 0  
Cogswell & Day ..... 2,263 15 0  
Smith ..... 2,175 0 0  
Adamson & Sons ..... 2,073 0 0  
Tolley ..... 2,057 0 0  
Maers (accepted) ..... 2,037 0 0

For building eight houses and shops on Lloyd's Brompton estate. Mr. G. A. Burn, architect. Quantities supplied by Mr. G. H. Julian:—  
Lawrence & Sons ..... £15,260 0 0  
Piper & Sons ..... 13,670 0 0  
Cowland ..... 12,425 0 0  
Dove (Brothers) ..... 12,200 0 0  
Myers ..... 12,040 0 0  
Downs ..... 11,912 0 0  
Stimpson ..... 11,600 0 0  
J. & C. W. Todd ..... 11,311 0 0  
McLennan & Bird ..... 11,275 0 0  
Batterbury (accepted) ..... 10,950 0 0

For sewer-drains, cellars, and road, in laying out Lloyd's Brompton estate. Mr. G. A. Burn, architect. Quantities supplied by Mr. G. H. Julian:—  
Myers ..... £2,405 0 0  
Stimpson ..... 3,918 0 0  
Batterbury (accepted) ..... 3,862 0 0

MR. BENSON'S WATCHES.—"We have seen several watches from this well-known firm, and can speak with confidence of their exquisite workmanship and artistic finish. They keep time with very great precision, and have been declared by competent judges to be well worth the money. Parties wishing them can be supplied through the post-office."—*Glasgow Examiner*, May 19, 1860.

Benson's Illustrated Pamphlet, post free for two stamps, is descriptive of every construction of watch now made. Watches safe by post to all parts of the globe.—*Advertisement.*  
J. W. BENSON, 33 and 34, Ludgate-hill.

# The Builder.

VOL. XVIII.—No. 932.

## Wages and Condition of the Hindoo Artizans.



IN these days of social economy the smallest item of information respecting the "condition of the working classes" is possessed of a certain value. The following brief notes, which have reached us from Bombay, concerning the native artizans, are therefore worthy of attention. It is sometimes useful to turn our eye on a lower phasis of civilization; and it is curious to observe the differences which occur in the social development. For the facts here given we are indebted to a native carpenter, who fills the office of a subordinate clerk to the Peninsular and Oriental Steam Navigation Company at Mazagon, near Bombay. In itself his communication is a curiosity; but, as our present object is rather to impart instruction than to create amusement, we shall do our best to exhibit the sense of it.

Few of our readers are unacquainted with the singular division of the Hindoos into castes, and with the pernicious effects which flow from this fatal and superstitious policy. It is probably not so well known that the same exclusive principle is carried out to even a still more absurd extent, if possible, by the native artizans. These people, although sprung from what is considered the lowest and most contemptible order—in the theoretic idea of society—are as devoted to their religion as the Brahmins themselves, and as eager to perpetuate its ancient dogmas. The working classes of India, accordingly, are divided into as many sects as there are castes in their religion. For example, a native carpenter will neither eat nor sleep with a stonemason, nor a brass-founder with a copper-smith. When it is considered how nearly those branches of trade are allied to each other, the absurdity of the principle becomes more apparent. But this is not all. It sometimes happens, in some of the large works in the neighbourhood of Bombay, that the workmen consist of a mixture of Hindoos, Mahomedans, Parsees, and perhaps a sprinkling of Portuguese, all of whom profess different creeds, and hate each other with that perfect hatred which only theological differences can inspire. The old idea of Shylock pervades the whole community: "I will buy with you, sell with you, talk with you, work with you, and so following; but I will not eat with you, drink with you, nor pray with you!"

Another singular feature in the social condition of the Hindoo artizans is this, that every trade is held to be hereditary. If a blacksmith have a son he must make him a blacksmith. The weaver's family, in like manner, must be taught, while they are still infants, to tie the ends of the wool, and, finally, to drive the shuttle after the manner of their forefathers. One generation succeeds another with almost the blind and undeviating instinct of the lower animals. It is impossible for a man to strike out an original path for himself, for as soon as he is able to lift a hammer or any other implement he must go in with his father and there he must remain.

They serve no formal apprenticeship. In the building trades, for example, a Hindoo boy commences work, we shall say, at the age of ten or twelve years; but until he gets accustomed to the use of tools he gets no wages; and even

then he receives next to nothing—perhaps a rupee or two a month—which is increased by degrees, more according to the skill he exhibits than to any stated time or fixed rate. Properly speaking, he is paid by the quantity of work he can execute. It is not at all uncommon to see two lads of the same age working together in a carpenter's or a blacksmith's shop, one getting eight rupees per month and the other getting only six; and it is enrious to observe that no symptom of discontent is shown by the weaker of the two.

The standard wages of all mechanics in Bombay, we are informed, is about twenty-six rupees, or 2*l.* 12*s.* per month. In the carpenter's trade, for example, there are three separate branches—ship carpenters, joiners, and carvers,—all of whom are nearly equal in point of wages and regularity of employment; and in this case we may divide the journeymen into three classes, the lowest of whom gets ten, the second twenty, and the third from forty to fifty rupees.\* Some men of peculiar genius and skill, who rise to the position of freemen, often earn 100 rupees and upwards per month. The stone-cutters are scarcely so well off in their circumstances, from the reason that there is less demand for their services. They are not settled in shops, like the regular carpenters, but pursue a desultory life under sheds and out-houses, and not infrequently cutting their stone at the quarry,—or mine, as it is called in India. The highest rate of their wages is about twenty rupees per month. The blacksmiths and copper-smiths, who are highly ingenious mechanics, have shops of their own, where they prepare the articles of hardware, which are exposed in the ironmongers' shops. They are also largely employed in public works and private establishments. In other respects they are on the same footing with carpenters. The plasterers or bricklayers,—these branches are conjoined,—are a numerous tribe, as migratory in their habits as the stone-cutters, and also closely resembling them in their circumstances. The highest wages, in this instance, do not exceed twenty-five rupees per month. The potters are considered about the lowest of handicraftsmen. Their wages in most cases do not amount to more than ten or twelve rupees. Generally speaking they carry on their trade in their own miserable bungalows, separately and independently, and thus become in a manner the bondsmen of the shopkeepers, who have large establishments, and derive large profits from their work. The jewellers, on the other hand, who pursue the same system of isolated labour, scarcely belong to the category of workmen. They have shops of their own, where they sell jewels, as they make them up, to the public, who have a keener scent for cheap jewellery than for expensive pottery. They often realise very handsome profits. The precious-stone cutters are of course similarly placed, with this exception, that there is more irregularity in their employment. Sometimes they engage themselves by the day, in which case they charge a rupee or two, according to the value of the stone, and the quality of the labour.

Under such a condition of things, it is obvious enough that no trades-union could exist. Accordingly, our Hindoo manuscript gravely relates that, "there are no meetings of the working men to settle the rate of wages." "Those rates," it goes on to state, "are fixed by the option of the employers, and the public demand for labour." It is, however, customary sometimes for working men of the better orders, such as coach builders and carvers, to carry on their business in partnership, but whether on the co-operative principle, or that of limited liability, our informant is silent.

With regard to the education of these Hindoo artizans we are informed that it is generally neglected; as, indeed, we might reasonably infer from the circumstance of their being put to work at so early an age, and possessing so little after opportunities of acquiring knowledge. Nevertheless, it is proper to state that numerous instances occur in the trades of which we speak where the men are what even a European tradesman

would regard as good scholars. They are far inferior in point of skill to English mechanics; and this is particularly observable when they come in contact at the same work. It must be stated, however, that, in point of ingenuity and power of patient monotonous labour, the Hindoos are unsurpassed.

Some of the ornamental metal-work in their temples is equal to the most elaborate specimens of which we know. The talcoos of Coromandel are in many essential respects superior to those of Manchester. The silks of Moulton, the brocades and ornamental gauzes of Benares, the green muslins of Mysore, not to mention the fabrics of Cashmere, are noble specimens of what a barbarous ingenuity with natural endowments may accomplish. And, we must always remember that the poor Hindoo workman has no advantage from the division of labour, or the use of machinery. His capital for the most part is miserably small; yet, by virtue of sheer personal handicraft and natural taste, his productions are prized over the length and breadth of the civilized world.

It is, however, impossible not to see that under such a system of castes it must be long before the artizans will take their right position in our Indian empire. This wretched principle of hereditary succession must destroy all noble emulation and pride on the part of the workman, and prevent the assertion of individual character. Let us hope that in the progress of things those foolish impediments of which we have spoken may be swept away, leaving free and uninterrupted course to the development of the national resources. The great problem of Indian government is now a financial one, and the solution of it must depend to a large extent on elevating the condition of the native artizans.

## ON CHURCH AND CONVENTUAL ARRANGEMENT.\*

In Germany (Lenoir, ii. 209), at the end of the tenth or beginning of the eleventh century, a modified basilican form appears, at Gerrode, c. 960; Hildesheim, 1001; Limburg, 1035; Mayence, Worms, and Spire.

The type adopted was a double-apsidal cruciform ground-plan, as in the east of France, at Besançon, Verdun, and originally at Strasburg; west and east transepts, a long nave, a short choir, both of three aisles; small round octagonal towers were multiplied, flanking the apses, or attached to both the west and east fronts in churches not cruciform. Polygonal domes or octagonal lanterns were employed at the west end, and at the intersection of the nave and choir, and galleries were constructed under the eaves of the roofs for the accommodation of women.

At Hildesheim we find a short apsidal choir, with an aisle on three sides, not communicating with the nave; a western transept flanked, like the transept, with octagonal towers, and a west door wanting.

St. Geroon, at Cologne, of the thirteenth century, has a circular nave, and is one of the last examples of a domical building. Cologne has a chevet, with seven chapels, c. 1322, five aisles throughout the church, and a partially developed transept. Freiburg has a western steeple, found also at Ulm; a low, ill-developed transept, and octagonal towers flanking the junction of the nave and choir, round which are twelve chapels. Strasburg was intended to have two western towers, and the whole east part is a basilica of the eleventh or twelfth century; the transept is ill-defined. Ratisbon, 1275 to the fifteenth century, has three east apses, and a "subdued transept." St. Stephen's, Vienna, as Prague was designed to have, has two transept towers. At Bamberg there are two apses, west and east, flanked by towers. Naumburg is of similar design. Xanten has two western towers, without an entrance on this side, with a polygonal apse, and four flanking chapels opening in the choir and aisles. At St. Severus, Erfurt, three spires rise in place of a transept over the apse.

St. Cunibert's, Cologne, consecrated 836, was the first instance of the Lombardic style in the Rhenish provinces.†

German architecture resolves itself into three periods.

\* By the Rev. Mackenzie E. C. Walcott, M.A. See p. 789, ante.  
† Comp. to Gloss. iii. p. 11; Whewell, Arch. Notes, pp. 46, 78; Peto's Arch., i. p. 82.

\* A rupee is 2*s.*

The pure Romanesque churches have a semi-circular domical apse, lower than the choir (as in several churches at Cologne, Mentz, Spire, Worms, Laach, Eberbach); and frequently the aisles have similar terminations; some churches (as St. Mary Capoline, the Apostles, and St. Martin), have apses to the ends of the transepts, instead of the usual triple eastern apse; and (at Jobanisherg, St. Peter's/Gelhausen, and Laach), the east sides of the transept received semi-circular apses. The towers are generally near the east end. There is an apsidal outer gallery round the choir at Laach, Eberbach, Worms, Spire, St. Gercon's, St. Martin's, and St. Mary Capoline, at Cologne. There are usually two pairs of towers and two cupolas or octagonal pyramids. St. Martin's and St. Castor's, at Cologne, are of this period. A portal cloister, as at Laach and St. Mary Capoline, Cologne, is another distinctive feature. The sides of the towers terminate in pediments, and in these gables Mr. Ferguson has ingeniously discovered the germ of spire-growth.

In the Transitional or Early German style the apse became polygonal, and of equal height to the choir, and the east chapels of the transept have seldom a simple semi-circular form, but have sometimes an additional recess (as at Gelhausen and Sinzig); or another form (as at Limburg), or wholly disappear with the transept (as at Audernach, Boppard, and Bamberg). At Mentz, Worms, St. Sebald's, Nuremberg, and at Bamberg, the eastern apse is round, and the west apse polygonal; at Bonn the ends of the transepts are polygonal, and the choir apse semi-circular. The churches are of three aisles, and often have a polygonal, as at Bonn and Marburg, or semi-circular end to the transept. Generally, where there are double apses, there are west and east transepts, as at Mentz, St. Cunibert's, the Apostles, St. Andrew's, St. Pantaleon's, Cologne; St. Paul's, Worms; and Nuremberg. Two pairs of towers on the east and west occur at Bamberg, Andrauch, Bonn, Arnstein, and Limburg. There is a central octagonal tower at Limburg, Gelhausen, Seligenstadt, Sinzig, Worms, Hermersheim, and Bonn; sometimes there is a central spire between a pair of towers; sometimes two eastern towers (as at Gelhausen and St. Cunibert's, Cologne); sometimes west towers, as at Limburg, Bonn, Seligenstadt, Sinzig, Hermersheim, and Boppard. A similar group is often found like a transept at the west end, and sometimes a single west tower in the central compartment of this front. The gables of the towers become more acute, and the cornices lighter. Buttresses were used, and porches were added at the west end.—(Whewell, p. 80, 105, 110.) Chapter-houses are rare in Germany and France, and seldom circular. A baptistry is attached to Meissen. At Worms, also, of the beginning of the twelfth century, there is a west octagonal lantern flanked with round turrets, a central octagon and east end flanked with round turrets. Spire, of the eleventh century, has an octagonal lantern at the intersection, and west square towers to the transepts. Mayence has a western apse composed of three trigonal apses, an octagonal steeple and west turrets, and an east lantern and a round turret. At Laach, c. 1093-1156, we find the ancient parvis before the church with a west cloister, as at San Ambrogio's, Milan; a western apse, used as a tomb-house; a square west tower, with a transept, flanked by lofty circular towers; an eastern transept, a central octagonal lantern, flanked by two square turrets; an apsidal choir, and transepts with eastern apses. Lateral porches supplied the place of a western door. The Apostles, at Cologne, has a tall west tower and transept, a central octagon, and two flanking turrets. St. Castor, Coblenz, Andrauch, and Arnstein have two groups of towers, but no central lantern. The third period is the complete or Decorated German, which occurs at Altenberg, Cologne, Freilburg, Ratisbon.—(Whewell, p. 113.) At Zurich the choir, of the eleventh or twelfth century, is square, while the aisles terminate in apses, and two west towers were contemplated. A thirteenth century church at Kaschau, Hungary, attributed to Villars de Honecourt, has a French arrangement of eastern chapels. Buda, of the same period, has three eastern apses and two west towers. Rooskilde, in Denmark, of the twelfth and thirteenth centuries, is a three-aisled apsidal basilica, with a western tower. Trondhjem, Norway, with square east chapels to the transepts, and an octagonal tomb-house at the east end, an aisleless nave and central lantern. Hitterdal, a wooden church, is surrounded by external galleries. The cathedral of Lubeck has a three-aisled nave with lateral recesses, an unimportant transept, and a

chevet, with seven polygonal chapels and cloister. St. Mary's is three-aisled, has two western towers with no entrance on this side, a low transept, consisting of chapels; and a chevet, with five polygonal chapels. Danzig is cruciform, with a west tower.

*Belgium.*—In Belgium the earlier churches had a square east end, and central and western towers; in later times we find, as in Germany, the French chevets; and the arrangement appears also in several Pomeranian churches. The oldest church in Belgium, that of St. Vincent of Soignies, of the tenth century, resembles Zurich: it has a square east end, and had a central and western tower. St. Gertrude, of Nivelles, has also a square east end, a central tower, and west tower flanked with two circular towers, and a double transept. Tournay has a transept, with apsidal ends of the eleventh century; a chevet with five chapels, consecrated 1223; and a central tower, round which four out of the original six lesser towers are grouped. Antwerp has an ill-developed shallow transept, a chevet with five chapels, a seven-aisled nave, and one of the two western towers which formed part of the design. St. Jacques, at Liege, has a circle of chapels round the choir apse.

Belgian Gothic architecture exhibits—1. Primary Pointed and Transitional, tenth to thirteenth century. The ground-plan is a Latin cross; the principal west door is isolated, and in the Transitional; lateral entrances are made to the nave and choir, but were removed under a single porch, deeply recessed, at the end of the transept in the thirteenth century. Porches at the west end are rare; towers were square: one stood at the west end, or two, as at St. Lambert's, Liege, and St. Sulpice's, Leu; or two flanked the junction of the cross and transept, as at St. Bavon's, Ghent. The principal door was on the west, under a porch, at St. Lambert's, Liege, and St. Mary, Dinant; but on the sides of the nave at St. Vincent's, Soignies, and St. Gervais, Maestricht. The west front, where was no door, had a large window, as at St. Vincent's, Soignies; Notre Dame, Louvaine; and where there are no west towers there are round turrets, as at St. Nicholas and St. Jacques, Ghent; St. Quentin's, Tournay; and in this case there is a central tower or octagon, as at St. Jacques, Ghent. In Transitional the choir was small, lower than the nave—as at St. Vincent's, Soignies,—square ended, or with a circular or octagonal apse. In the twelfth and thirteenth centuries it was enlarged. Sometimes it is aisleless, sometimes has a chevet and aisles, sometimes has not continuous aisles, throughout its circuit. The naves have no side chapels: the large triforium is painted in Primary and round-headed in Transitional. 2. Secondary—Pointed or Rayonnant, fourteenth to latter part of fifteenth century, is marked by the huge size of the windows above the entrances. The naves have side chapels; Lady-chapels are rare. There are sometimes as many as four doors at the west end, as at St. Gudule's. Recessed porches occur in the fourteenth and fifteenth centuries. Single or double towers flank the west end—square, as at St. Gudule's, or square below and octagonal above, as at Notre Dame, Antwerp, and St. Bavon's, Ghent, but were designed to carry a spire. At the end of the fourteenth and beginning of the fifteenth century they were intricately carved, as at Notre Dame, Antwerp; St. Gertrude's, Louvaine; and Mechlin; this was the period of wooden spires, as at St. Gertrude's, Nivelles, and St. Bavon's, Ghent. 3. Third Pointed or Flamboyant, latter part of fifteenth to latter part of sixteenth centuries. Notre Dame, Antwerp, has a fine octagonal cupola, a solitary instance. Spires became generally spherical or angular domes.—(Weale's "Quarterly Papers;" Schayes, "Hist. de l'Arch. en Belgique.")

*Spain.*—The Italian apse is a direct copy from the Roman basilica; the Spanish cathedrals present either the French chevet with a circle of chapels, or an apsidal aisle surrounding the altar, and opening on chapels with an eastern chevet, which, if the east end is square, is the Lady-chapel,—if circular or octagonal, as at Burgos and Batalha, a tomb-house. The transepts are ill defined. The interior arrangement is mainly that of the old basilica. The stalls of the clergy are ranged along the west end of the choir (which is shut off from the nave by a wall), and ranged westward of the transept, the whole space under the lantern—the cimborio—being railed in and unoccupied. The sanctuary (capilla mayor) contains only the high altar. It is curious to observe in passing that the canons' choir was in the centre of the nave at the Lateran, S. Maria Maggiore, S. Lorenzo fuori le Mura, and St. Clemente; and that

the circular font was placed in the north transept at St. Peter's, as the late Baptistery of Canterbury appears to have been built in accordance with that arrangement.

Leon, commenced 1199, terminates in a chevet with five chapels. Burgos, of the thirteenth century, has lateral chapels attached to the nave,\* two western towers, a central octagonal lantern, and octagonal eastern chapel, like that of Murcin. Toledo, commenced at the same period, is of five aisles, like Troyes, with an eastern chapel. Seville is a parallelogram, with five aisles and lateral recesses and an eastern chapel.

*Portugal.*—Batalha (Lenoir, ii, 229), of the fourteenth century, is a three-aisled nave, with a transept, having four eastern apses: to the eastward of the apsidal choir is an octagonal tomb-house, with radiating recesses, and an octagonal tomb-house inscribed in a square.

*France.*—M. de Camont divides French Mediaeval architecture into (1), Roman; (2), Ogival Primitif (thirteenth century); (3), Ogival Secondaire (fourteenth century); (4), Ogival Tertiaire, first epoch, 1400-1452; second epoch 1450-1550. In France,† as St. Gregory describes Tours, and Apollinaris Sidenius Lyons, the early churches in the north, Poitou, Auvergne, and Burgundy, as in the sixth century, preserved a basilican form, an apsidal oblong, with an atrium surrounded on the three sides by a colonnade. In one part of Aquitaine, and on the banks of the Rhine, they were aisleless; in Provence and Toulouse the basilica of Constantine, at Rome, seems to have been taken as a model. Fontevrault, of the twelfth century, has the plan of a basilica without aisles. From Auvergne to Nevers and Toulouse, the aisles and upper gallery of the basilica were preserved in the eleventh century. The double apse was found in the east of France, and on the borders of the Rhine; at Tours, Besançon, and Verdun; and, probably, Strasburg. Poitiers has also shallow niche-like apses to the transepts, and three choir alleys. The baptistries were circular. The naves were at length subdivided by pillars, as at St. Vincent's and Paris, by St. Germain, and at Clermont, by Namatius, the eighth bishop, in the fifth century; in the latter church an apse was added, and at St. Vincent's, which was called in consequence St. Cross, a transept. Namatius built Auvergne Cathedral in the form of the cross. In France, in place of the wall of the niche-like Roman apse, the architects constructed a screen of columns, with an external also opening into radiating chapels—a chevet. The chevet was deduced, probably, from the junction of the circular tomb-house so frequently found behind the altar with the basilica, by the removal of the intermediate walls. At St. Martin's, at Tours, the plan was initiated in the twelfth century by omitting half the eastern circle built by Perpetuus, and building the nave from the tangents, and was fully developed at Conques and Toulouse. Leon, like Dol, has a square end, but in the twelfth or beginning of the thirteenth century, we find semi-circular apses to the transepts of Nevers and Soissons, at Tournay, Belgium; and St. Martin's, Cologne. Till the middle of the thirteenth century the churches of the south of France, generally, had neither eastern aisles nor radiating chapels. In Provence, apses were usually polygonal; in the north, circular. M. Viollet le Duc gives some curious instances of a double east apse. The ground-plan is singularly deficient in a due expansion of transepts, which are often wanting, or frequently only indicated internally. Chartres, Beauvais; St. Maurice's, Angers; Autun, Poitiers, Carcassonne, and Rouen (the latter strikingly resembling the ground plans of Gloucester and Norwich), are the chief, not to say, almost the only exceptions. Bourges and Bazas are not cruciform, and, like many cathedrals, appear to have been constructed thus in distinction to the alleys, in order to show that a cathedral was a national monument built by the people. Portals, as at Laon, Chartres, Amiens, Rheims, Sens, Soez, Paris, Contances, Bourges, and Autun, are very distinctive of French arrangement, and were probably suggested by the large Clugniac porches. Another prominent feature in the thirteenth century is the prevalence of lateral chapel recesses to the aisles, and even when the aisles are double, another distinctive characteristic of the style, built between the buttresses, as at Rheims, Notre Dame, Paris; Troyes and Bourges; and at St. Martin's, at Tours, on the south side of the nave, and at the choir only, as at St. Omer's, Rouen. St. Front's,

\* Ferguson, Handbook of Arch.  
† Viollet le Duc, Dict. de l'Arch. s. v. Arch. Rel. Cathedrales; Abside, Chevet, Chapelle; Lenoir, i, 221; ii, 91.

Perigueux; Angoulême, Alby, Fontevault, and St. Maurice; Angers, are aisleless. Eastern apsidal chapels occurred in the choir of St. Front's, Perigueux; Nevers, Angoulême, St. Savin's, Fontevault; St. Hilaire's, Poitiers; Clermont-Ferrand, and Issoire. At Clugny, where there was also a choir-transept, there were double eastern apses to the main transept. At St. Benigne's, Dijon, and Langres, c. 1160, there were mere niches in lieu of transeptal eastern apses. St. André's, Vienna, has an eastern apse; so has St. Maurice's, Angers; Angoulême has four apsidal chapels attached; Clugny had an eastern apse with five chapels; Ronen has an apse with three chapels. A chevet with five chapels occurs at Rheims, Noyon, Tours, Clermont, Narbonne, Limoges, St. Ouen's, Bazas, Troyes, Clugny (now destroyed), Chartres, and St. Martin's, at Tours (Chartres has, however, an additional chapel on the east, connected by a staircase); with three at Fontevault and Conques, with seven at Beauvais, Bayeux, Amiens, Mans, Coutances, and St. Stephen's, Caen; and with four at Issoire, a fifth of square shape being inserted to the east. Chalons-sur-Maine, Carcassonne, and Angers, have an aisleless apsidal choir; Alby is apsidal, with lateral chapels round its entire circuit. St. Front's, Perigueux, as Clugny had, has an ante-church and porch. St. Hilaire's, Poitiers, and Laon, have square east ends, but in the former instance there are three shallow, niche-like apses. At St. Pierre Toscanella's, and at Spire, similar quasi-apses are attached to the transept. At St. Front's, Perigueux, an oblong building, with an apsidal termination, was carried out beyond the choir, like a lady-chapel. At St. Stephen's, Caen, a north-west chapel is attached to the nave.—(Lenoir, i. 275, 355; ii. 24, 95, 121, etc.; Viollet le Duc, i. 4, 232; ii. 423; iii. 226.)

**Chapels.**—The word chapel has been derived from St. Martin's cappa,\* which the kings of France carried out to their wars and deposited in certain tents, called, from the circumstance, "capella." In a chapel of Westminster, Carton set up his printing-press, a name from this circumstance attached to printers' workshops. The development of chapels requires particular notice. The first churches had but one altar; but in the sixth century, St. Germain built, at St. Vincent's, Alby, four, one in each wing of the cross, besides two additional chapels at the west end. Two centuries later, in the abbey of St. Gall, we find seven, four in each of the aisles, and an apsidal chapel of St. Peter at the west end of the church, in place of the mediana, or principal gate of the basilica. Chapels were first built for the sepulchre of saints. At St. Germain des Prés was an oratory of St. Symphorian, on the south-west of the front, in which St. Germain desired to be buried. On the north-west was the chapel of St. Peter. The cubicle mentioned by St. Paulinus of Nola, was devoted to prayers, reading of holy books, and commemoration of the dead. St. Praxedes, Rome, has two chapels near the entrance of St. Denecris Salonica, and another at St. Cecilia Transverberino; one on the south of the choir at Trieste, dedicated to St. Justus and St. Severinus, like the main church, composed of three apsidal aisles. Sens and Langres have a single eastern chapel; Cahors has three, and Angoulême four apsidal eastern chapels. Towards the end of the eleventh century, radiating chapels and an eastern aisle appear in Auvergne and Poitou, and the centre of France, extending in the twelfth century to St. Hilaire's, Poitiers, Notre Dame, Clermont, Nevers, and Toulouse; but in Normandy not until the beginning of the thirteenth century; but ordinarily the choirs in that province and the Ile de France were simply surmounted with aisles, as at Mantec, Poissy, and Paris. Laon and Chartres were almost destitute of chapels. At Bourges (c. 1230) and Chartres (c. 1220) the radiating chapels are mere apsidal niches; but in the twelfth century became important, as at St. Denis, and St. Martin des Champs. In the twelfth and at the beginning of the thirteenth century, chapels, according to an arrangement peculiar to abbeys, and afterwards imitated in the cathedrals, were enlarged, as at St. Remy, Rheims, and Vezelay, and communicated with each other by a subordinate narrow aisle. There are three radiating eastern chapels at Nevers, four at Clermont-Ferrand, five at St. Savin's, and only one on the east at Langres, c. 1160.

The difficulty of ranging chapels round the apse, as at St. Germain des Prés, led to the alternation or admixture of polygonal or square chapels with those of circular shape, as at Fontenello; and

in the thirteenth and two following centuries to the adoption of polygonal chapels only, as at St. Nicaise's, Rheims. Owing to this grouping of subsidiary apsidal chapels about it, the apse lost its significant name of chevet (capitulum). (Ducange, s. v. Capitulum, ii. 146; Lenoir, ii. 96.) The cemetery of great persons, as at St. Genevieve's at Paris, was on the east side of the apse, and a lamp was often set in a niche, so as to light both this garb and the crypt.

About the eleventh century the altars began to be removed out of the nave into eastern chapels, and the aisles were rendered continuous and enlarged, to afford a free passage round the choir.

In the thirteenth century the lady-chapel, like the radiating chapels of the apse, received a marked development, as at Rheims, Mans, Amiens, and Beauvais, built 1230-70, and at Coutances. The transepts also at Rheims, St. Hilaire le Grand, Clugny, and St. Savin's, as the choir had previously, in order that the altars might be soon entering the church. To multiply these chapels a second transept was added, as at Salisbury, &c. At Clugny it received north and south apsidal ends, as at Tournay and Noyon, a new arrangement of the eleventh and twelfth centuries. There are double aisles at Clugny and St. Hilaire's.

We are able to collect from the "Rationale" of Durandus, Bishop of Meude, who was born in 1220, and died in 1296, a clear description of a church of that period. It was cruciform, lying east and west, sometimes apsidal, and consisted of nave, chancel, and sanctuary, an apse, a crypt; the roof was tiled; the windows were glazed; the chancel was lower than the nave; there were altar-rails; a screen, and occasionally a rood-loft; a sacristy; a water-drain; there were carvings on the walls of carved images, the zodiacal signs, and Scriptural subjects; there was a veil separating the sanctuary from the choir, to be raised on certain occasions; and in churches "are suspended two eggs of ostriches and other things which cause admiration and which are rarely seen, that by their means the people may be drawn to church and have their minds the more affected." Among the conventual buildings and accessories he mentions a square cloister, chapter-house, refectory, cellar, dormitory, oratory, herb-garden, and well.

In France the naves did not receive their outer chapels (Viollet le Duc, i. 207; ii. 354)—constructed, as at King's College, Cambridge, between the buttresses—until after 1240, and the first instance occurs in Paris, where, in the choir, in 1260, the operation was continued. Limoges, Narbonne, and Troyes were designed without them; Laon, Coutances, Ronen, and Sens were modified for their arrangement, 1300-50. They were added at Amiens about the same period; but in the fourteenth century they disappear at St. Ouen's, while the chevet retains five radiating chapels, the easternmost being most prominent. The outer chapels were probably introduced owing to the enclosure of the choir.

The architecture of Ireland includes—1. Oratories, as in the south-west district of Munster; and bee-hive houses in Connemara, built of masses of rock, and vaulted with stone of a later period. 2. Celtic, small aisleless rectangular buildings, without an apse, usually in groups of seven, like the churches in Asin Minor and on Mount Athos, with a central west door, and occasionally provided with a chancel, as in the Patrick Temple, Galway, and in the early churches at Glendalough. In the fifth century they are of a type anterior to the Roman basilica; and some were built of timber. 3. Romanesque, ninth to twelfth century, with a basilican arrangement; the throne, or a bench-table, being at the east end, and the altar detached, as at St. Saviour's, Glendalough; the roofs are of high pitch, and the chambers are frequently constructed under them, or along the walls, for the clergy. The round towers, at once bell-towers, treasuries, and places of retreat, are both of this and the earlier period. That of Glendalough is said to be of the seventh century. Cormac's Chapel, Cashel, has transept-towers of the early part of the twelfth century. 4. Anglo-Irish, from the close of the twelfth century. The original plan of a simple oblong, or a nave and chancel, were preserved to the latest period. Bell-turrets were not common till the thirteenth century. St. Douglough's Church, of that date, is oblong, with a low square central tower, and adjoins an octagonal baptistry. Christchurch and St. Patrick's, Dublin; Gray, Kilmallock, and Cashel, are pointed; Jerpont and Dunbrody, Transitional. Newtown has Romanesque features. Transepts were added in (5), the Later-Pointed. In the fourteenth and fifteenth centuries the narrow

central towers were added. Cashel, Kilkenny, Waterford, Limerick, St. Patrick's, and Christchurch are, and Kildare was, cruciform. Their towers were central, with the exception of St. Patrick's and Limerick, which were on the west. There is no instance of two western towers in Ireland. The cloister of Kilkenny resembles cloisters in Spain and Sicily.—(Gen. Mag., N.S. vii. 433; Wakeman, Arch. Hibernica, 1818.)

The architecture of Scotland embraced—1. churches of wicker-work, which in the fifth century, gave way to stone churches, like that built by French workmen at Whithere for St. Ninian, and another constructed in the eighth century by monks from Jarrow. 2. Scotch-Irish, from the middle of the sixth to the middle of the eleventh century; it exhibited round towers, hee-hive houses, dome-roofed cells, small churches, often in groups, and, at Iona, priests' chambers over the aisle. 3. Romanesque Anglo-Scottish, 1124—1165, as at Dunfermline, Kelso, and Leuchars. 4. Lacet, 1165—1286; Kelso and Paisley had naves shorter than the choirs; Dunkeld, Dunblane, Paisley, Sweetheart, and Whithere had aisleless choirs; Brechin, Dunblane, and Whittemore, St. Andrew's, Aberbrothock, Dryburgh, and Melrose had only an east aisle to the transept. 5. Decorated, 1286—1370. 6. Flamboyant, 1371—1567. The saddle-back tower and polygonal apse are continental features; porches form a characteristic, as at Aberdeen, Paisley, and Dunfermline. Holyrood, Aberdeen, and Dunfermline offer the only instances of two western towers. Dunkeld has, as Glasgow had, a north-western tower. The spires are poor. The imperial crown of Edinburgh is almost unique. The transepts are seldom well developed. Edinburgh has double nave-aisles.—(Arch. Journal, xiii. 226.)

**English Architecture.**—The earliest English architecture of which we have any record, historical or material, was neither borrowed from France nor communicated from Germany. The Saxon churches (Poole's Churches, c. iii. p. 22; Lenoir, ii. 180) were divided into four classes (Canute's Laws, A.D. 1017, c. 3). The word "monastery" occurs in Iud's Laws, A.D. 693, § 6. St. Jerome mentions pilgrimages of the early British to Jerusalem. Wearmouth was built by French masons (Monasticon, i. 501). Stone churches are mentioned by Reginald of Darham (Surtus Publ. pp. 282, 281). Florence of Worcester speaks of the magnificence of Alfred's buildings, and Alcuin of York Cathedral: it was, in 627, a square basilica of stone (Ib. Fabric Rolls, p. vii.). Peterborough was built of immense stones, c. 655 (Hugo Can., ap. Lehaut, i. p. 3). Lasingham was of stone, c. 660 (Bede, Eccl. Hist., iii. c. 23). William of Malmesbury says that stone buildings were rare before the time of Benedict Biscop (Ib. i. c. 3). Polished stone is mentioned as employed, c. 674, at Ripon and Hexham. The word "basilica" is used by Eddius, Vit. Wilfridi, c. 17; Matt. Westm. Anno 750; Oronceus Vitalis, ii. p. 25; Will. Malm., fo. 43; Monast., iii. 135. In France it denoted a minister (Ducange, i. 611): in England, a church before consecration (Otho, Const. 1297, c. 1). At Abingdon, the church, like Clermont (Viollet le Duc, i. 209), had a double apse, with twelve chapels and twelve cells for the monks, in the seventh century (Monasticon, i. 512). The dome shown in Anglo-Saxon illuminations (Arch. Jour., vi. 359; i. 24; Jour. Arch. Ass., i. 29; vii. 270; x. 142) links the style with Byzantine. In the instance of Bishop Wearmouth, c. 675, we are informed that the church there was built after the Roman manner. We shall not pause to consider the stud buildings, like that of Glastonbury, but merely allude in passing to the timber church still existing at Greenstead (Jour. Arch. Ass., v. 1; vi. 191); Bury St. Edmund's, till 1092, was mainly of wood (Monasticon, iii. 101). There was a stud lady-chapel at Tykford (Ib. v. 206). Bede mentions St. Alban's memorial chapel at Verulam, c. 300, as being "of admirable workmanship," and the erection of a stone church at Galloway in 448 gave the name of Whithere, or Stonehouse, to the place. William of Malmesbury says that St. Aldhelm's "broad church survived whole to that day." St. Piran's Church, in Cornwall, of the fifth century, resembled the Patrick Temple of Galway. The nave door on the south was round-headed, with a chevron moulding, a keystone carved into a tiger's head, and two human heads upon the capitals. The font was octagonal. A single north-east side window, near the priest's door, lighted the east wall of the square-ended chancel; to the south-east was the altar, inscribed with a cross and the name of St. Piran. The stone chancel screen had an opening on the north side. A bench table,

\* Johnson, Canons, ii. 68; Durandus, ii. 10, 8; Gemma Animæ, i. 129; Ducange, ii. 103.

commencing on the south side of his screen, was continued round the nave to the east wall. At St. Gwythian's the nave had a south door, a chancel with a stone screen and altar, and a bench table against the north and south walls returned along the screen. St. Madderno's is a simple parallelogram, with a stone bench and division between the nave and chancel, a stone altar, and in the south-west angle a holy well (Arch. Jour., ii. 225; Jour. Ass. Soc., ii. 68). A similar well was found at Kirk Newton, in Durham.

King Edwin built a stone church at York (Comp. to Gloss. iii. 11). St. Augustine introduced the basilican form into England, but without the atrium or narthex. Norwich (Jour. Arch. Ass., xiv.) still retains evidences of a Roman type, where the steps of the bishop's throne appear in the wall behind the altar; at Canterbury the throne once occupied the site of the present altar, while the altar formerly stood on the lower platform; at Exeter the eagle,\* until recently, stood in front of the altar steps, being a vestige of the old custom of reading or preaching from that place.

In a history of Ramsey Abbey (Comp. to Gloss. iii. 18) of the time of Henry I., a church contemporaneous with those of St. Dunstan and St. Oswald, is described as having "two towers, one at the west end, the other central, according to the custom of the period." St. Bennet, Hulme, Belvoir, Wymondham, Durham, and Malmesbury, had two similar towers.—(Monasticon, i. 256; iii. 31, 288; Comp. to Gloss. iii. 21.) The western tower was eminently fitted for the defence of the most exposed portions of the church when it was in danger of assault during unsettled times.—(Lenoir, ii. 379; Viollet le Duc, iii. 340.)

Pope Sixtinians directed the employment of bells in 601. Baronus refers their use to the time of Constantine. Bells came from Italy: the large were called *campane*, the small *nabes*—(Wal. Strabo, c. 4, 5; Am. For., c. 1; Fleury, xviii. 42; Viollet le Duc, iii. 280.) In Scotland, at Aberdeen and Glasgow, the bells were hung upon trees. Bells are mentioned in England by Bede, c. 680 (Hist. Eccles. iv. 23). Turketil, who died 975, gave a bell named Guthlae to Crowland Abbey, and Ingulphus mentions a peal of seven bells there. By the laws of Athelstan the existence of a bell-tower gave the owner the right of a seat in the town gate, a place on the grand jury. Belfries are distinctly mentioned by a monk of St. Gall in the eighth century. One of the earliest bells remaining is that of Moissac, dated 1273. At Chartres (Dr. Billou, F.S.A., sur les Cloches, 1858) some of the bells bore the name of Les Commandes, as they gave notice for ringing the great bells. The same usage was adopted at Bayeux, where similar bells were called *Moneaux*—warners. At Clugny the bells were named after their destination—Prayers, Angels, Retreat, Toesin, &c. That at Strasbourg, used for the assembly of the Council, was called *Magistrat*; and one at Angers, *Evigilias Stultum*.

William of Malmesbury describes a church built by Alfred the Great, evidently showing the Rhenish type, as erected in a new way of building; four piers supported the whole structure, which had four round chancels in its circumference. Eddius (Comp. to Gloss. iii. 8, 9), Precentor of Northumbria, describes Hexham, built by St. Wilfrid, as "a structure of many parts, long and high, supported on various columns, and above many subterranean chapels;" and Prior Richard, in 1180, speaks of "its nave surrounded with lateral chapels, its walls divided into three stories, its columns leading to them, and oratories, with passages leading to them, and the covered vault of its sanctuary." He also mentions "porticoes (or apses) at Ripon." Alain describes Egbert's cathedral at York as "having many apses and curved roofs." At Winchester, St. Wolstan's Church had north and south aisles, an eastern apse over a crypt used as the burial place of bishops, several chapels, and a cloister to the west; and Miphelge, in the tenth century, added a west tower. We therefore gather from these facts that the larger Saxon churches were of stone, with a central tower, aisles, triforia, clerestory, apse, and crypts, although inferior in size and ornament to the Norman period. Bede (H. E. ii. 4) mentions a stone altar set up by St. Paulinus in 627, and similar altars are mentioned in the Council of Epaunne, 517, c. 26; Prudentius Apollinaris of France, in the fifth century; and the Excerpts of Egbert, in 750.—(Hierur.

Angl. 40; Camb. Camd. Soc. 1845; Canons, 714, c. 41; 816, c. 2.)

The church of St. Martin, at Dover, like St. Genoux, terminated in three equal eastern apses. While we recognise the historical fact that the cruciform shape of churches was one of gradual development, we must at least confess it would be difficult to assign any other reason than symbolical consideration as that which influenced our forefathers in laying out the ground-plan of their churches; and he would not be envid who should attempt to impugn their attempt to embody holy doctrines in external objects, and make the material fabric suggestive of Christian verities. As M. Martin (Hist. de France, iv. 337) observes, "Cet art n'est tout entier qu'une immense aspiration vers Dieu, vers l'infini aspiration ardente et douloureuse du cœur." In the tabernacle and temple the form of the edifice, the arrangement of its parts, and the order of its altars and furniture were made by Divine appointment according to a pattern. This model (Milman's Latin Christ. x. 29) in its main features was adopted and adhered to, as far as the different characters of the two dispensations would allow, in the adaptation of heathen buildings and in the positive construction of Christian churches. The doctrine of symbolism, however, must not be pressed too far. The principle of derivation of orientation is very questionable (Proc. Bedf. Arch. Ass. 1856), as far as it turns on the opinion that our Saviour died with his face to the south, or on the direction of the choir to that part of the sky in which the sun rose on the day of Dedication of the Church. The old English Homily on Wake-days (Poole's Churches, iv. 31; Orientator. Synh. of Churches, lxxviii, lxi.; Churton Eng. Ch. vi. 128), Isidore (Orig. xv. 8), the Gemma Animæ (i. 129), Durandus (v. ii. 27; i. 8), and Walafrid Strabo, mention simply the reason that Christians always prayed towards the east. Viollet le Duc (iii. 235) shows that the declination depended on mere constructional causes. St. Michael's, Coventry, Tynemouth, Boham, Liebfeld, and York bent to the south, and St. Mary's, York, and St. Ouen's, to the north.

At Canterbury the Saxon cathedral was arranged in a great degree in imitation of St. Peter's Church, at Rome. In the very ancient church of St. Gall, c. 820 (Lenoir, i. 32; Viollet le Duc, i. 243; Arch. Jour., v. 85), attributed by Mabillon to Eginhard, the architect of Charlemagne, the ground-plan embraced a long nave with screened chapels in the aisles, a transept with an altar in each wing, a short constructional chancel ending in an apse. A screen ran across the first bay westward by the cross, with lateral doors and in front of the ambo. (At Clairvaux the second or outer choir was used by the sick monks.) The ritual choir occupied the space of the lantern, and was furnished with seats for the singers; a western screen ran in front, and had a central entrance flanked by the analogia, one on each side,—an arrangement which reappears centuries later in the double screen to which I shall presently allude, and in the altars attached to the choir screen in Gothic churches. The high altar stood at the top of a flight of steps, on each side of which were smaller altars, and a lesser altar was placed in the apse. In the centre of the nave was the altar of the Holy cross (Lenoir, ii. 17; Monasticon, iii. 80); probably the first instalment of the future rood-screen. The confession, or cell of the saint, lay under the high altar. In each of the western towers was a chapel. The processional path lay between the arcade of the nave and its lateral chapels in the aisles. The doors in the north aisle, led to the porter's room; in the south aisle, to the poor man's hospice; in the south transept, to the cloister, crypt, sacristy, and dormitory; in the north wing, to the crypt, library, scriptorium, abbot's lodge, and guest-house. Canterbury (Willis Cant. Cath., ch. ii.) was a long parallelogram, divided by two arcades into three alleys. At the west end was an apse with the bishop's throne, fronting the lady-chapel altar. Many altars were dedicated to St. Peter and St. Paul; the eastern apse was allotted to the altar of the latter in reference to the scene of his labours, and the western to the former, in allusion to the pontifical throne (Lenoir, ii. 7). On each side of the nave was a tower, forming a quasi-transept: that on the north was occupied as the Novices' School, that on the south was entered by a porch, and contained an altar. The choir of the canons was inclosed by a screen breast high; at the upper end was an altar with lateral doors in the screen, which closed it on the north and south. In front of the apse, in the chord of which was the altar of the daily mass, were flights of steps on the north,

south, and west, ascending the altar platform, below which was a crypt containing an altar, and extending under the presbytery. Against the east wall of the apse stood the high altar. A passage from the south aisle led into the octagonal baptistry, or church of St. John Baptist.

Edward the Confessor (G. G. Scott, Proc. R.I.B.A., 1860), after "a new kind of building," changed the ordinary Saxon parallelogram into a Latin cross with a lantern at the intersection; the great area of the church had a lofty vaulting; the end had double arches on either side; the choir stood in the cross below the tower; and above and below were little chapels furnished with altars. St. Mary's in the Castle, Dover, built in the early part of the same reign, the latest date assignable, is cruciform and aisleless, with a central tower. St. Edmund's, Bury, completed 1095, had, besides a central tower, two octagonal west towers; the east end was apsidal, the transept had eastern apses, there was a crypt under the choir (Monasticon, iii. 1095).

*Ground Plan.*—In the Norman and Transitional Norman church, the grand characteristics were the great length of the nave, at St. Alban's, Winchester, Norwich, Ely, Peterborough, Jorvaulx, and Byland: a triapsal arrangement, the choir, shorter than at a later period, ending in an apse,\* and the transept having an eastern apse to each wing; the latter feature appearing at Norwich, Gloucester, Ramsey, Thetford, Castle-Acre, and Christ Church, Hants. Oxford, St. Cross, and Ramsey, had a square east end. The ritual choir occupied the space under the central lantern, and included the first two or three eastern bays of the nave. The apsidal east end, as at Gloucester, Canterbury, Waltham, Leominster, (Arch. Jour., x. 111), and Norwich, often terminated in an aisle opening into one eastern and two lateral chapels. In 1250 aisles were added to the transept of York; and in 1370 a choir transept. Reading had three eastern apses, and two eastern apses in each wing of the transept. (Archæologia, vi. 61.) Battle had three eastern polygonal apses (Horsfield's Sussex, i. 539). Wells and Lichfield have polygonal ends to the Lady-chapel. Eastward of the choir was the presbytery, with the altar standing in the chord of the apse, and the bishop's throne elevated on a platform behind it; the circular aisle behind forming a processional path. Apses are rare in the north, probably owing to the influence of Iona. Of a later period we have the "French Chevet," a circle of pillars, comprising aisle and a crescent of radiating chapels, as at Tewkesbury, Pershore, and Westminster. At St. Alban's the nave was filled with altars arranged against the piers. The central tower was at length commonly regarded as forming the natural division between the nave and choir; and this recognition, coupled with the introduction of eastern shrines and of a solid rood-screen, necessitated a complete reconstruction or prolongation to the eastward. Under the east tower arch the rood-screen was placed, and a recedes divided the new constructional and ritual choir from the retro-choir. (Viollet le Duc, s. v. Clôture.) Lateral stalls enclosed the choir, and open screens the presbytery; both partitions being inserted in the lower arcades. Access was thus permitted to the entire circuit of the church, without interruption to the choir services; the double aisles of the French churches served the same purpose more efficiently. The obstruction to the progress of a procession offered by the lateral chapels led to the erection of chapels external to the nave-aisles at Chichester, Manchester, Melrose, and Elgin. At Winchester, the recedes, with a more easterly screen, enclose the capitular chapel. At Westminster, St. Alban's, and Dury St. Edmund's, the retro-choir was occupied by the chapel and shrine of the patron saint. Crowland terminated in an apse without lateral chapels.—(Stukely, Iter. Curios., i. 33.)

*Crypt.*—The original ground-plans of the eastern portions of churches many sometimes be traced in the early crypts: an apsidal oblong martyrdom at Winchester has its aisles, and a smaller apsidal crypt for the altar to the east.

Crypts were employed as chapels and oratories, charnels (where no distinct charnels were built), mortuary chapels, and chambers to secrete the church jewels in time of danger. They are two kinds, one a square hall, the other a subterranean church, with apses and aisles. They occur at Repton (Jour. Arch. Ass., vii. 263, 275), York (three-aisled), at Gloucester (three-aisled), Christchurch (an apsidal oblong), St. Peter's,

\* Durandus, iv. c. xxv. The eagle of St. John was often carried on the pulpit (Lenoir, ii. 136).  
† Comp. to Gloss. iii. 19; Willis in Proc. Arch. Inst. 1815, 19—21.

\* *ἄψις*, a how. Passow, Lex. Gr.; Lenoir, i. 148, 201, 276; ii. 91; Ducange, i. 31.

Oxford, Bosham, Hytch, and of small size at Hereford (three-aisled), and Exeter, Ripon, and Hexham (Arch. Jour., ii. 239); in the latter two instances shaped like cells. Rochester has a crypt of seven aisles, full of chapels, but not apsidal, begun in the thirteenth century (Jour. Arch. Ass., ix. 279, 281).

At Westminster there was a crypt, as at Wells, with an altar under the chapter-house. Wells are found in them at York and Winchester; at York there is a lavatory. The crypt of Glasgow, of the thirteenth century, extends under and beyond the choir. A similar large crypt at Worcester wants the eastern lesser crypt, but is provided with an additional southern chapel (Britton's Cath., Proc. Arch. Ass. Worcester, p. 105); and the perfect subterranean church at Canterbury, vividly described by Erasmus, with its iron grille round the tomb, is a three-aisled apsidal oblong, with a transept, having two apses in each wing, and apsidal chapels at the east, while beyond is a second apsidal oblong with aisles, and a round crypt at the extreme east end. The latest English crypt is that of St. Stephen's, Westminster. The apse of a church is generally its most ancient portion, as the choir was always the first part built, and was always rebuilt with reluctance, being devoted to the most sacred offices of religion, and invariably of the strongest construction.

The crypt of Chartres had a martyrdom of St. Denis, with an ambulatory and large chapels (Ducange, ii. 682; Lenoir, i. 209; i. 157; Viollet le Duc, s. v. Crypte, iv. 117). St. Benigne de Dijon, of the eleventh century, is circular, with an eastern oblong chapel of St. John, and western auto-crypt, with four apses. St. Saurin, Bordeaux, of the eleventh century, is a nave of three aisles. St. Eutrope de Saintes, is apsidal, of three aisles, with three radiating chapels. At Auxerre, there is an apsidal crypt of the ninth or tenth century, of three aisles, with an aisle all round, opening into a small east apsidal chapel. The reliquary and altar of the saint occupied the east end.

At St. Servais, Belgium, there was a thirteenth-century crypt of three aisles, retaining its altar within the apse till 1806; the second, or *caréon funéraire*, as M. Schayes calls it, remains. A subterranean church of the same period, c. 1078-1092, an oblong of five aisles, with a pentagonal apse, is to be seen at Anderlecht. That of St. Bavon was a square of three aisles (ib. iii. 24). The crypt of St. Avit (De Caumont, Rapp. Verb. s. E.A., 1859), of the tenth century, and St. Aignan, a century later, at Orleans, are of three aisles, with a martyrdom or confession under the sanctuaries, and an apsidal church beyond the wall which bisects the entire building.

Glasgow and Llandaff (Freeman's Llandaff) are oblong churches; Canterbury, Lincoln, Salisbury, Worcester, Rochester, Southwell, and Beverley have, like Clugny had, a choir transept; rudiments of a similar arrangement appear at Wells, York, Hereford, and Exeter. Martin (Hist. de France, iv. 338) mentions a similar but exceptional instance at St. Quentin's, but observes that the choir transept is ordinarily found only in abbeys of a period previous to the Ogival style. The stalls of the clergy, probably reached from the choir transept into the nave (Viollet le Duc, i. 200), the choir transept being allotted exclusively to the clergy, and the western transept to the accommodation of guests. Durham and Fountains have an eastern screen; Peterborough, Lincoln, and Ely have a western screen; Exeter has one in a smaller degree. The choirs of Rochester, Kilkenny, and Christchurch are isolated from their aisles. Dunblane choir is aisleless.

I have been informed that the ground-plans of Minsters\* are invariably submitted to the Pope, and that many remain in MS. in the Vatican. We possess, however, the ground-plans of St. Gall, Clugny, Clairvaux, Cîteaux, and Clermont, which afford sufficient information for our purpose. The Benedictine (Viollet le Duc, i. 256) arrangement was uniform, a cruciform building with towers and chapels, marked by great magnificence. The Benedictine abbeys generally have a parish church immediately adjoining them.

Austin Canons.—Austin Canons, an order of regular clergy holding a middle position between monks and secular canons, adopted naves of great length, as at Jedburgh, Christchurch, &c., for the

purpose of accommodating large congregations (Johnson's Canons, ii. 233; Peckh. Const., 1281, c. 16), as they were a community of parish priests living under rule; and the prior's lodge is almost invariably attached to the south-west angle of the nave. The east ends are ordinarily square, and the choir—never very large—is sometimes, as at Lanthony (Arch. Camb., i. 201; i. 82, 3rd ser.), and Christchurch, shut off from its aisles. The towers are very seldom of any importance, and are generally additions of a late period at the west end, as at Christchurch (Curry's Christchurch), Dorchester (Addington's Dorchester; Arch. Jour., ix. 158), Bolton, and Waltham.\*

TOWN SEWERAGE, AND SEWAGE APPLICATION TO LAND FOR PURPOSES OF AGRICULTURE.

The questions of town sewerage, and works for the application of sewage to land, for purposes of agriculture, are not simple and easy. Town sewerage is a complex affair. Some of the items involved are—Site, area, and relative elevation; climate, rain-fall, surface gradients, and character of subsoil; population, water-supply, house-drainage, the use of cesspools, and the relative use of water-closets and soil-pans. Each of these items may be divided, and even sub-divided, fully to treat the question.

A town site may be inland, and the sewage may be taken by gravity over an area sufficient to use up the fluid as a manure; or the whole of the sewage may necessarily be delivered at so low a level as to require to be pumped before any use can be made of it. Then, agricultural land, available for the purpose of sewage irrigation, may be near, or it may be distant; and intervening works may require to be simple, or they may necessarily be expensive.

Steam power must also be estimated from the cost of coals and labour in a district, and I need not tell practical engineers that these elements vary widely in different parts of England. Coals are 5s. per ton in a coal district, and 20s. per ton in many places, where steam-power is required. The cost of lifting water or sewage in any place will be as the head overcome; that is, the vertical height, plus friction. It is of no practical use giving the cost per ton for Croydon, without giving such items also.

Sewage in any town is a varying volume, depending on many causes, but principally on the state of the weather, on the number and strength of subsoil springs, and surface streams. Sewage works—if these involve brick tanks, steam-engines, and underground pipes of cast-iron, for conveyance and distribution of sewage,—must be rigid. If such works are only just sufficient to manage the ordinary flow of sewage, they will be found in practice to be far below the requirements of constantly recurring excesses; and at such times sewage must be lost; and if persons are annoyed or damaged by the escape of sewage past the works of a company, such company may be actionable for this form of nuisance.

Sewage is "rich" or "poor" in proportion to the numbers of soil-pans in use by any population, the numbers using such apparatus, the wealth or poverty of the inhabitants, and to the extent of dilution with subsoil water and with other matter; the power of sewage to fertilize being in proportion to its richness up to a certain point. The richest sewage may have a manuring value (as tested in the laboratory) of 1ld. per ton of fluid; or the value may only be a fraction of a farthing per ton of fluid. Chemists of eminence state the annual value of sewage at 6s. per head per annum, and experience proves that all the nitrogen cannot be used by the plants, even under favourable circumstances.

I have devised and executed plans for the main sewers of some thirty towns, varying in population from 7,000 up to 50,000 each town; and in each town sewers are so designed and constructed as to render the use of sewage easy, when any parties will undertake the application of it to the adjoining land. At Carlisle sewage is pumped from man-holes, previously arranged for this purpose. At Chorley the sewage may be passed over the land below the outlet by gravity; but no one takes up the work. The time is ripe for active work in sewage utilizing: the field is large; and, if no more costly blunders are committed, the work will go on. In the towns sewered by myself I find that in the driest seasons, and at the driest periods of such seasons, subsoil water (spring-water) is always in excess of the water used by the inhabitants, which latter alone can be termed

"sewage,"—that is, the refuse-water containing house-washings and soil from water-closets. The spring-water in some towns removed by the sewers is up to twenty times in excess of the volume of water used by the inhabitants. In chalk districts, such as Croydon, excesses of this sort are found.

In England seasons vary in the amount of rain-fall about as one to two; and, in extreme excesses, (blunder storms), as one to several hundreds. The minimum fall of rain in a town may, for one year, be 20 inches; this will be a dry season. The maximum fall of rain may be 40 inches: this will be a wet season. There may frequently be three months without any available rainfall to cleanse the sewers, with occasionally much longer periods of dry weather; and, as in this year of 1860, rain may fall in excess week by week for several months. These are all items in the questions of tanking, pumping, and also for the distributing sewage by the intervention of steam power and cast-iron mains.

Mr. Shepherd brings forward instances of increased value to land, as at "Mansfield, from 3s. to 12l. per acre, per annum; in Scotland, to 16l., and 35l., per acre, per annum;" and also states, "from long and careful inquiry, I am clearly of opinion, that, when the sewage is applied to its legitimate use, each person residing in our towns will furnish sufficient sewage annually to irrigate an acre of land in the country." This latter statement is so beyond the mark, that, in my opinion, it is sufficient to invalidate anything Mr. Shepherd can say upon the subject of utilizing town sewage. At Mansfield, and in Scotland, the sewage of many persons is applied to one acre of ground, and is necessary to produce the results set forth in Mr. Shepherd's own letter to the *Times* of the 24th ult.

Water is of value in irrigation, but it will not give a profitable return on the cost of large brick tanks, steam-engines to pump it, and miles of underground cast-iron mains to convey it to the land and to distribute it. I can state, from my own knowledge, that in Croydon (which stands on the chalk formation), spring-water is many times its volume in excess of that which is true sewage. The farmers will soon find it out should they ever be induced to use the fluid on their land.

All experience in sanitary science proves that excess of disease in town populations is intimately connected with foul cesspools, foul sewers, and a foul subsoil. As cesspools have been and are abolished in any town, and as the liquid and soil refuse is speedily removed in water, by sewers, beyond the area of any town; so has the death rate of such town been reduced. The metropolis is a notable example: Wortling, Ely, Croydon, Carlisle, Lancaster, Rugby, and many other places, give favourable results, as vouched by the Registrar-general. Rivers and streams may have been fouled in excess, as the Thames, for instance, in the summer of 1859; but, even with such fouling of our rivers and streams, the gain, in human comfort, and in a diminished death-rate, has been considerable. Take the foul water of our towns to the land, and filter it through the soil in the cheapest possible manner, and then both town and country will be gainers. If sewage, with all its complications of dilution and intervention of machinery, occasional disinfection, &c., is not of sufficient value to farmers to induce them to find the capital, and run the risks indicated, then let the towns pay a sewage disposal-rate, in aid of the cost of works and management. At Rugby the sewage is paid for, but the proprietor has found out, by experience, that the town ought to be payers and not receivers.

At Rugby it has also been discovered that half the expenditure, to apply the sewage to half the area of land, would have been wiser and more profitable. The population is about 7,000: the area over which the power of irrigation has been extended is some 400 statute acres. The proprietor, by years of experience, finds that 200 acres would be sufficient. Mr. Shepherd would irrigate 7,000 acres,—at one person to each acre;—or, take adults, and say 2,000 acres,—that is, ten times the area experience warrants.

A company may intervene betwixt a town and any agricultural community, and, with economical works and honest intelligent management, be of service to all parties.

Closest and laboratory calculations must be taken with great deductions for practice. Town sewage is generated continuously, and, if used in agriculture, must flow unceasingly on to, over, and through the soil dressed with it. Plants can only take up and assimilate (in certain proportions) any manure, not the whole, but only a part (and most frequently a small fractional part): the

\* The term *Monsasticum*, as seen in our woodcut, applied to large conventual churches, is first used by Eusebius.—(Hist. Eccles., l. ii. c. 17.)

\* To be continued.

bulk must therefore be lost, partly by evaporation, partly by surface washing in time of rain; and at all times more or less by subsoil infiltration. Sewage must, therefore, be given to the land in excess, to produce the best and most economical results. Experience has proved this, both in Scotland and in England.

In conclusion I may state that I do not object to the formation of a town sewage company: I only object to wild statements as to the value of sewage, to the collection of a large capital to be expended in works and on salaries; knowing that, if the capital is so expended, there cannot be any profitable return. Railways are useful, but British shareholders, as a body, have reason to think that a more careful expenditure in the first instance would have given more satisfactory dividends. Lead and other mines may either make or ruin the proprietors. It has been said that all the ores raised in Cornwall and Devonshire, if fairly valued, have cost the speculators some 25s. for each 1*l.* sterling of value realised. Town sewage companies may easily expend more capital than they can earn dividend for. The sewage and spring water of Croydon cannot in my opinion pay working expenses and dividend on a capital of 30,000*l.*

With respect to Mr. Walker's letter in the *Times* of the 24th ult., I am not so ignorant as to even wish to imply that the sewage of 30,000 persons can be continuously placed on fifty acres of land: I, however, stated a fact as regarded a sewage utilization experiment at Carlisle.

The area of the land to which any sewage can successfully be applied will depend on the manuring richness of the sewage, and also on the character of soil, subsoil, and mode of cultivation. Sand and gravel are "hungry soils," and will filter and convert, area for area, larger volumes of sewage than heavy clay lands, giving more abundant crops of grass. Deep and close drainage will modify clay lands, and enable them to convert, usefully, larger volumes of sewage. I do not repudiate a judicious use of cast-iron pipes for sewage distribution: they may be used, but not extravagantly. I most sincerely hope no one will persist in saying that I wish to prevent a settlement of this most important question. But, having necessarily been brought into contact with the subject, and having seen existing works and having investigated the cause of some failures, I have found that extravagant expectations on the one hand as to results to be obtained from town sewage, and costly works on the other hand, have landed sewage speculators in failure. It is not advisable that the solidifying process failure at Leicester should be parodied in the liquid form at Croydon. Let the liquid sewage of Croydon go to the land by all means and at once, but in so economical a form that the speculation shall pay.

ROBERT RAWLINSON, C.E.

#### COLLIERY EXPLOSIONS.

No less than from 135 to 140 out of 200 persons have been killed by the fire-damp explosion in the Black Vein Pit at Risca, near Newport, South Wales, and many of the remainder have been severely injured. In regard both to ventilation and to safety-lamps much still requires to be done on behalf of our poor colliers, whose work is, at the best, one of the most repulsive and slavish kind, and would require every possible improvement to render it even tolerable to any but those who have been habituated to it from childhood. We lately noticed a new safety-lamp invention, in which any attempt to open the enmeshment of the light inevitably puts it out in the act. Some such invention promises well; for it is often from working with or otherwise using naked lights that such explosions as the dreadful one under notice occur. Where the liability is to "choke damp," as it is called, such an invention would be of course of no avail; but as against the combustible and explosive fire-damp it would be an important aid; although, without adequate ventilation, nothing can suffice to prevent deadly accidents in collieries.

Scarcely a month passes but we have dismal accounts of such accidents. Sometimes, as if by the interposition of Providence, only two or three lives are lost: at others the deaths amount to ten, and again to fifty, or one hundred, or even more, as in this sad case. Men and boys, in the prime of health and strength, are suddenly swept away, and widows and orphans created. The *Bristol Post* states that this black-vein pit at Risca, which is 150 yards deep, and the workings of which extend about three miles, has been prolific of accidents during the past fifteen years; that, within that period, first nearly forty were killed; then, eight

years ago, eleven were killed; and, five years ago, four or five more deaths took place.

While we sit at home by the side of our pleasant coal-fires, in the dull and cold season, we do not sufficiently reflect on the dangers and inconvenience which are experienced by the hard-worked miners. Apart from deaths and injuries by explosions and by choke-damp, the injury to health and the number of deaths which arise from the ill-ventilated condition of some of these mines are enormous; but we hear less of these than as regards the violent accidents to which that want of ventilation also leads.

When thinking of this, and of the numerous benefits for which we are indebted to the pitmen, who dig, at the constant risk of life, from the deep bowels of the earth, those supplies on which the comfort of our homes so much depends, and without which our steam machinery could not be made, or, when completed, would be motionless and useless,—who dig the black diamonds which are the means of lighting our streets and buildings, and which, to such an important extent, add to the national strength and prosperity,—thoughtful and well-disposed persons ought persistently to inquire if proper care be taken of these miners; or if, in this age, with all our scientific knowledge and mechanical appliances, such loss of life and destruction of health cannot be prevented.

Some of the best and most practical authorities now living are of opinion that, to a very great extent, they can be prevented, by the introduction of more certain methods of ventilation, greater care in the working of the seams of coal mines, and by the appointment of a greater number of persons in the management of collieries who, by education and other good qualities, are fitted for such an important trust.

This is, however, a matter of expense which, in too many instances, far more likely to be taken into consideration than the mere risk of human life. Such reckless disregard ought not to be allowed; and the matter is well worthy of the inquiry and interference of the Legislature; for there is certainly required a larger amount of intelligent and careful, as well as more general and more constant, inspection of mines, by gentlemen of high attainments, who, by being connected with the Government, may be supposed to be quite independent of the coal owners, and who will act vigorously for the safety of the workmen. Nor should miners be left, with impunity, to pursue the reckless course which they too frequently take at present. By the lighting of a single pipe, it may be, one person will cause the destruction of many. By the opening of his lamp for the purpose of enabling him to get better on with his work,—to enable him see more clearly that he does not mix any slaty matter with the coal, for which he will be subjected to loss in the price of his labour, &c.,—he may also cause an explosion. Admitting this carelessness of the men to be too common, it is clear that, if the ventilation of the pits were thoroughly managed, it would only be instances that one of those terrible accidents could take place at all. Nevertheless, with improved general arrangements of the mines, measures should also be taken, in connection with the miners, which might be likely to remedy the carelessness complained of. It is probably true, as is stated, that a number of the men who suffered from the recent explosion were found with tobacco-pipes, although this was forbidden; but how could these have been used if a vigilant and proper amount of inspection had been exercised? Perhaps the overlookers themselves were indulging in the same enticing but dangerous practice.

On this point it is worth while to inquire if the "Davy," or "Geordie" lamps are, in all pits, carefully examined, each time they are required for use, by a person of sufficient trust; if the locks which fasten the tops when required for use, in dangerous parts, be sufficiently tested, and of the best design and construction. It is also worth while to ask if it is not possible to improve on the present lamp, by such inventions as that we have alluded to, of a pit lamp which, on the endeavour of a workman to open it, would suddenly be extinguished. Has there been any sufficient encouragement given, of late years, for the production of an efficient lamp such as this? Pitmen who risk their own and fellow workmen's lives by opening lamps, or even using lucifer matches, for the purpose of pipe-lighting, should be subjected to both fine and imprisonment. In like manner, if it can be shown that these lamentable accidents can be lessened by improvements in the mines, and by care or additional expense, the proprietors and managers should not be allowed to go

scathless. Some suggest that, if a substantial fine were levied on the proprietors for each life lost, we would soon hear much less of these calamities. We know that many who are engaged in the mining business would, if possible, do right,—that in many instances there are now making exertions for the moral and social improvement of those in their employ; but, in the majority of cases, they do not personally supervise.

#### ARCHITECTURAL EXAMINATIONS AND THE ARCHITECTURAL ASSOCIATION.

THE ordinary meeting of members of the Architectural Association was held on Friday evening (the 7th inst.), at the house, in Conduit-street. The President (Mr. Roger Smith) occupied the chair.

Mr. Arthur Smith (Honorary Secretary) read the minutes of the last meeting, which were confirmed.

The following gentlemen were, on ballot, elected members of the Association:—Messrs. Georgi, Paraire, Weib, Taylor, and J. G. Goldsmith.

The president said he had to remind the meeting of the course of business, with reference to the question of architectural examinations, to which their attention had been invited by the circular of the Royal Institute of British Architects. At their last meeting, on the 23rd ult., Mr. Arthur Smith moved a resolution, which was in effect that the establishment of an architectural examination might be rendered advantageous to art, and improve the standing of the profession. A debate ensued on that proposition; and, as there appeared to be no prospect of discussing it without going into other points incidental to the subject, the meeting agreed to postpone the consideration of Mr. Smith's motion, in order to consider another bearing on details submitted by Mr. Blashill.

Mr. Blashill observed that when, at the last meeting, he ventured to submit a resolution, that, in the event of a professional examination being insisted upon, it should be confined to subjects connected with the practice of the profession, and that the Association did not consider it desirable that matters of general education should be introduced, he did so from a conviction that the object of the proposed examination ought not to be to test the scholastic acquirements of the candidates in a general sense, but should have reference only to those matters immediately connected with the profession of the architect. He would therefore, at the meeting to pass his resolution, the effect of which would be not to disqualify anybody, but to enable gentlemen so disposed to come in to offer themselves for examination in subjects of a purely professional and scientific character, without reference to those abstruse questions which too often formed a stumbling-block to competitive examination in other branches of learning. Since the last evening of meeting he had made a slight alteration in the wording of his motion, which he now begged to move in the following terms:—"That, in the event of a professional examination being insisted upon, it should be limited to those subjects which bear directly upon the practice of the profession, and should not include matters of general education; and this Association is apprehensive that an examination in the principles of beauty would lead to results unfavourable to the progress of art." Appendix to this resolution he wished to propose a list of subjects for examination, which should include the properties of materials, the theory and practice of construction, the construction of buildings, and the sanitary and structural clauses of the Building Act, and such matters. The history and character of the various styles of art might, perhaps, be added, and an examination into the elementary branches of geology, mensuration, mathematics, and chemistry. A knowledge of the outlines of chemistry would include the nature and quality of materials, and their mechanical properties. Geology would also have a certain reference to kindred subjects,—stone, sand, brick, earth, &c.; and an acquaintance with geometry would be necessary, in order to understand and apply the theory and practice of construction.

Mr. Arthur Alton said that he, for one, would protest against an examination in subjects which would involve what might be termed academical education. He feared that, as no examination but a voluntary one could be instituted, the whole affair would prove a failure.

The president reminded Mr. Alton that the question before the chair was—not whether there should or should not be an examination—but what should form the subject of a proposed examination.

Mr. Alton said that his object in coming to the meeting was to learn the opinions of others, and to give his own. With regard to the subjects named by Mr. Blashill, he was of opinion that many of them embraced matters which it was not absolutely necessary for young men to become masters of. It seemed to him that the whole principle blinged upon the fact, that the cry for improvement came from below instead of from above. The agitation had come from architectural pupils, who maintained that the education offered them was not sufficient to make them competent. The question, therefore, was, not whether they followed the associates of the Royal Institute were to be examined, because there were associates who were as old as follows; so that if the Institute were to attempt to force a compulsory examination upon its associates, they would be bound to attend the whole question of examination. He thought the Institute was perfectly right in asking for the opinion of the entire body of architects, for the only way to deal with such a subject was to put it up to the architects as possible tests.

Mr. Kerr (as a visitor, being called on) said he wished to explain the motive which had induced him to attend that evening as a visitor. For many years he had taken a deep interest in the question, and he reminded the meeting that, when the Architectural Association was founded, it was formed upon this very question; and, having reason to think that, owing to ambiguity in the programme of the Royal Institute, their precise intentions were not

thoroughly understood, he had made a suggestion that he should esteem it an honour to be allowed to further the objects of the Association by stating what he considered to be the views of the Institute, whether the latter opinion might not, so to speak, be misled and prove abortive. At the last meeting of the Institute it was proposed and the resolution of the question should be adjourned for an indefinite period, as they were waiting for the decision of the Architectural Association and for the Association in Scotland. It was clear, therefore, that the Institute could not discuss the matter until after the Christmas holidays were over, and he then explained the position in which the Institute stood, he hoped the Association would not arrive at any ill-advised conclusion, but give due attention to the subject. The object of the Institute in moving was, that they were of opinion that the time had arrived for the introduction of the educational element into the qualification of an architect. They proposed that this introduction of the educational element should be commenced in a very small manner, in order that they might feel their way, and have nothing to retract or retreat, but go forward. The members of the Association, however, were of opinion that they would not doubt feel that it was desirable to creep before commencing to run. The council of the Royal Institute had put their views in a very decided form, and the first proposition laid down, on their understanding of the matter, was never anticipated. The idea of confining the proposed examination to associates and those who might hereafter become fellows of the Institute was no integral portion of the proposition. The resolution decided that the examination should be established, the profession, as a whole, had no particular care about what the Institute might do, he hoped, therefore, that gentlemen would not waste time in considering that portion of the subject. The President said we consider that the Institute has abandoned that by their vote.

Mr. Kerr—When the proposition was first brought forward opposition was offered to it, and then the gentleman who proposed it said it should be taken as a whole or rejected as a whole. The Institute, however, refused to do that, but, for they considered that it was desirable that the proposed examination should be voluntary. The Institute had, in fact, abandoned the compulsory and now confined itself to recommending a voluntary examination, and he regretted that he had gone so much into detail as the third and fourth propositions with regard to the curriculum, now somewhat confused, and he had no doubt had, in some extent, misled the minds of the profession, in such language as "pure arithmetic and applied mathematics," and such expressions as "the theory of the beautiful" and "analysis of styles of art composition." They might well be misled. As far as he knew, the objects of the Institute was to make a complete list, containing not only the propositions made by Mr. Blashill, but other collateral subjects bearing indubitably on the subject, but that the candidates for examination should have the right to select non-essential subjects. He thought gentlemen might perhaps be relieved in their minds when he announced that he had authority for the statement of the members of the committee of the scheme. He agreed with Mr. Blashill that, if an examination be the test of competency, it ought to be confined to essential subjects, because he feared that supplementary or collateral subjects might lead to heartburnings and dissatisfactions, and that gentlemen otherwise well qualified might complain that candidates took higher marks in subjects in which they had not prepared themselves, and so created the introduction of details, and he assured the meeting that the Institute had the matter so much at heart that, in order to prevent misconception, it was quite willing to begin *de novo*. The main matter would be left to the candidates to prepare the curriculum; and, although the task would have to be undertaken sooner or later, depend upon it, here it was that the Institute would be left. He therefore advised gentlemen not to trouble themselves to walk patiently to the end of the road until the curriculum was settled. The Royal Institute was now founded upon what might be called the element of reality, and it was a pity that twenty-five years ago it was the only way to bring the members of the profession together; and it must be admitted that it had succeeded in a very honourable manner, and that it commanded the esteem and respect of the representatives of a very large number of the profession. The Architectural Association, on the other hand, was formed on the principle of self-improvement; the students and assistants were introduced into the ranks of the profession, and the education placed within their reach. They therefore determined to found an association which should for the most part be confined to young men who would endeavour by a system of mutual instruction, to make up the deficiency of which they complained. Since that time the Association, like most other young societies, had passed through various vicissitudes. He was happy to find that it still commanded the confidence of the junior members of the profession; but he took leave to remind them that their future progress would much depend upon the course which they might adopt that evening. The architectural institutions were, in fact, on their trial. The policy of the Architectural Association had always been education, and the possibility of the success of the Institute was not necessary there (in the Association), and consequently there was no rivalry between the two bodies. The profession was not so far gone as to require a diploma to be given to a student, or to require a register and the irregular dustman; but what it wanted was that its members should be known by education in their practice. Now with regard to the reply to be given to the Institute, there were three courses open to the Association. One course would be, if they did not see their way clearly, to consult caution, and not reply at all. Another would be to go thoroughly into the matter; and the third would be to treat the question in the abstract, and leave details until a future time, probably a year hence. He thought the Association would best consult its own dignity by dealing with the matter on the ground in detail, but generally, in the first instance. He totally objected to the Royal Institute of Architects confining the examination to applicants for its own membership. The profession at large had nothing to do with the matter, and he had already dealt with that there should be an examination for the public benefit, which should include the whole profession. He had never opposed the scheme of examination; but he thought the council of the Institute ought not to take upon itself functions which belonged to the profession generally. Holding this opinion, he was in favour of leaving the matter to the hands of a special committee, who would investigate the matter, and report, and report upon it. He felt persuaded the Institute would have to come to that in the end; for he thought the profession

would say, "This is a public question, and should be treated by a committee especially appointed with a view to its public character." If this course were adopted, the council of the Royal Institute would get rid of a good deal of the odium attaching to the subject, and the public would be far more satisfied in the end.

Mr. Baker said, he thought the Association had reason to be grateful to Mr. Kerr for attending to the present occasion; for, on their last evening of meeting, there was an opinion prevalent in the room that the examination was to be compulsory, and that any person who did not pass it would be ejected from or taboored by the profession.

Mr. Paraire complained that Mr. Kerr had come down and told them what they were to do,—a course which he feared would retard the action of the Association, and interrupt that good feeling which had previously existed between the Association and the Institute. He (Mr. Paraire) held in his hand the papers showing the description of examination for candidates for district surveyorships. It seemed to him that they would not be following a bad example if they were to adopt that examination as a guide. On that subject, for instance, descriptive geometry was an invariable subject of examination, and in his opinion a knowledge of algebra was equally indispensable. He should therefore move, as an addendum to the list of subjects mentioned by Mr. Blashill, arithmetic, algebra, descriptive geometry, drawing,—plan, elevation, and section,—applicable to architectural subjects, and freehand drawing.

Mr. Gates said that, as he had taken a prominent part in promoting a petition to the Institute on the subject, his opinions were pretty well known. He, therefore, merely rose to suggest whether it might be possible to attach the whole of the subjects from the resolution of Mr. Blashill, because it seemed to him that, taking arithmetic alone, an examination into that science might be so conducted that scarcely a single architect in London might be found competent enough to pass it. He did not oppose so much to the subjects themselves as to the limit to which the examination into them might be carried, for it would be easy to make an examination so abstract that it would be impossible for any one to pass it who had not devoted immense labour to that particular branch of study. The examination for a district surveyor could be very different, the list of subjects, yet it was well known that the manner in which the examination was conducted made it competent for almost any gentleman out of his articles to comply with it. He therefore proposed to express an opinion upon the subject, any objection to omit from his resolution the list of subjects altogether, as such a course would very much facilitate the object which they had met to accomplish.

Mr. B. A. C. Herring remarked that, on the last evening of meeting, he had expressed himself strongly against examination; but that, in consequence of the explanation given by Mr. Blashill, he had changed his mind, and modified. He begged, therefore, to propose, as an amendment to the resolution of Mr. Blashill, "That it is the opinion of the Architectural Association that a strictly voluntary examination should be instituted, which has a view of guiding the student of architecture to such a course of study as would enable him to arrive at competence in his profession."

Mr. Rickman seconded the amendment. Mr. Rickman supported the amendment proposed by Mr. Herring. He had never entertained a doubt as to the propriety of instituting an examination for young men coming out of their articles, and that it would sooner or later become a necessity, not in consequence of any law of the land, but *ex necessitate rei*,—as an incentive to improvement. If to propose an examination would answer that end, it would be impossible to deny its advantages. Had he been present on the last evening of discussion, he would have suggested the appointment of a committee to select the subjects to be included in the examination, and many of the subjects enumerated by Mr. Blashill ought to be gone into. The subject, however, was one which, in his opinion, ought to be left to those who were naturally the most competent to express an opinion upon it. Some desultory conversation ensued; and ultimately Mr. Blashill consented to withdraw his motion for the time, so that Mr. Herring's amendment might be carried; and Mr. A. Smith withdrew the resolution.

Mr. Herring's amendment was then carried without a dissentient voice. Mr. Blashill next moved his resolution, which, after one or two amendments, ran as follows:—"That, in the event of a professional examination being insisted upon, it should be limited to those subjects which bear directly upon the practice of the profession, and should not include matters of general education. And this Association is apprehensive that any examination upon the principles of taste might lead to results unfavourable to the progress of art."

After some discussion the resolution was passed, omitting the words,—"And should not include matters of general education." The schedule including the subjects suggested for examination was withdrawn.

On the motion of Mr. Rickman a resolution was also agreed to,—That it be an instruction to the secretary to transmit the resolutions passed that evening to the secretary of the Royal Institute of British Architects, and to express the willingness of the Association to enter into the other portions and details of the subject as soon as the Institute should have come to a decision on the essential points of the intended measure.

The President said he entirely approved of the resolution, and congratulated the meeting on the progress which had been made. It was then announced that at the next meeting (on the 21st instant) a paper would be read by Mr. Blomfield on "The Arrangement of Churches," and that the next subject for the Class of Design would be a grand staircase to a mansion.

Classes for modeling and for instruction in botany have been organized in connection with the Association, and gentlemen desirous of joining are requested to communicate with Mr. H. A. Reeves, 28, Brunswick-square.

FALL OF TWO HOUSES AT KENNINGTON.—On Thursday afternoon two houses in course of erection at the back of Kennington-park fell to the ground with a fearful crash, burying several workmen beneath the ruins. As soon as possible three men were extricated, when they were found to be much injured.

CONNECTION OF HEALTH AND DISEASE WITH THE ELECTRICAL STATE OF THE ATMOSPHERE.

In a paper by Mr. Thomas Moffat, M.D., "On the Prevalence of certain Forms of Disease in connection with Hail and Snow Showers, and the Electric Condition of the Atmosphere," read at a recent meeting of the Manchester Literary and Philosophical Society, it is stated that in 1852, while deducing results from the meteorological observations of the two previous years, the author observed that an intimate connection existed between falls of snow and hail and diseases of the nervous centres, such as apoplexy, epilepsy, paralysis, and vertigo; and that the results of eight more years bear out the truth of the observation. All observers, he remarks, agree that the air is negative on the approach of great storms, and negative or alternately negative and positive in unsettled weather; and he finds that such storms are almost invariably accompanied by convulsive diseases, or diseases of the nervous centres in some form, as well as by such other forms of disease as premature uterine action, epistaxis and diarrhoea, with vomiting and cramps. Negative electricity, he concludes, plays an important part in these atmospheric conditions and morbid actions. Hail and snow, he adds, are formed under the influence of opposite electrical conditions.

The subject is highly important, and merits further investigation. We have long been convinced that even common colds are produced by some electrical state of the atmosphere inhaled, and that the action of draughts on the skin is electrical, the continued friction of the current exciting electricity rather than merely producing coldness directly, though the positive electricity, as we are persuaded, is analogous to cold in its contractile tendencies, while the negative is probably relaxing. Ozone and antozone, which are just the vital air oppositely electrified, are believed to have something to do with the production of diseases of different classes, such as influenza and cholera; and it is many years since Mr. John Hay, we recollect, published a series of scientific papers at Leith, near Edinburgh, titled "The Seafield Bath Reports," in which he compared the electrical states of the atmosphere with the varying phases of the virulent cholera then prevalent. Were it fully proved what species of diseases (if any) the positive electricity tends to aggravate or to produce, and what the negative, we might perhaps be soon enabled to prevent as well as to cure such diseases, by means of the opposite electricity to that exciting the evil influence. In cholera seasons, if it be the electricity which excites the oxygen of the air into the ozonized state which is defective, thus weakening the scavenging powers, as well as probably acting directly to the injury of the human body,—might not the worst localities, such as close courts and dwellings, be even frequently re-electrified, directly, by means of so potent an agent as the electrical steam boiler of Sir William Armstrong's invention? Electricity of the right kind could, of course, be still more readily applied to the patient's body; and it might be that even those "colds" which are often so difficult to remove, and so deadly in their ulterior effects, would thus be removable, as if by magic. The medical and scientific worlds do seem to be here on the brink of important discoveries.

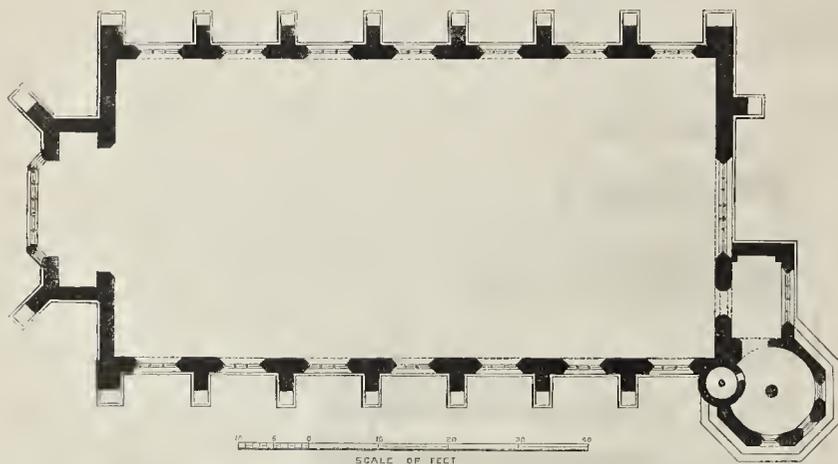
FRANCE.

THE Monceaux Park, the greater portion of which is about to disappear, was at the end of the last century one of the wonders of the capital: the Parisian folk delighted in admiring its pavilions of all sorts of architecture, grottoes, kiosks, imitations of rivers, ruins, islands, Greek temples, winter gardens, &c. In one portion of the park there was a windmill, with a rustic habitation for the miller; this fantastic but contained a dairy, with all the milk-pans in the finest porcelain, and the walls were lined with Carrara marble. Of all this nothing now remains but the *débris* of a colonnade, which formerly constituted a rotunda without covering, an ancient statue standing in the centre.

Henceforth, says the *Silole*, this park will be for the most part cut up into small lots, whose limits are already set out; but that portion which borders on the Rue de Courcelles will form a square likely to rival any of the metropolises.

The "Impasse des Peintres," and the adjoining house, which is to be cleared away, for certain proposed improvements, are on the site of one of the gateways of the town under Philip-Augustus. This portal, known under the name of Porte Saint Denys (in olden times), took another

NEW LIBRARY, MIDDLE TEMPLE.—Plan of principal Floor.



under Charles V. It was decorated, as well as the other gates of Paris, with a statue of the Virgin.

The *Impasse des Peintres* derives its name, according to Sauval, from the fresco painters inhabiting the locality: others say that a master-painter, Guyon Ledoux, built there, in 1535, a house with a corbelled turret: some existing documents, however, show that, in 1303, the *Maison de l'Arbalite* belonged to the descendants of one Gilles Lepeintre.

Of the thirty-one properties expropriated three were arranged amicably; out of 113 shops of different sorts and industrial establishments, seven were compensated by mutual contract. In summing up the following figures occur: offers by the town of Paris, 4,003,620*fr.*; claimed by owners and tenants, &c., 9,703,812*fr.*; awarded by jury, 5,972,700*fr.*; difference between demands and awards, 3,821,112*fr.*; difference between offers and awards, 1,360,080*fr.*

At *Lux-Saint-Sauveur* the works for the construction of the new Napoleon bridge are actively progressing. The Minister of Public Works has obtained the services of one of the British colonists near *Bagnères-de-Bigorre*, Mr. Lyte, an artist and skilful photographer, and has engaged him to make proofs of the works at different stages. These photographs are despatched at once to the Minister, who can report on the general progress without going into details only to be arrived at by complicated measurements and a mass of descriptions.

#### THE MOVEMENT ON THE CONTINENT FOR IMPROVING THE DWELLINGS OF THE WORKING CLASSES.

The following is an extract of a letter from Professor V. A. Haber, of Wernigerode, in Prussia, addressed to Mr. Henry Roberts, F.S.A.:

The best thing by far on the Continent in this direction is the *cité ouvrière* at Mulhouse, in France, which, in October, 1860, had not fewer than 560 excellent dwellings, with gardens, and of which 36½ have been sold to working men, after the excellent system by which the occupier may become the owner of his dwelling. Besides the houses there are a washhouse and bath, restaurant, reading-room, bakehouse, lodging-house for single men, a school for children, an inn, or house of call for working men on the tramp; and it is in contemplation to provide the *cité* with a physician and a nurse. There is not the least difficulty in getting 5 per cent. on the capital, though the shares pay only 4 per cent.: the capital raised by loan is at 4½ per cent.

To see this neat suburb of Mulhouse rising like an enchantment in a few years,—to see it on a fine summer Sunday, with the gardens in full blossom, roses without end, and the people as decently and homely merry as heart can wish,—and to compare this with the condition in which the writer has known them, some twelve years

since, and in which the large mass of the mill-people may still be seen here and elsewhere,—to see the 364 mere proletarian *ouvriers* transformed (with their families) into thriving *ouvriers propriétaires*—is a grand sight indeed. One peculiarly French trait is, that not a few young men, after having served their time, or not being yet called, enlist as *remplagants*, and with the money they get buy a house in the *cité* for their aged parents.

#### ARBITRATION, SHEFFIELD WORKHOUSE.

A DIFFERENCE arose between the Sheffield Guardians and Mr. Harrison with regard to his contract for joiner's work in the workhouse alterations. The amount of the charge in dispute was 200*l.* An arbitration was agreed on and the award has been made. The arbitrators' costs and charges amount to 100*l.* 10*s.* The arbitrators have given a decision adverse to the guardians. Mr. Harrison's original contract was 1,020*l.*, and during the progress of the work he appears to have drawn 800*l.*, leaving a balance of 220*l.* From this sum the guardians proposed to make a reduction of 200*l.*, leaving 20*l.* only as due to the contractor. Mr. Harrison objected to this; and the result was that Mr. Charles Unwin, Mr. John Frith, and Mr. T. J. Flockton were called in as arbitrators. We are informed that they decide that the guardians are to pay 313*l.* 1*s.* 10*d.*, being 93*l.* 1*s.* 10*d.* in excess of Mr. Harrison's original account. The award also fixes the guardians with the costs of the proceedings, making a total order of 414*l.* 4*s.* 10*d.*, exclusive of the charges of their own solicitors, and other items, which the arbitrators order each party to pay on their own account.

#### IRELAND.

A NEW Gothic drinking-fountain is in course of erection on the Custom-house quay, Dublin. His excellency the lord lieutenant is the donor. Messrs. Purdy & Outhwaite are the contractors.

The new Decorated chapel and other extensive works in connection with St. Vincent's hospital, Stephen-green, have just been finished at a cost of 1,200*l.* Mr. J. Beardwood, was the contractor.

The building surveyors of Dublin are about to form an association for the purpose of "protecting themselves against the irregularities of unqualified practitioners, whose proceedings are calculated to bring the profession into disrepute."

A new R. C. church is about to be built in the parish of St. Michael's, Limerick.

The Berwick drinking-fountain in Cork, and that in Limerick, presented by Mr. Ryan, the late mayor of that city, have been erected. Another, the gift of Mr. Malcomson, is in progress.

On Wednesday, November 21st, the opening of the new orphanage of St. Vincent de Paul, at Glasnevin, took place. The architect was Mr. S. J. Butler; and the builder, Mr. P. Myers.

The new building for the Jesuits at Miltonpark, near Dromybrook, has just been completed. The building stands on 25 acres of land, and consists of two four-story wings, 40 feet by 65 feet, connected by a two-story building, 64 feet long, containing a chapel and refectory. The height of the wings from the ground level to the coping of parapet is 50 feet. The designs show a front of Italian character, but in the erection of the building they have been departed from. The total cost of new works was about 4,700*l.* The designs were furnished and the works carried out under the superintendence of Mr. Charles Geoghegan; Mr. John Rooney, builder.

A new lunatic asylum is about to be built near the town of Letterkenny, co. Donegal.

A bronze statue is about to be erected in Cork to the late Alderman Fitzgibbon. The town council are to grant a site in Patrick-street, or some other suitable spot. A drinking-fountain is also to be constructed in connection with the statue.

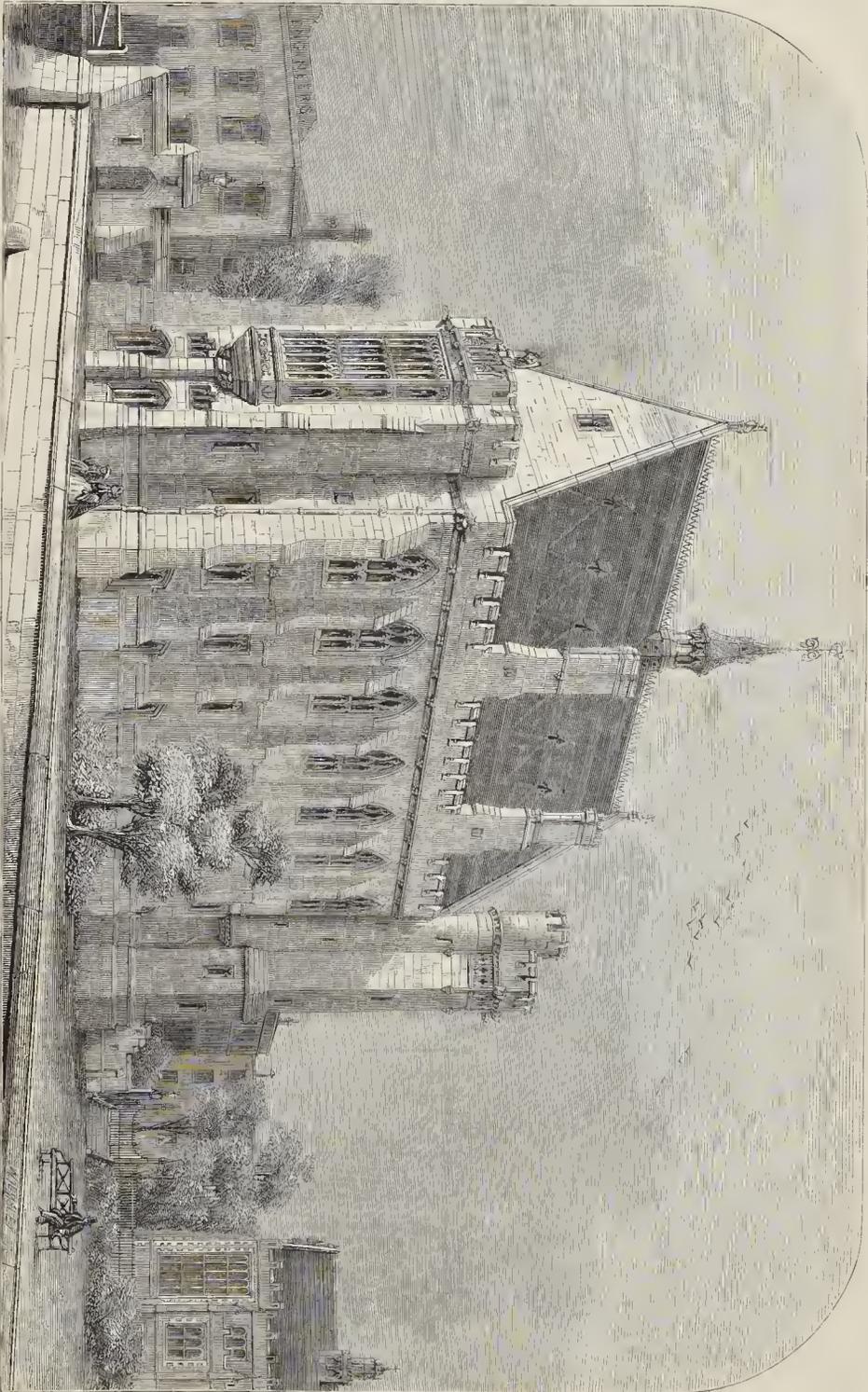
#### NEW LIBRARY, MIDDLE TEMPLE, LONDON.

In our volume for 1858 (p. 567), it is recorded, with other particulars, that the first stone of the New Library was laid by the late Sir Fortunatus Durrant, on the 16th of August of that year. The strike delayed the works, but the building is now nearly completed, and we give in our present number a view of it, and the plan of the principal floor,—the library proper. This apartment, which may be called 96 feet long, including the oriel, 42 feet wide, and 63 feet in height, to the underside of the ridge, is covered with a bummer-beam roof, after the fashion of that in Westminster Hall. In fact, when it is looked at from the south end, the window in the north end, not seen in our view, being also very like the great window in Westminster, the likeness is disagreeably striking. The library is warmed with Perkins's hot-water pipes, and the floor is laid with cement, in stone margins. The side windows and that in the northern end are filled with stained glass, by Messrs. Ward. The latter, containing the arms of Templars, is a rich piece of colour.

Below the library are two stories, introduced as a commercial speculation, with more advantage in a pecuniary point of view than to the appearance of the building externally. These chambers are not, as is generally supposed, for the temporary reception of persons overcome in the library by the somnifera influence of study; but will be let to any parties who wish to reside or carry on business in the Temple.

Mr. H. R. Abraham, it will be remembered, is the architect; Mr. Geo. Myers the contractor. The carving was executed by Mr. Ruddick. Mr. Brodie (who succeeded the late James Rowland) is clerk of the works.

The building is wholly of Bath stone externally; and the cost, including the book-cases, will be something under 13,000*l.*



NEW LIBRARY, MIDDLE TEMPLE, LONDON.—MR. H. R. ABRAHAM, ARCHT.



## CHANGES IN TRADE.

## THE FRENCH TARIFF.

GREAT distress, it is to be regretted, exists at the present time amongst the ribbon weavers of Coventry, and those engaged in departments of the silk trade, in Spitalfields: some other branches of trade are also depressed. Nevertheless, the general trade of the country is in a satisfactory state; and, doubtless, the new Anglo-French treaty will be the means of giving increased scope to British industry. It is, therefore, most desirable, at the present time, that both masters and workmen should endeavour, as far as possible, to take the opportunity which is presented by the reduction of duty on many articles of British manufacture.

Amongst some of the most important items of this treaty, it may be noticed that the duty has been entirely taken off, from between forty and fifty chemicals: amongst them are the various acids, dyes of iron, copper, various preparations of tin, including tiles of all kinds, bricks, fire-bricks, gas-retorts, drainage-pipes, and others; crucibles of all sorts, including those of plumbago, or black-lead; clay-pipes, glazed or not, of all shapes.\* Stoneware utensils, and apparatus used in the manufacture of chemical products, are all to be admitted into France duty free. Common ware of all sorts, flat and hollow ware, including bottles, flasks, household articles, kitchen utensils, &c., will be charged 4 francs per 100 kilos. This will cause increase in trade. Amongst the other articles from which the duty has been removed are broken glass and cullet; rock crystal, rough or worked, if unmounted; wool, raw, Australian, imported from British entrepôts; cotton, raw, imported direct from British India, and from British entrepôts, in British or French vessels. Several vegetable fibres are also free; as is silk in cocoons, raw or thrown. Slates for roofing are charged 4 francs per 1,000; in squares or slabs, 10 francs per 100.

Tissues, hosiery, and lace, of pure silk, are free: crapes, called English unbleached, and lace of silk, black or coloured, and net, are reduced to 10 per cent. in 1860; in 1864 they will be free. In connection with other matters, a considerable reduction of the French duty will open a market which has hitherto been closed by the old restrictions; and such will be the mutual advantages, that a still further decrease will be soon found desirable. So great a change cannot be made without for a time pressing on some classes; the evil will, however, not be met by the opposition or disputes of masters and workmen. The strike of the ribbon weavers, at Coventry, has led to no good result: on the contrary, we fear that it has been partly the means of bringing distress upon a large number of respectable and industrious families. Many blame the new tariff for this. It should, however, be remembered, that it is the change of fashion which has been the chief cause of this trouble. At the present time ribbons in the bonnets and dresses of the ladies are but little used in comparison with the quantity in demand a few years ago; velvets, feathers, and other kinds of ornamentation being employed instead. Otherwise, we believe that, by improvement of our skill in the design of the patterns of these articles, with the advantage of steam machinery, &c., we should soon have been able to compete in this way with the French. It has been suggested, in order to check the distress of the ribbon-weavers, that, if every woman in England were to purchase but one yard of ribbon, it would make a vast improvement in the trade. No doubt the ladies of Great Britain feel heartily disposed to relieve the sufferings of this or any other body of honest workpeople: it may, however, be feared that this plan will not be of any permanent benefit, for it is difficult to turn the tide of fashion.

Many remember the days when brass buttons of several descriptions were so generally in use. Some thousands of persons depended on this production for a living. Covered buttons became the rage, and in a very short time there was scarcely a brass button to be seen. Deputations from the unemployed workmen were received by personages of distinction, presents of brass buttons were offered, and benevolent gentlemen persisted for a time in wearing the old style. This, however, was of but little avail. The trade of the brass button maker became profitless, and many were reduced from a comfortable position to one of poverty. It may be hoped

\* Glazed pipes, with decorations, in relief, of one or more colours, flat or hollow, are charged 5 francs per 100 kilos.

that the cloud which has come over the ribbon trade is but temporary. The season has been unfavourable; and other things are to be taken into account which should encourage brighter hopes for the future. There is unfortunately a want of inclination on the part of workmen, when the demand for a particular kind of labour has ceased, to undertake some other. At the time of the change from stage coaches to railway carriages many of the most respectable of the guards and coachmen were offered situations in connection with the railways: only a few accepted them; and, in many cases, these poor fellows ended their days in the workhouse.

## THE LONDON COSTERMONGERS.

So officious and troublesome has become the persecution of these street dealers by certain authorities in the City, that a meeting of the costermongers and their friends has been held, at which their grievances were very fairly argued. It appears that there are about 50,000 of these dealers in London; that about 10,000 of them are married, and have an average of five children each; so that if we add 50,000 children, 10,000 wives, and 50,000 others, we find that the number of persons depending on this street trade amount to 110,000. We have had many opportunities of judging the character of this large body of the London population, who have generally been driven to this kind of life, and we have noted the great industry of the majority.

As a matter of certainty, there are some of these men and women very rough in manners, and perhaps not very fastidious in certain matters; yet generally we have seen much to be commended in the class; and to them not only the dealers in the market, but the dwellers in the poorer districts, are much beholden. Therefore, while it is necessary to keep the thoroughfares clear, we should be sorry to see a spiteful spirit shown towards them.

## PROVINCIAL NEWS.

*Stewkley (Bucks).*—The new schools lately built here, at a cost amounting to nearly 1,000*l.*, have been opened by the Bishop of Oxford.

*Brighton.*—The prospectus has been issued of a Brighton Hotel Company, with a capital of 75,000*l.*, in shares of 5*l.* each, the promoters being in negotiation for an eligible site on the West Cliff. The hotel will contain 200 bed-rooms, and accommodation for private families.

*Parkhurst.*—Improvements have been made at these barracks. A gallery has been erected, besides other improvements having been effected. The contractor for erecting the married soldiers' quarters, according to the plan of the Secretary-at-War, Mr. Sidney Herbert, has commenced preparing for the foundation for the building, which is to be placed at the western end, and facing the parade ground, which is also in the course of restoration. A well for the new barracks is now digging, and which it is calculated will require to be carried to the depth of 300 feet before a sufficient supply of water will be obtained.

*Worcester.*—Another step in the progress of our street architecture, says the local *Herald*, has been taken by the erection of a shop at the corner of Broad-street and the Cross. The proprietors are Messrs. Spriggs & Co. It has been erected by Mr. Hemming, builder, Lowesmoor, from the designs of Mr. Rowe, of this city, architect, and is of brick, with stone dressings. The shop has a long front, occupying the corner of Broad-street and the Cross. It is composed of plate-glass set in brass frames, and forming a series of windows in both streets, with an entrance in the angle. The shop and principal room above are illuminated at night by circles of gas-jets, disposed in sunlight pattern, with cut crystal pendants. The house is probably the loveliest in the city, and Mr. Spriggs has given the public the benefit of a considerable addition to the width of the footpath.

*Malton.*—The works for laying down a system of large drainage pipes along the streets of Malton are being proceeded with. The drainage, from the nature of the ground on which the town is built, has a great inclination to the river, and the trunk drains are being laid 12 feet deep, in order that the cellars and kitchens may be drained if required. The work is estimated to cost about 1,500*l.* The adjoining town of Norton is also under a survey by Mr. Jno. C. Wise, who is nearly ready with the sections, &c., with a view to the drainage of that place, which at present is very defective. Both schemes are under the control of the Malton Board of Health.

*Bristol.*—New schools connected with St. Clement's Church have been opened. The build-

ings consist of schoolroom, 70 feet by 22 feet; class-room, 16 feet by 14 feet; with teachers' residence, all in the Early Decorated style of architecture, from the designs of Mr. S. D. Gabriel, of Bristol, architect, and cost 1,400*l.* The design has been carried out by the following contractors,—King, mason; Lawrence, carpenter; Melsom, plasterer and painter.

*Leeds.*—An extraordinary general meeting of the Leeds Philosophical and Literary Society has been held, to receive the report of their building committee, and to decide upon some means for carrying out the proposed additions to and alterations in the hall of the society. The chairman explained that two sets of plans had been submitted to the committee, and one had been chosen. According to the selected plan the estimated expense, in all, was 2,682*l.* The committee, however, felt strongly that a new elevation would be required, the cost of which would amount to 540*l.* Thus there were 3,222*l.* for the inside and outside of the old and new buildings. In order to carry out the plan an additional sum of 1,200*l.* would be wanted. After some discussion the following resolutions were carried:—"That it would be desirable to carry out the plans produced, and adopt the improved exterior elevation as well as the internal arrangements, provided the requisite funds can be obtained; and that for that purpose the subscriptions should, if possible, be raised to 8,000*l.*;" and "That the general committee be requested to continue their services, and, if the required fund can be raised, to proceed with the execution of the work." The plans selected have been proposed by Messrs. Dobson & Chorley.

*Hull.*—The Hull Park Committee have decided that the People's Park should be laid out at a cost not exceeding 5,000*l.*, exclusive of planting the trees. Mr. Pearson (ex-mayor) has made arrangements with Mr. Earle, the sculptor, for a marble statue of her Majesty, to be erected in the park. A subscription is at present on foot in Hull for raising a statue to Mr. Pearson, the donor of the park.—A new company has been formed here, in order to construct a large dock on the west side of the town. The old dock company have issued a report, in which they virtually announce their intention to oppose the scheme in Parliament, and to apply for power to construct a dock themselves of a similar character.

## CHURCH-BUILDING NEWS.

*Walton (Bucks).*—The church of Walton St. Michael has undergone a general reparation, and been reopened. The restoration of the nave was entrusted to Mr. Scott, that of the chancel to Mr. William White, under whose auspices also the ancient rectory has received enlargement and some interior polychromatic decoration. The old unsightly pewing, which crowded up the nave of the church, has given way to open benches. The choir has been simply fitted in oak. The pavements of the sacrum and chancel have been relaid with tiles in plain colours, intermixed with the old stone paving. A new communion-table, rail, and sedilia have been provided. The east window has been repaired and glazed with stencilled quarries by Messrs. Lavers & Barrand; a new vestry added on the north side of the chancel; and a choir organ, by Mr. H. Willis, erected—partially recessed in the wall—with the key-board fitted into the stall-desk.

*Wolverton.*—The new church at Stantonbury, which has recently been erected for the accommodation of the large population connected with the works of the London and North-Western Railway at Wolverton, has been consecrated. The edifice is situated about three-quarters of a mile from the Wolverton station, on the west side, and is built of stone, in the Decorated Gothic style of architecture, from the designs of Mr. Street, of London. The tower and spire, which are intended to be raised to a height of 150 feet, are left unfinished from want of funds. The interior is without galleries, and has an open-timbered roof, with aisles, and unenclosed seats, instead of pews. The walls are of Cosgrove stone, with Ancaster dressings, the marble plasters supporting the arches being of a dark red colour. The stone pulpit occupies a kind of recess on one side, and bears an inscription to the effect that it was presented by the foreman and workmen at the Wolverton factory. There is also an octagonal stone font, the gift of the Marchioness of Chandos, the wife of the chairman of the North-Western. The entrances and floor are paved with tiles. Mr. Mills, of Stratford-on-Avon, is the builder of the church, which, it may be added, contains sittings for nearly 500 persons. The cost of the structure, so far as it is now completed, has been 4,430*l.*, of which

sum the shareholders of the London and North-Western Railway have contributed 2,560*l.*, and persons locally interested, and others, 1,870*l.* A further sum of 1,000*l.* will be required to complete the spire and the upper part of the tower. A burial-ground surrounds the church; and nearly contiguous to it are school-rooms, large enough for 400 children, which have now been in use for a considerable period.

**Southborough.**—St. Thomas's Church, erected at a cost of 2,400*l.*, has been consecrated. The edifice was completed about fourteen months ago. The design is in the Early Pointed style of architecture, and the materials used are the Kentish rag and Bath stone. The building consists of a nave, north and south aisles, and chancel with north and south aisles, an organ-chamber, south porch, and vestry. A clerestory, with eight cinquefoil windows, serves to light the upper part of the nave, and terminates at the west end of the building in a doublebell gable, beneath which is a couplet of lancet windows divided by a massive buttress extending from the bell gable downward, and terminating at the base in a western doorway. The remaining windows throughout are of a simple character, disposed in lancets, trefoil-headed and soffit-cusped. The roofs are covered with slates from the Bangor and Talero quarries, disposed in ornamental patterns. Internally the church is of Calverley stone, with alternated round and octangular piers, arches and dressings, of that material. It is arranged to accommodate upwards of 300 on the ground-floor, with open seats of deal, stained and varnished, as are the exposed timbers of the open roof. The architect is Mr. F. Hyde Pownall, of London; and the works were executed by Messrs. Jackson & Shaw, of Westminster.

**Salisbury.**—The memorial church to George Herbert, the poet, has at length been erected, in his own parish, Bemerton (a village in close contiguity to the city of Salisbury). The church stands on a site near the edifice where he formerly ministered and lived, and beneath the altar of which he was buried. Thursday, the 13th of the present month, is fixed for the consecration. It is not intended, for obvious reasons, to remove the old edifice, which is a small and ruinous structure, only about 45 feet long by 18 feet wide, without any architectural pretensions. The new church is in the Early Decorated style, and is to be dedicated to St. John the Evangelist. It is built of Bath, Fishbury, Melbury, and other stone, and consists of a nave, north and south aisles, and a chancel, on the north side of which is a tower, surmounted by a pointed bell-turret. The interior is about 104 feet in length, and 53 feet in width, and is fitted up with open stained deal benches to accommodate 365 persons. The pulpit and font are alike of stone, carved, and the general effect of the interior is enhanced by a stained glass east window. Mr. Wyatt, of London, was the architect; Mr. Miles, of Shaftesbury, the builder; and Mr. Howitt, of Wilton, clerk of the works.

**Chreacester.**—The new church of the Holy Trinity at Watermoor has been enlarged, and the unfinished designs of Mr. Scott have been completed. Dr. Warneford's trustees and the Diocesan Association made grants of 200*l.* and 70*l.* to insure free and open seats, which now accommodate 130 more persons, and the church has been re-opened. The church has been warmed by hot-air apparatus, furnished by Haden, of Trowbridge, at the cost of an anonymous benefactor, who presented 100*l.* for the purpose. There is some artistic carved work by Getflows, of Liverpool, in fruit, foliage, angelic figures, &c.

#### COUNTRY COTTAGES.—OVERCROWDED AND UNDRAINED.

A BERKSHIRE magistrate, in a statement made at a recent dinner of the Faringdon Agricultural Library, gives particulars of a special examination into the state of the cottages of agricultural labourers of the district, which fully corroborates all we have said on the subject of such cottages generally; and he himself remarks that he is firmly convinced that this is but a fair sample of the condition of the agricultural labouring population of England. "Indeed," he adds, "I have been assured by farmers that the want of decent accommodation has for some time past been driving the superior class of peasantry to emigrate; and that, unless some reformation be brought about, none but the feeble and most ignorant will remain in places where decent lodging is not to be procured." So totally inadequate is the accommodation in most of these cottages, that it is quite common to find fathers and mothers, with grown-up, as well as younger, sons and daughters,

the last of these with one, two, and even four illegitimate children, sleeping together, "pell-mell," as is remarked, in numbers varying from 5 or 6 to 8, and even 12, in one room!! Drains are generally a-wanting, or when laid, even worse than if a-wanting, as in flowing into a sitting-room, or emitting stench at a front door. The whole state of matters is fearful, and, moreover it is most disgraceful to land-owners. In one instance, that of Longworth, it is said that "Most of the cottages in this village are very old, some of them scarcely fit to live in. (Said to be ecclesiastical property.)" At a time when so much attention is being paid to the breed, keep, and condition of horses, and other beasts, it is shocking to think of such neglect of human beings. Would not many land-owners and farmers find it to the advantage of their much-loved pockets were they to turn their ploughmen and their farm-women into the well built and ventilated, drained and cleaved stables and cow-houses, there to enjoy the society of the sleek, fat, and spirited animals of which they are so proud? The magistrate referred to (Mr. H. Tucker) suggests that "Surely the Act of Parliament which authorizes the Government to advance money to lauded proprietors for the draining of land, erecting farm buildings, &c., might extend its provisions to the more important duty of housing the poor, if it were only with even half the comfort in which we house our cattle and our horses."

#### LINCOLN GRAMMAR-SCHOOL COMPETITION.

DESIGNS have been sought for master's new residence. In reply ten were sent in, out of which five were selected for further consideration, bearing the following names and mottoes:—"Beta" (Mr. Giles); Mr. Drury, Lincoln; Mr. Goddard, Lincoln; "Ides" London (name not known); and one marked "Justice." The last was accepted by the visitors, and proved to be by Messrs. Bellamy & Hardy, of Lincoln.

#### CLIFTON COLLEGE COMPETITION.

THE council having decided to confine the competition to the architects of Clifton and Bristol, issued their "instructions" in the first week of October, and invited all architects whose names appeared in the local directory to send in designs. The sum to be expended on the college alone is 10,000*l.* The author of the best design is to carry out the works at the usual per centage; and the authors of the second, third, and fourth-best designs are to receive respectively 50*l.*, 30*l.*, and 20*l.* In response to this invitation, upwards of twenty designs were sent in on the 28th ultimo. A sub-committee of the council was appointed to examine and report upon the designs submitted, and they afterwards called in the assistance of Mr. Benjamin Ferrey, architect. Ultimately the design of Mr. Charles Hanson was selected as the best. The second premium was awarded to Mr. Norton, the third to Mr. E. W. Godwin, and the fourth to Mr. T. R. Lysaght.

#### GLASGOW ARCHAEOLOGICAL SOCIETY.

At the usual monthly meeting of the Glasgow Archaeological Society Mr. Robert Hart read a paper on "The Remains of an Ancient British Village near Busby, in Cathcart Parish." Numerous traces of these pit-houses are said to be found in Aberdeenshire, and on the bank of Lochfine, and other places. These are found rarely to exceed 8 feet in diameter. Those found at Overbe were of the kind called "Piet's houses" by Wilson and others. They were arranged in a convex crescent round the foot of the small hill—thirty-six in number—and on the flat top of it, six, also in a curve. Those round the base of the hill were dug about 4½ feet deep into the hill, and averaged about 12 feet square. The sides of some were lined with a thin wall of stone: one or two had slabs of thin undressed stone set on end to support the earth sides: others had nothing but the natural soil for walls. There was a passage or entrance in the centre of one side in each, going in upon a level with the floor; but those on the top of the hill had an inclined passage down into them. The floors of them all were paved with irregular-shaped thin flag-stones, such as might be got in the bottom of the Cart. In the centre of the floor there was a hole or space left to hold the fire, and the remains of the fires were found in them.

Mr. James Fleming read a paper "On Certain Peculiarities of Scottish Heraldry;" and Dr. D. P. Stewart read the first of a paper "On a re-

markable Drinking Cup used by the old Viscounts of Kilsyth; and on Arms used by a Glasgow Family, of the name of Muir, at the Battle of Prestonpans."

#### LONDON AND COUNTY BANK, LOMBARD STREET.

THE contract for the superstructure of the proposed new building for the London and County Banking Company has been undertaken by Messrs. Jackson & Shaw, for the sum of 14,830*l.*, exclusive of the fittings. The basement, with its range of strong rooms, stationary departments, and lavatories, has been already completed by Messrs. Myers up to the street-level. The banking department will be fire-proof. The elevation in Lombard-street will be of Portland-stone, with rusticated Doric columns, as will also that in Nicholas-lane, up to the first floor, above which Jennings's patent facing bricks will be used, an experiment which will be worth watching. It should also be remarked that the whole of the stone to be employed will be obtained from old Westminster Bridge. Mr. C. Parnell is the architect.

#### THE HULL DBAINAGE QUESTION.

A RATHER stormy debate has taken place in the Hull Board of Health on the long mooted question of the west district drainage and the merits of the plan of Mr. Hawksley (supported by the local surveyor, Mr. Marillier), and that of Mr. C. F. Butler, the assistant surveyor, which, as our readers may recollect, is on the gravitating principle.

The debate arose upon a motion,—

"That the plan of Mr. Hawksley, C.E., for the drainage of the west district of this borough, together with his report of the 1st October, 1856, thereon, and presented to this Board on the 28th day of the same month of October, be, and the same are hereby adopted; and that all previous resolutions of this Board adopting any other plan of or for such drainage, and inconsistent with this resolution, be, and the same are hereby rescinded."

and on an amendment to the effect,—

"That it be a direction to the Committee of Works to submit Mr. Butler's plan for the drainage of the west district of this borough to T. Page, esq., G.E., late Government Inspector for Croydon, with instructions to report to the Committee on the following points, or on such of them as he may deem requisite, namely:—First—Whether in his judgment Mr. Butler's plan for the drainage of the west district, if carried out in the manner proposed by him, would prove efficient. Secondly—In his opinion it would not,—whether he can suggest any alteration therein by which it might be made so. Thirdly—In the event of his coming to the conclusion that Mr. Butler's plan does not, in its present form, and cannot, be so amended as to afford a reasonable prospect of its result being satisfactory,—whether he can himself furnish the Committee with an independent plan for the effectual drainage of the west district on the principle of gravitation. Lastly—If able to supply such plan, what would be its general character, and the approximate cost of carrying it into execution; and that all other resolutions of the Board to the contrary be, and the same are hereby rescinded."

Another form of amendment was proposed, embodying a suggestion that Mr. Hawksley's plan, as well as that of Mr. Butler, should be submitted to Mr. Page; that whatever decision Mr. Page might give with regard to either of them, should be final and binding upon the Board; and that, immediately upon receipt of Mr. Page's decision, the work should be proceeded with according to his report as to which was the best scheme.

In course of the debate it was asserted that there was in fact no plan other than a written one by Mr. Hawksley before the meeting, and that what plan there was had been so indefinite, that Mr. Marillier, the surveyor, had "mistaken the top for the bottom of it." This the surveyor denied; and it appeared that some slight misunderstanding only had occurred with regard to the invert and the crown of one of the sewers.

Very different opinions seemed to be entertained as to the cast district drainage (on Mr. Butler's plan), some maintaining that it was very imperfect, and that the new Pearson park could not be properly drained by it.

After much talk and no little reiteration, the previous question was supported, and the clerk, on being appealed to on the effect of carrying this question, said that they would be in precisely the same position as they were before. There was a resolution on the books approving of Mr. Butler's plan, and another giving instruction to the Works Committee to carry it out. If they carried the previous question these resolutions would remain, and it would be for future action to be taken on them.

Finally the previous question was carried by a majority of 27 to 15.

## ADULTERATION OF LINSÉED OIL.

We continue to receive letters showing the great want of pure oil. One correspondent says,—“They are now putting common resin in it, which is very injurious to paint, and becomes tacky in a warm atmosphere. The white lead you generally get, no doubt, is ground up with had oil. You cannot depend upon making a good job of flat painting: it will become glossy and pately in a short time after it is done, though nothing but turpentine is used. The oil question is really a matter of importance. For inside work, the only sure mode of making a good job of plain painting is by using a little good elastic varnish and turpentine, instead of oil; but this is too expensive for work generally; although, if done in this manner, the work would last two or three times as long as the ordinary process of painting, and look much superior. It would be a good thing for the tradesmen and public if any one would publish the true and best mode of testing whether the oil is genuine or not.”

THOMAS KERSHAW.

## COMPETITIONS FOR STAINED GLASS.

I WAS glad to see in your number of the 1st. instance some attention had been drawn to your extract of my letter, which appeared in your issue of the 10th ult., with reference to the making designs for stained glass more publicly competitive.

But the more I think what the effect of such a plan would be, the more I feel convinced that it would tend to raise the art of stained-glass designing, greatly higher than it at present stands.

I think it would give a great impetus to advanced students in Government Schools of Design, to have such a means open to them of showing their powers in designing; and even to attempt designs of this kind for other art manufacturers would also add to such impetus. To have a knowledge of the practical working out of such designs is, of course, very necessary; but I believe, generally speaking, with opportunities for learning, there is no great difficulty in attaining this knowledge, but often very much the reverse.

Another good that would result is, that it would allow young men to think and act more for themselves in this, and not be in any way hampered, as one so often hears they are, by what their employers may think or wish to do. At all events the plan is not likely to do any harm, and it might do much good. Why, then, should it not be attempted?

I still do not think the choosing out of such designers for stained glass, the best idealist, colourist, and delineator, and if possible combining them to produce the window, would make the “miserable jumble” which your correspondent, “Peter,” imagines. If good ideas, colour, and drawing are found to exist most in one design, the designer thereof is certainly the man to be employed for the work; and a more satisfactory thing is likely to result than if three were employed at it. But such a man is as rarely to be found as hidden treasures. I believe more artists do possess these qualities than we are apt to suppose; but, in order to arrive at extraordinary perfection in one or two of them, the other one or two are neglected. Many aim at drawing, to the exclusion of the other two qualities, power at chiaro-scuro and colouring, and many fewer at idea.

Of modern painters, Turner perhaps combined these three qualities to most perfection; but even his drawing seems to have been sometimes neglected so as to excel the more in idea and colour.

But to return. Out of many designs which might be submitted for a stained-glass window, let us suppose that none of them combined all the three qualities specified, or even two of them: my plan for making the most out of the number would be the following:—

Discover which design showed the most harmonious colouring, in doing which there would be no great difficulty; next that which showed the most correct drawing, in discovering which there would be more difficulty; and next, that which was the most rich in idea, to discover which might possibly be exceedingly difficult, for the richest ideas are very often the most subtle. For that reason a plain description of the artists' ideas would be necessary to accompany such a work, in order to avoid unnecessary delay in discovering the best idealist. It would also be essential, that those destined to decide on the merits of such works should either be artists, or men well versed in art.

Let the general arrangement and ideas of the idealist be submitted to the correct delineator, and I think a subject rich in drawing and idea would result. If this, then, were submitted to the man who shows the innate quality of producing harmonious colouring—a quality so rarely seen in our enlightened age,—I believe a very perfect window would be the consequence.

Mr. Ruskin, in “Modern Painters,” says,—“That art is greatest which conveys to the mind of the spectator, by any means whatsoever, the greatest number of the greatest ideas.” This is true with regard to all works of fine art; and no doubt, properly to convey these ideas, proper execution is required; but I maintain that these ideas may be, and often are, conveyed by inferior execution; and it is to obviate such deficiency that, where it is practicable, I would ask the assistance of another.

A STUDENT IN ART.

## IMPROVEMENT OF IPSWICH.

I BEG leave to second the proposition of your correspondent respecting the improvement of Brook-street; and I have no doubt that all who look to Ipswich as the capital of their native county will, with the usual patriotism, concur in the same. A similar improvement is wanting at the east end of the butter-market, where it enters Brook-street; more especially now that the west end of the butter-market opens into the line of streets leading from the Eastern Counties Station. It is worth making a public subscription for, which would certainly be responded to in Ipswich; for a still greater improvement was effected in Colechester by the same means, though the population of this town is little more than one-half that of Ipswich.

W. SCARGILL.

## BUILDING STONES.

In your recent notice of Mr. Hunt's Statistics of Building Stones you do not mention an excellent Bath stone from *Murhill Down* quarry, which has lately come under my notice, and has been used in several of the buildings in Gloucester—the markets, the corn exchange, &c. For outside works it is the best weather stone that I have seen under the name of Bath stone, being composed chiefly of shelly or flinty-looking particles, very equally disposed throughout.

I should hope that his work makes mention of Painswick stone, dug from the Coteswold hills, about six miles south-east of Gloucester. I may describe it as an oolitic freestone, resembling wrought Caen stone in appearance, but with far better wearing properties: it is excellent for indoor-finished work, as well as for outdoor-work, when not used in projections such as bases, string courses, hutch slopes, label mouldings, &c., in which positions *Murhill Down Bath* is preferable, or a stone called *Bisley* in this neighbourhood, which is also used for the ashlar work on the ground line, “between wind and water,” as the sailors would term it. The fine central tower, and other parts, of Gloucester Cathedral are built in this manner with the two stones, *Painswick* and *Bisley*.

If the Great Western Railway Company were to make a small branch-line from Stroud or Cirencester to Painswick and Bisley quarries, close at hand, these valuable building stones might rival the supplies of Caen and Bath stones in the London market.

W. H. E.

Mr. J. J. Roeluck, who writes to us to urge the goodness of the stone from the hills west of Huddersfield, remarks, with much truth, “When decay has taken place in a building such as Westminster Palace, the permanent remedy I believe to be in introducing carefully selected stones from the best quarries in the district from which the stone of the New Palace was supplied, rather than from any coating whatever applied to the whole building indiscriminately.”

## EXPERIMENTS ON THE PURIFICATION OF SEWAGE, AT CROYDON.

AFTER the discussions that have taken place, I need hardly say that the most effectual method by which the sewer water from large towns should be purified, before it passes into the rivers, has now become a matter of great and vital importance.

A correct and detailed account of the experiments which have been carried out during the last two years by the Croydon Local Board, under my direction, on a large scale and at much expense, may be of value to many other towns, which are probably now in equally difficult cir-

cumstances to those in which this rapidly-increasing district has been placed.

I will first state that no mechanical means have been adopted to mix the different deodorizing and disinfecting agents, hereinafter described, with the sewer water; but, as they were all applied in a liquid state, the intermixture was in most cases rapidly effected.

The flow of sewage water at Croydon varies with the state of the weather, from 600 to 1,400 gallons per minute; the whole amount discharged being from 800,000 to 1,400,000 gallons during the twenty-four hours;—a part of this, discharged during the night, being clean water.

The apparatus used during these experiments was of the simplest kind, consisting of two wooden cisterns, holding 600 gallons each, and two precipitating and filtering tanks, lined with brick, being each in length 320 feet; width, 45 feet; and depth, from  $\frac{1}{2}$  feet to 3 feet; each holding about 250,000 gallons. These tanks are subdivided by one longitudinal wall, and three transverse walls, besides perforated iron-plates, so placed as to contain a thickness of straw, gravel, and coke. They were generally worked alternately, so as to give time for substances held in suspension to precipitate, and also to facilitate the action of any chemical agents used to fix or separate the matter held in solution.

The water passes from these tanks into a culvert one-quarter of a mile long; and, at the time these experiments were made, also through about  $1\frac{1}{2}$  mile of open ditches before it entered the river. The water now passes over fields intersected with irrigating channels, to which I will not further allude,—a statement respecting these having already appeared in one of the daily papers.

In the following account of the different experiments, a statement of the peculiar effect produced by each is given: the general effect common to all is afterwards stated:—

The first trial was made with lime-water. 1,250 lbs. of lime were slaked daily in the cisterns, and then passed into a manhole situate in the sewer, 300 feet before it entered the tanks: this effectually deodorized the water passing into and from them, but gave a clouded and milky appearance to it; and before it reached the river there was a smell clearly perceptible, and a white deposit left on the sides of ditches. The expense of this process was about one guinea per day.

The second trial was made with perchloride of iron, made under the direction of Mr. Way, by dissolving iron rust in muriatic acid: this was applied at the same place, in quantities varying from 60 to 120 gallons per day, at a cost of 8d. per gallon. When the larger quantity was used the water near the surface, after passing halfway down the tanks, became quite clear, and flowed from the end of the filters free from colour and smell: there was, however, a deposit formed on the weeds and branches on the side of the ditches which became offensive. The water taken from the ditches was in a very different state from that taken at the end of filters; and this occasioned conflicting statements, as to its purity, which greatly perplexed those before whom the most contradictory evidence was given, by men of the highest character and respectability. The cost of this process was, on the average, four pounds per day.

The third trial was made with a deodorizing composition from the Walker Alkali Works, at Newcastle, consisting of a mixture of chloride of manganese and persulphate of iron, which was dissolved in the cisterns, and run into the manhole. This composition was very effectual in deodorizing, but did not clarify the waters so well as the perchloride of iron; but I think this was attributable to a defect in the temporary manufacturing apparatus fitted up hastily at Newcastle, which failed to give the proportion of perchloride of iron that was intended by the makers. The cost of this process was two pounds per day.

The fourth trial was made with limewater and fifty gallons of perchloride of iron. This was effectual in clarifying the water, but the same offensive matter was formed in the lower part of the ditches. The cost of this process was 2s. 10s. per day.

The fifth trial was made with Dale's magnetic muriate of iron, of which 100 gallons per day were used. The water, as it passed from the filter works, was nearly clear, but the same deposit was apparent in the ditches as previously described. The cost of this process was 4s. per day.

The sixth and last trial was made with one gallon of MacDougal's carbolic acid and lime to 40,000 gallons of sewer water. This removes all smell, and disinfects but does not clarify the water; this defect, being now, however, effectually remedied by the system of irrigation, is, in our case, of no consequence. The cost of this process is 18s. per day.

There is one general effect produced by all these agents, of a remarkable character. A large part of the solid matter, instead of subsiding to the bottom of the tanks, forms a floating crust on the surface of the first divisions, about 100 feet in length, which, in about six weeks, becomes 15 inches thick, and so solid that it is necessary to use spades and harrows for its removal; and if this is done at short intervals, the solid matter at the bottom of the tanks accumulates very slowly.

The manure from the surface just described is very valuable, and has been used this summer by our farmers in this neighbourhood, on meadow land and turnips, producing in one case four times



amusing, if not quite correct; and besides, it treats scientifically, as well as popularly, of the chemistry of all the fifty known metallic elements.

The results of Mr. Pepper's visits to coal mines are interesting, as they shed a light on the dark position of the poor miners, female as well as male, and show how such deadly explosions as those of recent occurrence take place, and how they could and should be prevented. He enters very fully into the peculiarities of such mining works, and illustrates what he says by rough but seemingly truthful sketches. We observe that he points special attention to the self-extinguishing safety-lamp (Simons's) of which we have ourselves just been speaking, as a hopeful aid in obviating explosions.

On the subject of iron the author treats no less fully, as well as of copper, lead, and tin, telling us all about their mines and their manufacture into market metals: of gold and silver, too, and of aluminium; and, indeed, of all the more important metals, there is abundant information, both interesting and instructive.

While treating of iron, the Bessemer process is described, and the author, we observe, expresses an opinion quite in accordance with that taken by us from the first; that, notwithstanding undue laudation in the outset, and undue depreciation in the long run, this process "will, in time, effect great improvements in the iron manufacture."

Under the head of lead is a *résumé* of what is known of the influence of water on lead, and lead on water, a subject which we were the first to bring before the public in a way to excite attention and lead to care and caution in the use of lead in water-supply.

Under the head of gold the author, while alluding to its modern abundance, takes care to prevent us running away with the idea that it is only in recent times that gold has been got in at least considerable abundance; King Solomon, as we are told in the Bible, having worked up 27 tons weight of gold, as the produce of a single year, on the adorning of the temple; and the tomb of Simandius, according to Diodorus, having been envired with a circle of gold 350 cubits about, and a foot and a half thick, a mass of gold of enormous value even at the present time: Semiramis, again, erected in Babylon three statues of gold, one 50 feet high, and weighing 1,000 Babylonian talents, with a table of gold 40 feet long and 12 feet broad, and weighing 50 talents. Gold, therefore, though probably not so very abundant as now that new accumulations have been added to the old (may not some of the gold of Solomon and Semiramis, by the way, be even now in circulation?) was by no means a scarce or rare article in times of old.

While treating of mercury and the beautiful colours which it yields, the author regrets, as every artist must do, the unstable nature of these colours. Vermilion, however, or sulphuret of mercury, is not so changeable as the iodide, neither is the red oxide. The iodide is the most beautiful of all, whether in its primrose robe or its scarlet attire. It is of a beautiful pale yellow while hot, but generally changes, in a very curious way, to a vivid scarlet, as it cools, or when it is even touched; yet we have obtained it ourselves of a yellow hue even while cold; and this yellow colour, as we have found, may be rendered comparatively fixed by repeatedly subliming the iodide of mercury on metallic zinc. A black colour will first be thus produced, but finally the beautiful pale yellow; and probably the scarlet colour may also be fixable in some such way, although we have not tried to do so. We may add, however, in aid of those artists or others who are personally in search of means to fix mercurial colours, that the bromide of mercury retains the yellow hue, though not so fixedly as the double iodide of mercury and zinc; but, by considerable pressure, it may be made scarlet, though only where pressed; and that a series of curious colours, ranging from pale yellow to deep sage-green, can be produced by combinations of mercury with iodine and phosphorus together. There is a somewhat curious fact with regard to colours produced from iron, which we some time since happened to discover, and which we may here note while on the subject of colours. Observing an artist-friend of some mark, on one occasion, looking (as we may call it), some red oxide of iron on his parlour fire, the idea recurred to us that in precipitating oxide of iron from its muriate, by means of an alkali, the first precipitation had appeared to be very crude by comparison with a second precipitation of the same oxide, after being taken up again by muriatic acid, as it happened to be; and, on retrying the experiment, we found that, at each of several precipitations,

the powder of red oxide of iron became finer and more subtle as well as more vivid in colour. How professional chemists would account for this curious fact we cannot imagine: it appears to be inconsistent with prevalent theory: nevertheless, it can be easily verified as a fact, and may lead those interested to further discoveries in the same direction,—a very interesting one when we keep in view the magnificent hues of subtle oxidation obtained—but only so obtained—on the surface of polished steel implements in the fire; and the beautiful prismatic hues which Bergmann got by forcibly subliming, in a strong heat, a little proto-muriate of iron. In repeating Bergmann's forgotten experiment, we may here add, as a curious circumstance, that we obtained round translucent scales, tough and bendable like talc, and scarcely distinguishable in appearance even from those of a fish. The sublimation was only got at a full red heat.

But we must have done with Mr. Pepper's "Play-book of Science," or rather with our own little Christmas by-play, in which its suggestive pages have led us to indulge. There are only one or two hints, as to correction of errors in old lore, which we may append to our otherwise unqualified approval of the volume. Bichloride of tin was not known among the old chymists as "liquor of Lebarius," but as "liquor of Lihavius." Prince Gebar was not merely said to have converted mercury into a solid, consisting, in fact, of oxide of mercury; but was said to have converted it into another solid, namely, gold; and he himself says that gold consists of pure quicksilver, "clear fixture," and "sulphur changed from what it was," as the "finger" of the other elements. If he were not an alchymist, how did he come to know or believe that? After the opinions given by eminent modern chemists, from Davy downwards, as to the possibility of transmutation, the probable correctness of the idea or principle, and the also probable constitution of the metals in general, as actual compounds (see Graham, the present master of the Mint, in his "Chemistry" on the subject), rather than elements, which no eminent modern chemist has ever conceived them in reality to be, though obliged to regard them as such *ill analysed*,—in the face of all this, we may remark, Mr. Pepper's ridicule of the principle of transmutation is rather stale and antiquated; and he ought to reconsider the subject, without allowing himself to be biased by the unquestionable impostures of so-called alchymists. On one other point we may add, that Dr. Dece did not consult his crystal while Kelly digested the revelations: it was Kelly who acted as Dece's "Scrier," describer, or seer, and who saw the visions in the crystal; while Dece, as the master-magician, noted them down. Mr. Pepper wonders "how he could look into the stone," as the "crystal" was "a polished piece of cannel coal." What Kelly really looked into, however, was the depths of his own imaging faculty; and any fixed point, almost, for the eye to gaze upon, would have done nearly equally well.

Finally, let us add, Paterfamilias, who is meditating the perennial Christmas hock-gift to his young hopefuls, cannot do better than place Mr. Pepper's "Play-book of Metals" on the list; and take a dip into it himself, too, on Christmas eve.

### Miscellaneous.

THE POST-OFFICE.—In the last financial year the expenditure was 1,905,568*l.*, besides 41,489*l.* for superannuation and compensation allowances, as compared with 1,854,808*l.* and 40,108*l.* in 1858-9; 1,776,911*l.* and 36,400*l.* in 1857-8; 1,610,325*l.* and 26,861*l.* in 1856-7; and 1,291,550*l.* and 23,500*l.* in 1855-6. The growth of expenditure in the five years consequently amounted to 579,866*l.* In the same period the income advanced from 2,767,201*l.* to 3,310,655*l.*, showing an advance of 543,454*l.*

STATUE OF AMERICA.—Mr. Edward Kuntze, of whose medallion portraits we spoke some time ago, has produced a statue of America which deserves a word of notice. America is represented as a female figure leaning upon a shield bearing an eagle, the shield resting upon the stump of a hewn tree, to indicate clearance, on the root of which are piled up fruits and other products of the country. The head-dress is a tiara of thirteen stars, representing the thirteen original States. She has a young, fresh countenance, with an air of beneficence, and with outstretched hand offers welcome to all. The arms, judging from photographs before us, are somewhat short. Mr. Kuntze's countrymen in England should aid him in the work.

LIVERPOOL CEMETERY COMPETITION.—Through want of indication, and under pressure of intimation on the part of an official that note-taking was forbidden, our reviewer did not see the whole of the designs. It appears there was a second room "elsewhere," containing nine sets of designs, some of them very good.

BROMPTON REFORM.—The ground has been cleared in Brompton-road of a block of dull, heavy houses with palings on the south side, and a large piece of vacant ground now exists for a new square between Knightbridge and the Museum, which is being laid out with considerable energy. A correspondent writes,—“This square will present two permanent sanitary adjuncts, a livery stable and dung-yard at one corner, and a busy slaughter-house at another.”

THE SEWAGE QUESTION.—An experiment has, it is said, been submitted, to practical test during the last eighteen months in Hyde, near Manchester, under a patent of Mr. B. Standen, of Salford, for deodorising and concentrating the material collected from potties and ashpits. It now assumes the shape, it appears, of "The Eureka Manure Essence," and is produced at Messrs. Standen & Co.'s agricultural chemical works, in Hyde. The manure collected is said to be greatly reduced in bulk and weight, and thus a saving effected in the cost of transport to the farmers, who receive it in a state of powder resembling guano. Joint-stock companies are to be established, it is said, to work the process in towns desirous of adopting it. The material seems to be similar to the Parisian *podrette*, if we rightly understand this account of it.

THE FIRE BRICK TRADE AND THE FRENCH TREATY.—In the spring of this year a meeting of the various fire-brick and clay-retort manufacturers in Durham and Northumberland was held in the Chamber of Commerce in this town, to consider the probable effects of the commercial treaty with France on this now large and important branch of our local manufactures. Mr. Jos. Cowen, chairman of the Tyne Commissioners, was appointed a representative of the trade to visit Paris, and lay the case of the fire-brick makers before the commissioners. He did so, and we are now glad to learn, by the publication of the details of the treaty, that all the concessions asked for by Mr. Cowen have been granted. Fire-bricks, clay retorts, pipes, and all other articles usually made by fire-brick makers, are henceforth to be allowed to enter France entirely free of all duty. This will be a great boon to this branch of local industry, as hitherto some of the fire-clay goods entering France were charged with a duty of ninety per cent. Now they are free. — *Newcastle Chronicle*.

OPENING OF THE BOTANIC GARDEN AT DUBLIN TO THE PUBLIC.—A treatise has been printed and circulated under the title of "The Royal Dublin Society and the Citizens of Dublin. Why should Exclusiveness and Sabbatarianism be the Rule at the Glasnevin Botanic Garden, whilst under Her Majesty, at Kew, Free Admission is the Rule on all the Days of the Week, and on Sunday?" Issued by a Preliminary Committee formed for Promoting the Freer Opening of the Glasnevin Botanic Garden. The committee propose to memorialize the governmental department which has the supervision of the Royal Dublin Society, in the event of the Society refusing to the public privileges which they themselves exercise; but they are hopeful that an expression of the public feeling on the matter is all that will be required to place the Glasnevin Garden on some such footing as that at Kew.

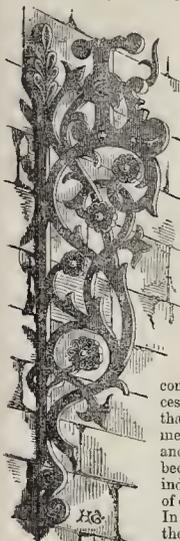
THE LEICESTER ARCHITECTURAL AND ARCHAEOLOGICAL SOCIETY.—A *soirée* has been held by this society at Leicester, under the presidency of Lord John Manners, M.P. The assembly was a numerous one. The large room of the Temperance-hall, where the *soirée* was held, contained many objects of interest. Lord John Manners made some remarks on the development of archaeological and architectural knowledge, and suggested that local architectural societies should give their formal opinion as to the style of the new Foreign Office. The Rev. Charles Boutell, M.A., delivered a lecture on "Medieval Costume as Illustrated by Monumental Brasses." The lecture was illustrated by rubbings from brasses. A paper from Mr. F. W. Ordish, on "The Objects of Architectural and Archaeological Societies," was then read. The Rev. I. H. Hill, of Cranoe, read a paper, from the pen of Mr. J. Gough Nichols, the historian, on "The State of Leicester in the Early Part of the Seventeenth Century." Mr. Thompson also read a paper on "Recent Discoveries illustrative of Roman Leicester."



# The Builder.

VOL. XVIII.—No. 933.

Condition of our large Towns. Leeds.



LEEDS, speaking broadly, is a filthy and ill-contrived town. In some of the streets it is impossible for a person unaccustomed to impure air to remain for even a short time without becoming sick and ill. The stench is overpowering, and the sights equally so. The paucity of private accommodation is such that in the side streets and open places no delicacy whatever is felt concerning

compliance with the necessities of nature; so that even young persons merging into manhood and womanhood have become from habit totally indifferent to the sense of decency in this matter. In many of these streets there is no superficial drainage. If the street be concave, the rain and slops soak down the middle to some lower level; if convex, the liquid refuse runs to the sides of the road, near the pavement, and not unfrequently overflows the latter. Some of the streets in the neighbourhood of Quarry-hill and the York-road are without any road pavement whatever. A week ago the cart-ruts in the roads were 9 inches deep, where the mud was solid enough to allow of an impression in it being left; and in others the cart-road was a narrow channel of liquid mud. Add to this, that with a few exceptions the streets are narrow, tortuous, and badly lighted; and that the air is afflicted with factory smoke; and that side of the picture, it will be seen, is not an attractive one.

Yet Leeds is wealthy and flourishing, and has spent money liberally and nobly. Let us look first, then, on this side of it.

The prosperity of Leeds may be indicated by the following table, showing the amount of money expended on public buildings and public works within the last few years:—

1847. Borough Gaol, cost .....	£40,000
1855. Kirkgate Market .....	14,000
1858. Townhall (exclusive of fittings, organ, &c.) .....	51,625
1859. New Grammar School .....	14,000
1860. New Workhouse .....	17,000
„ New Overseers' Offices.....	4,500

In addition to these there are numerous works of district property, such as cemeteries and chapels, also places of public worship, statues of Peel, Wellington, E. Baines, M.P., and a portrait statue of her Majesty, all of recent date.

At the present time sums of 8,000*l.* for the Philosophical Hall, and 16,000*l.* for the Schools of Science and Art, and Mechanics' Institutions, are being raised in the town, and the buildings will be proceeded with almost immediately. The extensive Infirmary is about to undergo thorough renovation, and additions are to be made to its accommodation; whilst a new theatre is to be built in a short time. But perhaps what will give the best idea of the resources of this town is the extent of the corporation loans under the Improvement Amendment Act of 1848, which in 1856 amounted to the sum of 512,000*l.*

The public spirit shown in these extensive outlays of money for improvements and addi-

tions to its public buildings and works is very great. A large part of this corporation loan is being devoted to the drainage of the town; and it is well that it is so, for few places of equal wealth and importance have been hitherto so miserably drained.

Perhaps it would be impossible to find a town in all England where the house accommodation for the labouring populations has so unequally kept pace with the increase of population as in Leeds. This is not altogether inexplicable when we consider the rate at which the increase of population has proceeded.

We give this table to explain the demand which has existed for the last fifty years for increased house-room in Leeds and its immediate suburbs:—

Population.					
A.D. 1801.	A.D. 1811.	A.D. 1821.	A.D. 1831.	A.D. 1841.	A.D. 1851.
53,342	62,665	83,943	123,548	150,234	174,270

It is believed also that in the census of 1861, the population will have reached 200,000. Thus it will be seen that in fifty years the population has been nearly quadrupled, and between the two last decades of years, above 20,000 inhabitants have been added in each decade.

This enormous increase has occurred chiefly in the labouring classes, mill-hands, mechanics, and artisans. There are a few streets built to accommodate the middle class of householders, which necessarily accompany so vast a labouring population. But the decent and comfortable houses of clerks and professional men, bear a very slight proportion to the miles of squalid tenements in dirty, badly drained streets, erected for the artisans and mill-hands. The courts and alleys, and pestilential dens into which the latter have been gradually driven; the filthy habits, the vicious appearance of the lower classes, all these are a foul blot on the town which calls itself the metropolis of the West Riding. And yet, naturally, the working classes of Yorkshire are, perhaps, the most intelligent in England. They are a well-formed, powerfully-built, and healthy race of men—hard workers and shrewd thinkers. Subject to such demoralizing influences as Mr. Hole has noticed in his account of the social condition of the labouring classes of Leeds,\* we hold it to be impossible for working men with large families, to keep themselves in even a tolerable condition of health or morals. The forest of factory chimneys vomiting forth their clouds of sooty smoke, such a plague to housewives as even to compel them to dry their washed linen before the fires of their single dwelling-rooms; the dye-houses and cleansing-rooms of cloth and other mills, poisoning and defiling every stream, and turning the river into a dense and blackened stinking drain; the narrow and over-crowded streets, the closely-packed dwelling-houses, the imperfect drainage; all these are influences which, acting together on the working man's health and happiness, have made a very considerable impression on his physical and social condition and his appearance.

One very serious evil in the construction of modern houses in Leeds is that of building houses back to back. In this case the houses are placed between two streets or approaches, the entrances being on opposite sides of the block,—each tenement going half way through the whole block. This arrangement results in the evil of an impossibility to get a draught of pure air through the house, and the consequence of very imperfect ventilation. The commonest deficiencies of life are totally disregarded, but we will let Mr. Hole speak for himself on this point:—

“The physical condition of the majority of the working classes of the town would have been good, had it been subjected to proper municipal regulations during the last thirty years. Decent houses and well-drained streets are scarcely less important than good wages, or day and Sunday schools:

\* “Light more Light!” an able essay on the present state of education amongst the working classes of Leeds, and the means of improving it; by Mr. James Hole, Hon. Sec. of the Yorkshire Union of Mechanics' Institutions, recently published by Longman & Co. To this work a premium offered by the Dean of Chester, before he left Leeds, for the best essay connected with the social advancement of the working classes, was awarded.

but notwithstanding an enormous sum expended in making drains, there are many miles of houses, yards, and streets unconnected with the main drainage. In Leeds, the reprehensible mode of building cottages back to back, has been almost universally the custom, and in spite of its known evils, it is allowed to go on, no steps being even contemplated to check its growth. The unfortunate dwellers in miserable streets so constructed, sometimes struggle for a while to maintain an aspect of decency about their little dwellings, but at last the accumulating filth renders it impracticable, and they give up the contest in despair. One privy to four cottages, has been settled to be the legitimate allowance in Leeds; but this liberality of supply has been by no means universally attained. A favourite plan, and almost inevitable on the back-to-back system of building, is to plant the privies for a number of houses in the centre of the row, with a sleeping-chamber over them! Every question of convenience, or even of common decency, seems sacrificed to the one consideration of getting the largest possible return for the money invested.”

This is the calm statement of a man, who, perhaps, knows more of the working classes of Leeds, than any other man in the town. We will ask the wealthy manufacturers of Leeds—the men whose riches and luxuries are the product of these dwellers in dens of fever and filth,—whether they approve of such a dreadful state of things? Revelling in the beautiful suburbs of Kirkstall and Headingley, surrounded by every luxury that boundless wealth can procure, it would yet be well if these woolen lords would realize the fact, that upon them devolves a responsibility in this matter. They live upon the industry of their armies of workmen and work-women. Is there to be no reciprocal feeling between them? We well feed and cleanly house the horse which carries us, and does our work well; are we to leave these other animals, these men who do our bidding and create our riches, in a worse case than the soulless brute? You, millionaires of Leeds, have no slight responsibility. Ask not yourselves, in a tone of contempt, “Are we our brothers' keepers,” for society has determined that you are. In so far as you derive your wealth from their labours, so far are you debtors to them, and they are claimants upon you for the righteous treatment which you willingly bestow on your horses,—if for no better.

It is impossible that the working men themselves can remedy the evil condition of their dwelling-places. The artisans may get well paid, but they marry early, and generally have large families. But supposing them to begin life with a virtuous determination to do well, and keep themselves respectable, it is easy to see how the struggle is maintained. Universal filth around them, and stench about and above them; companions who have long since given up the struggle in despair, whose various pleasures and demoralizing recreations alone seem to modify their evil plight,—all these gradually coerce their resolutions, and sap away their good intentions. Where it is impossible to give even the opposite sexes the common decencies of privacy in their houses and sleeping apartments, we must expect immorality, and the result to be regarded as a matter of course, and as nothing wrong. Where dirty streets, and crowded houses make men feel that their self-respect is gone, and that they are part and parcel of the system which includes these evils, we must expect them to fly to public-houses, and escape for awhile the miseries of home; though by this they are only perpetuating the evil, and entailing it with all its dread consequences on their children. Consequently, we find the low public-houses and beer-shops, and cheap places of amusement in Leeds, crowded in every part. The houses of recreation are brilliantly lighted, and music offers its attractions also to a music-loving population. The working man is well paid, and in these places he gets all the indulgences which money can procure him. In one den of so-called amusement, we are told that there is a greater average nightly attendance, than at the evening classes of the seventeen Mechanics' Institutes put together. The low beer-shops and public-houses are so numerous in the neighbourhoods of the artisans' houses,

that every twentieth house seems to be one of them.

We do not wonder that Leeds has to build enormous gaols, and workhouses, and reformatories. We cannot be surprised that Leeds should exhibit her criminal list, and demand that the assizes for the West Riding should be held in her Town Hall. But we will suggest to this metropolis of the West Riding, that her great men most imperfectly understand the very elements of political economy. They build a grand townhall in which assize courts can be held; they build an enormous gaol in which to incarcerate the convicted criminal; they add workhouse to workhouse where the spirit-broken pauper may decline and die at the public expense; they build a reformatory where young thieves who have graduated in the profession are prevented the practice of it,—and we are willing to allow these are, one and all, very excellent correctives,—but where are the preventives? The seed-beds of the crimes are allowed to exist and flourish in all their rank luxuriance. We do not hesitate in affirming that if proper control were held over the building of houses for the working classes; that if the streets were kept clean, and the river, streams, and canals were restored to their original purity; that if the drainage were properly carried out, and the dens of infamy and demoralization kept sternly in check, there would be a vast change and improvement in the condition of the town. It is never too late to begin. The town has already been saddled with the expense of correctives, let it now devote some attention to preventive measures. The municipal authorities may do a vast deal of good by exercising an undeviating control over the building of dwelling-houses for the poor. They will find that cheerful, roomy cottages, well ventilated and thoroughly drained, with proper accommodation for division of the sexes, and private offices for each house; all these are powerful antagonising influences against the crime and pauperism which now cost them such enormous annual outlays. If for each reformatory a dozen schools were built,—for each gaol a town were drained,—for each workhouse a Building Act enforced healthy cottages,—we should show our knowledge of political economy, and social science would triumph over police statistics.

Light, air, clean water, and elevating elegance in our streets, are in the end cheaper than gaols, reformatories, and workhouses. You must let men have the former with the addition also of room, or they will qualify themselves for the latter; and in any case the public has to pay, either for the preventives or the correctives, the happiness or the misery.

It was a natural remark which we heard a visitor make, whilst gasping the vitiated atmosphere of Leeds, "Surely these people have not enough air to live upon." One is almost willing to believe this, literally. It is a wonderful sight to see the chief approach to Woodhouse-moor on a Sunday afternoon and evening in summer. Woodhouse-lane becomes one huge footpath; pavement and horse-road are crowded with eager pedestrians, hastening upwards to the moor to get a breathing of un-heated, un-smoked pure air. In Holbeck also, where dwell many thousands of operatives, there is a general exodus to Holbeck-moor. Every outlet into the country is crowded with persons to whom the luxury of pure air is denied during the week. If you ascend any of the ridges or eminences which surround Leeds, and thence, on a Sunday morning or afternoon, regard the prospect, you will see the whole landscape dotted over with groups of figures; and would find it difficult to cast the eye on a country footpath or green field for miles around, where families and friends are not luxuriating in the blessings of a clear atmosphere. We see something like this exodus to the country in the suburbs of London on a Sunday. Leeds is a terribly rainy place, the atmosphere is dense and heavy, and retains perennially the smoke and sulphureous stonches of factory chimneys, iron foundries, dye shops, and cleaning houses, with which the town is crowded. The streets are narrow and not well lighted, except in instances which could be counted on the fin-

gers. Even in London we know nothing like the narrowness of the ways, whilst the traffic in many of them is only surpassed in important streets in the metropolis, Liverpool, or Manchester.

We have surely said enough to show that great changes are needed in Leeds, and we earnestly call on the right-thinking, intelligent, shrewd, and wealthy inhabitants of the place to set about the work.

*Millionaires of Leeds!* you are your brothers' keepers.

#### ON CHURCH AND CONVENTUAL ARRANGEMENTS.\*

*Cistercian.*†—The characteristics of the churches of the Cistercians, like the Cluniacs, a reformed congregation of the Benedictine order, is an extreme simplicity in outline—absence of triforium and pinnacles, a single central tower, a simple west front, and plain undivided windows—for no ornament of any sort, not even of painted glass, was admitted—and a flight of stairs led from the transept into the dormitory. Clairvaux had a chevet, with nine radiating square-ended chapels; two east chapels in each wing of the transept, and two in each of the western aisles of the transept. There was a large west porch; stalls for the clergy were set on the west of the transept, and for the servants at the lower end of the nave. Pontigny, c. 1150-70, where Lanfranc, Anselm, and a Becket, took refuge, had a chevet with seven square-ended chapels, and side chapels to the choir aisles, and west and east aisles to the transept; and Altenburg (c. 1255) has a chevet with seven polygonal chapels; the only English instance of such a termination is said to be indicated at Beaulieu, which, probably, resembled Clairvaux. Atohaça, in Portugal—1148-1222—has a three-aisled nave, and a chevet with nine chapels. Notre Dame Buremond, begun 1218, is of the Rhenish type, having pentagonal apses to the choir and apses, a cupola, with two flanking central towers; and a large west transept and narthex (Schayes, iii. 50). In the twelfth century the order distinguished themselves from the Benedictines by the choice of a secluded spot and the simplicity of their ground plan, which, in its earliest type, was marked by a short square-ended choir, as at Holy Cross, Here, Boyle, &c., except at Rievall and Fountains; often aisleless, as at Pluseardine, St. Mary Sweet Heart, Kirkstall, Roche, Furness, &c.; and by having chapels (usually four) on a line with the choir, and opening like an eastern aisle into the transept, as at Sybacone, c. 1147 (Lenoir, ii. 47). Fontenay (c. 1119), Sereny (c. 1128), Clairvaux, and Noriac, built by St. Bernard, and St. Vincent at Rome. Cîteaux was square-ended, but had apses to the transeptal chapels. Vaux de Sereny (c. 1128) was square-ended, with four apsidal transeptal chapels. Fontenay had a square apse, with square-ended transeptal chapels. This arrangement, which was adopted in the fifteenth and sixteenth centuries at Florence and Romo, appears in England at Kirkstall, Roche, Furness, Netley, Buildwas, Tutern, and Fountains, &c.; and in Ireland, at Dumbrody and Boyle. No Lady-chapel protrudes at the east end. The eastern aisle of the transept was always parted off into chapels (Arch. Jour., xi. 136). The exceptional instance of towers (both Perpendicular) occur at the west end of Furness, and on the north-west angle of the transept at Fountains. At Clairvaux (Viollet le Duc, i. 267), and ordinarily in Cistercian houses where the choir was aisleless, the whole space under the lantern was left open, so as to leave free access to all the eastern altars. The number of four transeptal chapels was sometimes increased to six, as at Rievall, Fountains (Proc. Ass. Soc., i. 263; iii. 54), Furness, Kirkstall, Dumbrody, and Graig-na-managh. Jorevella in 1154, presents an advance in the arrangement, having choir aisles; and Byland, which has western aisles to the transept. In France there was a large west porch.

*Friars.*‡—The churches of the Friars—Franciscan (e.g. Kilconnel), Dominican (e.g. St. Andrew's, Norwich), and Carmelite, e.g. Hulne, were oblong and of unbroken length, destitute of a triforium, and generally provided with only a single aisle or rarely flat-ended; but a Franciscan ruin at Winchelsea has an apse. The Franciscan church at Stirling has an octagonal apse. In the fourteenth

\* By the Rev. Mackenzie E. C. Walcott, M.A. See p. 793, ante.

† Jour. Arch. Ass., vi. 390, 312; Ecclesiologist, cxxxiii.; Viollet le Duc, 207, 250, 264, 269; Fosbrooke, Brit. Mon., 112.

‡ Fosbrooke, Brit. Mon., 117, 121.

and fifteenth centuries, tall, narrow towers, as at Roswick, Moyne, Multifernan, Adare, and Kilconnel, were inserted between the nave and choir. Ardirt has a west tower; the cloister is on the north at Moyne, Muekross, and Adare, on the south at Kilconnel. Kilconnel and Muekross have a south transept; Castle Dermot has a north aisle and transept. Reading has a nave and aisles.

St. Andrew's, Norwich (Jour. Arch. Ass., xiv. 60; Harrod's "Gleanings") and the Dominican Friary (Schayes, iii. 153-4), at Louvaine, c. 1230, and at Gloucester, had a nave with aisles; that at Ghent is a square-ended oblong, c. 1240; so is Roseomon, but with a north nave aisle. Conventual buildings were arranged by the Dominicans, as at Sligo and Kilmallock, on the north; and their preaching-yard laid out on the west or south side. Hulne, a Carmelite church, is a mere oblong (Arch. Jour., iii. 141).

The Friars (Lenoir, ii. 205; Viollet le Duc, i. 237; Ecclesiologist, No. cxxxiii.), owing to their destination as preachers, required to place their houses in the midst of a surrounding population; and had to adapt them to the irregularity of the site, large spaces of ground not being attainable. The stalls of the brotherhood occupied the nave, and the congregation occupied the parallel aisle. The cloister of the Jacobins of Paris and Agen were on the north side. The churches in those towns, as at Toulouse, were oblongs of two aisles, but the latter, of the latter part of the thirteenth century, has a chevet with five chapels. Chapels were not ordinarily added until the fourteenth and fifteenth centuries. The refectory at Toulouse and Paris stood out at right angles to the church. The Austin Friars' house at St. Marie des Vaux Verts, near Brussels, exhibits an oblong church without towers. On the north side of the cloister was the library, on the west the dormitory, on the south the refectory, on the east the day dormitory for the "meridian." On the north and south of the eastern cloister were the guest houses. The infirmary was detached on the south-west of the great cloister.

*Præmonstratensians.*§—Two of the most deformed ground-plans, in England, belong to the Præmonstratensian Regular Canons, a reformed branch of the same order as the Austin Canons. Easthy (Proc. Ass. Soc., ii. 317), with its long, aisleless choir, and nave wanting a south aisle, and Bayham, with an aisleless nave and lateral galleries to the transept. The choir is aisleless, but ends in a polygonal apse.

*Cluniacs.*¶—The original Abbey of Clugny bears a marked resemblance to Lincoln Cathedral, built by John de Noiers for Hugh of Burgundy. A peculiarity of Cluniac churches in England is the position of the sacristy, which at Tintford and Castle Acre is attached to the north wall of the transept. In France a narthex, or outer church for penitents, was a distinctive feature (Viollet le Duc, i. 185, 207, 259), as at Clugny, c. 1220; Yzeval, c. 1160; and Charité-sur-Loire, of the twelfth century, with two towers above the porch, four towers flanking the transept, and a central tower formed the lantern. The Abbey of Clugny was composed of a church with a nave with double aisles; a main and choir transepts, each with four apsidal chapels; an ante-church, a chevet with five chapels, and a cloister on the south. Above the great porch in Cluniac churches in France, a chapel of St. Michael was built. At Daventry and Tykford, the outer or firm-court was of considerable size (Monasticon, v. 206, 184).

*West Front.*—The ordinary west front in a fine building presented a gable between two towers. In the church of a nunnery, as at Romsey, there was no west door. The west fronts presented high-pitched roofs and gables, when stone walls replaced the old flat wooden roofs, and were especially useful in the snowy and rainy North. The mystic triangle of the Trinity in the pediment was replaced by the gable cross; and triumphant angels, apostles, evangelists, saints, and stories from Holy Writ and legends, arranged over the front, formed a guide of Christian life and vast systems of instruction. Occasionally, on a German type, in the central compartment there was a western tower, as at Belvoir, Ely, Hereford; imitated afterwards at Bolton, Wimborne, Christchurch, Hants, Shrewsbury, and Waltham. The same plan is observed at Mechnin, Limerick, Dantzig, Roeskildo, St. Vincent's, Soignies; St. Gertrude's, Nivelles; at Fribourg, St. Germain des Prés; St. Savin's, and St. Benoit-sur-Loire; but they were soon placed at the angles to show the

§ Lenoir, ii. 478; Fosbrooke, Brit. Mon. 115.

¶ Fosbrooke, Brit. Mon., p. iii.; Viollet le Duc, i. 237, 250.

arcading and windows of the front. We also find a western church attached, as at Sherborne, Glastonbury, and Tynemouth (Mon., iii. 311; Collinson's Somerset, i. 263; Harston's Sherborne); and similar instances in the Cluniac churches, and St. Front's, Périgueux.

**Porches.**—A Galilee (Duceage, s. v., Lenoir ii. 50) occurs at Durham, Ely, and Snettisham: it may have derived its name from being the most distant portion of the church from the altar, or from the circumstance of its being used like a lych-porch for the dead, with a touching allusion to the fact that our Saviour, after His resurrection, showed himself so frequently to His disciples in Galilee. The third week after Easter by the Greeks, and Wednesday in Easter week by the Latins, was called Galilee from this circumstance. This porch was used as their last station by processions. It is found on the south side of the transept at Lincoln. The porch was probably a vestige of the narthex of the primitive church. In it the children of the abbey serfs were baptised, and the office was said, at which the domestics assisted. It was also used on Palm Sunday to arrange the procession, and to receive great personages in bad weather. At Clugny it was as large as a church. It was often a sanctuary, containing a ring which the fugitive clung to, as at Durham (Fosbrooke, Brit. Mon., ch. xix.) and at Cologne, where there was an inscription, "Hic stetit magnus reus." It was also used as a parlour for conversation with persons who were permitted to enter the actual monastery. On the stones the measurements of weight and length were sometimes carved, as on a nave pier at Old St. Paul's.

In the twelfth century porches were often interspersed by grand portals. There are large porches at the west end of Peterborough and Chichester, south transept of York, and the north transept of Westminster. Large northern porches were added on the town side at Salisbury, Wells, Hereford, Christchurch, Worcester, Wells, Durham, &c.

**Galleries.**—The gallery in front of churches took its origin from the necessity of accommodating the choir, who sang "Lauds, Gloria," &c., when the procession on Palm Sunday returned from carrying the sacrament to the cemetery. Frequently windows were groned closely for this purpose, and this may have been the design of the huge west arch at Tewkesbury. In bad weather the ceremonial was held before the altar of the Cross, under the choir-screen, and this custom may have led to the construction of minstrel galleries at Winchester, Exeter, and Malmsbury. Galleries are found at the west end of the nave at Le Mans and Jumièges in the north transept, and in the north nave aisle at Winchester, in both transepts at Bechoverley, in the south transept at Westminster, Hexham, and Cerisy, and like a small arcade at Elgin.

**Doors.**—The north nave door was allotted to the laity, that on the south opened into the cloister, the exceptions are where the conventual buildings were on the north side of the church. Romsey, being the minister of a nunnery, has no west door.

**Towers.**—Towers had frequently an altar of St. Gabriel or St. Michael, the conductor of souls (perhaps in allusion to the Paradise below, or the legend of his apparition, c. 490 and 706), (Johnson's Notes, Ethelred's Eccl. Laws, 1014, c. 2), and the interior was frequently covered with sepulchral inscriptions. A chapel of St. Michael, in Cluniac houses, was built above the great door. The great tower of St. Benoit-sur-Loire, c. 1026, was called St. Michael's; the central tower of Canterbury is called the Angel tower; and on the highest gables of Wykeham's colleges are statues of St. Gabriel or St. Michael. Three towers were built at Canterbury, York, Wells, Lincoln, Durham, Llanthony, Southwell, and Ripon, as at Westminster, built by Edward the Confessor (Publ. Rec. Comm. 1855, p. 214); Liehfield alone retains its three spires. Ely and Peterborough have central lanterns; Salisbury, Norwich, Chichester, and Oxford have central spires. Two western towers were designed at Norwich and Chichester. At Chichester, as once at St. Paul's, Salisbury, and Westminster, Worcester (Arch. Inst. Wore., 103; and Crowland, Proc. Ass. Soc., iii. 273), there is a detached helmy-tower. At Rochester it is attached to the north transept; at Donlunne to the south transept. At Wyndham (Monast., iii. 328; Arch. Inst. Norfolk, vol. 1851, p. 115), the abbey steeple, built over the three eastern nave-hays, served as all communication with the nave, which served as a parish church. Aberden and St. Andrew's have two west towers. Elgin had three towers, with large turrets flanking the east end. Fortrose has a single west tower. At Exeter the towers

form transepts—a very convenient arrangement for the monks (Viollet le Duc, i. 168), when tolling the bells for the night offices, or when a large congregation filled the nave. The same arrangement prevailed at St. Germain des Prés, Clugny, Vézelay, and Chalons-sur-Marne. The western towers contained the bells rung on fast days, and as a summons of the laity to service. There are towers to the choir transepts at Canterbury, and tower-turrets at the west end of Salisbury, and Peterborough, and Rochester, to the east end of Chichester, and Exeter, and Norwich, to the west and end of Winchester. Turrets flank the choir of Peterborough.

**Transept.**—There are aisleless transepts at Canterbury, Norwich, Carlisle, Worcester, Gloucester, Exeter, Rochester, Kilkenny, Romsey, and Bristol; but the place of an aisle was ordinarily supplied by the erection of eastern apsidal chapels or square, as at Exeter. St. Patrick's has a quasi-aisle. St. Stephen's, Caen, as Canterbury had, has an internally formed lateral aisle. Scotland, like France, ordinarily presents only a quasi-transept. Transepts with east aisles for chapels are found at Peterborough, Hereford, Liehfield, Selby, Whithy, Ripon, Lincoln, Roche, Jorevalle, and Howden. Double aisles flank the transepts of Winchester, Ely, York, Wells, and Byland. One of the compartments at Winchester retains its name of the caleyatory, the place for lighting the censers. A stone confessional chair remains in the south transept of Gloucester, and confessionals are to be seen at Maig-Aidair (Fosbrooke, Ency., i. 122). The revery, as at Westminster, Gloucester, and Christchurch, was attached to the transept; it contained a press for vestments (one remains at Winchester), an altar, and a bell to announce the coming of the celebrant. Transept towers occur at Exeter and St. Mary Ottery, and in Cormac's chapel, on the rock of Armagh, consecrated 1134, as at St. Stephen's, Vienna, Narbonne, and Chalons-sur-Marne. At Angoulême there are towers at the ends of the transept. At St. Lambert's, Liege, there was a south transept tower (Schayes, iii. 136). Choir transepts are added at Salisbury, Lincoln, &c., as at Clugny and Nivelles. In the sixth century St. Germain built chapels in the transepts of St. Vincent's. The chapels were usually founded as sepulchral charities, and supported by families of distinction, or by bequest of ecclesiastics. There are superb western transepts at Ely, Lincoln, and Peterborough.

The word choir\* is first used by writers of the western church, and Isidore, of Seville, derives it from the (corona) circle of clergy and singers who surrounded the altar (Orig., lib. i. c. 3); it occurs in the c. 13 of the 4th Council of Toledo. The position of the ritual choir in the nave may be ascertained by a difference in the shape or ornamentation of the pillars, the presence of a piscina, or marks of the rood-beam. Priests' rooms are found over the vaulting of the nave and choir at McIlfont, Holy Cross, and Kilkenny. In abbeys the choir (Viollet le Duc, iii. 227), raised by steps above the level of the rest of the building, usually extended into the nave, from which it was divided by a rood-screen; and on this side of the transept was the altar for matins and lauds, the nave being left for the guests, pilgrims, &c. Romsey has a raised platform in the nave aisles for the stalls of the nuns. In the cathedral the choir usually commenced on the other side of the transept, which was given up to the congregation; the large aisles were for their accommodation on the same level with the choir, and no stalls obstructed their view. Between the high altar and the bishop's throne, which was placed in the apse, stood a low or matin altar, with the vestment of the celebrant on a stand, and a brazier for kindling the incense. On each side of the entrance of the sanctuary stood a seven-branched candlestick. (Comp. Fosbrooke, Encycl., i. 124.)

The apse or chevet took its origin in the junction of the common circular tomb-house of the east end, found behind the altar with the basilica, by the removal of the intermediate walls. The tomb-house is still existing, under the name of Becket's Crown, at Canterbury, an imitation of the east chapel of Scus, and like Henry VIII's chapel at Westminster; Trondhjem, Batalha, Burgos, and Mureia. Romsey has apsidal terminations to the choir aisles: the central compartment once formed probably an apse (Proc. Arch. Inst., Winchester volume). The choir is disproportionately short at Westminster, Brecon, Brinkburne, and in several Cistercian abbeys.

Stalls were introduced at the close of the thirteenth century (Schayes, iii. 125), when the choirs were lengthened and arranged in two tiers. The earliest instances of wooden seats occur in a constitution of Grosstete. Three-legged stools were an earlier substitute; there is a mention of their use in the fifteenth century, and of choir-stalls in the Black Book of Swaffham. Lenoir mentions that Romanesque stone stalls remain at Ratzburg (ii. 135). The choir in cathedrals, following the monastic usage, was previously walled off from the aisles by a low partition (Schayes, Hist. de l'Arch., iii. 126), as at Canterbury, Alby, Chartres, Bourges, St. Denis, Amiens, and Notre Dame; in the two latter instances carved with figures. A solid wall still incloses Rochester. The bishop's throne was, when stalls were introduced, removed to a seat in the choir. Sick and straggle monks sat in the retro-choir.

**Lady-chapel.**—The earliest Lady-chapel was built at the west end of Canterbury, and re-erected in the north nave aisle by Lanfranc, but did not assume a prominent position till the thirteenth century (in Belgium, in the fourteenth century—Schayes, iii. 106), and then was usually placed eastward of the choir. It occupied the south choir aisle at Elgin, and the north at Thetford, Hulne, Belvoir, Bristol, Oxford, Llanthony, Wyndhamton (Monasticon, iii. 328), and Canterbury; but was detached at Ely and St. Martin des Champs; is on the north side of the nave at Waltham and Rochester; on the south of the choir at Ripon (over the chapter-house) and Kilkenny; in the south transept at Wimborne; at Lincoln and Gloucester it is cruciform; at Liehfield and Wells it has a polygonal apse; is in the galilee at Durham, and in the south transept of Wimborne. At Christchurch there is a chantry over the Lady-chapel.

An inclosed baptistery, like that at Luton, is found at Cividade de Friuli, of the eighth or ninth century. At Canterbury it forms a round building near the choir.

At Fontaines the marshalling of processions was marked out by stones along the nave, and a line of demarcation to women drawn across it at Durham, as at Canterbury and York formerly (Fosbrooke, Encycl., i. 125). A curious acoustic arrangement of pottery was found under the wood-screen at Fontaines. The pulpit (Duceage, vi. 263; Lenoir, i. 98, 217; ii. 76; Viollet le Duc, ii. 406) was on the south side of the nave. In Italy stone pulpits are found of the thirteenth and fourteenth centuries, as at Siena and St. Miniato, Florence.

In the twelfth century, as at St. Augustine's, Canterbury, and Bury St. Edmund's, pulpits were used in French churches, but probably were only movable wooden lecterns. In the thirteenth century they became usual, owing to the establishment of the preaching friars, and their employment in the refectory; the earliest is that of Beaulieu. In the fourteenth and fifteenth centuries we find an open-air pulpit in the cloisters or court; as at St. Die, at the Friary, Hereford, and Magdalen College, Oxford; Bishop Latimer preached in Priory-gardens, and his contemporaries at Paul's Cross. In churches they appear first in the Perpendicular period. There is a stone pulpit at Wells. The bishop's throne (Lenoir, i. 205; ii. 115, 239; Viollet le Duc, ii. 22, 279, 414; Duceage, s. v., Cathedra) was formerly of stone, as at Canterbury, Norwich, Avignon, St. Vigor, and Rheims. At the close of the fifteenth century they began to be of wood. Sedilia, rare in France, are found in Normandy and Brittany, and appear in England at the close of the twelfth century. There are generally three seats connected with a piscina in England, but four occur at Firmess and Paisley, and five at Southwell. In place of the triumphal arch of the basilica, a trines (Lenoir, i. 185) was set up, richly carved and adorned with tapers. An altar of the crucified, used in the ceremonies of Palm Sunday, was erected in the nave of St. Gall, round which the sick monks on All Saints' Day took their place. The most ancient in Belgium is that of Louvaine (Schayes, iii. 127), of the sixteenth century. The finest in France is in the Madelaine, Troyes.

At St. Ambrose's, at Milan, and St. Miniato's, at Florence, altars, as was usual in Roman churches, were placed in front of the choir. A screen was added in the thirteenth century, and this addition was multiplied in the two following centuries (Schayes, iii. 126). It was used for reading the Epistles, Gospel, certain lessons, letters of commendation, edicts of bishops, and acts of councils, and in some places for the benediction of the bishop, whence its name of jube. At Clugny the lady were communicated at the rood-loft through a grill. They took the place of the ambo and lectern of the basilica, and were used for the reading

\* Lenoir, ii. 73.

\* Wal. Strabo, l. c. 139; Durand, l. 1—18; Lenoir, l. 183; h. 249; Honorius, l. 149; Duceage, ii. 336.

of the Gospel and Epistle, and at a later date for the organ and singers. They were composed generally of a central door, closed by a curtain during the celebration, as the ciborium had been veiled, and in the lateral arches were placed altars.

*Screens.*—The rood-screen took its origin in the necessity of protecting the monks from draughts of cold air. As a compensation to the laity for their exclusion, two kinds of screens were introduced, identical in principle, though varying in position and arrangement. One was the choir-screen, in which, as at Chichester, Exeter, and St. David's, an altar was placed on either side of the great entrance from the nave. The second was the nave-screen, in which there was a central altar, forming the main altar and high altar of the laity, set between the two rood-doors, as that of St. Cuthbert's at St. Alban's. At Guilden Morden (Lysons's Brit., ii. 59) there is a double rood-screen. At St. Alban's they formed a loft used as a dormitory by twelve monks. The rood stood over the choir-screen at Canterbury, but at St. Alban's over the presbytery-screen, a piece of furniture the original of altar-rails, which is still found at St. David's (Jones and Freeman's St. David's, p. 89). At Christchurch, Hants, the screen stood in the first compartment of the nave westward of the lantern, as at Tintern, Fountains, and Winchester. The screen is placed in the second bay westward of the lantern at Buildwas and Norwich; at Westminster and St. Alban's, in the third bay; in the sixth bay at Tynemouth; and in the fourth bay at Jorevalle. Various parcels screened off chapels in the nave, transepts, and aisles; often, as at Fountains and St. Alban's, blocking up the nave. Against these enclosures and between arches, the tombs of bishops and abbots were placed, but at length were developed into distinct chantries; the earliest instance being that of Idyngdon, at Winchester.

The reredos behind the altar is found at St. Mary's Overy, Winchester, Westminster, St. Alban's, and Christchurch. Immediately behind it, in a retro-choir, was the shrine of the Patron Saint, as that of Hugh at Clugny; St. Louis at St. Denis; at Winchester, St. Alban's, Bury, Durham, Brighthelmton, Lincoln, Lichfield, Westminster and Canterbury, where the east processional path is on a level with the chapel, but with the floor of the nave at Durham and Westminster. The shrines of saints were in subordinate positions: at Rochester, choir transept; Chichester, south transept; St. David's, north side of choir; and Oxford, in a north chapel.

Watching lofts to observe the shrine, remain at Oxford, St. Alban's, Westminster, Worcester, and Canterbury. Chambers for the watchers of the church may be seen at Lincoln (Fosbrooke, Brit. Mon., p. 283), and over the north porch of Exeter. Minstrel's galleries are found at Exeter, Malmesbury, Winchester, St. Mary Ottery, Gloucester, and, perhaps, Westminster. The cell of a recluse remains at Norwich (Proc. Ass. Soc., ii. 349).

*Wall Passages.*—The triforium (Ducauge, vi. 669), which at a later period was treated merely as a portion of the clerestory window, was at first designed to combine (Lenoir, ii. 103), additional height with constructional security, and was used for purposes of accommodation, for a passage, and for hanging tapestries on festivals; it is locally called the numeraries at Christchurch, Durham, and Westminster, where the great size of this gallery was a continuation of the plan of this story in the Confessor's church (Vita S. Edw., Puhl. Rec. Comm. 1858, p. 417), which contained altars, and was retained, probably, for the accommodation of spectators on grand ceremonials. It is a feature never found in a Cistercian church. The peculiar wall passages in the lower story in the same church were used by the abbot for the purpose of supervising the monks. The prior's gallery still remains at St. Bartholomew's, Smithfield, and was probably of a similar destination. The wall passages of the clerestory were probably used by the sciscian when he went round to secure the shutters of the windows, then unglazed or merely latticed, in case of rain or storms. The windows were formed of stone, pierced with circles or tracery, like trellis-work in the early churches of the West and East. Glass windows are mentioned at an early date. Gregory, of Tours, speaks of wooden sashes glazed in France (Glor. Mart., i. c. lix.), and in 1052, stained glass is described at St. Benigne de Dijon. A labyrinth (Lenoir, i. 184; Arch., Jour. xv.

\* Viollet le Duc, lii. 465; Darandou, iv. c. xxiv. ; Hier. Angl., p. 66.  
† S. Chrys. t. viii. p. 354; Lact. de Opif. Dei., c. viii.; Fortunatus; Carm., ii. p. 11.

218), to thread which was a compensation for a pilgrimage to Jerusalem, is found at Canterbury, and St. Bertin's, St. Omer's; St. Michele, Pavia; St. Quentin's; Aix; Chartres; St. Maria in Aquino; Lucca, and St. Maria in Trastevere, was introduced in Belgium in the thirteenth century (Shayes, iii. 118). The fridstool, or chair of sanctuary, remains at Beverley and Hexham. The tabernacle is often an ambyrie near the high altar, on the north side. A credence-table remains at St. Cross. After the thirteenth century credences (Viollet le Duc, iv. 372), were introduced in Belgium (Schayes, iii. 123), generally on the right and often on the left of the altar: the latter, divided by a slab, held a basin and cruets, and was furnished with a water-drain below; that on the right was an ambyrie, and held the books and ornaments of the altar. An additional ambyrie served to keep the holy oil. The piscina was ordained by Pope Leo IV. for cleansing the chalice. It became an important piece of furniture in the thirteenth century, and was provided with a stone bracket for the sacred vessels, and two drains, one for common water, the other for the rinsings of the chalice. Ambyries for the books and processional crosses also remain. An ancient clock brought from Glastonbury, is found at Wells. The "horloge à roues" is attributed to Gerbert, Archbishop of Rheims, or to Pope Sylvester II., c. 1003. The Cistercian rule xxi. prescribed their use, though sundials continued in use. The altars had no retables or crucifix, until the end of the thirteenth century (Shayes, iii. 121; Walafrid Strabo, i. c. 139).

The *sacristy* (Ducauge, v. 759; vi. 148; Lenoir, ii. 287, 367) ordinarily intervened between the chapter-house and the church; but is found on the north side of the choir at Thornton; south side of the choir at St. Mary's, York; Lichfield, Leicester, Hulne, Selby, and Furness; and at the east end of the choir at St. Mary's, Warwick, and Malvern; in conjunction with an almonry on the north side of the north transept at Castle Acre and Thetford; and on the south of the south transept at Westminster. It is very possible that the name of the so-called castellan's rooms at Christchurch was a corruption of sacristan's rooms, they being situated on the north-east angle of the nave. The sacristy at Noyon was a two-storied circular building, opening on the east side of the transept.

*Conventual Arrangement.*—There was a generally understood rule and an evident similarity in the ordinary mode of conventual arrangement. Where exceptions occur they may be readily traced to some easily assignable cause: (1) the retention of earlier buildings; (2) the habits and requirements of a particular order of monks, or their transfer as architects, or bishops over another order; (3) the nature of the site, existing streets, or old town buildings; (4) defence in exposed situations; (5) modifications of the primitive rule and rearrangement of the buildings at a subsequent period, from emulation with others, from the love of reconstruction, for convenience, grandeur, or imitation of adjoining churches; (6) the perpetuation of the plan of the mother church and convent, by imitation in its cells; (7) the confusion in arrangement, owing to the necessity of providing accommodation for kings, nobles, and guests of distinction, for synods, and sometimes parliaments.

In the case of the lonely Cistercian houses (Viollet le Duc, i. 307; De Canmont, Abec., 178; Monasticon, vi. p. 9),—for instance, Mount Grace,—the oratory and cloister were tomb-like. The brethren lived apart in little cells, each provided with three little rooms and a garden; and only left them three daily for church, or refectory on certain days; while they assembled in the cloister-court on evens to read over the lessons appointed for the matins of festivals. At Clermont there was an outer court with cattle stalls and a watch-tower on the west, the guest-house on the south, barns on the north, and the prior's lodge on the east, and the apsidal oblong church, flanked with chapels; to the south of the church was the cloister, with the refectory on the south and the chapter-house on the east. To the east of the church was a large garth, surrounded by separate cells.

Each monastery included (1) a cloister-court; (2) an inner court, with the infirmary, guest-house, kitchen, servants' hall, library, &c.; (3) the larger arch being designed for carts, granary,

stables, store-rooms, grange-hall, servants' rooms, tribunal, prison, and the abbot's lodge; a remarkable instance occurs in the Promonstratensian Abbey of Ardaines, near Caen; (4) the court of the church, or close, open to the public; and (5) mills, gardens, orchards, &c. There was a court called Ronneland—probably from rone, roony, as in Romney, Romney, &c.—in front of St. Alban's; the Forbury (Monasticon, iv. 39) at Reading; and at Norwich Tombland, at least since 1302 (Blanford's Norfolk, iii. 67). By the Benedictine rule (Fosbrooke, Brit. Mon., 112; Fleury, xxiii. 14, 19; v. 207, 213; Monasticon, i. pr.), where six hours were assigned daily to manual labour, every trade and occupation necessary to the convenience of the community were domesticated within the walls.

In the plan of St. Gall, of the ninth century, the library abuts on the north wall, the sacristy on the south wall of the choir. The abbot's house, outer school, and guest-house lie parallel to the north transept and north nave-aisle. To the east of the church are the garden, cemetery, infirmary, and novices' house; to the south is the cloister, with the dormitory on the east, the refectory on the south, and the cellarge with a ladder above it on the west. The poor man's hospice, composed of chambers enclosing a common-room, fronts the guest-house. To the west and south were farm-buildings and workshops. The hospice for stranger monks had a common room and a dormitory. The guest-house comprised a large refectory, sleeping chambers, stables, servants' rooms, and domestic offices. The almoner's rooms were on the north-west side, those of the porter on the south-west of the church. The outer school, to which a master's house was attached, contained a large room, parted by a screen, and opening on the bed-rooms of the scholars. The infirmary and novices' house each comprised a cloister, refectory, dormitory, and a chapel, which separated the two courts. The abbot's lodge, of two stories, contained in the base tier his sitting and bed-rooms, under his solar and oratory. The servants' house was detached. Between the church and the cellarge were the parlour and vestibule for the reception of visitors, and giving orders to servants. In the sacristy the lower story contained presses, chests, and the altar plate; the upper room held the vestments, and communicated with a room used for baking the sacred bread and preparing the consecrated oil. The library stood over the scriptorium, which was provided with desks. Under the dormitory, from which one staircase led into the transept and a second to the cloister, was the common-room, with a fireplace, and connected with the bath-house. The refectory was provided with a vestry for the ordinary robes of the brotherhood. The abbot's triclinium stood at the top of the room; the brothers sat along the side walls on benches; the guests' table occupied the centre, and faced the reader's pulpit. The kitchen and buttery communicated with this room.

The earliest plan extant of an English monastery (Lenoir, i. 28; Hasted's Kent, iv. 259) is that of Canterbury, made c. 1130-74. It embraces in the cloister court, which was on the north of the church, a chapter-house on the east, with the dormitory in a continuous line with it, the refectory on the north, and on the west the cellarge and store-rooms. Behind the refectory was the kitchen, southward of a second court, in which the guest-house was on the west, the parlour on the north, and on the east a gate. To the east of the dormitory was a cloister ranged round a herbery garden, and connected with the infirmary, which lay again to the eastward. The court-gate adjoined the guest-house, forming the principal entrance. In the herbery court the prior's lodgings were on the east; and to the north of the bakery, granaries and offices, which occupied another court.

At the close of the twelfth century Clairvaux, Cistercian (Viollet le Duc, i. 269) had the following plan—A cloister on the south side of the church, with a lavatory; on the east side of the garth the sacristy, preceded by a little library next the south transept, with the great library above it approached by stairs out of the transept; the chapter-house of three alleys, with the parlour and old abbot's lodge extending southward under the dormitory; on the south side the parlour, the refectory of three alleys, and kitchen; on the west side, but detached, the cellarge; on the south-east of the choir was a small cloister, with carols for the copyists in the north alley, and a large hall for conference on the south. To the east again were the infirmary and novitiate, and more to the southward were the abbot's lodge and infirmary cloister. The stables were on the north-west side of the church. At Cîteaux, the mother of the

\* Jour. Arch. Ass., xiv. 87; Canute's Ecc. Can., 2; Althelm's Trans., Ps. ix. 9, xciv. 22.  
† Proc. Ass. Soc., i. 177, 293; Churton's Monastic Remains; Schayes, iii. 134; Viollet le Duc, i. 282, 283, 279, 302, 305, 409; iii. 409; Lenoir, ii. 197, 201.

order, the arrangements were much the same. A little chapel adjoining the gate, to which the abbot conducted all guests before entering the monastery, and a stable conveniently adjoined it. The great cloister contained the cellars on the west, slightly detached by a passage, with the guest-house and abbot's lodge to the southward; on the south were the kitchen, the refectory, and parlour; on the east the dormitory, chapter-house, and sacristy; in a second cloister to the east was the library above the carols of the copyists at the north, and the infirmary on the east. Pontigny had its cloister on the north, with cellars of two alleys, and the rooms of the conversi above; on the north the refectory, kitchen, and calefactory; on the east the sacristy, chapter-house, novitiate, and wine and oil presses; on the west of the church were the abbot's lodge and guest-house. The cellars was on the west at Vaux de Senay.

The Clugnia Monastery of St. Martin-des-Champs has its cloister on the north side; the refectory and parlour on the north; cellars on the west; the sacristy, chapter-house, and large halls, under the dormitory on the east; a detached Lady-chapel on the north of the choir, the small dormitory running parallel to it, more northward. At St. Genevieve the refectory is on the west, with the kitchen on the south. At St. Germain-des-Prés the refectory is on the north, the chapter-house on the east under the dormitory, and the cellars on the west.

**Cloisters.**—The Eastern monasteries had an enclosure, round which the houses of the community were ranged, and connected by a colonnade, as at St. Laura, Mount Athos, and St. John's, Constantinople. But in the West, where the churches were of far larger dimensions, and frequented by women, a different arrangement was inevitable. There were ordinarily two cloisters; the common, or great court of the religious; and the smaller or private court, used for conversation, by the copyists, for the residence of the abbot and dignitaries, and adjoining the library, cemetery, and infirmary. At Abingdon the earliest cloister was a mere enclosed space within walls (Chron. Abingd., ii. p. 272); that of St. Cutbert, at Durham, was circular; while in the reign of Charlemagne, St. Angilbert gave a triangular form, for symbolical reasons, to the court of Centula, which contained two chapels of SS. Mary and Benedict. The cloister appears to M. de Caumont (Abec. Arch. iv. 4), and Fleury, to have been framed on the model of the peristyle of the Roman city house; the outer or farm court on that of the country villa. The triclennium reappears in the refectory, in the garth the xystus; the church in the atrium; and the exedra in the chapter-house; the kitchens and lesser rooms, hospitium, hyernaculum, tablinum, &c., preserve their original position in the monastery; the walled park, gardens, servants' and store rooms are equally familiar features to the classical student.

Cloisters were originally built of wood; until the twelfth century, and even at a later period, a timber roof was employed, and the corbels which supported it remain at Beaulieu, and in other places. The cloister is mentioned by Brakelond, c. 1173. It is wanting at Fountains, Kirkstall, Jorevalle, Stoneleigh, and Wroxhall. In the thirteenth century, alleys surrounding the garth are found at Salisbury and at Peterborough; and in the fourteenth century at Norwich, Wells, Chester, and Chichester, and Hereford had only three alleys. The cloister occupied the north side at Canterbury, St. David's, Chester, Gloucester, Buildwas, Milton Abbas, Sherborne, Tintern, Paris, Noyon, Rheims, Rouen, Beauvais, Sez, Bayeux, Puy-en-Velay, Cartmel, and Magdalen College, Oxford; and on the west at New College, in the same university; on the north of the choir at Lincoln; and on the south of the choir at Rochester. In cathedrals the bishops often took the south side as the best, and left the northerly to the canons. The church invariably formed one entire side of the cloister, which nearly always was to the south in northern countries, in order to secure as much sunshine as possible.

The cloister-close in Cathedrals was surrounded by the houses of the canons. In the twelfth century the canons built private houses round the close (Viollet le Duc, iii. 410; Lenoir, ii. 495; Schayes, iii. 133; Monasticon, vi. 39, 141). It must be borne in mind that Winchester, Canterbury, Durham, Norwich, Rochester, Worcester, Chester, Gloucester, Peterborough, and Westminster, continued to be Benedictine abbeys, and Bristol, Oxford, and Carlisle as Austin Canons' houses, until the reign of Henry VIII. In the

former, out of deference to the bishop, the superior bore the name of prior, and not of abbot. At Ely the bishop occupied the abbot's seat. With the exception of St. David's, the Welsh, the Irish, and Scotch cathedrals, and collegiate churches, as Lichfield, Ripon, Manchester (Jour. Arch. Ass., vi. 191); Wilmshere (May's Wilmshere, 1860); Beverley, Lindisfarne, Perth, Southwell (Jour. Arch. Ass., viii.; Arch. Inst. Lincoln, 214); York, and Wolverhampton, had no cloister. Maidstone (J. Whichcord's Maidstone) preserves its collegiate arrangement. The caputular buildings included a chapter-house, refectory, cellars, schools, a vicar's close, as at Hereford and Wells (Jour. Arch. Ass., xiii. 34), library, audit-hall, bursary, prison, and tribunal.

The common monastic arrangement was the following:—On the north were two doors into the church; on the east of the great cloister were the sacristy, chapter-house, and the calefactory, with the dormitory, approached by a separate staircase above them; on the west were the cellars and store-rooms and the guest-house; on the south, fronting, but thus removed as far as possible from the church, to secure it from noise and the smell of dinner, was the refectory, connected with the kitchen. Such is the description given in some old Latin verses preserved by Du Cange; and the arrangement is found towards the close of the eighth century at St. Wandrill's, Foutenelle, Upper Normandy; and at Beauport, Côtés du Nord, at the commencement of the thirteenth century. Boyle and Netley present the anomaly of a wall and gate occupying one side of the great cloister.

In the north alley at Beaulieu, Melrose, and Gloucester, the carols of the monks, recesses for copying books still remain. In the foreign abbeys they were usually in the smaller cloisters. In Cistercian houses this alley was appropriated to moral collations or lectures. Peter de Blois says the west side was allotted to the novices, and the east walk to prelections; the latter were selected from profane authors. Lanfranc mentions that the cloister was designed for conversation at certain hours of the day. The Benedictines used the cloister, and the Carthusians, Cistercians, Trappists, and Carmelites the garth, for internments. The cloister was under the control of the prior, sub-prior, and several other officers. It is observable that at Winchester, until a recent period comparatively, the scholars in summer time studied in the cloisters. In the centre of the garth, which was planted with trees and flowers, was generally a fountain, and sometimes a pulpit used in the festival of All Souls.

**The Chapter House.**—It was so called, according to Papias, because the rubrics of the statutes of the order were daily read over to the monks in this room. In the ninth century the alley next the church was used as a chapter-house. In 966, Herlevy, wife of Duke Robert of Normandy, built a separate chamber for the purpose at Fontenelle. Edward the Confessor built "a vaulted and round" chapter-house at Westminster (Vit. S. Edw., Publ. Rec. Comm. l. 2309). In the twelfth century one in the form of a parallelogram was built at Bocheville; a square or oblong is found at Buildwas, Castle Acre, Shrewsbury, Wenlock, Stoneleigh, Glastonbury, St. Mary's (York), Oxford, Bristol, Chester, Exeter, Gloucester, and Dunkeeld. From the commencement of the thirteenth century a polygonal shape was adopted, and of this and the following century we find a decagon at Lincoln, Bridlington, and Lichfield; and an octagon at Westminster, Howden, Kenilworth, Cokeresand, York, Sarum, Elgin, Plusecardine, Thornton, and Wells; and a round at Worcester. It is two-storied at Glasgow. In the thirteenth century it was sometimes divided into aisles; there are two at St. Pierre-sur-Dives, Dadeix, and Kirkstall; and three at Tintern, Netley, Fountains, Beaulieu, Jorevalle, and Buildwas. It was in this country probably a Cistercian; and certainly, as it is found at Fontenay at the close of the twelfth century, a French arrangement which was followed in Belgium (Schayes, iii. 134). At Wells and Westminster it is built above a crypt; it stands on the north side of the church at Wells. At Dunblane it occupies the east end of the north nave-aisle. It was provided with a stone bench along the walls, and with a seat for the abbot at the east end. Occasionally a chapel was adjoined, as at Batalha, and the apsidal termination found in the House of the Jacobins at Toulouse, Reading, Lanthony, Durham, Ripon, Houghmond, and Norwich may have served for a similar purpose. The chapter-house chapel at Tongres retains its stone altar (Schayes, ii. 148). As it was the place of

judgment on refractory monks, cells (Proc. Ass. Soc. ii. 230) are sometimes found adjoining it, as at Durham and Norwich. It was regarded as inferior only to the church in its sacred character, and a light not uncommonly burned perpetually in it. Bishops were interred in it at Durham, and persons of distinction at Gloucester. It frequently had two large openings on either side of the west door, as at Combe, Houghmond, Bristol, and Beaulieu, to admit light, and to enable the priors and monks of dependent cells to take part in the proceedings on important occasions. It is approached through a vestibule at Chester, Bristol, St. Mary's (York), and Kirkstall; and by a passage at Wells, Southwell, York, and Lichfield; at Belvoir (Nichols's Leicester, ii. 80) it stood in the centre of the cloister.

The *Slype* was a narrow passage between the transept and the chapter-bowse, which occurs in the Benedictine houses of Winchester, Gloucester, Durham, Finchale, and St. Alban's, where it led to the monks' cemetery. Its place is supplied by the *Sacristy* in Cistercian houses. It occurs in the Clugnia convent of Bromholme, and in that of Austin Canons at Newstead.

The *Dormitory*\* invariably adjoined the church, as the monks had, on the mornings of certain festivals, to sing matins at an early hour. For this purpose the Cistercians constructed a staircase out of the south transept leading to the dortor, and it usually extends in their houses over the chapter-house. It appears in the same position at Beldigh (Premonstratensian). The ordinary position was the east side of the cloister, as in fourteen abbeys of France mentioned by M. de Caumont; but it was built on the west at Durham, Chester, Worcester, Shrewsbury, Laocok, and St. Alban's, by Benedictines; at Fountains, Kirkstall, and Rievale, by Cistercians; at Hexham and Thornton (Proc. Ass. Soc., ii. 119; Arch. Jour., ii. 357), by Austin Canons; at Leiston and Eastby (where it is of two alleys, and detached by Premonstratensians. At Thourout and Senanques it is over the east walk of the cloister. It occupied at Crowland the east side of a second court, in which the refectory was to the north, the granaries being on the south-west, and the guest-house on the south. Cellars are frequently found under the dormitory, as at Westminster, Durham, and Sherborne, St. Mary's (York), Finchale and Shrewsbury (Benedictine), Bromholme (Clugnia), White Friars, Coventry, Thornton and Bolton (Austin Canons), Kirkstall, Rievale, and Farness (Cistercian). One portion of this substructure was the *calefactory*, a chamber warmed with a stove or long heating-pipes, serving as a place to provide fire for the censers, and warmth to the monks in cold weather; the chapter occasionally met here. There were two at St. Gall, one for the brethren, and a second for the sick and novices. The dormitory stood over the south aisle at Wenlock and Wymondham. Twelve monks slept in the roof-loft at St. Alban's, as watchers. The beds were ranged along the walls under the windows; the abbot, by the Benedictines (r. xxi.), Clugnia, and Austin Canons' rule, slept in the centre of the room. The cellarer then only had a separate chamber; but in later times the abbot or prior possessed his lodge, and the dortor was subdivided into separate cells, with doors made three-parts of trellis-work, so that the chief official could exercise a supervision of the whole. This plan was advantageous for silence, retreat, and devotion; and it is found in 1370 at Noyon, and, a century earlier, in the Black Friars, at Gloucester (Gent. Mag. 1860, p. 340), where the cells had stone partitions. A lamp burned all night in the dortor. At Tykford (Monasticon, v. 206) there were five cells. The dormitory of the conversi remains at Wenlock (Clugnia), (Potter's Mon. Rem.).

The chamberlain had charge of all the beds and furniture in a convent. The monks took their meridian (Monast., ii. 230) and changed their shoes before and after prayers in the dortor by day; in cold weather, when the spring in the cloister was frozen, they used hot water in the dortor; an additional reason for building the calefactory at no great distance from it.

The *Refectory*† ordinarily occupied the south side of the cloister, for reasons already assigned. At Sherborne, an exceptional case, it is to the west. Of course, where the cloister was on the north of the church, the refectory was on the north, but still almost invariably fronting the church, with Premonstratensians, Benedictines, Cistercians, Clugnians, and Austin Canons. The other deviations from the rule are at St. Augus-

\* Fo-brooke, Brit. Mon. ch. xxxvii., xlv. Ducange, ii. 230; Lenoir, ii. 390; De Caumont, Abec., 26.

† De-brooke, Brit. Mon. ch. xxxv.; Ducange, v. 550; Lenoir, ii. 241, 228, 310; De Caumont, Abec., 41, 81.

\* Lenoir, ii. 390; Ducange, ii. 230; Lenoir, ii. 390. Mon. Ch., xxxvii.; De Caumont, Abec., 26; Viollet le Duc, iii. 403.

\* Foebrooke, Brit. Mon., ch. xxxvi.; Ducange, ii. 159; Lenoir, ii. 390.; De Caumont, Abec., 34.

tine's, Canterbury, where it was on the east; at Joreville (Cistercian) on the south-east, beyond the dormitory; and on the west in the Black Friars, Gloucester. In the House of the Bernardines at Paris, at Nately, Furness, and in the Marvel of Mont St. Michel, and apparently at La Luzerne, the refectory was below the dormitory. It was above a cellarage Dunfermline, Battle, Reading, Beauport, Sherborne (Benedictine), Eastly and Leiston (Præmonstratensian), and Kirkstall (Cistercian). At Clairvaux, Savigny, and Bonport, at Tynemouth, Fountains, Vaux de Senay, Beaulieu, and Rievale, it stood north and south, at right angles to the cloister. The wall pulpits, which formed the guest table, remain at Chester, Eastly, Beaulieu, Shrewsbury, and St. Martin des Champs, and were used by the reader of holy books during dinner. At Winchester College to this day the Gospel is read at election dinner. The pulpit of St. Laura, Mont Athos, is of wood. The refectory of Fountains, Nately, Eastly, Villers (Schayes, iii. 40) in Belgium, and St. Martin des Champs, has two aisles; those of St. Mary's, York, the Bernardines, at Paris, of the fourteenth century, and of Alcobaca, have three. Mural paintings enriched the refectory, as at Villers, Clugny, Fontenelle, Luxueil, St. Germain de Flais, St. Michael, Antwerp, and St. Martin's, Dover. Leonardo da Vinci painted his "Last Supper" for the refectory of St. Dominic, at Milan. Adjoining the refectory was the torgema, or dresser, for cups, plates, &c. In the thirteenth century the refectory was sometimes apsidal; and the early form of the Eastern refectory, and those of Palermo, with three apses; and St. John Lateran, built by Pope Leo III., was an imitation of the Roman triclinium. (Lenoir, ii. 229). At St. Laura, Mont Athos, the refectory is in the shape of a Greek cross.

There were four kinds of refectory.—1. The summer. 2. The winter (as at Villers and St. Beatus's, St. Omer). 3. That of conversation; and 4. The misericord, for eating flesh meat (Fosbrooke, Brit. Mon., ch. xlv., xviii.; Ducange, s. v.; Monasticon, v. 206). At Tynemouth, we find a common hall on the west, and the new hall on the south of the cloister (Monast., iii. 311).

The *Kitchen* was, of course, an indispensable adjunct of the refectory, and invariably adjoined it, although, as at Durham, it occasionally stood behind it; its ordinary position was on the side. There were two—one for the convent, and a second for the infirmary. Our statements refer to the former. That of Marmontier was shaped like a bottle; those of St. Florence Vendome, Saumur, Villers, and St. Pierre de Chartres (thirteenth century) were round; those of Pontlevois, Fontevault, Durham, and Glastonbury, were octagonal; and those of St. Ouen at Rouen, St. Gall, and Fountains, square. The kitchen took charge of the hutchery and fishpouids; and the leibomadarius presided over the kitchen, entering for a week, each monk taking his course in turn. The kitchen of Fontevault had small apses in each face.

The *Lavatory* is found in the thirteenth century near the refectory of the Génovévans at Paris and at Clairvaux, and in the south cloister walk at Westminster, Wells, Chester, and Gloucester; at Durham it was a detached building in the garth, probably built over the spring, which formed the first simple lavatory. Near the lavatory is often found a long laundry for the towels.

The *Cellarage* usually formed the west side of the cloister, and sometimes joined the guest-house. A magnificent substructure of two aisles remains at Vincellottes, Fountains, and at Beaulieu; the cellars included granaries, beer, wine, and oil vats. On this side were the guest-house at five French abbeys mentioned by M. de Caumont, and magazines at seven others, also described by the same distinguished author. They were usually vaulted and divided into aisles: a good specimen remains, but on the east side of the cloister extending southward, of the time of Edward the Confessor, at Westminster; inferior, however, to the grand buildings of Vaucilar and Eberbach. The same purpose was served by the large granges, buildings divided into three aisles, as at Ardennes, Maubisson, and St. Vigor, for the convenience of having one alley free for the passage of carts.

The *Treasury*, sometimes called also the refectory, was generally near, or, as at Westminster, as at Canterbury; in the transept at Chichester; and there is frequently a deep recess in a crypt, to hide the sacred plate in time of danger, as at Canterbury. At Clermont, Limoges, and Nur-

bonne, the treasury and sacristy occupy two of the choir chapels.

The *Exchequer*\* derived its name from the chequered cloth divided into squares, for the convenience of casting up accounts. With the offices of the chamberlain and cellarer, it ordinarily stood in the great court, adjoining the cross round which the conventual market was held.

The *Library* at St. Gaul was over the scriptorium and adjoined the Presbytery, and was generally placed towards the north to preserve the contents from insects. Those of Wells and the Grey Friars, London, were of considerable length. At Septuagesima an inventory was taken. It is next the slype at Finchale; south of the choir at Wimbome; over the chapter-house at Dunfermline, Eastly, and Lichfield; and in an upper room near the south transept at Westminster, and near the north transept at Hereford.

The *Scriptorium* (Lenoir, ii. 374; Fosbrooke, Brit. Mon., ch. xlv.) was usually in the cloister or adjoining the church, but in the foreign Cistercian houses in the second or inner cloister; the preceptor had the charge and furnished materials to the librarii, who made new books, and the antiquarii, who copied or repaired the old books.

The *Archive* or *Muniment-room* (Lenoir, ii. 69, 375) was sometimes over the church-porch, as at Peterborough and Fontenelle; in the south-western tower at Clugny, where the north-western was the prison; in an isolated tower, as at Martin-des-Champs and Vaux de Senay. It contained the matriculation lists, chartularies, terriers, and registers. The provost kept the key. It was occasionally built over the sacristy; it is near the south transept at Chichester, and is of large dimensions, adjoining the choir at Salisbury.

The *Parlour* (Fosbrooke, Brit. Mon., ch. xli.; Dneange, iv. 142; Lenoir, ii. 327), common or reception-room, where the monks gave directions to the servants, traded with merchants, or conversed with friends, adjoined the gate or refectory; it was on the east of the cloister at Clairvaux, St. Mary's, York, Walsingham, Beaulieu, on the north at Clugny; on the south at Fountains and Cîteaux; south-east at Shrewsbury; west at Durham; north-west at Newstead. The Cistercians had three parlours; (1) for visitors; (2) for conversation; (3) for confession.

The *Abbot's or Prior's Lodge* is called the palace in the plan of St. Gall. Suger, in the twelfth century, and the prior of Canterbury before 1120, lived in a single lodge. In the ninth century it was a large building at Pontenelle; at Pontigny it contained four rooms; at St. Gall it consisted of a mansion, including a bed-room and solar, and servants' offices, kitchen, bath-room, and cellar. It often was provided with a chapel, as at Ely. It adjoined the church usually in Benedictine houses, was detached by Cistercians, and by the Austin Canons was connected on the west side of the cloister with the nave, generally on the south-west by a staircase, and adjoining the novices' hall, as at Haughmond, &c. It was on the south-east of the cloister at Durham, Kirkstall, Leiston, and Newstead; on the south-west at Westminster, Crowland, Hulne, and Bridlington; on the east at Shrewsbury, on the north at Sherborne, on the north-west at Tynemouth, on the south at Finchale, and north of the north transept at Eastly and Castle Acre; on the north-east at Wenlock, and of two stories.

The *Infirmary* was among the Cistercians a large hall for exercise, with separate cells like a dormitory, as at Ousecamp, near Noyon, founded 1130. At St. Gall it contained a chapel, dormitory, refectory, and consultation-room, standing to the north behind the church, and ranged round a cloister. In England it was on the east of a small cloister, and furnished with a hall and chapel at Canterbury, Westminster, and Gloucester; south-west of the nave at St. Alban's; detached on the south-west at Hulne and Shrewsbury; west of the dormitory at Durham and Worcester; south-east of the cloisters at Castle Acre and Peterborough; and on the east at Rievale, Binham, and Bridlington.

The *Guest-houses* were usually near the gate. One was built at Fontenelle at the close of the seventeenth century. It was not always a detached building, and frequently formed a hall, of two alleys at Beaulieu and Fountains, with bed-rooms opening off it. At St. Gall, in the ninth century, it consisted of two large buildings, with every convenience and servants' rooms. At St. Alban's it was an enormous range of rooms, with

stabling for three hundred horses. It was on the west side of the cloister at Fontenelle and St. Germain-des-Prés, at Newstead, Beaulieu, Eastly, and in the Norfolk houses (Hirrod's Gleasings); on the west of the great court at Durham, Finchale, and Eastly; on the north at Tynemouth, and Bridlington; over the great gate at Thornton; south of the cloister at St. Alban's; south-east at St. Mary's, York; east of the chapter-house, Worcester; south of the refectory at Shrewsbury; detached southward in the great or outer close at Furness and Hulne; north-east of the cloister at Tintern; on the north, over cellarage, at St. Martin's, Dover; and parallel to the refectory at Glastonbury (Collinson's Somerset, ii. 263). The Hospice, called Salle des Gardes, remains at Caen.

There were also guest-houses for travelling religious, and the poor, and pilgrims.

The *Tribunal*, or *Court*, and *Prisons*.—The tribunal and prison usually adjoined the great gate, as at St. Stephen's, Caen; or occupied the chamber above it, as at St. Alban's, Tewkesbury, Westminster, Malling (Mou., 118, 383), Hexham, and other abbeys. The dungeon is under a tower at St. Gabriel Calvados; near the transept at Berne; on the south of the chapter-house at Durham; at Clugny it had neither stair, door, nor window; at St. Martin des Champs was subterranean; and at Hirschau barely permitted the prisoner to lie down.

*Other Buildings*.—The gate-house was sometimes provided with a chapel in the upper story. A charnel was a frequent adjunct to an abbey, with a chapel over the arnary. The novices and choristers had a separate building and inner school. Glastonbury and St. Victor, and other houses, furnished seminaries or public schools, held in the outer school, usually divided by a screen or wall, to mark distinction of rank or attainments; besides these were the alms-house, surgery, dispensary, herbarium, industrial buildings, and workshops, mills, stalls, and stables, barns and sheds for agricultural produce and implements; while Hulne exhibits all the features of a fortified position, and others had on the coast, as at Furness, watch-towers. Battle has a fortified gate (Lenoir, i. 77; De Caumont, *Abécédnaire*, 178). Strong walls still remain at St. Stephen's, Caen, and St. Germain Auxerre; and forts defended the abbeys of Montpeyrnux and Condat. In the thirteenth and fourteenth centuries nearly all the French abbeys and Cathedrals, as at Alby, Beziers, and Narbonne, were fortified, owing to the continual wars (Viollet le Duc, i. 227, 262; ii. 376; Lenoir, ii. 491). At Casnel a castle forms the west end of the cathedral. Holy Cross, Beative, and Crossagnel were fortified. The alms-house (Fosbrooke, Brit. Mon., ch. xlii.) of Westminster stood on the west side; the sanctuary occupied the enclosure on the north side of the abbey. The alms-house of St. Stephen's, Caen, is detached at some distance on the north side. Charnels occurred at Steinen, Hereford, Hythe, Worcester, Norwich, St. Peter's-in-the-East, Oxford, Ripon, and Lynn (Gent. Mag. N.S. vii. 156).

In conclusion, the old distich informs us that the Franciscan loved the town, the Jesuit (the worst of architects) the great city, the Cistercian the valley, and the Benedictine the mountain. In England, the Benedictine was the citizen and most learned of monks; the Austin Canons, with their long-drawn aisles, were proverbial for their love of preaching and logic—the term, doing Austins, i.e., disputing with these monks, was long a proverbial exercise at Oxford; the Cistercian, with his secluded convent, the educator of the poor, an eminent friend of the labourer, a class which he employed in large numbers as conversi, was a recluse devoted to industrial pursuits in works and farming; the Clugniae combined the fine arts, reading, and study, with bodily labour and agriculture; while the cells of the Carthusian, a gloomy brotherhood, the Dominican was the preacher, eager for the development of intelligence, the champion of orthodoxy, and the devotee of philosophy; the Franciscan Minor, a name harkening all the brothers were equal by their vow of poverty, was the preacher of equality. It was a fatal error at the Reformation not to have converted their beautiful and stately houses to charitable uses, study, and prayer; but we may still glean from them all that they held of good and beneficial to humanity, agriculture, and art, and go forward ourselves with a firmer foot by retaining the lesson in our hearts; and, however widely our opinions in religion may differ from many of

\* De Caumont, *Abéc.*, 41; Ducange, s. v.; Coquina; Lenoir, iii. 348; Viollet le Duc, iv. 361.  
† Lenoir, i. iii. 294—302.

\* Fosbrooke, *Encycl.*, 241; Ducange, vi. 84  
† Lenoir, ii. 371; Fosbrooke, *Brit. Mon.*, ch. xlii.  
‡ Lenoir, ii. 339; Fosbrooke, *Brit. Mon.*, ch. xxxix.  
§ Fosbrooke, *Brit. Mon.*, ch. xl. Ducange, ii. 709; De Caumont, *Abéc.*, 43, 165; Lenoir, ii. 396, 409.

\* Fosbrooke, *Brit. Mon.*, ch. xlv.; De Caumont, *Abéc.*, 115; Lenoir, ii. 438; Ducange, ii. 173, 732.

the tenets of those who built them, we shall do well to remember that in their sacred enclosures he buried the enmities of many generations.

ON ACOUSTICS.\*

The subject to which I venture to invite your attention is that of acoustics, or the science of sound; in reference (of course) to its bearing on the arrangement and construction of those buildings where the free transmission of sound is of importance.

It will not, I think, be deemed necessary that I should advance any apology for the subject itself. The proper construction of buildings intended for music or public speaking, is a point of vital interest to every architect, as under this category may be comprehended all the more important works that come into our hands; and such buildings (however excellent in other respects) cannot certainly be said to have fulfilled the design with which they were erected, unless they have been made favourable to the easy transmission of sound. A knowledge of the laws that regulate this transmission, and of the methods necessary to bring a building into conformity with those laws, is then most desirable to us.

A very considerable time has elapsed since a paper on this subject was read before the Institute; and this consideration, coupled with the fact that even such books as exist on the subject are not generally known, induces me to hope that it may be possible to lay before you some already-ascertained facts of interest, but which are not so familiar as they deserve to be.

I must disclaim, however, the ability to present anything new, in any other sense than the one just indicated. The subject has always occupied a share of my attention as a reader, but not as an experimental philosopher; and lately, it has become my duty to search very thoroughly for all accessible information that relates to it, and it has been the difficulty of collecting scattered facts, and of obtaining even the titles of books, that has principally made me feel that an account of the books and other sources of information accessible, and a condensed exposition of the most important points to be gleaned from them, might be of use to others.

In the commencement of an inquiry into the laws governing the distribution of sound in buildings, a student would naturally seek information on the nature of sound and the laws of acoustics, from treatises on physical science. The works best worth consulting are the following, and I name them now, to avoid interrupting the main subject afterwards:—

"The Treatise on Sound," by Sir John Herschel, published in the "Encyclopædia Metropolitana," and since issued separately. This is the best work on the subject in English; but it has the drawback that it does not contain any account of the discoveries of the last thirty years, having been published in 1830.

Mrs. Somerville's "Connection of the Physical Sciences."

Detached Papers by Professor Wheatstone.

The article "Acoustics," in the "Encyclopædia Metropolitana."

Arnott's "Elements of Physics."

Brewer on Sound.

"The Cours de Physique" of Mons. Biot.

"Cours de Physique" of Pouillet.

"Traité d'Acoustique," by Chladni; a standard work; also published in German.

And the writings of Savart and Biot, and others, published in the "Annales de Physique et de Chimie," and the lectures of Savart, reported in the "Institut."

On the special subject of buildings, we have, published in England,—

Saunders on Theatres.

Wyatt on Theatres, quoted in "Gwilt's Encyclopædia."

Iman's abstract of evidence connected with the rebuilding of the Houses of Parliament.

A considerable number of papers scattered through the *Builder*, from 1846 to the present day, especially those by Mr. Scott Russell, before the Royal Society and this Institute, in 1847, and a few small pamphlets and incidental notices in books on other subjects. It is right to add that this is not a complete list, but only a selection.

Published abroad, we have,—

"L'Acoustique et Acoustique des Salles de Réunion Publiques," a very practical and sensible little book.

"Rhode, Theorie der Verbreitung des Schalles

für Bunknster," a small but very valuable pamphlet.

Observations by Chladni in his book, and in contributions to the "Allgemeine Musikalische Zeitung;" and a few other papers and hooks.

I am, moreover, informed that a French work of great value on this subject exists, different from any of these, but the title of which I have been unable to learn.

From almost any one of the first-named books a general knowledge of acoustics can be obtained; and if we make an attempt to sum up briefly what is known about sound, leaving out, as not essential to our present purpose, both the refinements of mathematical calculation and the elegant results of experiments on undulation, vibration, the pitch of musical notes, and other departments of the science, we arrive at a few definite results of philosophical inquiry which can be briefly stated, and will be enough for the present purpose.

Sound, then, may be regarded as motion made sensible to our ears; and the sense of hearing as a very refined sensitive and delicate sense of touch. A moment's thought will suffice to remind you, if this description seem at first sight startling, that there is no sound unaccompanied by motion, that there is but very little motion without audible sound; and lastly, that if motion exist, but he so cut off from our ears that no communication can take place, we hear no sound.

Sound is not, like light, conveyed through an imponderable medium; it, on the contrary, travels through all the substances, solid, liquid, and ætiform, that surround us; and it is precisely that class of substances best suited to convey motion, which forms the best conductors of sound; while those bodies that deaden and destroy motion, render sound also. For example, a rod of elastic wood, or of iron, will convey readily any motion, from one end of it to the other, and such a rod forms one of the best known conductors of sound.

A heap of sand will, be it only thick enough, check the force of the most powerful cannon-ball, and, were there no means of hearing round it, such a heap would equally deaden the report of the cannon; unless, indeed, the air lurking between the grains of sand conveyed some faint impressions to the listener.

We are, however, more familiar with the atmosphere as the conductor of the sounds that reach our ears than with any other medium, and as it is through the atmosphere alone that the sounds heard in large rooms are transmitted, we shall have little occasion again to refer to the conducting properties of other media.

The atmosphere, under favourable circumstances, will transmit to great distances any agitation that is roused in it. As an instance of this we may refer to the experiments of M. Biot. This gentleman having an opportunity of operating with a very long cast-iron pipe forming part of an aqueduct in course of construction at Paris, found that even when the pipe was 1,040 yards, or more than half a mile long, the explosion of a pistol fired into it at one end would blow out a candle at the other, and that the lowest whisper at one end was as distinctly audible at the other as to the speaker himself. This experiment succeeded better at night than in the day-time.

Although, however, the air in a tube where any lateral escape is impossible shows this marvellous sensitiveness, we do not find a similar result from speaking in open, unconfined air. It is a matter of familiar experience that sound under these circumstances decays and dies away, till at last it ceases to become audible. This decay is only the natural consequence of the fact that the original force is constantly spreading through a wider and wider space, and is getting (so to speak) diluted.

A familiar illustration to you all will be the gradually widening circles that spread on the surface of smooth water from a spot where you drop in a pebble, and which, weakening as they widen, at last fairly vanish into the flat unbroken lake.

The analogy between the progress of sound and that of water-waves thus roused, is, however, less complete than is ordinarily supposed, for it usually happens that, from the first, sounds have an initial direction impressed upon them, and that they travel further in this direction than in any other. The most familiar instance to us all is that of the human voice, which is always heard very much further in front of the speaker than it is at his sides or behind him. The human voice is not, however, an exceptional case; it is well to know that the larger number of sounds have something of this propensity. A good example is a tuning-

fork: when the sound of this is excited it will be audible to a much greater distance square than otherwise; that is to say, you will hear it better if the ear is in a line with the two arms, or in a line at right angles to one joining the two arms, than it will if the fork is turned a quarter round, so that a line joining the two arms would be at an angle of 45° to one drawn from the ear to the fork.

The decay of sound is very much prevented not only by any initial direction it may receive, but also by any accidental circumstance that prevents the agitations in the air from spreading laterally, even if it be only one side that is confined. Thus sound will travel a long distance along the ground, and it will be very audible along a wall, because the angle formed by the wall and the ground forms two sides of a sort of tube, and thus prevents part of the lateral escape. There is an instance of this sort recorded in Dr. Hutton's Dictionary, that has been often quoted: a garden wall exists in Dorsetshire that will, be states, convey in this way a whisper 200 feet, without loss of distinctness.

Sound in an open atmosphere travels in a straight line; should it, however, encounter an obstacle, or pass the limit of any boundary, it always spreads to some extent behind that obstacle or boundary. For instance, in a church an auditor exactly behind a stone pier and close to it will probably hear worse than if nothing were between him and the clergyman; but still, even close to the pier he will hear; and, if keeping always the pier between him and the speaker, he moves further back, he will soon reach a point where he will hear as well as if his ears as if there were no obstacle. I use the words "with his ears" advisedly, because the eyes always assist us in our attention to public speaking, and, of course, this assistance would be lost in the situation I have supposed.

Sound, when it encounters an obstacle directly opposed to it is, however, beaten back, or reflected; the phenomenon of echo is familiar to all, and is the result of such a reflection, sending back the sound from a considerable distance. It was laid down by Mr. Scott Russell, in the paper read by him before you on this subject, in 1817, that in the case of sound, the movements of which are closely allied to water-waves, reflection does not take place except where the wave impinges on the obstacle at an angle greater than about 30 degrees.

Where the angle is less than this, the sound does not again leave the obstacle, but simply runs along the face of it,—in fact, is conducted along it, in the manner we have just had occasion to mention. All, or almost all, whispering galleries are examples of this conduction, that at St. Paul's being a very good one.

Should the angle, however, at which the sound falls approach nearer to a right angle, it will be reflected back, and will follow the same law as the reflection of light; that is to say, the angle of reflection will equal the angle of incidence, so that all sounds to be heard, as echoes by the speakers, must fall on a reflecting surface exactly at a right angle, and if a sound reaches any surface at an angle of, say 45 or 60 degrees, from the right, it will be thrown off at the same angle, 45 or 60 degrees, but to the left.

It will be familiar to all that there are some echoes that can repeat one syllable, some two, some three, and so on, simply because in the one case longer time elapses than in the other before the echo gets back; and it will always be found when the sound takes longer time to make its journey to the reflector and back, it is because it has had a greater distance to go over. From this we gather that the speed at which sound travels, rapid though it be, is not so great but that the effect of even a moderate addition of length is quite perceptible in the longer time it takes to reach the ear. In this particular sound differs from light and electricity, which travel so fast, that unless with great distance, the time they consume in going cannot be detected.

The speed of sound in the atmosphere varies with the greater or less density of the medium. It has been very frequently measured, and Herschel gives, as the results of the best investigations, that sound in dry air at the temperature of 62 degrees travels over 9,000 feet in eight seconds. This statement is easily remembered, but it may be useful to add that 9,000 feet, or 3,000 yards in eight seconds, equals 1,125 feet, or 375 yards in one second, or 12½ miles in a minute.

As a practical application of this fact, I may extract from the same author the remark, that if music were performed in a room 53 feet long, with an echo in the extremity, each reflected note, should

\* Read by Mr. T. Roger Smith, as elsewhere mentioned.

there happen to be a passage with as many as ten notes in a second, would exactly interfere with the following note sounded by the musician. Passages as rapid as this constantly occur in modern music, and it is not a very uncommon thing to hear them thus spoiled.

The varieties in the nature of sounds are very great. Thus we have music, articulate speech, and noise; we have variations of pitch, of quality, of loudness, of volume, of intensity, and of distinctness. We have in music combinations of sounds in succession to form melody, and simultaneously as harmony; and of sounds heard together, we have some combinations that are harmonious, and some that are discordant.

As an illustration of some of these peculiarities, let us suppose the string of a harp struck and left to sound. We hear a long, definite note gradually dying away, but which, faint though it becomes, still retains its pitch. If, now, we examine the harp-string, we find it constantly vibrating to and fro with great rapidity; as it gets to rest, its excursions on each side of the line of repose grow shorter and shorter, but they neither become more nor less frequent than when they were most violent. It is clear that each movement of the string must rouse a movement in the air, in fact, strike a blow upon it; and we begin now to trace some connection as likely to exist between the regular recurrence of these blows and the equable pitch of the note the string gives out, and also between their diminishing vigour and the fading loudness of the sound. It is, in fact, as I dare say you all know, the regular recurrence of distinct impressions which occasions all prolonged sounds, and with one or two exceptions, this is always a consequence of vibrations. The way in which the separate shocks on the ear produced by the vibrations get fused into one sound corresponds very closely to what happens to the sight when a spark of fire is swung round so rapidly as to appear a fiery circle: the impression of the sound on the ear, like that of the spark on the eye, does not die away the very instant the exciting cause stops; and if that impression be renewed before the recollection of it has had time to vanish, the sense of hearing loses the consciousness that any intermission has taken place.

Very bright lights remain longer impressed on the eye than the image of ordinary objects, and similarly very intense sounds remain longer in the ear, and consequently fewer repetitions of them in a second are required to produce a continuous note: so that though it is impossible to hear sounds from an ordinary cord making fewer than 30 vibrations in a second; yet Savart has succeeded in making audible a sound composed of only 14 pulses, or 7 complete vibrations, in a second; and, at the other extremity of the scale, in rendering audible sounds up to 24,000 vibrations, or 48,000 pulses, per second. The greater or less frequency of the vibrations occasions the sound to be more or less sharp, and the actual correspondence between the number of vibrations in two notes determines their concord or discord when sounded together.

For example, the lowest C on a grand piano is said by Brewer,\* to require 32 pulses in a second for its production; the sound most accordant with that is its octave, the number of whose vibrations always bears the relation of two to one to those of the original sound. Thus, in the instance just selected, 64 vibrations in a second are required to produce the C an octave above the one we started from. If the dots in the diagram represent pulses, it will be seen that when a note and its octave are sounded together, every vibration of the fundamental note coincides with a vibration of the higher one.

If G, the fifth above this C, had been substituted for the octave, we should have struck a note containing 48 pulses in a second along with the C containing 32 such pulses; that is to say, three pulsations of the higher note to every two of the lower one; and, as the diagram shows, only every other pulse of the fundamental note would have coincided with one of the upper one. This is the next most accordant interval.

The relation between a note and its major third is expressed by that of 4 to 5, or 32 to 40, so that this interval is less perfectly consonant.

Two notes the pulses of which hardly ever coincide, sounded together, produce a discord. For instance, the seventh above any note bears the relation to it of 15 to 8, and this is consequently a very imperfectly consonant interval.

Beyond just stating that all natural sustained sounds are produced by the vibrations of elastic

\* Whose numbers do not precisely correspond with those given by some of the French writers.

substances, it is impossible to enter upon the very complicated and very interesting investigations that Chladni, Savart, Wheatstone, and others, have conducted upon undulation and vibration in all its forms, or to describe to you the elegant experiments by which the motions of vibrating bodies are rendered visible.

The transmission of these vibrations through the air is, however, a matter of some moment to our subject. Each impulse of the vibrating body makes an impression on the air immediately adjoining it, which impression instantly passes onwards and outwards, leaving the atmosphere behind in a state of quiescence. A wave of sound is, in fact, a state of momentary compression travelling with the speed of the wind away from its exciting cause into space; and it is accompanied by a displacement of particles, slight, indeed, but still actual, and, in fact, when the impulse has lost the power of moving the air at all it ceases to exist.

Should this wave meet with an obstacle that reflects it, it will travel back through the atmosphere to any point to which it may be directed by the reflecting body. Any agitation of the air which from circumstances, such as reflection, for example, is made to take the form of regular pulses, will, if these are but frequent enough, become an audible sound. Take a familiar instance.

Suppose that we have a pipe, of any length shorter than about 35 feet, closed at one end, and make an agitation in the air at the open end. As that the separate movements are so far apart that the impulses leave long intervals between them, no sound is heard; but as soon as the movement is brisk enough for a pulse the moment it has travelled to the bottom of the pipe and back, to be followed at once by another, an audible sound will result, the pitch of which depends on the length of the journey each pulse has to make down the pipe and back again. If we go on making the agitation more brisk for a time, no alteration, except in loudness, will be audible, the pipe seeming, so to speak, to keep the agitation that wants to enter it waiting till the one that is there emerges.

But suddenly the sound heard will jump an octave, and we shall find, if we take the proper means of investigating, that the air in the pipe has divided itself into two vibrating lengths. Increase the agitation, and soon another jump takes place, the air in the tube dividing itself into three portions, and so on,—the points of division being termed nodes. Thus, for example, by blowing more or less violently into an organ-pipe, we can produce either its fundamental note, or the octave above that note, which is the sound proper to a pipe of half the length, or to the original pipe divided into two portions by one node, or the twelfth above, which is the sound proper to a pipe one-third the length; or to the original pipe divided into three portions by two nodes, and so on.

These divisions equally occur in vibrating strings, and it is remarkable that even where a string or a pipe is sounding the gravest note it variably coexists along with the primary ones, giving out the octave, twelfth, &c. These sounds are called *harmonies* of the principal sound, and an acute ear can detect their presence constantly; perhaps nowhere so readily as in the note of a large bell.

It becomes of importance to us to know all these circumstances, if we reflect that any room may be regarded as nothing else than a great organ-pipe, in which, if a suitable agitation be roused, sounds, no doubt, will be emitted by the air. Nor is there any safeguard in the size of the room; for, although a room be too large for what would be its primary note to be audible, the harmonies of that note, some of them, will be quite appreciable; and it is the presence of these, that causes what is known as the *note* proper to a room.

As this note cannot be ordinarily avoided, the only thing to be done in relation to it, is to see that the dimensions of the room, each way, bear some simple numerical relation to one another: so that if undulations are roused that travel from end to end, and others that travel from side to side, the sounds due to the two may blend harmoniously, and not clash discordantly.

The last point to which I have to draw your attention, is the sympathetic vibrations that sounds can excite in sonorous bodies. If a tuning-fork is sounded in the air, its note is extremely feeble, but if it be rested upon a pianoforte, or a table, a marked alteration in sound is audible.

Half a dozen tuning-forks, of different pitch, tried in succession, will all rouse the same pheno-

menon, and the truth is, that small as they are, each one has set the entire material of the pianoforte or the table in vibration, and that, too, in accordance with its own rate of motion, so that the whole table or the whole piano has become, for the moment, a part of the tuning-fork, and is emitting sound in unison with it.

If we now vary the experiment, and hold our different tuning-forks near the open end of an organ-pipe or a flute, we shall not get the same uniform result. Those forks which emit the sound the pipe or flute would emit if blown into, or one of its harmonies, will be found to set the air in the tube into sonorous agitation, and the note they emit will be greatly reinforced; but the other tuning-forks, whose note is not related to that of the pipe in question, will be found to have only a trifling influence, if any, over the air in the tube, and this sound will not be perceptibly reinforced.

Thus we arrive at a fact of the greatest importance, namely, that some vibratory bodies will move in unison with almost any sound, while others, voiced to emit a particular note, will reinforce that note, or those related to it, but will be useless, or almost useless, as regards other notes.

It now becomes desirable, having considered some points relating to the nature of sound and its transmission, to ask, "What means have we of influencing sound in a building? and what obstacles is it likely to encounter there, compared with what it would meet with in the open air?"

There are two familiar instruments in everyday use, and a third some forms of which are also well known, which supply a sufficient answer almost without words to the first question, namely, "What means have we of influencing sound in a building?"

The two instruments I first alluded to are the violin and the speaking-trumpet. The third is any common reflector, say the sounding-board of a pulpit.

If we take any familiar sounding object, such as, for instance, a watch, and note how far its beat can be heard in a room, and then place it successively in the mouthpiece of a speaking-trumpet, in the focus of a parabolic reflector, or against the body of a violin, we shall find that in each case we have influenced the sound; and so far as I know, we have no possible means of influencing the sounds emitted in buildings, except such as bear an analogy to one of these three.

There will be something to be said by hand-and-foot upon impediments, and the avoidance of them; for, after all, except in extraordinary cases, the whole secret of success in building, for sound, lies in simply doing as little harm as possible; but as far as assistance to sound goes, I repeat, we cannot get beyond the teaching of the mirror, the speaking-trumpet, or the violin.

To return to the watch, we shall find that both the reflector and the speaking-trumpet cause its tick to be heard much more loudly at the same distance, or to be audible to a much greater distance than when uninfluenced; but only in one direction. The person to whom the trumpet is pointed, or towards whom the mirror faces, gets more sound; but a person at the side gets less.

Were the sound of such a nature as to be capable of being closely examined, it would be found in both cases to be deteriorated in quality of tone; and I am inclined to think more so by the reflector than by the speaking-trumpet, and in each case, if articulate, or otherwise very sharp and defined, it will have lost a little of its distinctness.

If, now, we take the violin and place upon it the watch, we shall find that the sound will be audible to a greater distance than when the watch is by itself; but will not be (as in the other cases) confined to one direction only. It will not, probably, extend in any direction so far as the trumpet would throw it, but will be much more equally heard; while, and this is the great point, whatever change takes place in its character, is entirely for the better. None of its distinctness is lost, but its tone is improved; and should the violin be a very fine one, and something with musical sounds he substituted for a watch, the effect on the quality of the sound will be very marked. A string, for example, stretched to sound a certain note, and excited by a violin bow, will give out its proper note, indeed, but its voice will be poor, thin, and weak. Transfer the string to the instrument, draw the same how across it in the same way, and the note of the string, re-inforced by the vibrations of the body of the instrument, will be something totally different, incomparably firm, and yet identical in pitch and sharpness.

We ought, then, in building for sound, to take

a lesson from each of these instruments. What are their peculiarities? In the reflector and the speaking trumpet, the influence upon sound is almost wholly a matter of form. In the violin it is also, no doubt, a matter of form, but as much if not more a matter of materials combined with form.

We gather, then, that we may, as in the speaking trumpet, impress an initial direction on sound as emitted, and guide it forward, or that we may aid its progress by reflectors behind or above the speaker, but that if we want to support or improve it, we must have recourse to the resonance, or sympathetic vibrations of some sonorous body, capable of lending itself to all the varieties of sound produced near it.

The common sounding-board often fixed over pulpits, acts as a reflector, but usually (being made of thin wood), as a resonant reflector, a much less dangerous neighbour than a hard smooth surface of plaster or stone, which has the disadvantage, that it reflects a sharp and somewhat spoiled echo, that travels in the same direction, indeed, as the primary sound, but is a little behind it, and seems often to mar its distinctness.

It will be readily understood that a slanting reflector overhead, to beat downward and forward rays of sound that would otherwise escape towards the ceiling and be lost, is likely always to do good, and can in no case be so injurious as one behind the speaker; and it need scarcely, I think, be added that the only reflectors that can be of advantage are those that throw the sound forwards in the same direction as that in which the speaker is speaking. An echo reflected down from a high ceiling, or worst of all, back from an opposite wall, will always be disagreeable.

It may be more appropriate here than afterwards, to notice a curious application of the reflector to pulpits, which was some years ago rather extensively made use of, and is illustrated in the model before you.

It appears from a pamphlet published by Rivington in 1829, entitled "Description of a Parabolic Sounding Board erected in Attercliff Church, by the Rev. John Blackburn," that this church is a parallelogram, 95 feet by 72, and 56 feet high, with an elliptical recess 32 feet wide by 10 deep for chancel, and the pulpit placed in the centre of the centre aisle, in front of the chancel. There is no clerestory, but there are pillars supporting a gallery. In this church it was impossible for the preacher to make himself heard, and after shifting about the pulpit in various directions with no marked advantage, he determined to erect behind the pulpit a sounding-board like a hood—parabolic in section with his head in about the focus of the parabola. He relied upon the property of that curve to reflect as parallel a series of rays diverging at the focus, and he adds, that the result exceeded his most sanguine expectations.

The congregation were now able to bear the preacher, and the remote seats of the church became some of the best. The inventor of this expedient was Mr. Blackburn himself, and he brought it before the public in this pamphlet, which is admirably and scientifically written, and also laid it before the Royal Society and the Society of Arts. With the last-named Society he deposited a model, which has since passed into the possession of the London University College, and it is by the courtesy of the secretary of that college, and of Professor Potter, that this model, which is the one before you, is intrusted to me for this evening's paper.

To proceed, however. In the Society of Arts Transactions I find two letters from Mr. Farish, the Jacksonian Professor at Cambridge, who had had one of these reflectors put up in his church. He reports most favourably both upon Mr. Blackburn's reflector and his own, saying that the sound is improved in every part of the church, and especially that of the more distant parts; but he alludes casually to inconveniences that had been supposed to exist, and says they are of no consequence.

This seemed like a flaw in the case, and as the point appeared of great practical interest, I obtained, through the kindness of Mr. Holland, of Sheffield, full particulars of the subsequent history of the reflectors, and, not to trouble you with all the details, found the main facts relating to them to be these.

First, I find the reflector has been pulled down from Attercliff Church, partly because it was unsightly, partly because the present incumbent can do without it, and partly because the inconveniences attending it were felt very trying by most preachers; though the inventor either was not annoyed by them, or endured them cheerfully for the sake of the real benefit he

derived from the reflector, but some of the casual occupants of the pulpit found them so trying that they used to prefer preaching from the reading-desk.

The disadvantages were,—first, that the speaker heard every word uttered in every part of the church; and, secondly, what was worse, had every word be himself uttered diaped into his own ear; and, lastly, that to do any good with the reflector he was obliged to keep still, with his head in or near the focus of the parabola. One of the neighbouring clergy preaching in the Cambridge Church states that he was at once amazed and amused at the distinctness with which he heard the whisperings of the charity children in the remotest part of the west gallery; and the converse of this transmission was true, for a watch placed at the focus of the parabola could be heard to the very end of the church.

As regards the general application of these instruments, I find that the carpenter who made the original one himself made and fixed no fewer than twenty-nine of them, including two at Oxford, one at Cambridge, one at Trinity Church, Huddersfield; one at Dackensfield, near Manchester; and one at St. Sepulchre's Church, Smithfield;—perhaps members present can inform us of the fate of some of these. Also, I find that at Darnall, near Attercliff, the end of the church was built in a parabolic shape, and the pulpit fixed in the focus. The preacher in this church is satisfied with the effect, but occasional preachers, some of them, dislike it. Lastly, I got information of one other church at Sheffield, where the reflector was put up and made use of, and satisfied the clergyman and those persons who sat in the centre and at the ends of the church, but the people at the sides heard worse than before, and complained accordingly; so much so that it had to be removed.

From these facts, which I hope I have not unduly extended, we may gather that the parabolic reflector possesses such disadvantages that it would never be safe to build the end of a room of that shape, and that, in most instances, it will be inadmissible, even as a palliative, in bad cases; but that, on the other hand, it does enable persons remote from the speaker to hear well, and therefore, in a church or room that was long and not wide, it might be valuable, if the speaker is not nervous, and does not employ much action. I need not add that it can hardly fail to be always frightfully ugly.

We pass now to consider the speaking-trumpet, and the analogy it may bear to a room. The action of the speaking-trumpet was for long attempted to be explained by the theory that the sounds were reflected across and across from side to side of the tube, and somehow got ejected nearly or quite parallel in direction from its mouth. But this theory fails in many ways to account for the phenomena of the speaking-trumpet, and M. Hasselwitz, the great authority on that instrument, declares that all his experiments led him to the conclusion that the effects on sound produced by the speaking-trumpet are due to a different cause. The air contained in the interior of the instrument, he maintains, being enclosed by its walls, is compressed by the vibrations of the sonorous body in a more vigorous manner than would be the case if the walls had no resistance; consequently, each individual particle of this air contracts a greater amplitude of vibration, and is capable of transmitting that action to a greater distance before it becomes entirely lost, than it would in the open air.

Now all this applies, *mutatis mutandis*, to a public speaker in a room. If you set him up in a spot where a great height over his head swallows up the sound above him, and vast spaces open on either side of him and behind him, the power of his voice is wasted in communicating vibratory motion to these masses of air, as well as to that mass which lies in the direction where the auditors are.

If now, avoiding the extreme of cramping and confining the space too much, you set your speaker under a low roof, which rises as it goes away from him, and in a recess that widens as it joins the main building, you procure him the advantages of the speaking-trumpet, and throw his voice forward by preventing it from losing itself. And it must further be remarked that if you want your speaker to be able to address a very numerous audience indeed, you must effect it, not by enlarging the building very greatly in every dimension, but by extending it in the direction towards which speech is directed—namely, forwards—with only such additions of height and breadth as are necessary to prevent the structure from falling through disproportion.

Turning now to the violin, we find its peculiar effects are due to resonance. As to the methods of procuring resonance, we have seen that a body of air in a room will reciprocate certain sounds, and we find in certain buildings that the air will reciprocate any musical sounds emitted, but with the disadvantage that it continues to sound them for some time after the original musical notes have ceased. Canterbury Cathedral is the finest instance of this sort of resonance I have heard of. Westminster shows it also. Beautiful as is the blending of sounds and richness of tone due to this cause, it is of more advantage to church music than to reading or speaking, as you will readily notice at Westminster. In ordinary public buildings, therefore, a large mass of empty space is to be avoided, not only because the air in it absorbs part of the power of the voice, but because it may be resonant in an undesirable way. The employment of thin planks of wood for procuring resonance is not open to the same objection, and nearly all the most celebrated acoustic buildings known will have been found to be fitted up to a great extent with wooden lining.

A floor on columns, with a hollow space under it, and a ceiling with a hollow space above it, are both adjuncts to resonance. It is to be remarked, that the presence of auditors in a room deadens the sound so much that if a building be such as to afford, when full, the greatest possible assistance to music and to the human voice, it is more than likely to have a very decided reverberation when empty.

Let us now for a moment ask what *harm* we can do to sound; what impediments a building may present to its propagation; and how far, in a new building, we may avoid these impediments, or, in one where they already exist, may neutralize or remove them.

The principal cause that will have an unfavourable influence on sound in buildings are echo, reverberation, obstacles, and unshapeliness or bad proportions.

Echo is, where it exists, one of the most formidable blemishes possible in a room, for it asserts its unwelcome presence with every word that is spoken. The presence of a flat surface at a considerable distance from the speaker or musician, and facing him, is very much to be avoided, as apt to echo, and consequently in almost all good public rooms the end farthest from the platform is curved, or recessed, or otherwise broken up, or has a gallery thrown across it, the front of that gallery being carefully arranged, so that either it shall not echo or shall reflect the sound to where there is no auditory. In case of an existing echo, the best remedy no doubt is to break up the surface of the reflecting wall in some such way as this. Where expense or other difficulties prevent this remedy being applicable, to hang up draperies, which may mask and break up the reflecting surface, is good.

In over-loud rooms an echo is often perceived from the ceiling downwards. Such a one exists very decidedly in the new reading-room at the British Museum.

Should the echo, however, be indistinct, or very much broken up, or should there, indeed, be a noise, but not amounting to a regular echo, the disturbance is called reverberation.

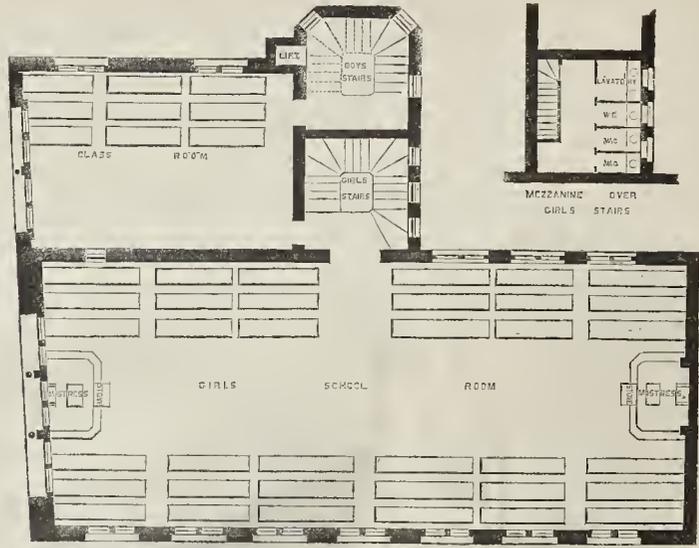
The excess of resonance in an empty room often causes reverberation, and may be generally cured by covering those surfaces which reflect sound with soft substances. The audience frequently do it, but if not, the gradual addition of carpets or matting, or hanging up drapery, will proportionally deaden the excess of sonority in the room till a proper pitch of distinctness is gained. In a church in the north, where the reverberation was unpleasant, even when there was a full congregation, the desired quiet was, I am told, quite gained by laying down matting over the aisles and other open spaces.

Open skylights are very apt to reverberate, so are deep and square window recesses, and both ought to be avoided where sound is of great importance.

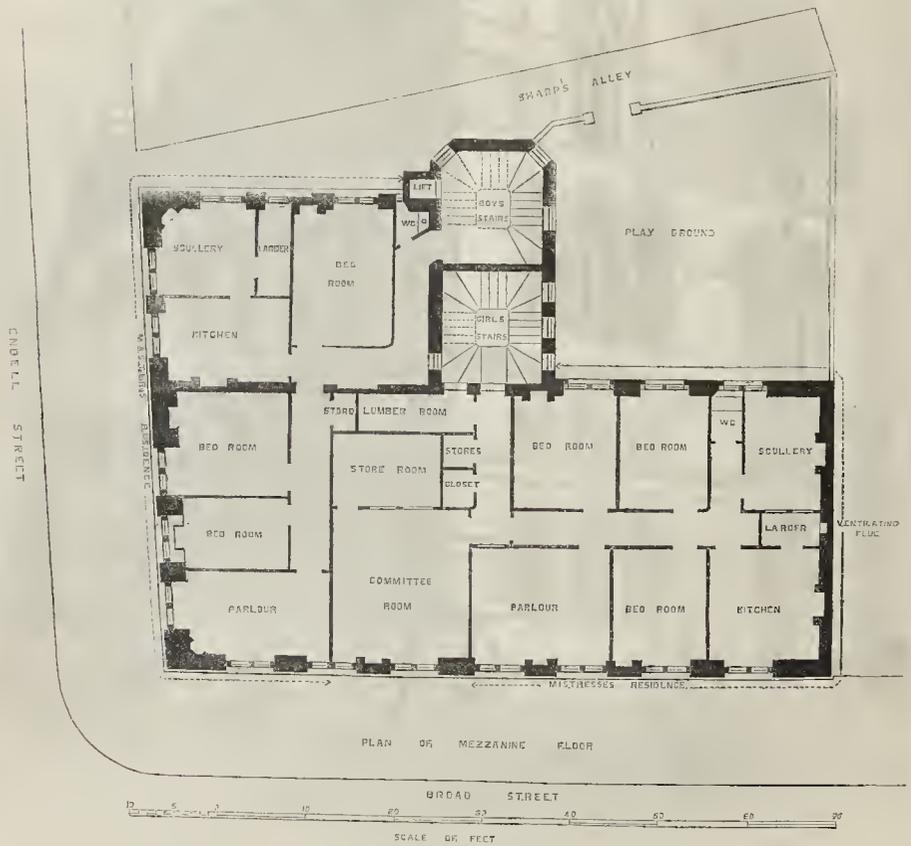
Lastly, damp walls reverberate much more than dry ones, and in a new building it may often be as well to hang up a little drapery for a few months, which can be safely taken down, when all gets quite dry.\*

**NATIONAL PROLIFERATION INSTITUTION BUILDING, LONDON.**—The foundation-stone of a new building, at the corner of Gracechurch-street and Bostons, intended for this life-office, has been laid by the chairman, to whom the board presented the silver trowel used on the occasion.

\* To be continued.

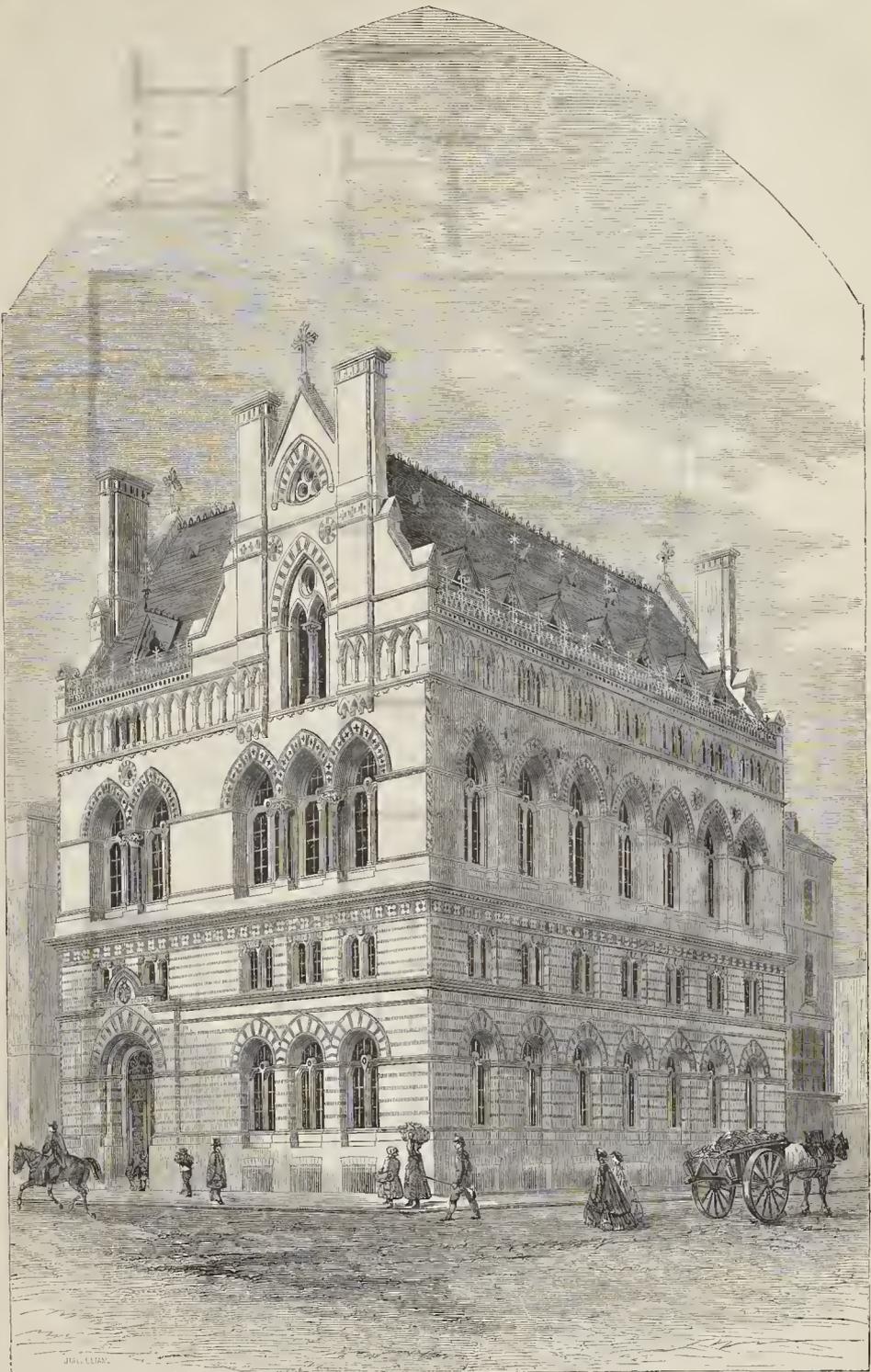


PLAN OF FIRST FLOOR GIRLS

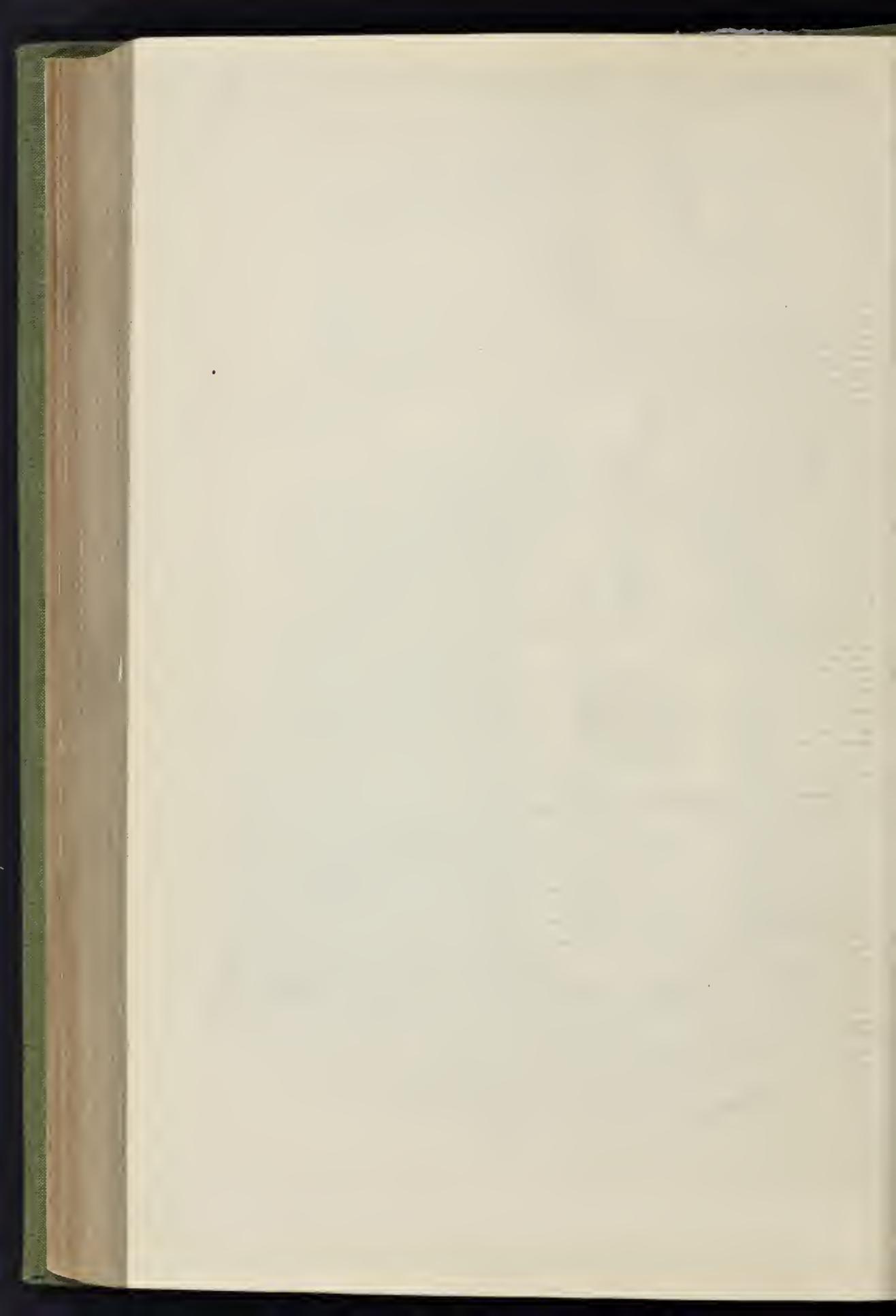


PLAN OF MEZZANINE FLOOR

ST. GILES'S NATIONAL SCHOOLS.



ST. GILES'S NATIONAL SCHOOLS, BLOOMSBURY, LONDON.—MR. E. M. BARRY, ARCHITECT.



## NATIONAL SCHOOLS, ST. GILES'S-IN-THE FIELDS.

SOME of our readers may have noticed a lofty brick structure in course of erection at the corner of Endell-street, where the latter enters Broad-street. The building is now completed, and on Wednesday last was formally opened, by the Hon. A. Kinnaird, M.P., in the absence of the Right Hon. Lord John Russell, as the National Schools of St. Giles's-in-the-Fields, having accommodation for nearly 1,500 children. Such an establishment, we need hardly remark, is greatly wanted where it is placed, as the neighbourhood is one of the worst in London. Great exertions have been made by the parishioners, headed by the present indefatigable vicar of St. Giles's, the Rev. A. W. Thorold, to supply the educational deficiencies of the parish; and the edifice just erected from the designs of Mr. Edward M. Barry is the first fruit of their anxious labours. We now give a view of the exterior, and plans of the principal and mezzanine floors. The building and its appurtenances occupy a site 75 feet long, with an average width of 60 feet; while a portion of the land, about 30 feet square, is set apart as a playground and a means of obtaining light and air, at the back of the building.

There are four floors, besides the mezzanines and attics over the staircases. The basement is proposed to be used for a soup kitchen, or for an industrial school. It is abundantly lighted by means of windows in the plinth of the elevations towards Broad-street and Endell-street. The ground floor is devoted to the infants' school, and contains a large schoolroom, 62 feet long and 23 feet wide, as well as a private class-room and other conveniences. Immediately over the ground story is a mezzanine floor, 9 feet high in the clear; and here are placed residences for the schoolmaster and schoolmistress, and a committee-room, with store and lumber rooms. The master's residence is entered from the boys' staircase, and the mistress will have access to her house from the girls' department. The latter is in the principal floor, which is 18 feet high.

The girls' schoolroom is 72 feet long by 28 feet wide; and the class-room in connection with it is 30 feet long by 20 feet wide. It is intended to use the large room for lectures and other parochial purposes, in the hours when it will not be required for scholastic uses. The boys' department is over the girls' floor, and the arrangements are in all respects similar. Access is given to the boys' floor, by a separate staircase and entrance from Sharp's-alley. The girls and infants will enter by the principal door in Endell-street. A lift is constructed in connection with the boys' staircase, giving the means of hoisting from the basement to the highest part of the building. The lift finishes, externally, as a bell-turret, and is a conspicuous object from Endell-street. The materials employed, are brick, tiles, and slate; the last forming eills, weatherings, and copings. The prevailing colours are a warm yellow and red, but a few black bricks are also used. Black and red Minton's tiles form the string-courses between the mezzanine and principal stories. All the strings, and moulded work, of all kinds, are of red brick. The windows of the principal floor towards Endell-street are grouped together, and only divided from each other by columns of red polished granite, with boldly carved capitals.

The gutters are of cast iron, and so arranged that lead flashings are dispensed with. There is a railing of ornamental character fixed to the gutter to prevent snow, broken slates, &c., from slipping over into the streets, and to act as a parapet in giving protection to men who may be required to clear the gutter, or to repair the roof. The dormers, bell-turret, and hips of the roof, have ornamental finials of wrought iron, and cast-iron crosses are placed on the three gables. The roof is covered with green and blue slates, arranged in bands; and the ridge is formed of slate, perforated with trefoils.

The internal construction is very simple. The stairs are of Yorkshire stone, and the floors are supported by rivetted wrought-iron beams. All the floors are pugged, and a space is left between the floor and the ceiling joists below them, to prevent the transmission of sound. The roof, which has a space of 28 feet, is composed of principals formed by a semicircular arch, and collar over the same. The principals carry purlins and rafters in the usual way. All the internal woodwork is stained and varnished. The window-frames are so designed as to constitute important features in the elevations. Each arch-headed window has a transom across the springing of the arch, and a mullion connecting the sill with the transom.

The windows in the part below the transom open internally as casements, and the part which fills the arch is hinged to the transom, to open inwards at any angle desired for ventilation. The rain-water pipes are of cast iron, and appear externally at the corners of the building. They are placed in the position so often occupied by a shaft in Venetian buildings; and their upper portions are ornamented by a twisted band cast on to the pipe. Means are adopted for admitting the external air to the school-rooms and class-rooms through the dado, and vitiated air-flues are built in the walls, and carried up into the chimney shafts, which are of great height, and are placed on the gable walls of the building.

The workmanship displayed about the whole of the building is very good, and reflects credit upon Messrs. Mansfield & Son, the contractors, and Mr. Dale, the clerk of works, to whom we must give credit also for an ingenious arrangement of the desks and forms.\*

We congratulate the rector, Mr. Thorold, on having set up such a powerful means for good in his neighbourhood as these schools present; and Mr. Edward Barry on having produced one of the most successful brick-buildings of which our own time can boast.

## ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The ordinary general meeting of members was held on Monday evening at the House in Conduit-street.

The chair was occupied by Mr. F. W. Porter. The minutes of the last meeting having been read and confirmed.

Mr. T. Hayter Lewis (hon. secretary) read a list of donations to the library, including a copy of the illuminated volume by Mr. Owen Jones and Mr. H. Warren (published by Day & Son), entitled "Paradise and the Peri."

The Chairman, having announced that the next ordinary meeting of the Institute would be held on Monday, the 7th of January, when a paper would be read by Mr. G. E. Street, stated that, on an early evening, a discussion would be taken (at the instance of Mr. Tite, M.P.) on the various processes for the preservation of stone.

Mr. Penrose (hon. secretary for foreign correspondence) said it was with deep regret that he had to announce the death of two distinguished members of the Institute. The first was one of the most eloquent writers on art, the venerable and lamented Earl of Aberdeen. The deceased nobleman travelled in Greece long before the termination of the great war, and, in the year 1822, published a work which produced a great effect at the time, entitled, "An Inquiry into the Principles of Beauty in Grecian Architecture." His lordship was a member of the Dilettanti Society, and during his long life had done everything in his power to encourage classic art. The other member whose death they had to deplore was Mr. Samuel Ware, the author of a well-known treatise on arches and their abutments, published in the year 1809.

Mr. Kerr said he wished to call the attention of the members to something more than a formal recognition of the merits of the late Earl of Aberdeen. He would do so in no disparagement of the statement of Mr. Penrose, but, from a profound admiration of the high merits of the deceased nobleman. He (Mr. Kerr) had been brought up in the office of which the Earl of Aberdeen was the most distinguished client; and he was of opinion that his lordship had occupied the first place in the list of their vice-presidents. When the noble earl first came before the public in connection with art, the Gothic school (modern) was in its infancy, and that Baroual style of architecture, so to speak, was coming into vogue which had led the way to the Mediæval revivals of the present day. The Classical style of architecture had not then arrived at maturity; and, at that time, when such men as Professor Cockerell came before the public with Greek remains, Lord Aberdeen also presented himself, with perhaps more profound learning and acute judgment; because, from his position, he was enabled to devote more time and attention to the abstract principles of Greek style than any professional architect could be supposed to do. Since that time the Gothic school had arrived at a high position; and, although the architectural body were divided upon the subject and split into two camps, one advocating (as he

himself did) the Classic, and the other the Gothic; still he thought they might combine, on an occasion like the present, and express their opinion on the loss of a high-minded and cultivated nobleman, whose writings on art were as eloquent as his knowledge was profound, and his taste pure and elevated.

Mr. C. H. Smith observed that, on the return of the noble earl from Greece, fifty years ago, Argyll House was subjected to very extensive repair and alterations. Although the building looked mean, and the elevation, perhaps, paltry, it contained some of the finest rooms of any private mansion in London, especially upon the ground-floor, some of which were 20 feet in height. The mansion was, he believed, built by Gibbs, and was decorated in the Roman and Italian style. The cornices of the rooms were very beautiful, and the ceilings were rich with elaborate ornaments, in the style of Sir Christopher Wren. When the Earl of Aberdeen bought the house from the Duke of Argyll, he had just concluded a lengthened tour in Greece, whither he had been accompanied by Mr. Wilkins, the architect; and he returned home imbued with a taste for Grecian art. The beautiful rooms to which he referred were forthwith stripped of the bold decorations in the style of Wren and Gibbs; and, in their stead, trifling and insignificant-looking cornices were put up, abounding in honeysuckles, after the manner of pure Greek art; and the elaborate ceilings gave place to a style of ornamentation plainer even than that of the room in which they were then assembled. This innovation was made, as he understood, in deference to the desire of the Earl of Aberdeen, who could bear nothing that was not Grecian.

The Chairman said he quite agreed in the tribute which Mr. Kerr had paid to the memory of the late earl, who was one of their most distinguished members. With regard to the observations of Mr. Smith, in reference to the internal decorations of Argyll House, the question was one of taste, upon which, of course, there would be diversity of opinion. He had now to announce that the council had fixed the 14th of January for a special general meeting of members, to consider the question of architectural examinations.

Mr. T. Roger Smith then read a paper on "Acoustics;" a part of which will be found on another page.

At the conclusion,

Mr. Scott Russell, in responding to an invitation, said he had very little to add to the almost encyclopedic paper which they had just heard, and which he felt had very nearly exhausted the subject. He would be chargeable with ingratitude, however, if he did not express his individual thanks to Mr. Roger Smith for the information contained in his essay. Mr. R. Smith had admitted with modesty that he laid no claim to be the discoverer of any new laws of nature, but he had done what perhaps was more valuable; for, instead of discovering one law of nature, and endeavouring to account for everything by that principle (which quacks often assumed to do), he had thrown a philosophical light over the entire subject. Although he could add nothing new to what Mr. Smith had said, he would venture to refer to a few instances which had come under his own observation, in illustration of the practical hints which he had thrown out. Certainly a great difficulty was to convert an ordinary room into a good sounding room. There was a radical difficulty between the necessities of a big room and those of a little one. A little room was infested with abominations which arose out of its littleness, and no doctor or quack could get rid of them. The public generally insisted upon getting a parallelogram, large flat surfaces and a flat ceiling, and there was really no cure for such a building. Under these circumstances all that could be done was to choose a tolerably good proportion, and make the room near to it, but not exactly it. He differed from Mr. Smith in thinking that we had not yet got the exact proportions for acoustic purposes, for he thought that if they took the ordinary harmonic numbers,—2, 3, 4, and 5 (all of which were good acoustic numbers),—and took them in breadth and height, they would procure a room which would speak easily, and resound to the human voice. If on the other hand they were only to come near to these numbers, the result would be a room which would neither speak nor sound. He believed that when they had the choice, if they kept the roof high, they would simply avoid echo; but that, if they wanted an audience to hear the speaker or singer, they must keep the ceiling low. If the

\* The form and desk are in one; and, when required, the top of the desk turns over and serves as a back to the seat, or, the back edge of two desks being placed together, they form a table and seats.

room were low, and the speaker placed himself high, his voice would soon cease to strike the room at a reflecting angle. He had first noticed this in rather a remarkable manner. In Scotland, as they all know, half the church went out from the other half, and had no place to go to. The general assembly met in a building in which no one could hear what anybody else said. They then went to a low building where the ceiling was 15 feet high, and the floor about an area of an acre, where the audience (consisting of half the ministers in Scotland and their congregations) heard each other very distinctly, because the sound sensibly travelled along the low roof. The difficulties of echo would beset all large parallelograms. In theatres an attempt was made to get rid of them by breaking up the space with boxes and partitions; but he believed that the best form of building for 1,500 or 2,000 persons would be one pretty nearly a circular or an octagon, or a circle with four parallelograms. One of the best churches for hearing which he knew of in this style was that of St. Stephen, at Edinburgh, which was an enormous octagon, and in which from 2,000 to 3,000 persons could hear very distinctly a clergyman who had not a loud voice. In this church there were no echoes. The best form that he knew of for hearing and seeing was a circle, with the seats rising one above another, and covering as much of the bare wall as possible. The worst form was that nearest it, namely, a semicircle, with a great flat wall to echo the voice. The courts of justice, for instance, were built in this manner; and he could point to at least half a dozen of them in which nobody could see or hear anybody he wanted to see or hear. There was another point to which he would refer in reference to this subject. It should be borne in mind that there was one set of noises which it was desirable to hear, and another which it was undesirable to hear; and the great desideratum was to make a building in which what it was desirable to hear would be audible, and that which it was undesirable to hear would be inaudible. No one, for instance, wanted to hear, either in a church, a concert-room, or a theatre, fidgeting, rubbing of feet, or tittering. These were noises which no one particularly wished to hear; and theatres were generally so well constructed for hearing what passed on the stage alone, that the audience were very seldom disturbed by the not infrequent loud conversation of persons in the boxes. Her Majesty's Theatre was the most wonderful building for hearing and seeing in, and he did not think he could suggest anything better, although it had faults which might be corrected very easily. He did not think the difficulties to be overcome were so great with a large building; for, where the building was very large, there was no bother on the score of resonance; and, if the building were raised behind, and the wall covered with heads to swallow the sound, the probability was that it would answer very well. The great secret of success in making a large building hear was to cover it with heads; for in a large building the voice required to be assisted. In a small building, on the contrary, the difficulty was to suppress the echo. He could personally speak to the accuracy of Mr. Smith's statements with regard to the parabolic reflector, for he had tried it when he was a guest at the house of Mr. Blackburn, and was frightened at his house. It was also, as represented by Mr. Smith, "villainously ugly," and, moreover, prevented the congregation at either side of the preacher from hearing him. He therefore hoped that it would never be generally adopted in our churches. He also agreed with Mr. Smith in thinking that resonant roofs were great aids to hearing; that the roofs of churches should be of wood; that the top of the pulpit should be of the same material, and as large as possible; as, if this precaution were not taken, it would be impossible to prevent the speaker's voice from being lost. He did not believe in the parabolic form, but he believed that if the end of a building were narrowed near the speaker, the roof inclined, and the walls covered as evenly as possible, every auditor would get his share of the sound; and that, by attending to these principles of construction, all would be done that human nature could do to assist the voice. He begged to propose a vote of thanks to Mr. Smith for his excellent and instructive paper.

Mr. White, in seconding the vote, said he had devoted a good deal of time to the consideration of this particular subject; and that there were one or two points in the paper to which he wished to refer as briefly as possible. One of these was the proportioning of a room to given ratios. To determine exactly what these should be, would perhaps require a paper as long and elaborate as

that which had been read that evening on the general principles of acoustics. Mr. Smith had, he thought, suggested those which were favourable to the transmission of sound, and in this respect he (Mr. White) believed that old churches were built with greater regard to the ratio than was generally supposed. On a late occasion Dr. Barlow, in lecturing on symbolism, had referred to a paper by him (Mr. White) on the geometrical proportions of Mediaeval churches, but he begged to say that his paper had nothing whatever to do with symbolism as such. From the observations which he had been able to make, he had arrived at the conclusion that buildings which were the most beautiful in proportion were the best also for sound. Again, with regard to the general form of buildings, low aisles and lofty naves were best for sound. In reference to flat surfaces behind a speaker, as referred to by Mr. Scott Russell, in our courts of justice, he might state that on one occasion he remembered the Bishop of Lincoln preaching in the open air; when, instead of turning his back to the wall, he faced about towards it, and the result was that he was heard distinctly by several hundred persons. At Dorchester church, in Oxfordshire, the building was lofty, but with low aisles; and there, although the area was very spacious, every word uttered in the pulpit could be distinctly heard from one end of the church to the other.

Mr. Frazer, referring to the use of sounding-boards, mentioned the case of the great church of Amsterdam, formerly a Roman Catholic but now a Protestant building, in which the sounding-board was from four to six times the size of the pulpit. With regard to what had fallen from Mr. Roger Smith, it seemed to him that his paper contained perhaps too much theory without those deductions which would enable the architect to arrive at the proportions which would give certain effects. Mr. Smith had pointed out the descriptions of buildings which were unfavourable to the transmission of sound, but he had not given the actual proportions of a perfect building. Professor Donaldson, of Edinburgh, whose lectures on the theory of sound showed the attention which he had devoted to the subject, was at present building a music-hall in connection with the University, and the proportions which he had adopted were 30 feet wide, 45 in height, and 90 in length. He had tried various experiments, and the above proportions were the best he could devise. The building was now all but complete, and he (Mr. Frazer), understood that Professor Donaldson had been completely successful in making what might be termed a model music-hall.

Mr. Scott Russell said that Mr. Frazer was not quite correct in the enumeration of the proportions chosen by Professor Donaldson. The music-room in question was 66 feet long, 48 feet high, and 32 feet wide, and these were the three proportionate numbers of musical harmony which would make a good room.

Mr. C. H. Smith said that, if all the conditions of a room were equal, the sound would be heard more distinctly in winter than in summer, the density of the atmosphere making the difference. Some substances, it was known, absorbed sound, while others reflected it. Mr. Scott Russell had suggested that a wall should be covered with human heads, but he (Mr. Smith) took leave to suggest that they should be bald heads, because anything in the nature of hair or wool was antagonistic to the transmission of sound. This was proved at once by reference to a carpet warehouse, in which it was extremely difficult to hear. Experiments with regard to acoustics should always be made when the room was full. At the room of the Royal Society, the difficulty of hearing was so great that they were obliged to hang woollens across it to absorb the sound. The admission of the outer air, in cold draughts, had also a good deal to do with sound; for, in the orchestra of a theatre, it was known that if the door were suddenly opened so that the cold air rushed in, the musical instruments were all put out of order for the moment.

Mr. Morris said, one of the most important subjects in architecture was church building; and the exact position of the pulpit was an essential consideration. It was, in his opinion, essential that the pulpit should be placed very near a communion service was always better heard than any other part of the service, in consequence of the reflector formed by the recess in which the table stood, and which produced that abatement in the ceiling, and narrowing of the walls, necessary for perfect hearing. When, many years ago, he built a church, he went with the minister

and made various experiments with the view of determining the site for the pulpit, and they found that the greatest effect was produced by placing it as near the wall as possible. At Westminster Abbey the sermons for the people were preached under the lofty cross, and the consequence was that those only heard who had the good fortune to get very close to the preacher; while those behind him could scarcely hear a word. On the previous day he attended Divine service in a church where the pulpit and the reading-desk were on the old plan. The result was, that the reader, who stood with his back to the pulpit, was distinctly heard; for the pulpit served as a sounding-board; but, when the minister came to preach, his voice was completely lost.

Mr. Penrose said the Institute would be anxious to have Mr. Smith's paper printed as soon as possible, in order to make experiments, for it was well worthy of illustration; and when the profession were in possession of it, it might assist them to remove an accusation often brought against them, namely, that they did not understand the principles of acoustics. On this subject an anecdote was told of the late Mr. Justice Maule, who, on being shown by a friend the plan of a room which he intended to build, and which he believed would be very good for sound, said, "Then you won't tell your architect!" He (Mr. Penrose) could corroborate the testimony of Mr. Smith in reference to the superiority of a wood ceiling, even in a room but 30 feet long. At St. Paul's Cathedral it became necessary, in consequence of the echo from the dome, to place something to prevent the sound going up, and with that view he had prepared a sounding-board, hyperparabolic in its sections, which he found had the effect of stopping the echo and propelling the sound. A preacher, speaking distinctly and slowly, might now be heard at a distance of 120 feet. There was a building at Athens which might be mentioned as having been constructed especially with a view to hearing, as the walls were made to radiate from an angle close to which the speaker stood. There was one building which he could mention of the parallelogram shape, which had been found favourable to sound, and that was the new church of St. Pancras, in which 3,000 persons could hear with distinctness. It was understood that semicircular roofs were very bad for sound, generally speaking, but this was not the case when the roof was very lofty, as in the case of St. Paul's Cathedral. There was one objection to a low building, and that was, that the ventilation would be imperfect, and there could be no doubt that the quality of the air had a good deal to do with the transmission of sound.

Mr. Hansard inquired whether any new effects had been produced at St. Paul's by the removal of the screen?

Mr. Penrose replied, that the music and preaching were now heard much better, and that the congregation in the transept were able to hear the sermon, which they could not do before.

The vote of thanks was then passed unanimously.

Mr. Arthur Shean Newman, of Tooley-street, was, on ballot, elected a fellow of the Institute.

Mr. Baister Fletcher, of 6, Oregon-terrace, Peckham-rye, was also elected an associate.

#### PROPOSED ARCHITECTURAL ALLIANCE.

GROWING out of a suggestion which appeared in our columns, and a pertinent paper "On the Evils of our Present Practice, and the best Way to Remedy them," read by Mr. J. P. Pritchett, before the Northern Architectural Association, the latter body addressed a letter by their secretary, Mr. Oliver, as our readers know, to various architectural societies. The letter said:—

"The object of the Northern Architectural Association set forth in this resolution, is to establish an alliance or general association between the several architectural bodies in the Kingdom, so that when any question arises touching the interests of the profession, such as a proposed legislative enactment, any important competition, or any growing evil, the views of the profession at large may, by such an organization, be at once ascertained, and immediate action taken thereon.

Should the proposal be favourably received by the existing associations, the details of the plan will, of course, require the consideration of the various associations joining in the alliance; but I may just mention that in promulgating this idea the Northern Architectural Association do not wish to inaugurate an additional society, entailing expense and labour on its members. They merely wish to establish a bond of union amongst the several societies now existing, but which, under the present circumstances, are totally isolated from each other; and they think by the interchange of reports of proceedings, by correspondence on passing events, and by meetings of delegates on important matters, much service may be done to the profession, as good feeling will thereby be promoted between distant members of the profession, and united action can be at once taken concerning any matters affecting their joint interests."

We are informed that replies favourable to

the proposal have been received from the council of the Royal Institute of British Architects; the Institute of Scotland; the Liverpool Architectural Society; the Birmingham Architectural Society; and the Glasgow Architectural Society.

A scheme of action has now to be prepared and discussed by the various bodies.

#### THE ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of members was held, as mentioned last week, on Wednesday, the 12th, at 9, Conduit-street. Mr. P. Anson presided.

Mr. Moody, the curator, read the report of the committee, which included the following:—

"A sub-committee having carefully examined and valued the whole of the stock of photographs, amounting to about 1,300, and having selected more than 500 to be retained, in conformity with Clause No. 2 of the Objects of the Association, the committee are prepared to dispose of the remainder at a very moderate rate to subscribers for the current year, Schools of Art, and similar educational societies. The photographs will be open to inspection on application to the curator, Mr. Moody, at 9, Conduit-street, W. The uncertainty so publicly expressed last year as to the continuance of the Association, the partial derangement of its operations, the late period at which it opened, and the short duration of the exhibition, held in a new locality, naturally operated prejudicially, as is made manifest by the great diminution of the number of subscribers from that of the year 1859. But the committee confidently hope, from the numerous expressions of satisfaction which have been received, that subscribers will be induced, by the excellent quality and the extremely low cost of the photographs issued, to assist by drawing the attention of their friends to the advantages offered by the Association,—as the larger the number of subscribers, the smaller the proportion of expenses to be met, and consequently the greater advantages to each individual subscriber."

"The forthcoming exhibition, which will open on the 1st of January, will be an unusually interesting one—many artists having taken subjects expressly for it; and it has been sought, by inviting suggestions for the works which shall form the subject of photographs, and the directing of photographers to these subjects, to advance as much as possible the practical character of the subjects exhibited."

"To Mr. F. G. Penrose the best thanks of the committee are due, he having acted in his capacity as Honorary Foreign Secretary to the Royal Institute of British Architects, a circular letter to the foreign and corresponding members of that Institute, requesting them to make known the objects and advantages of the Association to photographers resident in their respective towns—a measure from which the committee anticipate the most favourable results."

"The following gentlemen have kindly undertaken the office of Local Honorary Secretaries:—Mr. Dawson, of Bradford; Mr. Suter, Brighton; Mr. P. M. Phipson, Norwich; Mr. McGibbon, Edinburgh; Mr. W. H. Reid, Plymouth. The committee will be glad to receive the names of gentlemen in other towns willing to act in the same capacity. They have the pleasure to announce that Mr. Beresford Hope has consented to act as the third trustee."

"The following gentlemen are the retiring members of the Committee:—Messrs. Aitchison, Clifton, Gariing, Morgan, and Whitehead, of whom Mr. Morgan offers himself for re-election."

"The following have expressed their willingness to serve on the Committee. We have the pleasure of proposing them, to make up the full number of twenty-five:—Mr. E. R. Baker, George Truett, J. P. Seddon, Roger Smith, and W. S. Barber."

"The general account of receipts and expenditure from the 30th of November, 1859, to the 30th of November, 1860, showed that the Association had received 1,015*l.*, as follows:—Balance from previous year, 112*l.*; subscriptions received in 1860, 508*l.*; ditto for future years, 4*l.* 4*s.*; ditto for photographs in excess of subscriptions, 339*l.*; admissions, 33*l.*; season tickets, 3*l.*; sale of catalogue, 7*l.*; illustrated ditto, 6*l.* The expenditure included the following items:—Liability from former years, 89*l.*; dilapidations at Suffolk-street, &c., 23*l.*; rent of Conduit-street Gallery, and expenses of exhibition, 80*l.*; advertisements, 72*l.*; paid to photographers, 410*l.*; curator's salary, 30*l.*; balance in the hands of curator and in the bank, 217*l.*—total, 1015*l.* The statement of assets and liabilities showed an estimated balance in favour of the Association of 181*l.* 19*s.*

The Chairman, in moving that the report and statement of accounts be received and adopted, stated that the committee wished to be empowered at a general meeting to dispose of their surplus stock. It had been examined by the Committee with great care, and an estimate of its value had been carefully made. From this examination the committee were enabled to state that the value was fully equal to that of last year.

Mr. C. C. Nelson seconded the motion.

Mr. Baker commented upon the expenditure, which he stated was larger than the receipts. He hoped, however, that the Association would be enabled, by the sale of their photographs in stock, to balance the account; and that in future years either a larger income would be obtained, or some means devised of economising the expenditure.

Mr. Lightly said that the expenditure last year was to some extent exceptional, as there was a heavy charge for advertisements, &c., consequent

upon what might be termed the reconstruction or revival of the Association. Moreover, the number of subscribers estimated was 1,200, whereas 500 were all that were obtained. He had no doubt, however, that from the satisfaction so generally expressed by the subscribers, they would interest their friends, so that a large measure of success would attend the operations of the Association during the coming year.

The motion was then put and agreed to.

On the motion of Mr. Lightly, a resolution was passed empowering the Association to dispose of the surplus stock of photographs.

Mr. George Truett was elected an auditor in the room of Mr. Webb, deceased.

Mr. W. Beresford Hope was elected one of the trustees.

The retiring members of the committee having been re-elected, thanks were voted to them, to the trustees, auditors, and honorary secretary (Mr. Lightly), for their services.

The Chairman, in acknowledging the usual compliment passed to himself for presiding at the meeting, expressed his hope that the next exhibition would continue to give satisfaction to the subscribers. He admitted that the expenditure was large compared to the receipts, but he hoped this anomalous state of things would not exist another year.

#### ART AND ITS CRITICS.

##### LIVERPOOL ARCHITECTURAL SOCIETY.

THE 11th meeting of the session was held on Wednesday evening, the 12th; Mr. James Hay, the president, in the chair.

Mr. W. H. Pieton, the hon. secretary, having announced various donations,

The Chairman presented Mr. Doyle with "Fergusson's Hand-book of Architecture," as a prize for the best set of drawings made during the summer.

Mr. Frank Howard then proceeded to read the paper for the evening, which was entitled, "A History of Art, and its Critics."

After some prefatory observations, he said the first specimens of painting on sculpture which we found consisted of rows of these simple, simple figures, either standing, sitting, or walking in procession. From this rude mode the art proceeded to the formation of groups, and hence originated one of the first principles. When a number of figures were introduced into one subject, it was found necessary to distinguish the principal figure in the piece. This was done by making the god, the hero, or the king, much larger than the subordinate figures, and this practice was adopted at the Parthenon, in Athens. In the subsequent progress of art, the principal figure was distinguished by being more elaborately finished than the subordinate characters. The next desire was to distinguish figures by character. Polydorus wrote the names of the deities he meant to represent under the figures, and the same practice appears to have been adopted in some of the Etruscan vases. Phidias had the credit of individualising character, for he fixed the forms of his gods, in which, it was said, no Greek ever after departed. With the name of Homer we were introduced to the earliest criticism in art. (How far he read *in extenso* the passage in which Homer describes the figures on the shield of Hercules, or the shield of the shield of Hercules. In each criticism, he contended, there was exactly the same description: record, and nothing else was held up. The next step in the art was the perception of form. Pericles called in Phidias to decorate the Parthenon. These wonderful productions of Phidias and his pupils, the remains of which now were by the name of the Egin marbles, had been acknowledged as unapproached, if not unapproachable. Phidias was ranked as the foremost sculptor of the world. It was left to Mr. Ruskin to make such use of himself as to say that he would rather see the Egin marbles in fragments in the museum than have seen them in their perfection in the Parthenon. The next step was the imitation of objects, and here the dangers of art commenced. Zeuxis followed Phidias in idealising form. When he painted the picture of Helen, he required seven beautiful virgins as models, and out of them he made his "Helen of Troy." Subject was lost sight of in the object, and Zeuxis painted a man eating figs and grapes; and, when it was hung out, the grapes were so natural that the birds came and pecked at them. A contemporary painted a curtain so perfectly that Zeuxis asked him to pull the curtain aside that he might see the picture; and when he learnt the truth, "Zeuxis has deceived birds, but you have deceived Zeuxis." Zeuxis then painted a picture of art, and painted a subject piece of art. The public only admired the glossy skin of a lion's cub in the picture; and, in disgust at their taste, Zeuxis ordered it to be removed. "The public," added Mr. Howard, "only admire the clay of a cart." Landseer attracted more by the fine gloss of his bay horses than by any other quality in his pictures. He was told of Andsell and Landseer that they had dogs and horses rubbed over with bear's grease to make them gloss when they were seen from them. This was what painting for the public inevitably led to. Public opinion had never been so satisfactory as when it was convinced of its own ignorance, and was wise only to know that it knew nothing.

Mr. Howard then went on to the revival of art in Italy, tracing the progress down to the present day, and giving criticisms of the works of the great masters. The principles, however, upon which artists are judged were always the same,—invention first, then taste, and last execution. The public reversed them, and put execution first

and invention last. As to artists, it was only in the application of the principles that differences arose. The whole of art had not been settled. There were some questions of science yet to be solved. But should it be urged upon the strength of these unsettled questions that the uneducated public were as qualified to judge as those who had made these matters the study and even the experiment of their lives? Because artists doubted, were the public to decide? If so, the severe censure of Pope would be justified, "that fools rush in where angels fear to tread."

A discussion ensued, some of the members maintaining that in the long run public opinion on art was, on the whole, sounder and more correct than that of artists,—a very defensible position, inasmuch as it says in other words that the ultimate deduction from the opinions of the many is more likely to be sound than the opinion of an individual.

#### SITES FOR PUBLIC STATUES.

NOTWITHSTANDING that we can with justice claim the honour of having had, amongst us, men most eminent in literature and science, it is remarkable that, with the exception of Jenner, we have no street monuments, in the metropolis, of those worthies who, in peaceful, scientific and literary pursuits, have shed lustre on this land.

In various directions,—in the streets and squares,—there are memorials of naval and military heroes, statesmen, and persons of rank; but we look in vain for such marks of esteem,—placed in the sight of the multitude,—in honour of those who have been national benefactors in science or literature, and who have thereby acquired a world-wide fame. Neither Shakespeare, nor Sir Isaac Newton, nor Milton, for example, has an open-air monument. This is a matter not creditable to the present state of our intelligence and advancement. In most foreign capitals, a better spirit than this is shown.

It has often occurred to us that many of the statues which have been placed in London seem not to be in the right situations. Generally, there has been a disposition shown, if we except Trafalgar-square, to place the street monuments in as isolated positions as could be contrived; and in few instances, in the metropolis, has monumental statuary been made accessible to our public buildings, as we have often urged; and notwithstanding that this might often be done with advantage. It is to be hoped that, in the arrangements of the new law courts, there may be ample opportunity afforded for placing in front of the buildings, in prominent situations, representations of worthy lawyers who have done honour to the bench. Connected with the exterior of the College of Surgeons, or Physicians, we would like to see effigies of Hervey and John Hunter. In front of the British Museum, why have we not the figures of some of our most famous philosophers and poets? What place so fit for memorials of Shakspeare and Milton as the bases or pedestals which seem to have been made for the express purpose on each side of the central portico? An avenue of statues, stretching from the metal gateway to the main entrance of the Museum, would have an excellent effect; and ample space might be found here for at least twenty memorials; and amongst these we might expect to find such men as Caxton, Sir Christopher Wren, Sir Joshua Reynolds,—who was both a painter and author,—Sir Isaac Newton, Oliver Goldsmith, Dr. Johnson, and others whose names will come to recollection.

When we reflect how powerless the efforts of the wisest general, or the bravest soldier, would be against those modern cannon and rifled muskets and other means which science has brought into use; and on the civilizing effect of literature; it would seem that the time has arrived when equal honour should be shown to peaceful benefactors of the state, with that which has been shown to the mighty men of the sword.

#### KING GEORGE III. AND ART.

HOWEVER great may have been the mental deficiencies of this monarch, and obstinate his disposition, it is but just to say that art, science, and literature were beholden to him for judicious encouragement and assistance: although himself of imperfect education, and no great reader, he was ready to admire the talent of others. With great judgment and much munificence, under the direction of this king, the famous library which forms such an important feature of the British Museum was gathered together. The collection of topographical prints, the mugs and plans, are both curious and valuable, and show that they were purchased *en amore*. This seems to have been his majesty's favourite study; and, probably, several of the plans are the work of George III's

own hands, for good authority states that he copied every capital abart, took the models of celebrated fortifications, and the soundings of the chief harbours in Europe. In 1820, there was in the Queen's library, at Frogmore, a portfolio of drawings—about fifty in number—done by George III. when Prince of Wales: they are problems worked out from a work on practical geometry, with vignettes to each, drawn in Indian ink, on small folio paper. His majesty had an early predilection for the study of architecture; and this preparatory department was probably the groundwork of his knowledge of the art. It is probable that these drawings were made with Mr. Kirby, as that artist was the instructor of his majesty in the science of linear perspective. A celebrated antiquary and virtuoso, writing from Rome, on Dec. 16, 1762, says, "Nothing gives me more satisfaction than to find so many fine things purchased for the King of Great Britain. He is now master of the best collection of drawings in the world, having purchased two or three capital collections in this city, the last (belonging to Cardinal Albani) for 14,000 crowns; one kind of which are original drawings, by the first masters; the others, collections of the most capital engravings; and lately there has been purchased for his majesty all the museum of Mr. Smith, at Venice, consisting of his library, prints, drawings, designs, &c."

The king was remarkable for his free and kindly bearing to men of genius. To Reynolds and West he showed particular favour, and his support of the Royal Academy from its commencement is well known. It is said that the king first suggested to Mr. West the professional study of Scripture history, and desired him to bring his drawings to the palace for inspection. Mr. West did so, and came at a time when the sovereign had with him some dignified clergymen. The company were all gratified with the sketches and with their accuracy to the Scripture text, affording proof of the painter's acquaintance with the Scriptures. "And do you know how that was?" said his majesty to the prelate who made the remark. "Not exactly, your majesty." "Why, my lord, I will tell you. Mr. West's parents are Quakers, and they teach their children to read the Bible very young. I wish that was more the case with you, my lord."

It was in conversation with Joseph Lancaster that the king expressed the worthy sentiment that "he hoped the day would come when every poor child in his kingdom would be taught to read his Bible."

George III.'s appreciation of Handel should not be overlooked, and, as an evidence of his generosity, it is worth while to state that, during his illness in 1789, a committee, appointed to examine the state of the privy purse, found that, out of an income of 60,000*l.* per annum, his majesty never gave less than 14,000*l.* a year in charity.

However much all must regret the general events—the bloodshed and expenditure—of this reign, it should be remembered that both art and science emerged, as it were, in England, at this time; and that manufacture, commerce, and education all became extended in a most remarkable manner.

#### MISS COUTTS'S DRINKING FOUNTAIN.

The most important drinking-fountain yet designed for London is being erected through the munificence of Miss Durdett Coutts, in Victoria-park. It includes a colonnade around four fountains, covered with a dome, and will be constructed of Aubigny stone and green and red marble. There will be figures of Sicilian marble, and bronzo appliances. The height will be 57 feet, and the diameter of the structure 26 feet, while the steps around the whole will extend to 40 feet. Mr. H. A. Darbishire is the architect; Mr. George Smith, of Plinico, the contractor; and the cost will be about 5,000*l.* Miss Coutts does nothing by halves.

#### THE MYDDLETON STATUE AND FOUNTAIN FOR ISLINGTON.

The old police-station at the corner of Islington Green is at last cleared away, and the site will be prepared for a statue and fountain, which are being executed by Mr. John Thomas, the sculptor. The design consists of a statue of Sir Hugh Myddleton, proposed to be in Sicilian marble, 8 feet 6 inches high, in the picturesque costume of the period, raised on a rich pedestal, with sculptured dolphins and shell, supported on console-shaped trusses, at the angles, which are intended for fountains. Marble panels are on each face of the pedestal, which is also enriched with festoons of shells and water-flowers. The pedestal stands in

the centre of a basin for water, with an ornamental curb, 3 feet 6 inches high, of an Italian-shaped plan, 24 feet in diameter. On pedestals on each side of the curb to basin are sculptured boys with vases, from which will spring jets for drinking fountains, falling into marble shells, supported on corbels.

Sir Morton Peto, Bart., M.P., presents the marble statue: the other portion is to be erected by subscription.

#### THE ROYAL ACADEMY MEDALS.

ON Monday, the 10th inst., being the ninety-second anniversary of the foundation of the Royal Academy of Arts, the following silver medals were awarded, at a general assembly of the academicians.

To Mr. Thomas Henry Watson for the best architectural drawings,—the Morning Chapel, St. Paul's Cathedral.

To Mr. James Turpin Hart for the best drawing from the antique.

To Mr. Charles J. T. Smith for the best model from the antique.

To Mr. Thomas Henry Watson for the best perspective drawing,—the Royal Exchange.

To Mr. Thomas Henry Watson for the best drawing illustrating sciography.

The President, Sir Charles Eastlake, justly complimented Mr. Watson on the zeal, industry, and talent displayed by him, and stated that the medal for the best architectural drawing was to be considered a first-class medal, conferring upon him the privilege of a student for life; and that in addition a book handsomely bound and inscribed would be sent him.

We add our congratulations to those of the president. Mr. Watson's father has been long known to many members of the profession.

#### THE FEMALE SCHOOL OF ART.

As we mention that an exhibition of paintings, drawings, sculpture, and other works of art, will be opened early in June, 1861, the proceeds of such exhibition, and sale of pictures, to be appropriated to the fund now raising for a building for the permanent establishment of "The Female School of Art;" and that the exhibition will terminate with a bazaar, for which contributions are solicited; we may, perhaps, lead some of our readers to interest themselves in the undertaking. The contributions will be thankfully received by the superintendent, Miss Louisa Gann, between this time and the 1st of May, 1861.

The school is at present carried on in a house in Queen-square, Bloomsbury (No. 43). These premises are in many respects better adapted for the school than those in Gower-street; but what is needed is, that the school should be rent free, and that its permanency should be established.

The students are doing their utmost: they have formed an evening working party, and an afternoon painting and sketching party, to make suitable articles for the bazaar—a praiseworthy course, as their time is valuable to them for study, and they have already subscribed to the fund, besides now paying a raised fee for instruction.

#### CHURCH-BUILDING NEWS.

**Luffenham.**—The tender of Messrs. Cave, of Oakham, and Halliday, of Greetham, builders, has been accepted for the restoration of South Luffenham Church.

**Saffron Walden.**—The church here has been opened after extensive repair. The entire works have been completed by Mr. Wm. Brown, of Lynn, builder, who has lately carried out similar restorations at Newport, High Roothing, and other churches in Essex.

**Buckland.**—The parish church of St. Mary, at Buckland, near Reigate, has been restored. The glazing of the east window is by Mr. Hardman: "The Crucifixion" occupies the centre light, the figure on the cross being thrown out from a ruby vesica. In the side lights are the figures of the Virgin Mary and St. John. The tracery in the upper part centres in a circular cusped light, in which is the Lamb, and exhibits angels in adoration. The two other windows in the sanctuary are—one, representing the visit of the holy women to the sepulchre; the other, the raising of Lazarus. The roof is of oak, in panels, the last row of which over the altar is decorated with tracery, painted and gilt, and bears, in the centres of each, shields with a cross of fleur-de-lis. Over the altar and on either side, are the emblems of the Evangelists; while, at the intersections of the ribs, are carved and gilt bosses and shields bearing the names and

emblems of the apostles. The pavement is a green trellis with black spots at the intersections, the interstices of the trellis being filled with tiles, increasing in richness as they approach the altar. On the north side of the chancel is a four-centred arch, moulded and filled up to the capital with an open oak screen for an organ. The pulpit occupies the north-east corner of the nave, and is octagonal in shape. A large three-light window is filled in with the subject of the Nativity, with attendant angels in adoration. A newell staircase of open work leads up to the ringing-chamber in the tower, where there are five bells. The fittings throughout are of English oak. The works have been carried out under Mr. H. Woodyer, architect, by Mr. Wm. Shearburn, builder, Dorking.

**Stanton (near Tewkesbury).**—The church of St. James, Stanton, has been restored, on plans furnished by Mr. G. R. Clarke, of London, architect, at a cost of 720*l.* The chancel has been rebuilt, a vestry erected, a new roof placed on the north aisle, the old nave roof unceiled, a porch erected, and a final and lightning-conductor added to the spire. The old chancel arch, also, has been replaced, open seats provided throughout (the old bench ends, which exhibit specimens of carved tracery, being preserved). Three new windows have been placed on the south and north sides of the church, and a stained-glass window at the west end of the nave. The subjects illustrated in the three compartments are the texts, "Rise, take up thy bed and walk" (John, v. 8), "When he looketh upon it he shall live" (Numbers, xxi. 8), and "Receive thy sight" (Luke, xviii. 42). The whole of the works have been completed by Mr. Griffiths, of Eldersfield, builder.

**Dawley.**—A new Wesleyan chapel has been opened here. The new edifice, built upon the site of the old one, occupies a conspicuous situation. Mr. Griffiths, of Bridgnorth, was the architect. Mr. Bray was the builder. The style is Italian. Fronting the street is a tower of white, blue, and red brick; the crown mouldings, strings, and cornices being of Bath stone. It is finished with deep corbel cornice, hipped roof, and weather-vane, and has openings for a clock. The main roof is carried higher than the sides, in order to obtain light by means of nine clerestory windows, in consequence of buildings blocking up the back. The chief entrance is beneath the tower, up which a stone staircase also leads to the end and one of the side galleries. The centre is divided from the aisles by white brick pillars, and semicircular arches of the same material (blue and white), and finished with label moulding—the whole painted. The total cost will be about 1,200*l.*

**Marden (Herefordshire).**—The church here has been restored. The old plan has been adhered to, according to the *Hereford Times*, and everything valuable as mere material, or as archaeologically or architecturally interesting, preserved and re-adapted in the new edifice, such as the pillars and arches, the well and niche of St. Ethelbert, &c., and the old type has likewise suggested the character of the new work. In taking down the old roofs and walls, it became a subject of wonderment how they could have held together. The timbers of the roof were found to be in many important parts perfectly pulverized with decay, and the mortar worthless. In re-building, the nave pillars have been set at their original elevation. The nave is separated from the aisles by arcades of four bays on each side, and is surmounted by a simple clerestory, pierced with quatrefoil and trefoil apertures. The west facade of the church is composed of a three-light window in the centre, with cinque-foils at the ends of the aisles, and a sexfoil in the gable. The aisles are lighted with eight two-light windows of various designs. There is a stone porch on the south side, with a moulded archway, the inner doorway being a restoration of the old one. The framing of the roof is visible internally. The benches have been restored. The aisles are laid with encaustic tiles, supplied by Mr. Godwin, of Lugwardine. The works have been carried out from the designs and under the superintendence of Mr. Thomas Nicholson, of Hereford, the diocesan architect, Mr. Crittenden acting as clerk of the works, and Mr. Noden, of Leominster, being the builder.

**Canon Frome.**—A new church has just been erected for this parish, the tower of the old one only being retained. Mr. Bodley was the architect, and the work is in the Early English style. The walls are of the local red stone, left free from plaster. Bath stone has been employed in the windows and pillars. The floor is laid throughout with tiles, the chancel floor being enriched with marble bands and four marble steps. The

chancel stalls, altar, and pulpit, are of oak, carved. The eastern wall is adorned with a reredos of alabaster, inlaid with marble, displaying the cross above the table, while a window (the work of Messrs. Clayton & Bell) represents in three compartments the Nativity, Crucifixion, and Resurrection of our Saviour. The nave and aisles are furnished with movable oak benches and chairs. Mr. T. Collins, of Tewkesbury, was the builder; and the reopening took place on the 6th inst.

**Upton.**—A new Independent chapel at Upton, near Chester, has been erected and opened for divine service. The design was furnished by Mr. Thomas Lockwood, of Bolton, architect, and has been carried out by Messrs. Lockwood and Farrimond, of Chester, builders.

**Leicester.**—The lofty stone spire of St. Martin's Church is a spire no longer, and the crazy old tower is now eased of its weight. The difficult task of taking it down was entrusted to Mr. William Neale, carpenter, Leicester, who has accomplished the work without mishap or accident, in little more than three weeks. The sort of crow's-nest scaffold thrown out of the four upper windows of the spire, and by which the most dangerous part of the work was to be performed, was a noticeable feature in the work of demolition. It is to be hoped, when the tower is taken down in the ensuing spring, the whole being to be rebuilt, on a design by Mr. R. Brandon, of London, architect, that funds will not be wanting to carry it out in its entirety, and once more to make the lofty spire of St. Martin's worthy the fine old church to which it is to be an appendage.—The foundation-stone of the new church of St. Andrew has been laid by the Duke of Rutland. Mr. Scott is the architect; Messrs. Osborn, of Leicester, are the builders; and Mr. J. Firth, the stonemason.

**Derby.**—The foundation-stone of a new Wesleyan chapel has been laid at the top of Canal-street, London-road, Derby. The new edifice will accommodate 900 persons. It is to be 80 feet long by 47 feet wide, and the total height on the walls 30 feet. Means are provided by four staircases for entrance to and exit from the galleries, which will be circular in form, a space being left for an organ and singers. A basement story below the chapel, in height 10 feet, will contain a room for school or public meetings, 60 feet long and 20 feet wide, besides four vestries, &c. The building is to be faced with bricks with stone dressings. Facing London-road there will be two octagonal turrets, surmounted with perforated stone pinnacles, relieved with tracery and canopies: they will be about 66 feet high. The front windows will also be relieved with tracery, labels, and carved terminations, and construction arches formed with blue and white bricks. The sides will have battresses and plain lancet windows, with labels and arches the same as to the front windows. The design is by Messrs. Giles & Brookhouse, of this town, and was selected in competition. The tender of Mr. Wm. Bridgitt has been accepted, and will now be carried out. It is estimated that the total cost on completion will be about 3,000l.

#### STAINED GLASS.

**Albury Church.**—A stained glass window has been placed in this church, painted by Lady Rokewood Gage, of Albury-park. The subject is St. Peter. The glass was provided by Messrs. Powell. Lady Gage intends, we understand, to paint the other windows of the chancel in turn.

**Salisbury Cathedral.**—A painted window has been placed in the chapter-house of this cathedral by Miss Wickens, of the Close, as a memorial to the late Mr. James Wickens and his relict, the parents of Miss Wickens.

**Christ Church, Heaton Norris.**—Another memorial window by Messrs. Edmundson & Son, of Manchester, has been put up in this church, making the fifth. The subjects, which are in three medallions, are,—“The Raising of Dorcas,” “The Raising of the Widow's Son,” and “The Raising of Jairus's Daughter,” with diapered grounds and border.

**Warrington Church.**—Mr. R. B. Edmundson has erected in this church a window in memory of his own parents. It is the west window in the north aisle, consisting of four principal lights and tracery in the Decorated style, and is one of the new windows of the recent restoration by Messrs. J. & H. Francis, of London, architects. The principal subjects are Simon with the infant Jesus in his arms, in the Temple; Mary and Martha; Mary seated at the feet of Jesus hearing His teaching; the Resurrection, and the Ascension. Below are four angels, bearing scrolls inscribed with suitable texts. Each subject is

surmounted with canopy work. In the large opening in the tracery is a representation of the Good Shepherd. The remainder is filled up with angels, emblems, &c., with the following inscription at the bottom of the window:—“This window was erected to the honour and glory of God in affectionate remembrance of James and Elizabeth Edmundson, by their son, R. B. Edmundson. Also in memory of Barbara Edmundson, his sister, and Ralph B. Edmundson, his son. A.D. 1860.”

**Manchester Cathedral.**—An unknown individual has had completed, and erected, in the west end of the south aisle, a stained and painted window. This window is of four principal lights, with tracery. The subject represents Aaron and Hur staying up the hands of Moses during the battle with the Amalekites, and occupies the four large lights. There are three small subjects in the tracery, which represent, on the left, “The finding of Moses; on the right, “The Destruction of Pharaoh's Host in the Red Sea; and, in the centre, “Moses holding up the brazen serpent in the Wilderness.” Angels with palm branches, &c., fill up the remainder of the tracery. Messrs. Edmundson & Son were the artists.

**Christ Church, Blackburn.**—A memorial window, in stained glass, has been erected in Christ Church, Grimshaw-park, Blackburn, to the memory of the late Robert Hopwood, esq., of that town, a donor to that and other churches. The window is 16 feet high by 8 feet wide. The style is Decorated Gothic. The subject, extending over all the lower lights, is “The Last Supper.” The treatment of this subject, from designs furnished and executed by Messrs. Baillie, of London, is peculiar. The Saviour, as if to mark his special affection for “that disciple whom Jesus loved,” has risen from His seat, and is administering the holy communion to the youthful communicant, who meekly receives the symbols of his Saviour's death on his bended knees, to the surprise of the other disciples, more especially of St. Peter. In the tracery lights, in the first row above the subject, on the right and left, are the bread and wine. Above these are angels in the act of adoration, and the whole is surmounted by a celestial crown.

#### PROVINCIAL NEWS.

**Barnard Castle.**—The Mechanics' New Hall here has been inaugurated. The new building is an addition to the Witham Testimonial, erected some fifteen years since, for the use of the Mechanics' Institution, and comprises a large hall capable of seating 700 people, an orchestra or proscenium, to accommodate fifty or more speakers or performers, with two side rooms, and another apartment, with a separate entrance for the use of the savings bank. The whole was designed by Mr. Bryson, architect, and carried out by Mr. Appleby, contractor; the entire cost being about 900l.

**Liverpool.**—The finance committee of the town-council have been empowered to sell to Messrs. Lightbody & Boulton, on behalf of persons not named, a portion of land in Dale-street, belonging to the corporation, at the sum of 40,000l. This land was originally offered for the sum named to Government as a site for a post-office. The persons taking it bind themselves to expend 70,000l. in erecting a building on the site. It is said that the intention is to erect a leviathan hotel on the American principle.

**Southport.**—Twenty million of bricks, says the *Ormskirk Advertiser*, are now wanted in Southport, for the building of 100 more houses.

#### IRISH BUILDING NEWS.

The town of Balbriggan has been lighted with gas by Mr. Daniel, of Mary-street.

A new wing is being erected to the Royal School, Dungannon, adjoining the Armagh road, which will nearly double the accommodation of that edifice. Mr. McCurdy is the architect; Mr. William Geatens, of Dungannon, the contractor.

The works at the new Protestant Hall, Waterford, are progressing rapidly: one of the towers is entirely finished. The main building is roofed in, and the ceiling nearly completed: it is lighted by means of two very efficient gas deflectors. Mr. Fitzpatrick is the contractor.

A new cross has been presented to the inhabitants of Garey, by the Right Hon. Sir P. Esmond. It is erected in front of the Parochial Church of St. Michael. It is of granite, and is 25 feet high from the base. The lowest stone of the shaft weighs 3 tons. On each of its sides are deeply sculptured recesses, containing four figures, representing SS. Peter, Thomas, Bartholomew, and James. Higher up on the shaft are figures, life

size, of St. John and the three Marys. From this rises a cross, on which is sculptured the dying Christ. The whole has been executed by Mr. Fegan, sculptor, of Sallystown, county Wexford, at a cost of 256l.

#### THE PATENT PAINTED AND GILDED LEATHER CLOTH.

THE majority of our readers have, doubtless, met with the patent leather cloth used to cover seats and otherwise, and many have seen it in its painted and gilded shape as manufactured by the Leather Cloth Company; nevertheless, they would probably be surprised, as we certainly were ourselves, to find a large warehouse in Cannon-street West, filled with rolls of it. In France it has long been extensively supplied by this company, but here as yet it has only been occasionally used. In the new Westminster Palace Hotel, for example, it is hung in the smoking-room; and, at the Royal Hotel, Bridge-street, Blackfriars, in the billiard and reading rooms. Many of the designs already produced are very elegant; and it may be made to present all the elegance of gilded leather, the *cuir doré* and the *cuir argenté* of the Middle Ages, while its cost is but trifling as compared with those hangings with which, as we know, in the sixteenth and seventeenth centuries all the houses of the Venetian nobles and gentry were hung. In England, too, it was greatly used, and examples may still be found in old houses. The cost of the painted and gilded leather cloth may be called about 2s. 6d. a yard square, being enamelled by a patent process, which preserves the original beauty of the gilding, and allows it to be washed without injury. It is very durable, and it could be hung on new walls, on which it would not be safe to paint or put paper.

This company, who have manufactories also in France and Belgium, have large works at West Ham, where they employ about 150 men. Looking over their warehouse, we saw large quantities also of their vulcanized India-rubber belting, which, as being more durable, appears to be fast superseding the leather belting.

#### CESSPOOLS IN SALFORD.

SIR,—I send you some extracts from the Salford paper, by which you will see that while you good folks in the south are spending your hundreds of thousands of pounds in endeavouring to alter your system of drainage, we in the north are following out the good old plan of cesspools, and are in a fair way to obtain a profit from that which is a source of great expense and trouble to you.

The following is the system pursued here:—Nearly all the houses are built with a passage, called an “entry,” running the whole length of the backs of the houses: a large cesspool, or “midden,” is constructed between every two houses, with an open space for ashes between, closed with doors in the walls of the entry, through which it is emptied regularly, under the direction of the police, by the town scavengers, in the night time; the only deodorizing material used here being the ashes and other refuse thrown down the cesspool.

Of the successful operation of the above system, which seems to be so highly spoken of and recommended by our local authorities, I leave you to judge when you have read the annexed papers.

T. J.

\*.\* The pith of the statements is to the effect that there are districts in Salford where a pestilential air predominates, and which give an average (per annum, we conclude) of 47 deaths in a thousand! If this be correct, the authorities are permitting the perpetration of wholesale murder under their very eyes, and in spite of their very noses.

#### TOWN SEWAGE OUTLET WORKS.

THE experiments made at Croydon in attempting to purify sewage are only valuable in so far as they furnish actual results. In each case, as described, the sewage seems only to have had the solids of the sewage intercepted; and, I believe, recent chemical analyses prove that the result of any known process of so-called disinfection or purification of sewage is merely a separation of the solids, and is not in any degree a chemical purifying. The effluent water remains true sewage water, full of the soluble salts of sewage, as if mechanical filtration alone had been used. This effluent water, however bright to sight and pure to smell, is true sewage; and, as such, ought to be conveyed to agricultural land for purposes of vegetation. Even after passing through 6 feet

vertical of land under cultivation, water escaping from the land drains will be found, on analysis, to contain manure in solution, not so strong as at first, but strong enough, in many instances, to warrant a second use in irrigation, and sometimes, probably, a third and fourth application, if the site is favourable for this form of irrigation.

The cost of sewage works ought to be kept down, as also the cost of working. Tanks constructed with brickwork are not, in all cases, necessary. Canals or tanks may be formed with side slopes of say one to one in earth, at a very light cost; and in such tanks or canals the sewage may be strained free from all solid and flocculent matter, by hurdles, in which gorse has been secured, so as to stop all floating matters. Simple liming will hasten deposition; but, excepting in hot weather, this may not be necessary. The "floating crust" found on the surface of the sewage in the tank at Croydon is not all due to the chemicals used, but is partly due to the oxygen of the atmosphere. Such a scum or crust is found on the foul rivers and canals in and near Manchester, and other places, at all times; but most during warm weather. The Croydon sewage tanks might probably have been made as effective without brick side-walls; and, if so, the cost would have been saved. At several places expensive tanks of brickwork for filtering sewage have utterly failed, as at Lugby, for instance. Let our engineers try simple and inexpensive means to free sewage from its solids, and then to get the clear-liquor water conveyed to land in the cheapest possible manner, and all parties will be benefited. If the sewage cannot go to the land it must go, without its solids, into the nearest water-course, river, or the sea.

CIVIL ENGINEER.

#### ARCHITECTURAL EXAMINATION.

I CANNOT refrain from offering an observation on the proposed examination of those who contemplate following the profession of an architect. Whether the examination should be compulsory or voluntary, I believe it would be a great advantage to the rising generation if those who are competent to form an opinion, and who have suffered in early life in an architect's office by having received little or no instruction, would suggest a proper routine for study to be followed. Many have not the advantage of a classical education; but still there are many subjects to which their attention might be drawn for their study and consideration, and which would prove, and they would derive, an advantage in future life. For instance, if the student were told it would be to his advantage to have a correct insight into arithmetic, geometry, algebra, mensuration, leveling, land-surveying, estimating, perspective shadows, geology, trigonometry, together with a general historical knowledge of the profession, a young man would then have before him a system laid down for his general instruction, which I regret to say never was the system adopted in an architect's office many years since. A heavy premium was paid for six or seven years, and during that time not one word of instruction was imparted, no opportunity afforded to see the progress of construction, and neither in drawing, perspective, nor any of the useful requirements in following the profession in after life. Therefore I feel for the rising generation, if a proper system of instruction were laid down, it would prove a great boon to many, whether they might feel disposed or not to pass an examination; at all events, they would be generally qualified, and feel better satisfied with themselves, and feel grateful to those who had put them in the right road for preferment. I should therefore be an advocate for examination, which need not be so strict as to deter young men from such a course or dishearten them in their prospects in life.

A FRIEND TO THE YOUNG ARCHITECT.

#### NEWCASTLE SAVINGS BANK COMPETITION.

At the adjourned annual meeting of this institution the members proceeded to select one of nine sets of plans sent in for new Bank premises. It was arranged that voting should be on all the nine, and that the mode be by ballot. The result of the first scrutiny was,—Mr. Johnstone, five votes; Messrs. Oliver & Lamb, three votes; Mr. Watson, nine votes; Mr. Wardle, two votes; Anima non, one vote. Mr. Watson not having an absolute majority of all the votes, a ballot was again taken between him and Mr. Johnstone, with the following result:—Mr. Johnstone, six votes; Mr. Watson, fifteen votes; consequently the premium of 50l.

was awarded to Mr. Watson. A building committee for the purpose of carrying into effect all such measures respecting the proposed new building as may, from time to time, be referred to them by the General Board of Management, was then appointed.

#### NORTHAMPTON TOWNHALL COMPETITION.

SIR,—It may perhaps ease the mind of "A Competitor" to know that one of the sons of one of the architects of Northampton does not intend (nor has he at any time mentioned his intention) to compete for the new townhall.

W. HULL, Jun.

#### APPLICATION OF SEWAGE.

CARLISLE.

SIR,—I quite agree with the writer of the article in your number for the 18th inst., headed "The Sewage for the Soil," that the public may obtain valuable information from all schemes for the application of sewage to the soil which may be carried out.

I send this communication in order to contribute some information on the Carlisle experiment, and also to correct an error into which the writer has fallen as to the engineers of these works.

Considerable alarm was felt by many persons in Carlisle when it was first understood that the low-lying land in the vicinity of the town was to be irrigated with the sewage; but I can unhesitatingly state that, during the past year, there has been no inconvenience felt therefrom, and no complaint from any person on this account, while it has been equally obvious to the eye that a powerful stimulant had been applied to the growth of grass. So far the experiment has been a highly satisfactory one in a sanitary point of view, and I should rejoice to hear that it has been equally successful financially.

The error in the article is the statement that Mr. McDougall was the engineer of these works. He is the lessee of the sewage of Carlisle, and the inventor of the distinctive used, but Messrs. McKie & Mansergh were employed by him as the engineers of the works, and had the sole responsibility of practically carrying them out.

ISAAC CARLISLE.

#### MASTERS AND WORKMEN.

Mrs. Brown, and Mr. O'Brien v. Bennett.—This was an action, tried in the Marylebone County Court, to recover wages for work done and loss of time. Mr. Lewis, instructed by the London Amalgamated Association of Operative House Painters, said the claim involved a principle whether the employer is not liable for loss of time incurred by workmen when kept waiting for materials. The plaintiffs are journeymen glaziers, lately employed by the defendant at the New Railway Station, Finsbury. They were engaged on the 2nd of October, and commenced work. On the following day, being short of glass, the defendant told them not to leave the job, for he expected more glass to arrive every minute. Therefore, complying with the request of defendant, no deduction ought to be made from their wages. The plaintiffs corroborated the above statement.

The defendant admitted the want of glass, but did not consider he was liable for the men's loss of time. Several witnesses having been examined, his Honour was of opinion that, if employers through neglect kept workmen short of materials, and a loss of time occurred, it would be unreasonable to deduct the loss from the wages of the workmen.

Verdict for plaintiffs, with costs.

#### LIGHT AND AIR CASES.

Cutler v. Hedges.—This was a motion heard in the Vice-Chancellor's Court on behalf of the lessee of No. 15, New Burlington-street, for an injunction to restrain the defendants, Messrs. Hedges & Butler, of Regent-street, from increasing the height of a building at the rear of the plaintiff's house, and from erecting dormer windows on the roof thereof, so as to prevent the plaintiff from enjoying the same amount of fresh air and light through his windows as he has hitherto and of old been accustomed to enjoy. The plaintiff complained that the defendants had raised a building at the rear of his house, about a foot in height, and that they had placed on the roof thereof, which slanted northwards, dormers (which were windows projecting from a slanting roof), and that the raising of such building and the placing of such dormers materially diminished the amount of light in the rooms, or some of them, at the rear of his house. It was stated that before the suit was instituted the plaintiff had said that he would be content if the dormers only were removed, and that the roof might remain at its present height.

Mr. Mallin and Mr. Cutler were for the plaintiff; and Mr. Bacon and Mr. G. Simpson for the defendants.

After the case had occupied the court a considerable portion of the day, the Vice-Chancellor suggested that the dormer windows should be removed from the north to the south side of the defendant's building; that such building should remain at its present height; and that there should be no dormers on either side; and an order to that effect was accordingly made by consent.

#### PATENTS CONNECTED WITH BUILDING.\*

CHIMNEY-POLES.—R. Atkinson, Southampton-court, Tottenham-court-road, London. Dated 11th April, 1860.—On the outside of the pipe or tube forming the chimney-top is fixed a series of vertical ribs, with tapering cross-pieces attached to the edge thereof, forming a series of T-shaped ribs round the said pipe or tube. When the wind strikes the chimney-top it enters between these T-shaped ribs, and its egress being prevented by

the overhanging edges of the said ribs, it is forced to travel upwards, through openings provided into the interior of the chimney-top, and thus causes an upward current. A series of chambers are also provided round the exterior of the chimney-tube or pipe, and communicating with the interior, for the purpose of increasing the upward current of air; and there are also short exterior tubes or flat rings for directing and dividing the currents.

ATTACHING KNOBS TO SPINDLES OF DOORS.—W. Bate, Wolverhampton. Dated 26th April, 1860.—This invention consists in a new and peculiar method of connecting and attaching the spindles to the knobs of locks and latches, so as to permit of their being used with doors of different and varying thickness, which the patentee accomplishes by providing a series of holes one quarter of an inch apart, through one of which a screw is passed from side to side of the neck of the knob. By this means he obtains a rough adjustment of the length of spindle. At the opposite end of the spindle he provides another set of holes, but only one-sixteenth of an inch, or less, apart; and by securing the other knob, by means of a similar screw passed through one of the closer-placed holes, he is enabled to correctly adjust the length of spindle as required.

IRON OR GLAZED STRUCTURES FOR HORTICULTURAL OR OTHER PURPOSES.—T. H. P. Dennis, Chelmsford. Dated 11th April, 1860.—The patentee uses wrought or cast-iron pillars for the main supports, attached to which are bosses having dovetail, mortises, or joints arranged to receive horizontal plates. The dovetails to fit these mortises are formed from the solid wrought or cast-iron plates, either on one or both sides. The end rafters are attached to the ridge by a sliding bolt; the sash-bar or intermediate rafters are also fixed to the ridge and front plate, either by forming a hook from the end of the sash-bar or rafter, or by affixing iron clips thereto. In the latter arrangement, distant pieces are necessary. The end bars or lights of a house are fixed, either with iron clips, having a mortise in the upper side to receive the bars, or by cutting mortises from the bars to fit up to and clip the plates. The iron clips are made suitable for wooden structures where iron sash-bars are required. The pivots upon which the front sashes hang are formed from their own frames, and swing upon the iron mullion of the house; the sashes can be drawn entirely out. The dovetail joints and fastenings, by which the sash-bars or rafters are held in place, are applicable to any shaped building.

FLOORINGS AND ROOFINGS, AND OTHER PARTS OF BUILDINGS.—A. Taaffe, Rue de l'Union, and W. Toovey, Rue de la Pompe, Brussels. Dated 25th April, 1860.—To obtain lightness, strength, and freedom from fire in construction, there are formed eight framings of wrought metal, which are covered on the upper, and, if desired, on the lower sides with plates of sheet metal, the whole being united together by nuts or screws, or other suitable bolts. When for floorings, the upper surface of these constructions may be covered with wood, or any other suitable material, and the under surface with lath and plaster, or any other suitable material to form a ceiling. Sometimes the surfaces are formed by means of plates laid in angular channels, and connected together across the upper and lower angles by transverse straps or plates, or by the aid of blocks of wood when for roofing. The invention cannot be described without reference to the drawings.

#### Books Received.

Fairbairn's Crests of the Families of Great Britain and Ireland. Compiled from the best authorities, by JAMES FAIRBAIRN, and revised by LAWRENCE BUTTERS, Seal Engraver in Ordinary to the Queen for Scotland. Edited by JOSEPH MACLAREN. In 2 vols. Edinburgh: Thomas C. Jack. London: Hamilton, Adams, & Co.

The first volume of this useful work contains an alphabetical list of more than 30,000 families, with their respective crests, as they may be found on the rolls of the Herald's College, and another of nearly 5,000 mottoes, with translations from alien or obsolete languages. There is also a Glossary of heraldic terms. The second volume is occupied chiefly with nearly two thousand well-executed plates of different crests. Most of these are common to many families, no less than 162 bearing the stag-head, while 181 are distinguished by the same, *erased and attired*; but many others, such as the Pegasus, appear to be claimed by one family only. There are few materials for com-

\* From the *Engineer's* lists.

mentary, further than to recommend the work to those who may not be acquainted with its contents, as a depository of valuable information for all interested in tracing the descent of families.

Many of the crests, we may remark, record, as is very well known, a very savage state of things as the boasted origin of families; but a few even excel in this regard; one, for example, consisting of a tattooed savage; another of a grisly head stuck on a dagger. Very absurd, too, in appearance, are some of these crests. The Vandye family, for example, have an eagle stuck into a harrel, with one of its wings torn off; or, in heraldic language, it consists of "an eagle's head and neck in a tun, dexter wing elevated, sinister cut off and lying on wreath."

As a whole, however, family crests are full of interest and significance: it is only to be regretted that this well got up and useful work contains little or no information as to the history or origin of, or reasons for, the adoption of such symbols, as denotive of families, and their names and deeds. A third volume, with a mass of explanatory but condensed references, would soon be called for, in order to render the work complete. A single word would very often suffice to explain what is now a mystery to all but a few.

A very useful art-feature in the second volume is a series of plates of monograms, for the use of family-plate manufacturers and others. There are also specimens of lettering, crests, and scrolls and garters with mottoes, heraldic illustrations for chargings, &c.; British and foreign crowns and coronets, regalia, orders, chaplets, and helmets; city arms, and flags of all nations. This second volume also contains a glossary, key to plates, &c.

In the preface the editor regrets the decline and fall of heraldic influence and heraldic studies, which he ascribes to the unquestionable fact that "the honours due to genius, valour, patriotism, and industry, have been bestowed too much in the spirit of party."

*The British Almanac and Companion for 1861.*

Knight & Co., Fleet-street.  
MR. CHARLES KNIGHT contributes to "The Companion" an interesting and valuable paper, "Localized Handicrafts in South Midland Agricultural Districts." These are chiefly non-factory employments, such as refer, for example, to straw-plait, lace, and shoes, concerning which the statistical knowledge possessed is not precise. The social position of the females engaged in the straw-plait trade is a matter of serious interest. Thames Embankments, Refractories and Ragged Schools, and the South Kensington Museum, afford subjects for other papers.

"The Companion" has, as usual, its article on "Architecture and Public Improvements," but on the present occasion it calls for no observation from us beyond this, perhaps,—that inasmuch as it could not have been written but for the *Builder*, the fact that the *Builder* is not once mentioned may be placed in the category of things "cool."

#### VARIORUM.

BEETON'S "Christmas Annual" (248, Strand) gives for a shilling such a variety that it can scarcely fail to command a large sale,—a detached illuminated almanack (with flowers of monstrous size, by the way), a sheet of puzzles, and a book of tales, conundrums, charades, tricks, and what not, the whole illustrated with wood-cuts.—And, talking of wood-cuts, we must again praise those in "The British Workman," the sixth yearly part of which has just been issued. It is a miracle of cheapness, and is doing much good.—"Stanford's New London Guide" (6, Charing-cross), contains a large amount of useful information; but it should be revised by a competent hand, to prevent the appearance of such an erroneous assertion, for example, as that Westminster Hall, the crypt of "old St. Paul's," that of St. Stephen's Chapel within the Palace of Westminster, and the entrance to St. Bartholomew's Church, are remains of the Norman period!—The Christmas number of "The Welcome Guest" titled *Snow-bound*, is an amusing bundle of stories told in a railway station while waiting for a train stopped by the snow. The fault is an over abundance of robbery and murder. Perhaps, however, at Christmas, people look for spice.—A third edition has been published of Dr. Lankester's valuable and comprehensive "Guide to the Food Collection in the South Kensington Museum."—Viollet-le-Duc's "Essay on the Military Architecture of the Middle Ages" (J. H. & J. Parker); and Mr. Miles's "General Remarks on Stables, and Examples of Stable Fittings" (Longman & Co.), will receive early notice.

#### Miscellaneous.

**MEMORIAL OF CROMPTON.**—The people of Bolton have subscribed to erect a statue of Samuel Crompton, who invented the "mule" which has given fortunes to hundreds, and bread to thousands. After some discussion the commission has been given to Mr. W. Calder Marshall, R.A.

**STREET TRAMWAYS.**—Mr. Train has received permission from the vestries of St. John's, Hackney, and St. Leonard's, Shoreditch, to lay down a line from Ball's-pond, along Bridport-place, Pool-street, Dorchester-street, New North-road, Pitfield-street, Old-street-road, and City-road, towards the City.

**BRITISH ARCHAEOLOGICAL ASSOCIATION.**—At the second meeting of the session, held on Wednesday, the 12th instant, Mr. G. Godwin, V.P., in the chair, Mr. T. J. Pettigrew read an elaborate paper "On a Seal of Richard Duke of Gloucester, as Admiral of England and Earl of Dorset and Somerset,"—showing that he received that appointment in the 2nd and in the 11th Edward IV., and that the seal must have been, from the titles expressed on it, executed between the years 1474 and 1475. Afterwards, Mr. Syers Cumming read an interesting paper "On the Employment of Tubes and Hollow Bricks in Ancient Buildings." The Chairman made some general observations on the subject as affecting cottage-building.

**ROYAL ENGLISH OPERA, COVENT-GARDEN.**—Mr. Balfe's new opera, "Bianca, the Bravo's Bride," is pursuing a successful career, but must be stopped for a night or two because of the time that will be occupied, in the first instance, by the forthcoming pantomime. "Bianca" contains some of Mr. Balfe's best music, and is sung by Miss Pyne admirably. Mr. Harrison, too, does all that need be done, and the chorus is excellent; but, with these exceptions, the opera is not efficiently sung. To Miss Pyne and Mr. Harrison the English public are indebted for the establishment of an English opera-house on sound grounds; but, if they would maintain their position, they must strengthen their company.

**THE NEW ORPHAN HOUSES AT ASHLEY DOWN, BRISTOL.**—Another annual report, by Mr. Mullar, the founder and conductor of this extraordinary establishment, has been given; from which it appears that he is now building accommodation for an increase of the number of orphans to be provided for, from 700 to 1,150, at a cost, for building, of 23,000*l.*, and an additional yearly expense of about 5,200*l.* For the current year, he states that 50*l.* a day is required, and more as the work proceeds. It is a scarcely credible fact that it is almost entirely by what may be called a "hand-to-mouth" system that these many hundreds of poor orphans are being fed,—a system which has, to a constantly progressing extent, been successfully pursued for the last quarter of a century, by the same singular man, who attributes his success to the power of daily and believing prayer alone; whereby, from day to day, contributions come tumbling in from all quarters, tradesmen giving percentages on all their profits, professional men a share of their income, in one case amounting to nearly one-half, ladies their jewels, clothing, &c., all for behoof of the poor little orphans. Mr. Mullar, it appears, has always enough coming in to keep him going without either credit or debt, but seldom much more; and at times he scarcely knows, from day to day, where the means are to come from for the next day's provision, yet it never fails to come. This is certainly a wonderful phenomenon; but it is also a fearful risk: still, we dare say, in case of any sudden short-coming, at least for a time, no difficulty, on the score of credit, would arise. The greatest risk, perhaps, is that of the sudden or unexpected death of the devoted and remarkable head of the institution. The new building, as noted, will cost some 23,000*l.*: of this sum he has already 21,282*l.* on hand, and "every day brings him fresh supplies," often in very small sums. Of the general expenses, he has a balance of 9,358*l.* to begin the year with; but, besides the orphans, he has schools, missionaries, Scripture circulation, &c., to provide for, in a similar way; and, for all this, he has a separate income of about 10,000*l.* a year, of which there was a balance of 2,392*l.* in hand. In all, the sum in hand, when the report was made, amounted to 35,033*l.*; and the grand total of annual expenditure to 72,182*l.*; out of which sum he allows himself—nothing per annum, by way of salary; or rather perhaps, we should say that he has a salary of 72,000*l.* a year, and spends it all on his little orphan family.

**FALL OF AN IRON ROOF AT LILLYBURY.**—The skeleton iron roof of the new building in course of erection at the Lillybury Copper Works has suddenly given way, bringing with it three workmen. One fell 18 feet, but escaped unhurt; while the other two fell from the height of from 30 to 35 feet, and were very much injured. The span of the roof is nearly 60 feet, and the weight of the iron which fell, being fifteen iron girders, was not far from twenty tons.

**READING.**—The Abbey Gateway, according to the local *Mercury*, "daily manifests further indications of a fall on its northern side;" and, he adds, "if the further consideration of the restoring is made over to Mr. Scott, it is quite clear that all difficulties will be removed long before any decision is arrived at."—The new Assize and Police Courts approach completion. The civil and nisi prius courts are in a forward state. As respects the position of the grand jury gallery, the paper just named says, "We believe it will be found that very few judges will be able to make themselves heard at such a distance, and there will also be some awkwardness discovered in conveying the hills to and from." The floor of the large hall is being paved with Pocol tiles of various colours; but, on the occasion of halls, a temporary boarded floor might be laid down at a small cost. There are a large number of offices connected with the courts. The grand jury room is fitted with a "sun light." A hot air apparatus is carried throughout both the police and assize departments, and is introduced into every office.

**OPENING OF A NEW CATTLE MARKET AT NEWCASTLE-UPON-TYNE.**—The new cattle market recently opened, and which is situated at no great distance from the old one, will afford accommodation for about 3,000 head of cattle, or about three times the number hitherto adequately provided for. The site of the new market is immediately on the west side of the Infirmary. The area is about two acres and three quarters, surrounded by a stone wall surmounted by iron palisading. The entrance is through gates in Marlborough-street, and one at the east end of the market. The pens are accessible from five alleys running parallel with Marlborough-street, the whole length of the market, and 17 feet in width; these again being intersected by two cross alleys of 30 feet in width. The pens are constructed of oak, and forty of them are appropriated as stands for bulls, being of great strength, with ring-holts, &c. All the alleys and the two principal crossings are paved with blue whin Pifo-stone, and the pens with freestone. There are seven entrance-gates; and, as soon as the new street is formed to the south of the market, another will be formed on that side. The market is fitted up with gas; and with water from the Whittle Dean, and also from the Bath Lane.

**ELECTRO-TELEGRAPHIC PROGRESS.**—All the metropolitan police stations are said to be now connected by telegraphs, and the fire-engine stations will very shortly be in similar communication. The wires are all carried over the houses, and are in many instances supported by the church steeples. Many of the newspaper offices are about to be supplied with wires from Mr. Renter's office, and in one case a newspaper in Fleet-street will have private wires to the Houses of Parliament. Mr. Renter has made a proposition to the London daily papers to report the whole of the proceedings of both Houses of Parliament. He proposes to have one corps, and, as we have said, to have wires laid to each office, so that the report can be printed from a copy written out by a telegraph clerk.—One of the first acts of Count Persigny's administration, it is said, will be the completion of the telegraphic wires by which the chief towns in eachondissement will be placed in communication with each other and with the more important centres of population in the empire. The reduction of the price paid for transmitting telegraphic messages likewise occupies the Count's attention. Although the original price charged by the Government has been reduced, the transmission of telegraphic messages is still beyond the reach of the majority of the public. The consequence is that the annual produce of the telegraphic department is much less than it might be, and the country in general is deprived of the advantages of the telegraph.—Experiments are at present being made with a newly-invented electro-telegraphic apparatus which transmits messages textually, giving a perfect *fac-simile* of the handwriting. The reproduction is said to be so faithfully executed by this new apparatus that any description of portrait or drawing may be forwarded with as much facility as a simple message. It is of this invention we presume that the *Journal de Havre* speaks as an Italian one.

**THE TYNDALE MONUMENT: CURIOUS PROPOSAL.**—Earl Ducie proposes that the column to be erected to the memory of Tyndale, should be surmounted by a parabolic reflector or mirror of some kind, which might be so constructed as to reflect the sun's rays through a large angle and be visible at a great distance, across the Severn, and up and down the line of the Midland Railway. "This reflector would," it is said, "have a very beautiful effect, during many hours of the morning and evening in summer, and throughout the whole period of sunshine on a winter's day, and would strikingly illustrate the great event of Tyndale's life which it is proposed to commemorate."

**MONUMENTAL.**—The proposal to erect a statue to the late Lord Macaulay in Trinity College, Cambridge, has met with a hearty response. The Prince Consort, Chancellor of the University, has headed the subscription with 100*l.* An influential committee of "residents," with Dr. Whewell, the Master of Trinity, at its head, has been formed for the purpose of carrying out the arrangements.

—A monument has been erected on Southsea Common to commemorate the late Sir William Peel, who died in India at the head of the Naval Brigade during the Sepoy mutiny.—Lord Dundonald, it seems, is to have a monument at Liverpool, and several subscriptions, headed by the Mayor, have already been announced for the purpose.—We regret to hear so little said of Admiral Napier, who surely merited a place in St. Paul's, with something monumental to remind us of the bluff old sailor, who did some brilliant deeds in his lifetime.

**CENTRAL RAILWAY STATION IN THE CITY.**—The Court of Common Council have adopted a report of their Improvement Committee relative to the establishment of a central railway station in the City of London. The report stated that it was absolutely necessary that there should be a central railway station in the City, and that the best site for it would be Farringdon-street,—that the effect of having the station at this spot would be to materially improve Holborn-hill and Skinner-street, and reduce the gradient from 1 foot in 19 to 1 foot in 40 in the case of Holborn-hill, and 1 foot in 46 in Skinner-street, which alone would be a most important improvement,—that it would also greatly improve the City property in Farringdon-street and Victoria-street, and be of very great importance in connection with the proposed new market in Smithfield. The report concluded with a recommendation that the court should continue their powers to carry out the proposed plan.

**"NEEDFUL REPAIRS" OF A HOUSE.**—In the Court of Common Pleas, last week, was tried the case of *Scates v. Lawrence*. It was an action for breach of covenant to repair and make "all needful reparations" reasonable wear and tear excepted. 30*l.* were paid into court. The plaintiff's estimate was 60*l.*, the defendant's, 16*l.* The house is the Swiss Cottage, at Tottenham, which had been built 150 years ago. The case for the defendant was that it was dilapidated when he entered it, and that seven years before the close of the term he had put it into repair. The plaintiff's answer was, that the rent (50*l.*) was low. The house contained three sitting-rooms, four bed-rooms, the usual offices, a large garden, a field, stable, conservatory, &c., and that the defendant took the house, knowing its condition. Mr. Justice Willes: On such a covenant a tenant is bound to put the premises into good repair if out of repair when he entered, and to keep it in repair, having regard to its general character and condition; but he is not liable for new papering, which is purely ornamental, and not expressed in the covenant. It is a matter to be decided by the jury. According to common sense, rather than the strict construction of law, if the tenant had painted the outside within three years, and the inside within seven years, and there had only been fair wear and tear since, he was only bound to cleanse the old paint, &c., and not to repaint. So, as to other repairs; the tenant was not bound to give the landlord a new house, but the old house in reasonable repair, with reference to fair wear and tear. The maxim, "give and take," must in such cases be applied; and a landlord ought not to claim for every crack in the glass or every scratch on the paint. The question was whether there had been a substantial performance of the covenant. The tenant was entitled to have the benefit of repairs he did, and was not bound to make them just before he left, so as to let his landlord have the whole advantage of it, and have none of it himself; for the landlord, not the tenant, had to bear the burden of fair wear and tear.—The jury immediately returned a verdict for the defendant.

**CO-OPERATIVE PROFITS.**—The Wardle Co-operative Manufacturing Company, we hear, has declared a dividend of 60 per cent. on the past half-year; and other companies in the Rossendale district are in so flourishing a condition, that large dividends will be paid to the shareholders.

**FALL OF A WAREHOUSE IN LIVERPOOL.**—On Saturday before last, about three o'clock p.m., a large portion of tenement, situated at the corner of Jordan-street and Chaloner-street, suddenly gave way; and, with a rush, the front and corner walls, beams, floors, and roof, with the contents of the different apartments, settled down in the street. The portion of the warehouse which fell is almost new, having been recently rebuilt after a fire which occurred on the premises about twelve months ago. It was four stories in height.

**LINCOLN GRAMMAR SCHOOL COMPETITION.**—Sir,—I your notice of the Lincoln Grammar-School competition you mention one of the five designs selected for further consideration, with the motto "Ideas," with names unknown; so I beg to inform you that the unknown authors of that design were myself and Mr. James Thomson. Our names were attached as usual in such cases, but I suppose overlooked; hence the only means of making the unknown known will be by your courtesy through your wide-spread journal.—**GEORGE SIMMONS.**

**LINSEED OIL.**—Allow me to thank a "Friend to the Unemployed" for his remarks respecting the adulteration of linseed oil. I would suggest that the manufacturers or merchants should be subjected to a similar ordeal as the *Lancet* uses towards different tradesmen, viz., to purchase samples from each, and publish the result of an analysis, giving the name of the firm that sold the genuine article. If linseed oil is scarce, let us have what there is genuine, at the market price, because it must be genuine to answer our purpose. The present substitute will not do.—**A. B.**

**FALL OF HOUSES IN KENNINGTON.**—Sir: You mentioned briefly the fall of houses in course of erection near Kennington-park. If the poor fellows who were buried beneath the falling materials, and almost crushed to death, should not survive, an investigation will take place, and show how inadequate are the powers of district surveyors in preventing speculative builders erecting such dangerous structures as those in question. There are several of a similar description, in close proximity, now erecting, and equally dangerous. Mortar of lime and mould from the excavations; joints to brickwork averaging 3-inch and 1 inch; arches without skewbacks; neither iron nor other bond; spruce deal joists, 7 inches by 1½ inch; lintels, 4½ inches by 3 inches, carrying the floor; joists over openings, 4 feet 6 inches wide, without discharging arches or any other support but the head of sash-frames. They will vie with houses at Brighton, which are the climax of scamping.—**A. CLEGG, OF WORKS.**

**THE COVENTRY RIBBON TRADE.**—An excellent example, so far as regards the distressed weavers of Coventry, has been charitably set by the Baroness Brunow, who, as Messrs. Grant & Gask, of 60, Oxford-street, inform us, has ordered, through their firm, a dress, to be made principally of Coventry ribbon, and for the completion of which about 500 yards will be required. It is to be hoped so excellent an example will be widely followed by other ladies. A suggestive one at our elbow (while giving her vote—a plumper, of course—in favour of the ribbon dresses, one of which she wishes she may get, just to see how it would look), says she knows of a desideratum which might also perhaps be of considerable service, at least at a future time, to the ribbon weavers; while it would be "a real blessing" to milliners and mantua-makers, both amateur and professional, could it only be realized by some inventive brain. From what we can understand as to this desideratum, it appears that, in the making of bonnets, dresses, cloaks, &c., the cut materials are often required to be what are called "on the cross," in order that they may set or fit more handsomely; and that, for this purpose, such materials are cut crosswise,—or slopingly, rather,—out of webs of silk, or velvet; but that, in doing so, there is not only very little economy, and some disfigurement by frequent joinings, but often great waste, and considerable additional have what I shall call "cross ribbons," broad and narrow, so woven as to imitate the cut material "on the cross," an end would be put to a great deal of waste slashing, against silk and velvet webs, and rejoining of the materials so cut; and a new branch of the ribbon trade might thus arise, to replace, so far at least, that which has fallen into disuse.

**THE SEWAGE OF CANTERBURY.**—The subject of utilizing sewage is about to be taken up at Canterbury. Some gentlemen connected with agriculture have met to discuss a plan for irrigating the Sturry marshes with the Canterbury sewage.

**THE GLASGOW QUEEN'S PARK.**—The Glasgow Town Council have resolved to devote 8,000*l.* in laying out the main roads and walks on the plan of the Queen's or South Side Park, as modified by Mr. Carrick, the city architect. A long discussion has taken place upon the method of laying out the park. Some members are in favour of its being laid out in the Italian style of gardening, others preferring that it be laid out as an airing and recreation ground for the people.

**HOW TO BRING DOWN RAIN.**—Mr. Weeks, of Sandwich, writes as follows to Mr. Rowell, who, at the British Association, suggested the possibility of bringing down rain from the clouds at pleasure:—"I have from very early life been an assiduous experimenter with electric kites, atmospheric exploring wires, &c. Now I beg to assure you that it has several times happened that, when my kite has been raised immediately under a distended, light, fleecy cloud, at moderate elevation, a free current of sparks has passed from the apparatus during some ten or twelve minutes. I have suddenly found myself bedewed with a descent of fine misty rain; and, on looking up, have seen the cloud upon which I was operating surprisingly reduced in magnitude."

## TENDERS

For setting out, excavating for, and forming, roads, foot-paths, and sewers, on land east side of railway, for the Great Malvern Hotel Company. Mr. E. W. Elmist, architect:—

Hayes & Warrington	£1,350 0 0
Edwards	850 0 0
Holt (accepted)	928 0 0

For two villas at Spareshook, Essex. Mr. Read, architect. Quantities supplied by Mr. Baggett:—

Macey	£3,700 0 0
Hedges	3,587 0 0
Lawrence & Sons	3,548 0 0
Coleman	3,389 0 0
Hill	3,284 0 0
F. & F. T. Wood (accepted)	3,280 0 0

For the erection of a public-house, the "Rose and Crown," High-street, Wapping, for Messrs. Taylor, Walker, & Co. Mr. Charles Dunch, architect. Quantities by Mr. Curtis:—

Perry	£1,490 0 0
Hedges	1,387 0 0
W. Hill	1,350 0 0
Hack & Son	1,339 0 0
Wood, Brothers	1,259 0 0
Blackburn	1,209 0 0
Emmott	1,205 0 0
Stewart	1,188 0 0
Brown (accepted)	1,141 10 0

The accepted tenders for warehouses for Mr. W. P. Edwards, St. Stephen's, Norwich. Mr. John Daymond Ellis, architect, Norwich:—

*Bricklayer, Plumber, Mason, Slater, and Tiler.*

J. W. Lacey ..... £492 0 0

*Carpenter and Joiner.*

T. Brooks ..... £647 10 0

*Smith and Founder.*

Pinson ..... £347 0 0

*Plumber, Painter, and Glazier.*

J. & J. King ..... £218 10 0

Total ..... £1,705 0 0

For public-house, Approach-road, Victoria-park, Messrs. Hannack & Lambert, architects:—

Brown & Robinson ..... £2,160 0 0

Case ..... 2,150 0 0

Page ..... 2,050 0 0

Blackburn ..... 1,909 0 0

Forrest ..... 1,689 0 0

Hedges ..... 1,685 0 0

Perry ..... 1,633 0 0

For building new offices for the Commissioners of Sewers of the City of London, at Gullinall. Quantities supplied:—

Sawyer ..... £6,070 0 0

Harding ..... 6,800 0 0

Bartley, Brothers ..... 6,586 0 0

Cowley ..... 6,459 0 0

Longmore & Barge ..... 6,375 0 0

Brage ..... 6,286 0 0

Garnison ..... 5,751 0 0

Little ..... 5,711 0 0

Cushing ..... 5,657 0 0

Axford & Co. .... 5,592 0 0

J. J. & F. Coleman ..... 5,459 0 0

Mellor ..... 5,363 0 0

Wills ..... 5,342 0 0

Wilson ..... 5,347 0 0

Batterbury ..... 5,235 0 0

Stevenson ..... 5,219 0 0

Patman & Fotheringham ..... 5,167 0 0

Colls ..... 5,160 0 0

Rider ..... 4,966 0 0

Myers ..... 4,940 0 0

Hill (accepted) ..... 4,892 0 0

Perry ..... 4,728 0 0

# The Builder.

VOL. XVIII.—No. 934.

Shades and Lights in London. St. Luke's: Whalstone Park: St. Clement's Dances.



**ITH CHRISTMAS,** which brings with it the termination of our volume for 1860, comes the repetition, in numerous quarters, of statements made by us years ago as to the condition of the homes of the labouring and poorer classes in various parts of London. Thus, Mr. Harvey, chairman of the West London Union, writes to the leading journal to describe the state of parts of Holborn. He says the relieving officer and one of the guardians of the union recently visited Plumtree-court, Holborn, which contains twenty-seven houses, without back yards, and, with few exceptions, without back lights. These houses were occupied by 676

men, women, and children. In one room, 10 feet by 13 feet, and 8 feet 6 inches high, there were thirteen persons living and sleeping, viz., two men, five women, and six children. In another house, 17 feet long and 16 feet wide (including the passage), with ground-floor, first-floor, and attic, there were sixty-nine persons living and sleeping, with only one convenience in the basement. On another occasion, when the officer visited a house in this court, between twelve and one o'clock in the morning, for the apprehension of a man who had deserted his wife; in attempting to go into one room he was compelled to wait until the inmates had risen from the floor behind the door, so that the door could be opened. The people lay so thick on the floor that he had to be cautious in stepping between them. In this room there

was one child suffering from the measles and another from the small-pox. On opening the door, he goes on to state, the stench was so great that the police officer who accompanied him was obliged to withdraw.

Seven years ago we described this same place in words differing little from those now used by Mr. Harvey:—

“Leaving Field-lane,” our account ran, “and crossing Holborn into Shoe-lane, opposite the wall of St. Andrew’s Churchyard, you reach the entrance to Plumtree-court, which has long been the haunt of fever: this court extends a considerable distance towards Farringdon-street, when it goes off at right angles to Holborn: the court is very narrow, and the drainage very imperfect. A sink at the bottom of this pestilential hole receives the greater part of the refuse of the place: it is often stopped, and then a pool of considerable extent is formed. Pulling the latch of the outer door of one of the houses here, and then entering the room on the left, with the assent of its occupants, we found an atmosphere so stifling that we were forced for a moment to retreat. There were two beds in the room: in one, which seemed to have heads all round it, were no fewer than nine women and children. They were stowed so oddly and so thickly, that it was not an easy matter to count them even by the strong light of the policeman’s lantern. In the other bed were a man and a lad, and in a small room, or closet, leading from this room, three other persons were sleeping. There was little ventilation. Had there been none, assuming that each respiration is 40 cubic inches (Menzies), the respirations twenty a minute (Haller), and that the existence of .08ths of carbonic acid is destructive (Lichig),\* the occupants of the front room must have died in eight hours! We will not trouble our readers with the inference, nor need we give them further details of this quarter. Pondering on what we had seen, and weighing the possibility of improvement before the infant-school has done its work, we were glad to make our way homeward to freer air.”†

We have engraved views by the dozen, showing to the eye the overcrowded state of houses now again pointed to as full of danger because of the number of their inhabitants, nothing having been done to bring about a change: indeed, in some of the London parishes, we have reason to believe that the overcrowding is greater than it was five years ago. Parish authorities do not seem to be aware that the Removal of Nuisances Act requires that whenever the medical officer of health, if there be one, or if none, whenever two qualified medical practitioners shall certify

\* See First Report of Metropolitan Sanitary Commission, page 137.  
† See, also, “London Shadows,” by George Godwin; page 15. 1854.

that any house is so overcrowded as to be dangerous or prejudicial to the health of the inhabitants, these inhabitants consisting of more than one family, the local authority shall (not *may*) cause proceedings to be taken before the justices, to abate such overcrowding, and the person permitting it is rendered liable to a penalty.

Leaving the authorities, then, to do their duty, while we venture to pursue the course we believe to be ours; we would give a few particulars of a parish little known to the majority of readers,—St. Luke’s in the central portion of London. Many have heard of the benighted condition of Golden-lane and its neighbourhood, from the often-repeated appeals of Mr. Rogers, the incumbent of St. Bartholomew’s district; while others of an antiquarian turn may remember accounts of the time when Golden-lane and its surrounding parts were a fashionable locality,—when the theatre of Queen Elizabeth’s days existed, and green trees and fields stood in the place of the endless rows of houses and other buildings which now exist. Generally, however, except to the immediate dwellers, little is known of this, perhaps one of the poorest and most neglected parts of the metropolis. It is most densely populated. From Old-street, an important thoroughfare (“the old highway from Aldersgate for the north-east parts of England, before Bishopsgate was built”), branch on both sides many streets, most of them narrow: from these run courts and alleys teeming with an immense population, chiefly in a poor and forlorn condition. Strange and dreary is the appearance of these avenues, in spite of the bright sunshine. Let us, however, make a more minute examination,—walk to Golden-lane and its tributaries, and see how these are cared for. Leading from the lane in Cherry-tree-court, a place barely 4 feet in width, are seven houses on one side and a high wall on the other. Externally the houses are not in bad repair, but in the interior their dirty and dilapidated condition is remarkable. In one small back room was a little boy nine years of age, and a girl some years younger, who had scarcely a rag of covering on them: there were two other children out, we were told, working in the street. Those at home crouching over the fire were altogether un instructed. Their mother made a living in the markets, they told us, and their father had run away. A wretched bundle of rags in a corner served for bedding. In a back yard, rupaved and broken, was the overflow water from cesspools, the closets stopped and in a bad condition: there was only surface-drainage, and that of an incomplete description, and yet every room of these premises is occu-



Fig. 2. A Pleasant Garden.



Fig. 1. The Cellar and its Produce.



Fig. 3. Home Comfort.

ped by a family, some of them consisting of seven, eight, or nine persons. In most of the houses the water "ran short;" on Sundays "the water is turned on for about five minutes, but sometimes it does not reach them." The landlord of this and a large extent of property here and in other quarters has been asked times out of number to put the place into a little better order; he, however, receives the rent, promises attention, but does nothing. The whitewashing of the narrow, dark staircases of these houses and of the walls, which are at present black with accumulated smoke and dirt, would entail but a trifling outlay. We trust that the day is not far distant when compulsory drainage, *thoroughly carried out*, will be made a rule in connection with the dwellings of the poor. Remarking that the scavengers of St. Luke's perform their duty very badly, we pass on to Harshorn-court, a singular locality, which, with the parts adjoining, is inhabited to a great extent by thieves and the most dangerous characters. This is the entrance to a labyrinth of courts which, like the intricate workings of a Gloucestershire iron-mine, lead in all manner of curious and mysterious directions. In front of five houses is a kind of square, which formerly has probably been occupied as gardens; here swarms of children peer curiously out, neglected little creatures, so forlorn, so seemingly helpless for good, that the first impulse is to ask—What is to become of them? What business, according to present arrangements, are they fitted for? What, except by chance, is there for them but beggary or the prison?

The houses mentioned are single houses (one room deep), without any openings at the back. Like those previously alluded to, these dwellings are, so far as exterior is concerned, not in bad repair, but anything worse than the interiors cannot be easily imagined. Let us step up one of the dark narrow staircases: in one room, on the door being opened, a man had risen hastily from his bed; a strong active-looking woman was there, and from the mass of rags swarmed a number of children (it was about ten o'clock in the morning). Few could look at these helpless little things without an aching heart; the faces, not ill-shaped, were massed with dirt, and they had on scarcely a rag of covering; there was no furniture in the room, the window was plastered with mud; and the floor, although this able woman was here, had probably not been washed for months. The tenant complained of the landlord's neglect. Modestly, we ventured to hint that if the wife were thoroughly to clean even the broken glass of the windows, and maybe, give the floor a good washing, when the landlord next called for his rent, he would be so much astonished at the contrast that he would set some one to put the walls in order immediately. The tenant stated that his wages for working in the market are small and uncertain, and with a number of children "I cannot pay much rent," he said, "or do you think that I would stop in such a place as this? The dirt you speak of is the least evil, from night till early morning the place has no peace, at times it would take a dozen policemen to quell the tumult." This is no doubt true, for most lawless and defiant is the population here.

In all parts there are apartments in a similar condition; no attempt is made at ventilation, there are no hack windows, no openings to the roof; dirt and crowding, particularly in the upper rooms, produce an atmosphere unpleasantly visible.

A great portion of the open space is occupied by a large dust-heap, which consists of the worst kinds of refuse, that, we are told, has been in the course of collection for several years, and which is daily added to by such matters as the costermongers may not find convenient to sell. There are no dust-bins provided, so that, as a necessity, the refuse of the houses is added to this putrid heap, which is made a sort of *play-ground* for the children, who, in their way, enjoy what seems to them a remarkable benefit.

For a population of ninety and more persons, there are only two closets, in a most filthy condition, over which is the water-tank. How can people be clean or decent under such circumstances? Refuse is left in all

directions, and the roadways, in other weather than this, are deep with poisonous and stagnant water. Turning sharply to the left of the *play-ground*, we come to Little Chicapside. In this and other places, close by, may be seen groups of houses without proper accommodation; even the surface drainage is not good; the pavement abominable, and the whole of the space around is polluted with cesspools.

We look into many houses and tenements, and hundreds might be described so much alike, that an account of one would almost serve for the other. Range after range of houses, badly constructed; the roads and yards unpaved, are patched in such a manner as to be of but little use; the soil saturated with the most unwholesome matters, to a considerable depth; room after room, to the extent of thousands, all loaded with dirt; the same pictures of broken ceilings and walls; half-naked and half-fed children; old wick-like women, crouching by the fire-grates; men entirely or partially drunk, lying on shavings, or rags, on the floors, nearly all without furniture,—these form the picture. Without particularizing, we will jot down slightly a few characteristic features.

Twelve houses form a narrow court, sunk below the regular surface; there are two closets only for all those—there was, a short time ago, only one. Here dwell persons who might give information respecting missing dogs; others who collect in the streets; and there is more than suspicion that some of the persons who have lived here, have been engaged in the horrible employment of skinning cats alive. Gladly do we escape from the din of barking dogs, and the unpleasant physiognomy of the inhabitants. Let us proceed to a fresh spot.

Another narrow court, in which are several houses, having cellars below them. In passing, had as have been the smells already experienced, they seem faint in comparison with that which rises from the grating. By means of the open windows above this we see a sickly woman, and a child lying in a corner still more sadly stricken. This is not to be wondered at, for descending into the cellar will be found an untrapped and dirty closet (Fig. 1), the water-cask close to it, and an accumulation of other refuse, which had been allowed by the scavengers to remain for six months. Up the staircase, by the crevices of the floors, by the open windows, the fever-bringing gases make their way into the rooms.

In one of these houses, similarly situated, where the people seemed better off than usual, we asked a woman if she thought that water kept in such condition could be fit for use. The reply was,—*"It's excellent water, sir; I would not mind drinking a gallon of it."* On endeavouring to explain how soon water is rendered unwholesome by the action of bad air, she said,—*"I am sure I don't know, sir, but it is beautiful water though."* This ignorance is one of the difficulties to be encountered, and stops the way of improvement.

Let us make another sketch. It is a square room, the walls of which we can touch either way by stretching out the arms; close to the window is a closet, untrapped, and cesspool (Fig. 2). In rooms like this a family of six persons may be found. Such is the unpleasant effluvia which arises from the back premises, that people cannot, particularly in summer time, open the window.

We peeped into another interior, dirty beyond description,—a man on the floor asleep,—the children out at *work*, which probably consists of turning "catherine-wheels," or some less honest employment. Onions and other vegetables are lying about to be got ready for sale. The atmosphere, if possible, worse than usual; the ceiling and walls, black as the back of a chimney. The fireplace and chimney project, and a large portion of the upper part of the bricks has been removed; so that the smoke, in a great measure, spreads over the walls and roof. (Fig. 3.) On the person here waking up, and some remarks having been made that it would be better for health to have a little ventilation, he at once said, "certainly," and bodily lifted out the window-frame, and placed it against the wall.

Words and sketches fail to give an idea of what is going on around us. Nothing but a personal inspection can afford a just notion of the state in which these poor and often ignorant people are allowed to be.

In one small room, without any separation, live nine grown-up persons and two children,—eleven in all. There are the mother, and married sons and daughters, and the children, all living in this promiscuous manner.

In some parishes their sanitary arrangements are much more effective than others. In St. Luke's the relative state is not good; when saying so, we must, however, not omit to add that the district is overrun by poor, and that the chief body of ratepayers are but ill able to meet the heavy demands made upon them. There are, however, matters which depend on more sanitary inspection; and where the forcing of the proprietors of houses to do what is right, might not only be beneficial to the inhabitants, but, by preserving health, be a saving in the poor-rates. As one example of the inefficiency of the parish officers of health, we will mention Wood's-place, Chequer-alley, leading to Whitecross-street. Here, at a very short distance from the houses, is a water-closet, which, at the time of our visit, was overflowing on the ground. The people say that the effect upon them is very bad, and that maggots crawl from the court into the houses. This state of affairs has continued for a long time, and the parish authorities have had notice of it for more than eight months, yet nothing has been done. In other cases it is complained that half-measures are used, and that when improvement has been made, there is not enough attention shown to see that order is kept. To this important question we may return at another opportunity. Weary, oppressed, and pained beyond expression by the poisoned air and the sad sights which have come to view, we will now only look at one more group of houses. In an ill-paved yard is a closet, the cesspool is overflowing, standing in pools, and running down the gutter, and into a smith's premises. The smith says that at times he is quite flooded with it, and that at the last attack of cholera, himself and two sons were in the hospital ill with this disease at the same time, and that deaths happened in the adjoining houses. "But see," said a respectable-looking old man, "the state of the place a little way to the back. I have a large family, which in a measure forces me to live in such a place. Look at the house adjoining; a drunken man, if he fell, would knock the wall out; there are two closets overflowing, the dust and other refuse are inundated; close to this is the window of my bedroom; no one would credit the atmosphere we breathe. I have been to the country to work, and when I returned last Saturday night, I thought I should have been poisoned; and complaint is useless." Mr. Rogers' schools, excellent in their arrangements and good in their management, and a harbour for the houseless in Playhouse-yard, are bright spots in this darkness.

In Whitecross-street—a wonderful market for the poor at mid-day—the crowd is enormous, but on a Saturday night you might almost walk on the people's heads.

Various interests are antagonistic to the rapid improvement of the dwellings of the poor to which we have referred; but the statesman will be a benefactor to his country, who will with firmness and vigour grapple with the monstrous evils which so much need remedy. The important points to be aimed at are—

- 1st. Power to overlook houses let in tenements.
- 2nd. The power of preventing the letting of such houses to more persons than the amount of space will healthfully admit of.
- 3rd. The enforcement of the removal or improvement of houses which are shown to be arranged on wrong sanitary principles, or where drainage is in such state as above referred to; and
- 4th. The establishment of Ragged Schools—the provision of means for the removal of the youth of both sexes who are placed in situations which leave no hope, and other measures which have been often referred to by us before.

It seems, however, clear, that in order to give parishes such as St. Luke's fair play, we should have an amalgamation of all the parishes of the metropolis, rich and poor, so that those which are ill-conducted may be assisted by others more prosperous.

That our review may not be wholly a dark one, we must not omit to note some of the good things that are in progress in various parts of the metropolis. In St. Giles's, once in such evil repute, the schools and other buildings which have been reared during the last twenty years are creditable to all who have been concerned. In other directions we are glad to note improvement, and that in various neighbourhoods, schools, churches, and improved buildings are springing up. Every one has heard of Whetstone-park, a place heretofore always infamous. It consists of a row of houses, between Lincoln's Inn and Holborn. These buildings are of much older date than any portion of Lincoln's-inn-fields. We well remember the place some years since, when its badly-paved, dirty, and evil state was notorious. We now find the place carefully swept; boards are posted with directions to prevent the throwing out of refuse, and in the centre of this once-neglected spot a Ragged School has been established.

Great alterations have taken place here in a comparatively short period. In 1735, the few persons who inhabited Lincoln's-inn-fields were obliged to apply to the Legislature for permission to rate themselves, for the purpose of getting rid of several nuisances. On this occasion evidence was given that, forty years before, the site had been all in grass. About 1705, that part which bounds the Terrace-walk of the society of Lincoln's-inn, was raised; but in 1734, quantities of rubbish were brought from all quarters, and thrown there. The space near the Turnstile was infested by persons who let wretched horses for a half-penny a ride. The riders' limbs frequently came to damage. Besides, the fields were used as a place of exercise for the horses of richer persons, and in consequence accidents were of frequent occurrence.

The *Loyal and Impartial Mercury*, of September 1, 1682, has the following paragraph:—"On Saturday last, about 500 apprentices and such like having got together in Smithfield, went into Lincoln's-inn-fields, where they drew up, and, marching into Whetstone-park, fell upon the land-houses there, when having broken open the doors, they made great spoil of the goods: of which the constables having notice, and not finding themselves strong enough to quell the tumult, procured a party of the King's Guards, who dispersed them, and took eleven, who were committed to the new prison. Yet on Sunday night they came again, and made worse havoc than before, breaking down all the doors and windows, cutting the feather-beds and other furniture to pieces."

The Ragged School which has been opened here is very useful, and is well attended,—some evenings of the week by boys, and on the other evenings by girls. It is most desirable that the school should be open during the day; and this could be readily managed, should sufficient funds be provided.

Close by, namely, in Clare-market, a more important establishment has been opened through the exertions of the Rev. C. M. Robins, the incumbent of the district. A row of six houses, known as the Colonnade, has been taken, put into good repair, made to communicate, and decorated with texts and otherwise.

On entering the place we find ourselves in a commodious room, comfortably furnished. Some very good engravings hang upon the walls. In the upper story is a sleeping-room, in which are several beds. The fittings of this apartment are remarkable for their neatness and good taste. This part of the building is a refuge for orphan and destitute boys, which, in a spot close by, has been in operation more than twelve months, and has been the means of rescuing from misery and ruin many boys who, but for this institution, would have been left to sink. They are now earning an honest livelihood, some as errand-boys, some in shops,

while others have been sent to sea, where they are doing well, and bear a very good character.

In the sitting-room set apart for these boys is a fireplace fitted for cooking. Here sick people may have broth, puddings, and other things cooked for them free of charge. Something of this sort is greatly needed in all the poor districts of London, for many have very little idea of cooking properly; and in illness this is more than ever the case, to say nothing of the trouble and expense of cooking at home. Instruction could, at the same time, be given to some older girls, who might assist in this kitchen. A trap-door and some descending steps lead where a large boiler has been provided for making soup in the winter time. Good soup is made and sold to the poor at 2d. per quart, cost price. This will supply a want that has been greatly felt in the parish: the prospect of a rise in the price of provisions during the winter will make this and other soup-kitchens of great value. Passing through the apartments of the superintendent, a room is found neatly papered, and hung with good prints. The floor is carpeted, and the place has the aspect of a drawing-room. This is the club-room, provided for working men, where they may smoke their pipes, have the opportunity of enjoying a gossip, or reading books, newspapers, and other periodicals, in a well warmed and well lighted apartment. Above this is a library.

Next is a club-room for women, which is provided in the same way as the men's club. Here, from six until ten o'clock in the evening, aged and other women may come to read, work, and talk. When we remember the conditions of some of the wretched homes which those persons are forced to occupy, the advantage of this provision is evident.

In the Working Men's club, we learn that already eighty subscribers have entered their names. The payment is 2d. a-week, and it is considered that this is more than sufficient to meet all the expenses of rent, light, fire, publications, &c. It is worthy of notice, that the club is under the management of the working men themselves, who will thus have a direct interest in its success.

One room is occupied by the Parochial Mission women, who are employed amongst the poor in performing various kind offices for them when in distress. There is also a clothing establishment in the same house, where persons living in the neighbourhood may procure articles at cost price. There is also a registry for servants out of place, nurses, and charwomen.

On the ground-floor a large apartment has been contrived, which is intended as an adult school for boys and young men, who are able to pay a small sum weekly for their schooling; and here it is proposed to give lectures and cheap concerts. Several inhabitants of the district have offered their services in carrying out this praiseworthy object. Here persons living in the neighbourhood will have the opportunity of spending an evening in a comfortable room—a greater boon to hard working men than many imagine, who are not aware of the conditions of their homes. In order that the most may be made of the premises, the upper part of two of the houses has been put into good order, and is let out at a reasonable rate to persons of a good character desirous of living in a quiet and respectable manner. We direct attention to this excellent work with pleasure, and recommend those who are willing to benefit the neglected masses of the metropolis and our large towns to pay the institution a visit.

The Swamps still abound; but the Bridges are building.

We have made arrangements by means of which we hope to be able to place before our readers in the coming year articles of more than usual interest illustrative of architectural and social progress abroad. We shall, further, continue the review we have commenced of some of our large towns, with special reference to their deficiencies and requirements.

#### COMPETITION DESIGNS FOR THE LEEDS MECHANICS' INSTITUTION AND SCHOOL OF ART.

THE exhibition of competing designs for this institution commenced on Thursday, December 20, in one of the side galleries of the Mnsic Hall, in Albion-street. This exhibition has been looked forward to with great interest by many persons. The union of a mechanics' institution, school of art, and picture gallery, boys' school and girls' school, and school of science; and the sum, 13,000*l.*, to be expended on the building which was to accommodate all these institutions, gave great scope to the architect's powers, and grand designs were expected from the competitors. This expectation was enhanced by the eulogiums which have been passed on the plans at every public meeting in Leeds for the past two months. Those who were interested in the cause of architectural beauty looked forward to a display of originality at least, and probably of some genius. It is true that the sum of money to be expended was small, and the ground to be covered large; but then the site of the building was grand; and it was certain that good men were working hard in this competition.

We have been accustomed to regard mechanics' institutions as standing illustrations of the utter sacrifice of feeling to apparent use; of beauty and elegance to commodious utility. This is necessarily the case in the management of these institutions, and unnecessarily, though almost invariably, evident in the architectural features of the buildings erected for, or adapted to, mechanics' institutions. But, in Leeds, the Town-hall has created a revolution. A building sufficiently good to please the Leeds people ten years ago will not pass muster now. The warehouses erected latterly, whose chief requirements are room and light, have added to these two necessities grandeur and architectural beauty. The Town-hall and the Wellington-street warehouses act as a standard by which all new buildings are tested; and great dissatisfaction is expressed when new works fall short of these common standards. Thus, the Overseer's Offices in East Parade, which are now being erected, are loudly and universally condemned by all men of taste and by the public generally. Yet we would remind the Leeds people that it is better by far than any municipal building or any private building erected more than ten years ago in Leeds. It is the standard which has been raised, and the public taste elevated; and the architect of the Overseer's Offices has not kept pace with this rapid improvement in both.

Being cognizant of these circumstances, it may be expected that no public body will venture to erect a bad public building in Leeds; particularly when the completion of the undertaking depends upon subscriptions from the inhabitants of the town. So that we were glad to hear the oft-repeated praises of the plans for the art schools, picture gallery, and mechanics' institution; and believed that, in proposing to erect a building which should be a credit to the town, the committee was doing the wisest thing possible, and making a powerful claim on the generosity of subscribers and friends of the institution.

Our first introduction to these plans on Thursday morning showed us that the committee has not been able to exercise much choice in the matter. There are only three plans out of the seventeen competing which could be adopted with any degree of credit. In two of these there are several obviously objectionable parts, and the third might be very considerably improved. But we shall notice the whole of the plans; and, after remarking upon each, give our own opinion on the plans generally, and the selected plan in particular.

The drawings are arranged in sets, but not numbered, and the names of the architects competing are not attached to them. It has been stated that three plans out of the whole were selected for ultimate comparison and choice, and that the authors of these three were Mr. Brodick, Messrs. Perkins & Backhouse, and Mr. Shaw; all, oddly enough, Leeds architects. It is, moreover, no secret as to who are the authors of the majority of the designs; and, whilst examining the plans for this criticism, we invariably heard the spectators speak of the designs as Mr. So-and-so's, and not by the motto attached to them. We shall, however, only refer to the selected three under the names of the authors: the rest we shall notice by motto.\*

\* We should here remark that the principal conditions of the competition were,—1st. That the building should be so arranged that the school of art, the art gallery, and class-rooms for boys and girls might be erected first; leaving the Mechanics' Institution, library, hall, and reading-room to be erected afterwards. 2nd. That certain specified rooms, with dimensions given, should be kept in one block or wing; and that other rooms should be kept in the other block or wing to be erected afterwards.

"M.I.B.A."—The selected design of Mr. C. Brodrick, architect of the Town-hall, is on the plan of a rectangle, and is one of the few that are so treated. The site of the new building is not itself rectangular, one of the angles of the oblong being reduced, making a trapezoidal form.

The plan chosen has a façade to the three streets by which the site will be surrounded. It is in the Italian style. The entrance in the centre of the principal front is elaborately decorated. It is approached by several blocks of steps; and, on each side of the site, is a recumbent lion. The doorway itself contains elaborate carvings, both of mouldings, caryatides, &c.; and the two pilasters which break the façade and rise to the top of the building are surmounted by a segmental pediment, filled richly with sculpture. The general character of the elevation is that of a large unbroken rectangular block, relieved only by the before-mentioned pediment and the vase-like forms surmounting the pilasters on each side. A very noble tier of windows runs round the whole of the three fronts of the building on the ground floor, and gives abundance of light to the rooms in it. The whole of the first floor (the building consists of basement, ground, and first floors) is lighted from the roof, being appropriated to the school of art, picture gallery, and school of science. The lecture-hall is in the centre of the building, and is circular on the model (so the accompanying statement says) of the Rotunda at Dublin, and is 77 feet in diameter. The picture gallery and schools of art and science surround this great central hall on three sides; and, on the fourth (the back), the hall occupies the ground to the extent of the site. The ground floor is devoted to the reading-room, library, and offices on one side, and on the other to the girls' school. The basement is occupied on one side by the boys' school, dwelling-rooms for porter, and waiting-rooms, &c.; whilst beneath the hall is a large room of the same form as above, to be devoted to tea-parties.

So much for the internal arrangements, which appear, except in some slight particulars, all that could be desired. Let us now glance at the exterior. It has been noticed that the whole of the first-floor is lighted from the roof: there are, consequently, no windows above the ground-floor windows. Thus it will be seen that the whole of the top of the building, for one-third its entire height, is a dead wall, which, unbroken except by a cornice, gives a heavy leaden appearance to an otherwise grand and well-designed structure. The roof is low, and surmounted by a picturesque cresting, in some degree helping to relieve the weight of the dead-wall. We would suggest that a parapet should surmount the cornice instead of the present flat wall; and, instead of the flat space between the cornice and the ground-floor windows, the wall should be broken up at intervals by bas-reliefs or other sculpture. A smooth stone building as this is would, in a few years, become blackened by the factory smoke, like the Philosophical Hall, in Park-row, Leeds; and then this third of the elevation, which is unbroken, will be like a huge leaden coffin, sepulchral, heavy, and excessively ugly.

"Prodesse civibus," the second selected design (by Messrs. Perkins & Backhouse), claims to be in the Tudor style, though there are not wanting features in it which are of any style but Tudor. This design has been described as being Classical on the ground-floor, and Gothic above; the windows on the ground-floor being circular-headed and plain, whilst the first-floor windows are bowed, with tracery. The top of the building is surmounted by a fifteenth-century parapet. At the angle of the principal front is a huge dome. The lecture-hall is 92 feet by 61 feet, of very good form, and will accommodate 2,087 persons. The picture-gallery is 84 feet by 30 feet, and a good room. The decoration of the hall, which is shown in a separate drawing, is most unsatisfactory.

"Spes" (now labelled as being by Messrs. Shaw & Sons), is the third plan selected out of the competition. It is Tudor in style, the principal feature being an octagonal lantern-tower—not altogether destitute of character in itself, but wholly out of place here. The hall, or lecture theatre, is 116 feet by 50 feet, an absurd plan, considering the distance some of the audience must be from the lecturer. There are two galleries, one above the other in the hall, which have a bad effect. The general effect of the exterior is trifling and petty, and the windows are small.

"Fortiter et Fideliter" gives us an exterior like a reduced segment of the Coliseum, excessively classical, yet possessing considerable power. There can be no question but that the arrangements of this plan are infinitely superior to all the other

plans in competition. It complies with the conditions most scrupulously. The lecture-hall is 90 feet by 70 feet: the picture-gallery is constructed on the South Kensington model: the accommodation for the class-rooms, both for the school of art and other classes, is admirable. The plan possesses one feature peculiar to itself: the great hall is in the angle of the plan, and stretches diagonally across the site, whilst on one side is a separate entrance to the school of art and picture-gallery; and on the other side a separate entrance to the day schools. No other competitor has coped with the difficulty of the site as the author of this plan has. It is undoubtedly the most masterly arrangement in the competition. The cost of the building is estimated at 13,000*l.*; the sum to be expended.

Red Cross in a Circle,—a device.—This is the most highly and elaborately wrought of the Gothic plans. In a series of nine powerfully executed drawings, the author gives us most detailed and minute plans, elevations, and perspective. The general character of the elevation is simple: the entrance is flanked by two towers with high-pitched roofs; that of the school of art is also high-pitched; that of the lecture-theatre semi-circular. The author makes the most of the dead wall of the picture-gallery, by constructional brickwork.

The internal arrangements of this plan seem very successful, and proceed from an intimate knowledge of the various departments, especially of the art department; which, judging from the accompanying statement, the author seems to have studied, and taken much pains about. The lecture-theatre, designed to seat 2,000 persons, is 107 feet by 64 feet, and is a noble Gothic hall. It is surrounded on three sides by a gallery. The plans include an elaborate system of warming by means of hot air, and of ventilation by a shaft in a central courtyard. The decoration of the hall is effective. We would suggest to the author of these plans that his design is considerably marred by heavy penwork in his perspective; though this seems a fault of haste, for the workmanship in all the others is masterly. And if the author will allow us, we will remind him that thirteenth-century costumes are not common in Leeds at present, and that his perspective is not improved by them. Also, that the spiral column of the human figure is a continuous joint at intervals of an inch and a half, or less, and not a pocket-knife. A memorandum of this sort will be valuable to all the other architects engaged in this competition, as well as to our *Gougesque* friend.

Red Cross in a Blue Circle,—a device.—The chief feature in the elevation is a very high-pitched roof and dome. We will not be responsible for describing the style of this design: the best characteristic of it is, that real brick is used. The arrangements, however, are not good. Great pains have been taken to make the most of the design, which has fourteen drawings to explain it, and is very creditably executed. The lecture-hall is 100 feet by 60 feet, and not a bad room.

Three Concentric Circles,—a device.—The internal arrangements of this plan are really good, but the exterior is so unfortunate that we shall not consider the design at any length. It is a stone building, and, in the upper story, has clustered shafts of green and red, the only colours in it, which look like small wax tapers borrowed from a Christmas tree. The author is evidently not at home in the style he adopts, which is a sort of Italian.

We will here deviate from our task, to protest against the use of monograms of a simple character. The last three designs have all concentric circles as a monogram, and two have internal crosses. This is confusing, and may be of disadvantage to a competitor. We also protest against long Latin sentences, as in the next design we notice, though we only give the commencement of it. Surely architects can find one word, or two at the most, of sufficient character to individualize their designs; and, if they only can avoid "Excelsior" and "Amicus" they are safe.

"Secretur ad imam," &c., &c., &c.—This Gothic plan is indicative of great practice in cottage architecture, which the author must have had; and that is not a good preparation for the designing of a large building. On the right is an immense hall with high-pitched roof, like a Belgian Hotel de Ville, without the dormers and gables. On the left are clusters of gables, small, and dwarfed by the large hall. The arrangements in this plan are admirable. The details of the windows are exceedingly beautiful, and thoroughly well drawn.

The hall is of a bad form. Few architects seem to take the trouble to make such perspectives as the author has executed.

"Sit Lux, et Lux Fuit."—Another Gothic plan, the principle characteristic being a picturesque tower of great elegance. The lecture-hall, 60 feet by 105 feet. The other internal arrangements are both good and commodious.

"Art and Science."—In seven drawings the author gives a detailed plan of arrangements, which (judging, as we have invariably done, from the printed instructions) are not of the best possible character, much space being lost in corridors and passages. The exterior is Italian, and heavy. The lecture-hall, 92 feet by 50 feet, is better in form than in the majority of plans, the prevailing error being to make the hall too long for its breadth.

"An Old Friend."—An Italian design. The author of this design, whom we suppose to be a Leeds man, proposes to devote 400*l.* of the architect's commission to the external carving, of which there is abundance. This, no doubt, is a delicate bait, but has been signally unsuccessful. The most original part of the plan is a large corner dome, the lower part of which acts as a vestibule to the lecture-theatre.

"Connoissance" submits six drawings of a red brick design, with a corner lantern-tower, not without character. The author laments the haste with which he has had to produce his drawings, and having to send them in incomplete. We notice this design for no other reason than to propose to the author that he should get some one to write his description of competition works for him. There are not two lines of the description without four or five words wrongly spelt: the author dispenses with full stops, and is not very luxuriant of commas. The ridiculous verbiage, bad spelling, and absurd composition of this description disgrace the competitor. If "Connoissance" is a forger, we apologise for our remarks; but, if an Englishman, we are sorry for him.

"Ars et Scientia."—Elevation classical and meagre, not necessary accompaniments of each other. The lecture-hall has two galleries—a bad feature. The internal arrangements good and commodious. The picture-gallery is 80 feet by 30 feet, and built on the South Kensington model, which, by the way, seems to be the model for a large number of competitors.

"Ut Prosim."—Italian, with portico and central dome. A bad and minute edition of the Leeds Town-hall.

"Per Ardua."—A Gothic design. Totally insignificant; no unity or subordination of parts. Cottage architecture applied to a large building must be unsuccessful.

"Intent."—This is a design which seems to have cost the author little trouble. The elevation, in a pseudo-Italian style, is so unsatisfactory in point of design, that no excellence of arrangement could possibly compensate for it.

Having glanced at all the designs, we must now say a few words concerning the competition itself. There are eleven Classical and five Gothic designs, three only of which seem to us worthy of consideration. These are—"Fortiter et Fideliter," Red Cross in a Circle, and Mr. Brodrick's. We have carefully compared all the plans, room with room, judging in all cases by the printed instructions. Concerning the two first: both are so good that it seems to us merely the question of Classic or Gothic as to which should be selected. Both not only comply with all conditions, but show, in provisionary rooms not asked for, a very close knowledge of the subject. All the rooms are well lighted: the arrangements are simple and distinct; no space is lost in either; the central courtyard, in the Gothic design, being most valuable as a means of access for built-in two parts—the art department first, and the hall of the Mechanics' Institution afterwards. Both can be built for the money (13,000*l.*) as the designs now stand.

Concerning Mr. Brodrick's design, we have only to say that, if it suits the committee of the Mechanics' Institution, the committee has entirely misled all the other competitors by the issue of the printed conditions. Mr. Brodrick is the only competitor who has systematically neglected compliance with the principal conditions, and his design has been chosen. We must explain. Condition No. 2 says—"The plans to be so arranged that, if necessary, the school of art wing, including the art gallery and the class-rooms, &c., may be erected first, leaving the Mechanics' Institution, library, and reading-room, &c., to be erected afterwards." Mr. Bro-

drick has placed part of the school of art over the library and reading-room, and a tea-room, which was to be on the basement of the school of art, he has placed under the central hall; so that with his plan it is impossible the two sections can be built separately. Condition No. 5 says:—"The total cost of the building is not to exceed 13,000*l.*" &c. The selected plan exceeds that sum, without the lions at the entrance, the pediment over the doorway, or the eurytides. In the table of dimensions given in the instructions, the number required to be accommodated in the lecture-hall is 2,000. Mr. Brodrick states in his description that his hall will only seat 1,600; and, if more space be required, the audience must look through the glass screens or doorways at the back of the hall, standing; or a gallery be erected on the external landing for each lecture requiring sitting room for 2,000.

Now, we do not wish to pass a judgment on the committee of selection, which committee, we suppose, includes the men of taste who are subscribers to the institution; but we will quote to them the 12th condition issued by themselves: "As the only object of these conditions is to secure proper and strict impartiality in the selection, so that the best design may be adopted without improper influence or prejudice, it is hoped that they will be strictly complied with: *any breach of them will certainly exclude the drawings.*"

A short time before the drawings were sent in, a circular was sent to the competitors to say that in case of any difficulty of providing for the school of art rooms, some of them might be placed in the Mechanics Institution wing. This, of course, entirely altered all the previous conditions; but it was sent too late to be of use to the majority of the competitors, who have not been able to alter and improve their plans by the arrangement. Thus we find that in the best plans the original instructions are observed strictly: curiously, however, the permission was used in the selected plan.

We will ask this question in the name of those gentlemen who have adhered to the original conditions. Did the committee authorise the issue of the second circular reversing the first, and was it issued on the representation of the majority of the competitors, or by the request of the author of the selected plan? It is due to those who have spent much valuable time in this competition that good faith should be observed towards them. It is right and just that others besides local men should have a fair chance. Competitional morality on the part of committees is not high. We should be glad to hear a satisfactory explanation of this instance of competition injustice. We do not know personally one of the competitors. But we, in common with other professional organs, have a direct interest in the maintenance of strict integrity in public competitions.

It was stated in one of the local papers that the three selected plans were referred to Mr. Scott, for his opinion. We should be glad to know if the three were submitted to that gentleman, and whether he was aware of the existence of the printed conditions, which the committee had issued.

Our object in this inquiry is to give the unsuccessful competitors an opportunity of gaining fresh confidence in the fairness of competitors; for some of them seem to have that confidence shaken; and, we confess, not entirely without grounds.

ON ACOUSTICS.\*

The next unfavourable agency named was that of obstacles. Sometimes in buildings of some size obstacles in the shape of columns, not only may be tolerated, but will bring beneficial results after them on account of the good they do in breaking up or cutting off vacant spaces. This is particularly the case with the columns in churches, which, obstacles though they may be to direct sight and hearing, often help to prevent reverberation, and always are essential to that system of construction with a nave and side aisles, which is not only emulated by ancient tradition, but also found to suit well with modern requirements.

The most serious obstacle to comfort in hearing is the interference of some one's head between the auditor and the speaker. Where the speaker is not very high up indeed, and the audience occupy a level floor of any great extent, the inconvenience from this cause is much felt, and some partial elevation of the back of such a floor is often attempted.

A method of securing an undisturbed ray of sound and line of sight for each auditor was first

published by Mr. Scott Russell in the "Edinburgh New Philosophic Journal," vol. xxvii., for 1839, and has since been re-described and illustrated by Lachez, though it appears to have been practised more or less perfectly by the Romans. It consists in a system for setting out the height of the seats, by which they fall into a curve, called by Mr. Scott Russell the is-acoustic, or equal-hearing curve. The mode of procedure is as follows:—Having a section of the room, and having determined the position of the speaker and the seats, you proceed to determine the height at which you will place the speaker above the first auditor. This settled, draw a line from the speaker's mouth, and let it touch the point where the top of the head of the first auditor ought to be. This will fall on the line marking the position of the second auditor, and you fix the height for his seat, so that this visual line will come below his eye or ear—for this allowing some average dimension. From the point thus obtained, set up a height which will give the top of the head of this second auditor, and so on.

The dimensions that Lachez advises to be followed are:—

	m.	m.	ft.	in.	ft. in.
Back to back of seats	0.60	to 0.75	1	11	to 2 0
Height of seat	0.45		1	0	
Mean height from top of seat to eye	0.75		2	0	
Mean height from eye to top of head not less than	0.15		0	6	
Better as much as	0.30		0	12	

Mr. Scott Russell recommends for face-room, or the height from the mark for the supposed position of the eye to the top of the head, an allowance of 18 inches.

The nearer to the front seat the object to be seen or person to be heard is placed, and the lower it is, the more steep will be the inclination of the seats.

The farther removed and the higher elevated the object is, the less steep will be the curve which, in such cases, even dips down at the commencement of its course.

The seats in the Handel orchestra at the Crystal Palace will give a good idea of the nature of this is-acoustic curve.

There is a great advantage besides the direct radiation of sound to auditors thus placed, and it is, that they are almost of necessity free from the effects of echo. To make a stepped arrangement of seats perfect, they should be arranged on a sweep on plan, and then every auditor will have his face directed towards the speaker—will have an uninterrupted sight and hearing, and will be free from echo at his back; for if any such echo exists, it must pass over the heads of every one but those in the very back row of all.

The remaining obstacle is unshapeliness and bad proportion.

That a disproportioned room is bad for sound is a fact long since admitted, and holds good whether that room be large or small; but when this has been said, and experience has been appealed to for confirmation of the fact, there is very little that, in the present imperfect state of architectural acoustics, can be added. The subject has been alluded to before, and the most probable explanation of what is an admitted truth was then given, namely—that if all the dimensions are not in proportion to one another, the note of the room will not be good and pure. It is very possible that, in time, we shall know this for certain, and shall know, too, what precise series of numbers are best for dimensions, so that a room may be "voiced" beforehand, like a bell or an organ-pipe, by calculation. But we have not reached such knowledge yet.

In connection with proportion, however, I ought to draw your attention to the great division which seems to obtain between buildings for sound. There are, no doubt, two main divisions of speaking places, in the one (of which an ancient theatre is a type), sound is directly radiated from the speaker to the hearer much as in the open air. These should approach a circular or semi-circular shape, and an equal dimension in every way.

The second sort are those where the form of the building combines with the initial direction of the sound, or imparts such a direction to it, and conducts it onwards in one direction. The majority of large rooms are of this class.

Probably, therefore, one or other set of forms and proportions must prevail. If the building is to be on the radiating principle, it must be constructed so as to avoid reflection of sounds, and may be lofty, but must approach a semicircle or a circle on plan.

If conduction is to assist, then there must be one dimension decidedly predominating over the

others, and that dimension should be the length away from the speaker, and should regulate the width and height; with the proviso, that in these buildings the proportions should be rather long than short, and rather low than high.

With one example of an influence upon sound in galleries and long rooms, which is unquestionably due to the proportions of the room, and will be modified by every modification of those proportions, we shall have done with the topic.

It must have often occurred to persons listening to music in a tolerably long hall or gallery, to notice that there are portions where the sound appears more distinct than in others. This was very noticeable in the Floral Hall at the time concerts were given there, and may, I understand, be detected in St. James's Hall.

This phenomenon coincides with an interesting investigation of Savart, published by him in the *Annales de Chimie*. He invented an apparatus for showing visibly the actual condition of the air in a room during the time that a continuous sound of great intensity was kept up; and I mention this investigation, not as having been pushed so far by him as to lead to any practical result, but rather as showing that methods exist by which we may perhaps be able to arrive at information as to the acoustic condition of the air in rooms to a degree hitherto unattempted.

The sound employed in this investigation was that of a bell fixed in front of an open cylinder of such dimensions as to be suitable to reinforce powerfully the note of the bell; and a sound was obtained by this apparatus of such intensity as to be hardly bearable. The effects of this sound on the air were made visible by a sort of artificial ear, formed of a thin membrane stretched tightly over a small wooden frame, and lightly sprinkled with sand.

This membrane, when near the bell, became excited, so that the sand on its surface was thrown into an agitation, but on moving it to and fro along the room, places were found where the agitation varied; in some parts it became very intense, in others very moderate, and on exploring every part of the room, it was established that the points of greatest intensity formed a spiral line, making several revolutions during the length of the apartment. On opening an end-window, this spiral could be traced as continued into the air beyond a considerable distance. The distance from one turn of this spiral to another was not equal to the length of the undulation proper to the note sounded; it became greater the larger the apartment, and in a long gallery approached the length of the sound-wave.

When the windows in a chamber were opened, the position of this line of loudest sound, which, by-the-by, was distinctly perceptible to the ear, as well as visibly demonstrated by the moving sand, was altered, but moving about the sounding apparatus from one part of the apartment to another did not cause any such alteration, which seems to show that this property of a room, if once decidedly manifested, cannot be altered by moving the position of the speaker, but will only be affected by changes in the room itself.

We have now got together some few materials for the design of an acoustic building. Let us for a little consider how they have been applied, or can be applied to various descriptions of structure, commencing with an inquiry how far the simple consideration of size ought to modify the treatment.

The safe limit of direct radiation can, of course, only be very approximately ascertained, but comparing the results obtained by Saunders's experiments, with the observations of that accomplished philosopher as well as architect, Sir Christopher Wren, we may say approximately, that if we were to enclose a space not exceeding 70 feet in length by a somewhat smaller breadth, we should be quite safe in presuming that the natural radiation of a human voice of ordinary power would reach all the audience with no assistance, when the speaker was placed in the best position for being well heard, provided always we were able to insure that no echo from any part of the walls should interrupt. Should our building be much larger than this size it will become desirable to assist, if practicable, the voice of the speaker. If we apprehend a considerable interference of any obstacle with the sound, this may be too great a dimension to be safe. If, on the other hand, circumstances are all favourable, it may, perhaps, be exceeded.

The conditions under which a single speaker can best address an auditory depending upon direct radiation, have been already referred to. The building should have a circular outline, and be in extent something more than a semicircle. Tho

\* By Mr. T. Roger Smith. See page 815, ante.

seats should rise one above another, and the speaker should be pretty well forward among his auditors; and the remotest auditor should not be beyond the limits of direct radiation.

The most perfect type of these buildings, seems to have been an ancient Greek theatre; especially if we bear in mind that the chorus which occupied the most forward part of the stage, was the most prominent feature in the earlier Greek plays. In modern buildings this form has, unhappily, gone out of fashion, except for scientific lecture theatres; but there is one fine example in the great Handel orchestra at the Crystal Palace, the appearance of which, when full, will convey some idea of what the auditorium of an ancient Greek or Roman theatre must have been when crowded with people. Roman theatres differed from the Greek ones in the auditorium not exceeding a semicircle in extent, and in being constructed even down to a late period, and, when of large size, of wood, the resonance of which material was, as Vitruvius tells us, relied upon to reinforce the sound, consequently the *echéie*, or brazen reinforcing jars introduced into Greek theatres, were not adopted in Rome.

There has been much controversy about these *echéie*, and those who wish to know about them, will do well to consult the "Dictionary of the Architectural Publication Society." It may be sufficient to observe that, though in all probability the resonance from them would not have flexibility enough to reinforce speaking, it would be admirably suited to strengthen the effect of slow-sustained declamation, especially if that declamation were of the character of a musical recitative or chant; and if, as seems probable, the principal parts of a Greek drama partook of this character, we cannot doubt that the vases would be a real assistance.

Among English lecture theatres that of the Royal Institution has always been deemed famous. It resembles Roman theatres in being constructed of wood; its seats are arranged in a curve similar to the is-acoustic curve, and its dimensions are very nearly indeed in the ratio to one another of 2, 3, and 4. Its outline presents a semicircle of 30 feet radius, with the ends prolonged 15 feet, and the ceiling is flat, the wall behind the speaker being flat also. One great advantage in this building is the comparatively small volume of air it contains: the favourable form and proportions help it; but it no doubt draws much of its excellence from the resources of the wood employed in its construction.

Lachôz in his pamphlet gives views of all the principal lecture theatres in Paris, and points out that most of them are defective through having too vast a space above and behind the speaker; and he shows that if we wish greatly to extend the space of such an auditorium, the walls should radiate behind the speaker's head, and the ceiling should also be lower where he is than elsewhere.

All modern theatres for dramatic performances depend mainly, though not exclusively, upon direct radiation. In one of the most celebrated and most frequently quoted examples, however,—that at Parma,—the form was such as to favour conduction as well as radiation, while the resonance of the material, constructed as it was internally of nothing but boards, even to the ceiling, no doubt, helped the sound very much. The Parma theatre is connected with the ducal palace, was built in 1618, and so far back as 1790 was in a state of decay. It must not be confounded with the modern Teatro Ducale at the same city.

The dimensions of this building were considerable; its length from the front of the stage to the back of the gallery above the stage is 130 feet, and the width 102 feet, the general form being an oblong rounded off opposite the stage, and the seats being ranged amphitheatrically in steps. Notwithstanding the great size of this house, a low voice could be heard in every part, even if the speaker was as much as 10 feet back, making the distance from speaker to hearer 140 feet.

Of more modern theatres, perhaps, not one is so famous for acoustic effect as the Opera-house in the Haymarket, which was brought to its present form internally about 1790. Here again we have considerable dimensions, though not at all equal to those at Parma; but we have the entire interior constructed of wood, the ceiling of wood, and the stage brought so far forward that a singer may be almost in the middle of the auditorium, and may be heard by all of them directly. The orchestra of course, is even more among the auditors; the stage is extremely shallow behind the curtain; and the auditorium is a little more than a semicircle prolonged by two almost straight sides, which approach each other as they reach the proscenium. The ceiling is an extremely flat curve

over the pit, brought down above the stage to throw the voice forward, and there is a hollow unoccupied space above it. Altogether the form is undoubtedly favourable to sound in a high degree: the space above, behind, and at the sides of the singer is restricted as much as possible, and gradually swells out in the part where the sound is wanted to expand, while the divisions of the boxes which do not radiate from the stage would prevent any echo from the back wall, and break up any wave of conducted sound. More important, however, than the form, in all probability, is the use of resonant material and resonant cavities, and the entire absence of plastered surfaces.

There is one other group of public buildings which peculiarly require to be treated on the amphitheatrical plan, but which hitherto have always exhibited a sort of unsuccessful compromise in their arrangement. I allude to courts of justice.

It is very desirable that the general public should hear well, and they have therefore usually been ranged on steeply-inclined benches; but this has ordinarily been done in a square and often a cubical room, so that all the disadvantages of the square corners and of undue height above the very persons to whom perfect hearing is essential, are retained. In most old law courts various contrivances for contracting the space above the bench are visible; but it would be a much better construction if the court were from the commencement arranged so that there would be a fair prospect that those who *must* hear would hear perfectly, and that all others present would hear well.

The moderate size of our law courts points to the principle of direct radiation of sound, as the one on which they must be constructed. The basilica, on the other hand, the form anciently employed for the same purpose, introduces us to the consideration of the second great division of buildings, namely, those where the transmission of sound is assisted, and whose peculiarity is that they are *oblong*. These divide themselves naturally into buildings with a nave and aisles, and simple large or small rooms.

It will be perhaps desirable to consider first those buildings with nave and aisles of which the basilica may serve as a type, and afterwards to notice large rooms celled in one span, and small rooms.

In the large cathedral churches of Medieval times,—where the object was not simply to build a church just as large as a single speaker might fill with his voice, but to raise a monumental pile for ceremonies,—it was of no moment that the resonance of the air contained in the building should be great, so long as it did not destroy the effect of music; and these buildings afford accordingly a wonderful illustration of the sonority of a large body of air, but very few of them are easy to fill with a distinct spoken utterance.

In Protestant churches of more moderate dimensions, the main object undoubtedly is, that read and spoken words, delivered from the reading-desk, the pulpit, or the altar, shall be perfectly audible to the congregation. How far does the ordinary arrangement of nave and aisles effect this?

There is no question that the columns inseparable from such an arrangement interfere with direct sight, and partly with direct hearing; but I believe it will be generally admitted that the advantages attending upon their use more than counterbalance this disadvantage. I have stumbled upon a passage on this subject in Mr. Denison's lectures on church building, in which I think you will be able for once to concur with that gentleman.

"It is at last discovered," says he, "that so far from the pillars and aisles and broken throats of Gothic churches, built after the fashion of the old ones, being worse for hearing in, they are generally better than the wide-spread buildings all under one span, like a railway station, which it was the fashion to erect in large towns a few years ago. This fact is noticed in two recent reports of the Church-Building Society; and I had observed the same thing myself in several instances, even in small churches, though without knowing that it was general before I read it there. Certainly some of the worst places for hearing in that I know are buildings all under one roof, and of far less capacity than many churches, both old and new, of the nave and aisle construction, in which a large congregation can hear perfectly well; so that in this, as in many other things, the old Gothic builders knew what they were about a great deal better than we do."

The system of open roofs, of a high pitch, so as to accord somewhat with Gothic character, and

carried from wall to wall in a single span, was some years ago employed a good deal for Dissenting chapels; and many instances have occurred where these places are bad for hearing, in some instances to a serious extent. The English Chapel Building Society, is now employing its efforts to promote the erection of buildings divided into a nave and aisles, even where the size of the place of worship is but small.

The position of the pulpit in churches and chapels, with nave and aisles, is a point of considerable importance. In chapels for Dissenters, it is usually placed in the centre of the end of the building, with the communion-table in front of it.

In churches it is almost necessarily placed at the side, principally that it may not intercept sight of the chancel and hearing of the Communion service. There is, however, another quite as good reason for this position, which is, that a centre aisle is almost essential to the decent arrangement of a church; and it is in the highest degree unpleasant to a speaker to have the empty bareness of the aisle in front of him whenever he lifts his eyes, while it is equally unsatisfactory to the congregation to see their minister as nothing better than a dusky shadow, projected on the light of the east window before which he necessarily is fixed, if his pulpit be central.

Is this position acoustically had for the pulpit? and (whether at the centre or the sides) should the pulpit be far forward or not?

In answer to these inquiries, it seems clear that if the building be thoroughly good to speak in, it will not be so very material where the pulpit stands; but I have no doubt that in doubtful or bad cases, especially where there is echo, the side position of the pulpit is much more likely to prove advantageous than the central one; and on that ground it is to be recommended, even for Dissenting places of worship, for the voice being naturally directed towards the main mass of the congregation, will be sent, not straight against the end wall, but obliquely against a side wall.

It is, I believe, always had to place a pulpit directly against a wall. The practice of Sir Christopher Wren, followed by many good architects, is to put it forward some distance into the nave. Others withdraw it into the chancel, or under the chancel arch.

The choice between these two positions must depend rather upon the shape of the church,—if it be nearly square, so that the hearers can be grouped round the preacher on the direct radiation principle, I would put the pulpit forwards among them, and place it against a column, as is done in the great Continental churches. If the church be long, and the hearers must be reached rather on the speaking-trumpet or conduction principle, the pulpit will probably answer best drawn back under the chancel arch. If there are transepts, and a difficulty is found in making people in the nave hear (and this often happens with transepts) it will be quite worth while to try drawing the pulpit a little back into the chancel—for it generally happens in these cases that the communion service, read from the altar, is better heard down the nave than either the prayers or the sermon, owing to the direction the parallel walls of the chancel impress on the sound.

Wren's churches, it seems to me, may be studied as models of arrangement for church-building in large towns; the more so, because, while classic in style they follow the forms of Gothic churches in plan and section. It is remarkable that, notwithstanding that his unrivalled constructive skill gave him every inducement to erect a wide roof, he has not, so far as I know, left a single church without columns in the interior, except only the very smallest. In almost all cases he has placed the pulpit some way down the nave, and in all, the proportions of the cross section, while they avoid the vice of being cramped, present a certain general impression of lowness when seen on a drawing.

It seems agreed that, except in excess, the timber trusses of open timber roofs are advantageous on account of breaking up echoes-surfaces; but I fancy that, so far as it goes, the sharp angle the two sides of such a roof make at the ridge forms a noisy sort of trench, and that a better effect is obtained where a wooden ceiling is thrown across at the level of the collar or higher. This will partly depend on the proportion of the church.

Galleries, if properly inclined, not had places to hear in; but the spaces under them are, unless the galleries are shallow. This especially applies to side-galleries; an end gallery may safely be deeper. Such a gallery sometimes helps to prevent an echo, or the introduction of one will often check an existing echo.

On church building, finally, we have among old

authorities, not only the practice of Sir Christopher Wren, but his recorded opinions, embodied in a letter, from which, had time permitted, I would have made an extract. The document in question is to be found in "The Parentalia," and expresses Wren's conviction that 2,000 was about the extreme numbers that could be accommodated in one church, which he prescribes ought not to exceed 90 feet long by 60 broad. He observes further—"A moderate voice may be heard 50 feet distant before the preacher, 30 feet on each side, and 20 feet behind; and not this unless the pronunciation be distinct and equal." And from this starting point he seems to have regulated his practice.

As to modern practice, the members of this Institute ought to be able to furnish full information on church building, considering the great activity that has lately prevailed in that branch of practice.

The last topic on which I have to trouble you relates to buildings without any columns internally—in fact, large rooms. The most difficult subjects for the architect to treat would seem to be rectangular rooms—perhaps those of moderate size being worse to encounter than larger or smaller ones. Among these I would include great and small halls, lecture-rooms, and concert-rooms, and also the majority of Dissenting chapels, together with such churches as are not built with a nave and aisles.

A rectangular room of considerable size is the commonest form for apartments destined for great assemblies, and is so simple, and has become so natural, that it will probably never cease to be usual for northern nations; and yet it lies open to nearly all the obstacles which we have described as besetting buildings of one or another class. Its flat floor renders it liable to the obstruction of the direct lines of hearing; its straight ends almost preclude any arrangement of auditors on a semi-circular or segmental curve; its flat sides and square angles are very apt to reverberate; its flat ends, coupled with its considerable dimensions, expose it to echo; the mass of air in its height and at the back wall tends to swallow the speaker's voice; and even its very dimensions allow space for the voice to decay, while it is very possible that its windows or its skylights may afford opportunities for sound to be generated of a disturbing character.

I am not prepared to bring forward a single instance that unites all these disadvantages, though Exeter Hall, before the alterations, might have been instanced as exhibiting a good many of them.

I am, however, better pleased to invite your attention to one or two cases where these obstacles have been all successfully surmounted, and from the consideration of these we shall be able to form some tolerably definite ideas of what a great hall ought to be.

We will first consider the case of the Free Trade Hall at Manchester, the work of Mr. Walters, who has most obligingly furnished full information respecting it. The requirements here, as in most great rooms, embraced fitness for both musical entertainments and public speaking, with accommodation for a very large audience, and good architectural effect. All this has been successfully accomplished.

The dimensions of this hall are very considerable; they are, as measured from the contract plans.—The internal width, 10½ feet; length, 176 feet; height, 70 feet; thus bearing very nearly the simple arithmetical relations to one another of 2, 3, and 5. The plan is a parallelogram, with a semicircular sweep at the end opposite the orchestra. The orchestra is partly in a recess with a roof curved upwards, but advances into the body of the hall. The side walls are low, the ceiling coming down on to them with a cove of unusual height.

The side walls are plain below the gallery, the upper part of them being broken only by engaged pilasters, so that they offer no obstacle to conduction, and what reflecting power they exercise will be favourable; but at the remote end, where conduction along the walls would commence, and at the semicircular end, the surface is broken up so as to dissipate or destroy the conducted wave of sound. Columns here take the place of pilasters. Deep, open recesses, used as private boxes, are formed, and balconies are thrown out on corbels; while the gallery, which at the sides is shallow, becomes here deeper, so as more effectually to check the sound that might reach the back wall, and be echoed. The doors of entrance are here, too, covered with cloth; and lastly, the front of the gallery itself has a section of compound curvature, so that it

cannot echo. These precautions, coupled with the curved end of the room, are successful, and there is no echo.

When full, this hall is very successful, either for music or for speaking; but when empty, the resonance on it amounts to reverberation.

The good result, here, it will be remarked, is mainly due to form and proportions; resonant material is not present in an extraordinary quantity, for the walls are plastered, and so is the ceiling; the floor, however, has a space underneath it, and there is a large space above the ceiling. I believe there is a good deal of woodwork about the orchestra—the most important part,—and there is a large organ there which, I cannot help believing is likely, even when not played upon, to be a slight auxiliary to sound.

Another example of great fame in the north of England is the Philharmonic Hall, in Liverpool. I have lately visited it, but am not in a position to speak of its good qualities from personal experience, or to lay before you any authorized information, except what appeared in the *Builder* at the time the Hall was erected. The architect is Mr. Cunningham; and the dimensions given in the *Builder* are,—extreme length, 135 feet; extreme width, 102 feet; extreme height, 68 feet; open part of hall, clear of boxes, is 106 feet by 68 feet. Calculated accommodation, 2,300 persons.

The appearance of the Hall on entering is most peculiar: two elliptic arches of vast span extend along the two sides, while smaller ones cross the end; and by these the very considerable dimensions of the Hall between the walls are masked, and it is brought to appear a moderate-sized apartment with a domed ceiling, and having four recesses opening out of it. These recesses are occupied—one of them by the orchestra, and the other three by two galleries, one above the other, and receding back.

The orchestra is the only place where resonant material appears to have been employed. It is built of wood, and contains hollow cavities of considerable size. In all other parts the architect seems to have dreaded resonance as much as echo. The surfaces likely to echo are curtained over and divided with great care; the boxes into which the galleries are divided are hung with draperies, and on nights of concerts the floor is covered with a carpet, and all the seats are cushioned.

I have been given to understand that the effect upon music is, that it is heard most distinctly, and quite free from reverberation or echo, but that the room affords no support or assistance to the voice or instruments.

It is perhaps not right to conclude a reference to this building without observing that, in arrangements for ingress and egress for the comfort of its occupants, and so far as one could judge, for ventilation, it is one of the best and most liberally planned structures we have.

Coming nearer home, we may refer to the very large and very successful music hall in the Surrey Gardens, for authentic information respecting which I am indebted to the architect, Mr. Horace Jones.

In this large building as many as 13,000 persons have been assembled to hear music and to hear preaching, and in either case have they done so without difficulty. The general form of this building is well known. It is an elongated octagon, or a parallelogram with octagonal ends, and into which the walls of four octagonal staircases project. At the end opposite the orchestra, and up the two long sides, are built three tiers of galleries, with fronts of curved section, and supported on iron columns. The roof over two of these galleries is horizontal; that over the third one inclined; and that over the central space is very similar to the one at Liverpool, both being domed rather like the bottom of a ship.

The dimensions of this hall are very considerable. The extreme height and extreme width are within a foot the same; the width is 68 feet 6 inches; the height 69 feet 6 inches; the length is 153 feet 6 inches, or two and a quarter times the width,—another instance of simple proportions. The form is well chosen, and the galleries act extremely well to prevent echo and reverberation; while yet they are not so near together but that they can be well reached in every part by the voice. The principal reliance of the architect for musical beauty of tone was, however, placed upon the use of resonant materials. The walls are lined with match-boarding on lathens, and it was at one time intended to form the ceiling of wood. The orchestra is constructed of thin, well-seasoned planks, and there is a sounding-board over it in a slightly inclined position, the

action of which is believed to be very beneficial. This is not only of wood, but it was specially required to be of old materials. That these various precautions have been successful is a matter of notoriety; and, in fact, they have answered so well that this hall has been pointed out to me by a professional musician as one of the best in London, not only relatively to its vast size, but absolutely.

Very many other rooms might be brought forward and analyzed, even of those in London alone. To refer to only two others, we will take the hall-room at Buckingham Palace and St. Martin's Hall. The hall-room was built by Mr. Pennethorne. The dimensions are 110 feet by 60 feet, by 45 feet, hearing to one another very nearly the relations of 3, 4, and 8. The angles of the room are rounded, the ceiling slightly roughened with ornament, and brought on to the walls by a cove. The cornice has very little projection, and the lower part of the building is lined with boarding, covered with silk. There is a recess at the end, opposite the place for the music, broken up with pilasters, &c., so as to dissipate echo. This room is admirable for music.

St. Martin's Hall was mainly designed, so far as its adaptation for acoustic purpose goes, by Mr. Hullah himself. It measured, according to the account published at the time it was opened, 121 feet 6 inches long, by 55 feet 5 inches wide, and was 40 feet high. The dimensions cannot be exactly reduced to any very simple relation, though they are not very far from 2, 3, and 6. The nearest to them are 5, 7, and 15. The height and length, however, are very exactly proportionate, the height being one-third the length. This room had no recess for orchestra or organ, but the orchestra, placed the most perfect one in London, was built up of wood against one wall. There was a gallery rather deep across the end, and shallow at the sides, with the front carefully reduced to the minimum of surface. Facing the orchestra was a recess, partly breaking up the end wall. The windows were all high up, and were slightly recessed.

The distinguishing feature of this room was its great wooden ceiling, flat in the centre (which occupied about half the entire width), and sloped down at the two sides to meet the walls. This was paneled, and there was a hollow space over it, and under the floor.

The room, when full, answered to perfection for music, but it was, when partly filled, subject to reverberation, owing, no doubt, to its extreme resonance.

Among the smaller public rooms there are a great number of examples of a class for the acoustic construction of which I would earnestly bespeak more care than has ordinarily been bestowed upon them. I refer to the small public rooms in suburban villages or country towns, the failure of which is as great a calamity for the community to which they belong as the non-success of the most important structures would be in great cities.

These rooms are perhaps more frequently than not imperfect, and consequently fail of their end, which is to afford the inhabitants of the place where they are built a good meeting-place on public occasions. Ordinarily, I think, the small means disposable lead to the walls being built bare and unbroken, but plastered. The ceiling is often too high for the other dimensions of the room, and if there is any semblance of an open roof, it is so thin and slight as to offer little or no obstacle to reverberation. Very frequently, too, circumstances render it advantageous to light these places from the roof, and skylights that act as sound-traps are formed, or if not, at least the walls are left quite devoid of any breaks. It would be desirable in building such a room to pay regard to good proportion, and where practicable, to light from side windows. If this is not admissible, probably it will be advisable to break the line of the walls by piers and arches of moderate projection; and above all, to form some description of break or recess, or cant or curve, in one or both of the end walls, and to make the ceiling drop down at the ends. It would be wise partially to line the walls with wood, or form a wooden ceiling, and if it is necessary to keep the surfaces plain, not to plaster them internally, also to curve or cant off the angles on plan, and to cove or cant the ceiling in sections.

In existing rooms that are had the best remedy must be usually left to the judgment of the architect, as the circumstances of the case will vary; but the most generally useful and the most inexpensive palliative for reverberation,—the usual vice of these small halls,—is to hang up curtains in various parts. Matting or carpet on the floor might

often be of use, and a sounding-board, or even a sheet of canvas, so stretched as to cut off part of the air above and behind the speaker, might often be advantageous.

The subject is now before you, gentlemen. We have considered the general laws of sound, and the modes of influencing sound in a building, namely reflection, as in a sounding-board, referring especially to the parabolic sounding-board; conduction, as in the speaking-trumpet; and reinforcement by resonance, as in the violin. The subject of impediments next required attention, and we have considered echo, reverberation, obstacles with the aid of acoustic curve as a means of escaping them, and had proportion.

Lastly, we have referred to the application of these general principles to particular cases, dividing them, according to size and shape, into buildings for direct radiation of sound, or square and round buildings, and buildings for conduction of sound, or oblong buildings. Among the former we have noticed theatres ancient and modern, lecture theatres, and courts of justice; among the latter, basilicas and other buildings with nave and aisles, and large rooms.

#### AMERICA.

On the 28th ult., the back wall of a large building in Whitehall-street, New York, erected last year, and used as a storeroom, gave way. The roof bent by its own weight to the floor. According to the American *Architect and Mechanic's Journal*, the building belongs to Mr. J. T. Johnson, for whose arrest a warrant has been issued, under the Unsafe Buildings Act. The damage is estimated at 75,000 dollars.

At Lewiston, Maine, a new cotton-mill has been completed, 642 feet long, 73 feet wide, and 75 feet in height. A continuation of the building, one story high, makes the total length 609 feet. The buildings occupy more than five acres of ground, and have swallowed up nearly five millions of bricks. A bell has been hung in one of the towers, 6 feet 7 inches across the mouth, and 5 feet 1 inch in height. The buildings will cost 200,000 dollars; the machinery, 500,000 dollars.

Dover-street, Boston, is being raised: whole blocks of houses have been lifted from their original foundations to the required level. In some of them the occupants have pursued their daily life indoors without interruption! One block has been moved back 8 feet.

#### THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held on Friday, the 22nd inst., at the House in Conduit Street.

The chair was occupied by Mr. Bashill. Messrs. Clarkson and Crawley were, on ballot, elected members of the Association.

After the transaction of some routine business, Mr. Blomfield, Vice-President, read a paper "On the Arrangement of Old Churches," to which we shall return.

At the conclusion,

The Chairman observed, that an important and interesting point, referred to in Mr. Blomfield's paper, was that which related to the introduction of a new material in construction, in the shape of cast-iron. Iron and glass were, in fact, the distinguishing features in buildings of modern times. He remembered that he had spent a pleasant hour with Professor Cockerell, in looking over the designs for the church at Constantiople, and that they noticed a general omission of iron and glass. The new reading-room at the British Museum was not, however, open to that objection, as iron and glass had been abundantly introduced. The difficulty of the arrangement of columns was serious, especially when the area of the church was large. This, however, might be got rid of by making the nave large and the aisles small. With regard to the pulpit and reading-desk, he feared that if wood were the material used in their construction, there would be a difficulty in making them fixed and permanent.

Mr. Bunker reminded the meeting, in justice to the gentlemen who had competed for the church at Constantiople, that they were told that earthquakes were not unfrequent in that part of the world. It was therefore thought that a solid pier of 2½ feet was more likely to bear a superincumbent weight than a pillar of ten inches in diameter. With regard to reading-desk and pulpit, it was very important that they should be made structural features, but it generally happened that when the Specifications came out higher than was expected, the

pulpit and reading-desk suffered. This was what often led to insignificant-looking pulpits, more like washing-tubs than anything else.

Mr. Blomfield said he had not multiplied examples of stone pulpits, as many existed in Continental churches which some of his readers had no doubt seen. There was, for instance, a very massive one at Perugia, in front of the cathedral, which was intended for occasional preaching. As preaching was an important part of the English church service, in his opinion no architect ought to design a church without keeping that consideration in view. If the pulpit were of wood, it might be put near a pillar, which ought to be decorated, with a view to its reception.

The Chairman remarked that a large transept was open to two objections: it divided the congregation, and it was extremely difficult to hear in other portions of the church. Large transepts were better suited to Roman Catholic churches, where there was more ceremonial and less pulpit instruction.

Mr. R. Spiers said that, in making a design for a Protestant church in France, he selected the octagon shape, in consequence of the client objecting to Gothic, and that when he put up his façade the building looked like a Dissenting church. The shape, however, was appropriate for seeing and hearing.

After some discussion on the discomfort of the present pew system,

The Chairman said that, unless the roof of a church were also built of iron, there would be an objection to the use of iron pillars. The difficulty might, however, be got over by substituting a cluster of four columns for one pillar. In reference to the orthodox material to be used in the construction of communion tables, it was generally held that stone was "Puseyite." In a case which came within his knowledge in Lancashire an incoming clergyman attempted to remove the stone altar, and an outcry was raised that he was a Puseyite.

Mr. A. Allon asked whether Mr. Blomfield had taken into consideration the large congregations of the present day, such as met at the invitation of Mr. Spurgeon and the class of preachers called "popular"? Such congregations could only be accommodated by a great span of roof (as at Exeter Hall), in a circular building, or one in the shape of the ancient Forum.

Mr. Blomfield replied that he had not contemplated any such buildings. Churches capable of holding 2,000 persons were those which Sir Christopher Wren spoke of as the largest for general convenience.

On the motion of Mr. Herring, a vote of thanks was passed to Mr. Blomfield.

#### THE GRANITE EXPORT.—HARBOUR OF ST. SAMPSON, GUERNSEY.

THE Port of St. Sampson is situated on the east side of Guernsey, and extends some distance inland, where there is a wall, called "The Bridge," which divides the parish of the Vale from St. Sampson.\* This wall was built in 1803, to keep the sea from penetrating across the island, as it had done since 1204: 5,000l. were made by this project, and now corn grows and houses stand where the billows of the Atlantic rolled at the commencement of this century. On each side of the harbour are quays. Outwards there is a break-water, and nearer to the harbour is a pier, extending from the Vale Castle: further inwards are the real pier-heads.

The trade of this place and neighbourhood consists in the preparation and exportation of granite, for the north of the island is the situation of the grey granite of commerce: it is worked all round this neighbourhood, and even on the quays. Guernsey granite is of a better quality than that of Dartmoor or Aberdeen: the experiment was tried in the Commercial-road, London. After having been seventeen months laid down in the tramway, these different kinds were taken up, and found to have lost thus:—

Name of Stone.	Sup. Area in feet.	Original Weight.	Loss of Weight by wear.
	Pt.	Cwt. qr. lbs.	lbs.
Guernsey .....	4,734	7 1 12½	41
Peterhead (blue) ..	3,484	4 1 7½	64
Aberdeen (red) ..	5,375	7 2 11½	11½
Dartmoor .....	4,500	6 2 25	123
Aberdeen (blue) ..	4,823	6 2 10	123

This table shows that the Guernsey granite lasts rather more than three times as long as that

\* William Staines, once Lord Mayor of London, worked in this neighbourhood.

of the blue Aberdeen. The granite of Guernsey is remarkable for its resistance of atmospheric influence for a long period. Lettering cut in the arch of a doorway is as clear and sharp in 1860 as when erected. It is also extremely hard and ponderous, thus resisting friction and wear of all kinds, and is generally exported by colliers, who, after bringing coal, return laden with a cargo of stone. The duties of the harbour of St. Sampson realize an amount of about 1,450l. yearly: in 1843 the dues only amounted to about half that sum. The number of tons exported from this harbour average yearly 116,000; in 1842 there were only exported about one-third of that quantity. One penny per ton is the duty on the stone exported: the prices for freights for London vary from 6s. 6d. to 7s. 6d. per ton. E. A. M.

#### TENDERS FOR THE NORTHERN MIDDLE LEVEL SEWER.

METROPOLITAN BOARD OF WORKS.

At a meeting held on the 21st inst., the Board proceeded to open tenders for the completion of the Northern Middle Level Sewer Works, rendered necessary by the abandonment of the contract by Mr. Rowe, who had originally obtained it.

The engineer (Mr. Bazalgette) said, the matter in reference to Mr. Rowe stood thus: Engineer's original estimate for the work, 280,000l.; taken in 1859, by Mr. Rowe, for 264,533l.; work done by Mr. Rowe, 10,739l.; leaving due on the original contract to Mr. Rowe of work unfinished of the value of 253,794l. The following are the amounts of the tenders sent in:—Mr. Moxon, 322,675l.; Messrs. Brassey and Co., 329,800l.; Mr. Durbach, 335,000l.; Mr. Thirst, 345,000l.; Rowland, Brotherhood, and Co., 346,500l.; Mr. W. Hill, 357,000l.; Mr. J. Digges, 363,000l.

On the motion of Mr. Carpmael, seconded by Mr. Doulton, the tender of Messrs. Brassey and Co. was accepted. The present estimate for the unfinished work is 329,800l., showing an excess to be paid on the new contract of 76,166l.

#### THE GARDENS OF THE HORTICULTURAL SOCIETY, SOUTH KENSINGTON.

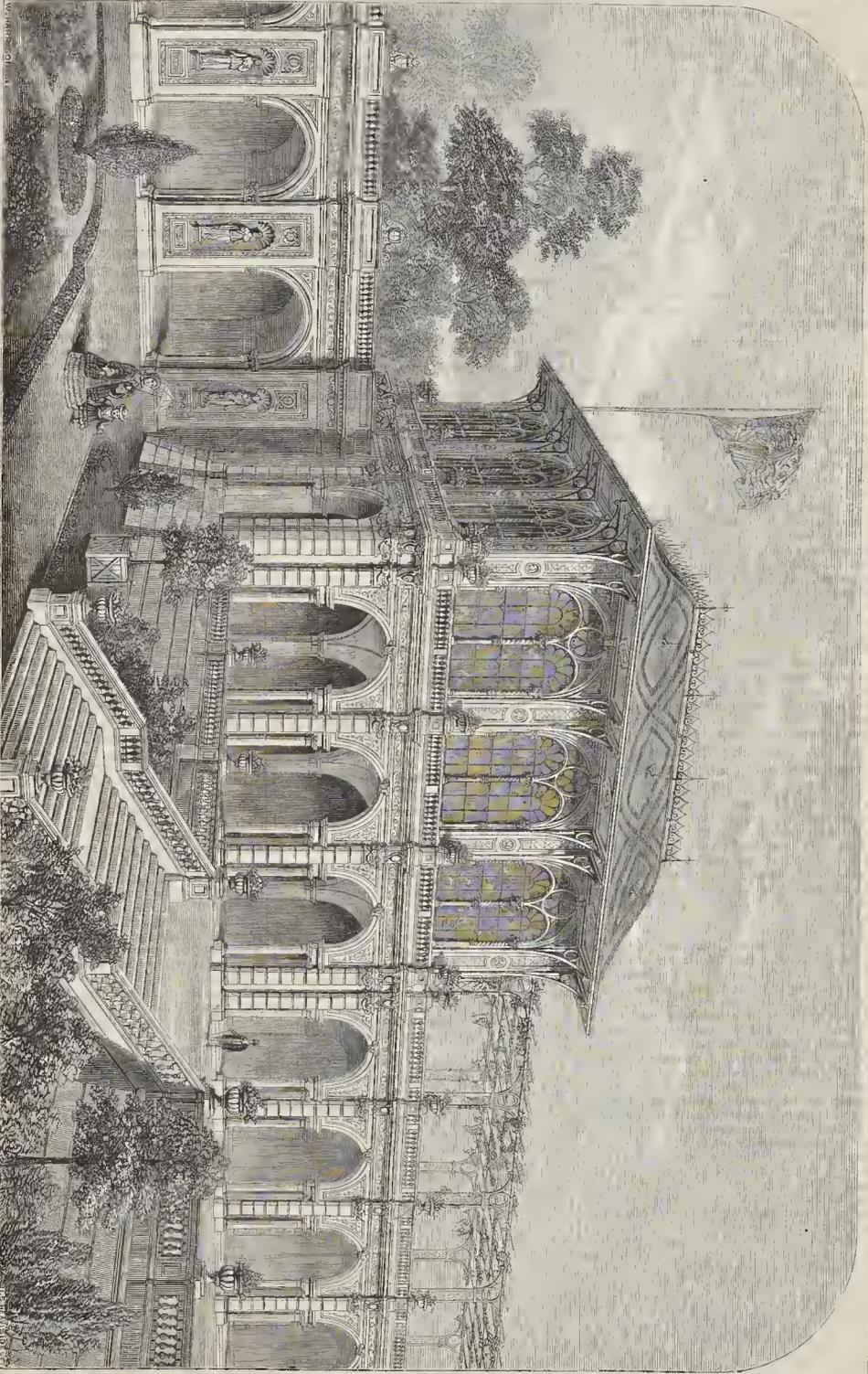
LOITERERS in the fine new roads of Brompton, around and through the land belonging to the Royal Commissioners of 1851, will observe long skeletons of arcades springing into being, and on which, until the occurrence of the present frost, men were busily engaged. When the spring comes, the whole will speedily get into shape. What this will be in one part, the engraving in our present number, representing the upper arcade, with a pavilion as suggested by the architect, Mr. Sydney Smirke, shows. It is but fair towards all parties to say that in the first instance, Mr. Smirke acted only for the Royal Commissioners, and had nothing to do with the works about to be executed by the Horticultural Society. Quite recently, however, the latter body have placed in his hands the architectural portion of the middle arcades connected with Mr. Durbam's Memorial of the 1851 Exhibition now in progress, the fountains, and the terraces. Captain Fowke has the direction of some of the works for the Horticultural Society.

Returning to our engraving, the upper arcades are circular on the plan, and are built of Portland stone and brick, faced with moulded and rubbed red bricks. The frieze, capitals, and spandrels, will be of tessellated work, or glazed terra cotta in colour. The height is 26 feet; the internal width in the clear is 23 feet.

The middle arcades are straight, each 630 feet long; the height to top of cornice is 23 feet; the clear width within 20 feet. The hack walls and roofs of these middle arcades will be temporary. The arcades are of Portland stone and moulded and rubbed red and yellow bricks. The niches, enrichments, and statues, are to be of terra cotta, glazed, and in colours.

The pavilions are intended to be of wrought and cast-iron, partly gilt and partly cased with glazed and coloured terra cotta. The erection, however, of these pavilions will probably be postponed for the present, and may not be carried out at all.

In the lower arcades terra cotta columns are being used. Mr. Nesfield has the entire control over the garden works, and has made some progress. The landscape gardener, however, suffers under the great inconvenience of having to wait for Dame Nature. In whatever pelting haste man may be, Nature teaches us a lesson of deliberate progress. She is slow and sure, whilst man goes blundering on in hot haste, very fast, and some times very wrong.



THE ARCADES AT THE HORTICULTURAL GARDENS, SOUTH KENSINGTON, WITH SUGGESTED PAVILION.—MR. SPINER SAUNDERS, R.A. ARCHITECT.

1870

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1900

OF THE RESOURCES OF DESIGN IN THE NATURAL KINGDOM, FOR ARCHITECTURAL DECORATIONS.\*

"Nature,—enchante Nature, in whose form And lineaments divine I trace a hand That errs not, and in its patterns still renew'd,— Is free to all men,—universal prize."—*Comper.*

"Strip'd of her ornaments, her leaves, and flowers, She loses all her influence."—*Comper.*

From time immemorial man has endeavoured to imitate and to convert to useful purposes the beautiful forms presented to us in the vegetable kingdom.

In the buildings of the Assyrians, Egyptians, Greeks, Romans, and the Middle Ages, ideas culled by our ancestors from nature can be traced, either undisguised and self-evident, or being conventional representations founded upon material objects. And this is not surprising for—

"Who can paint, / Can imagination boast, / Amid its gay creation, lines like hers?"—*Comper.*

Some writers object to "copying the forms of nature," and urge that "we have already, in the floral carpets, floral papers, and floral carvings of the present day, sufficient evidence to show that no art can be produced by such means; and that the more closely nature is copied, the further we are removed from producing a work of art." Now these assertions are untrue, and therefore unjust: the floral designs and carvings of the day are insipid and unmeaning, simply on account of the laws of nature having been disregarded in their production: the Gothic architects of the fourteenth century did not merely copy nature, they selected, adapted, designed, and proportioned natural objects upon buildings and works of art, as Nature herself would have arranged them; and therefore the incapacity of modern designers must not be brought to bear against the artists of the fourteenth century, who so successfully followed nature. The fault evidently may be traced to want of skill, and not to the use of natural productions. "The defects," it has been observed,† "arise from various causes, and are of various kinds; but there is one which we notice above all, on comparing the works of these days with those of the thirteenth and fourteenth centuries; namely, the absence of that spirit which is so observable in ancient carving."

It is the practice in the present period to imitate natural leaves upon capitals of columns, and to term the process copying from nature; and how is this accomplished? Not in the manner of the fourteenth century: it is certainly not an easy task to "go back to nature, as the ancients did." The Medieval artists surpassed the sculptors of Greece and Rome in this particular. In Rome, the foliage, fruit, and flowers, were strung in wreaths and festoons, as if fresh gathered, without any further attempt at form or arrangement. Now the Medieval architects worked with nature, id est, they so wrought and distributed the stems, leaves, and flowers in their buildings, that they appeared to grow with greater life and spirit than they ever did in nature: the leaves were not (as they are in our time), sculptured flat, insipid, and spiritless: a vigour was imparted to them that produced a well-balanced and agreeable light and shade.

"Yet so delightful mix'd, with such kind art, / Such beauty and beneficence combined; / Shade, unperceived, so softening into shade, / And all so forming an harmonious whole."—*Thompson.*

The architect should personally select the leaves, flowers, and other natural objects, for his proposed ornaments, as drawings and engravings (however beautifully executed) will not show the form, light, and shade, which exist in the living specimens. The point I wish to urge is, that the laws to be found in nature should be transferred to art, not by literally copying from natural productions, but by forming, disposing, and designing ornament upon natural principles, and, as far as practicable, rendering it symbolical.

By the means of symbols, a sacred character has been given to ecclesiastical buildings, and religious instruction imparted from time immemorial; and it is certainly more interesting and edifying to design ornamental combinations with an intention, than to introduce unsightly and unmeaning decorations. The utility and importance of symbols cannot be doubted, and the extent of their employment may be partly an open question; although they are at the present period seldom used; and when adopted, are often selected without discrimination.

In the ornamentation of our old cathedrals and

churches, appropriate decorations were generally produced: each flower, each leaf, each device, had a significant meaning: "this principle," observes Virgil, "is completely overlooked at present; any design, so long as it is considered to look pretty, is introduced indiscriminately for all seasons, and in all situations."

The ancient sculptors were scrupulously attentive to their discriminative symbols. In the Assyrian sculptures, the pine cone and honey-suckle ornament were frequently used; with the latter the Greeks were evidently acquainted. The leaves and fruit of the vine alternating upon horizontal branches formed an arbour for an Assyrian king and queen. The lily and other flowers were selected for the adornment of Solomon's temple: the palm-tree was carved upon the walls and ceiling; for the capitals of the columns the pomegranate (symbol of sacred things and fertility), was selected; and the olive tree was found serviceable for the cherubim and the doors.

The Egyptians formed columns of clustered stalks of the papyrus, with unopened buds for the capitals; and with these were decorated the Temple of Luxor, Thebes; the Temple of Karnac, the Temple of Philæ, &c. The palm leaf supplied the capitals of the columns of the Temple of Edfou; and in several of the temples built while Egypt was governed by the Ptolemies, the lotus (sacred to Isis) embellished the columns of Dendera.

With the Greeks, the acanthus flourished: it was nurtured and brought to a wonderful perfection. The species supposed to have been employed for the Corinthian capital is *Acanthus mollis*, or *Brank-rose*; but Dr. Sibthorp considers that the *Acanthus spinosus*, still called *acavada* is the one meant. This, however, does not affect our inquiries, and may be left to antiquaries to deal with. The capitals of the columns of the Tower of the Winds, at Athens, have one row of acanthus leaves; and the Choric monument of Lycisates at Athens is also decorated with these leaves. The Greek leaves have been said to have more of the natural character of the acanthus: the Roman acanthus is more artificial. The Greeks chose the lotus for the upper range of leaves on the capitals of the Tower of the Winds at Athens, and the upper leaves of the ornament on the apex of the roof. Leaves of this plant decorate a marble *stèle* (Stuart, vol. v., p. 53): they are also to be seen in the Erectheum. Many capitals at Athens and other parts of Greece are embellished with these leaves. The laurel (dedicated to Apollo) is wrought on the outside of the Choric monument of Lycisates at Athens; laurel wreaths occur on medals. The honey-suckle (which the Greeks borrowed from the Assyrians, and wonderfully perfected) was extensively employed in the Erectheum, at Athens, also on sepulchral marbles and vases, and on a capital from the Temple of Apollo at Branchyda, near Miletus. An *amarantine* wreath was worn at the funeral of Achilles, and often worn at funerals in the early ages of Greece: cultivated, also, on the graves of the ancients were the asphodel (sacred to Pluto), the myrtle, and the mallow. A brazen palm-tree sheltered the golden lamp made by Callimachus, in the Erectheum: the palm was also used for wreaths:—

"With wreaths and palms to bind the victor's brow."—*Virgil.*

In the Pandrosium, over an altar, grew an olive tree (dedicated to Minerva). On medals are sometimes found garlands of olive. In solemnizing the festival of the Dionysia, garlands of ivy (dedicated to Bacchus) and "wreaths of fresh-blown roses" were used. With violets were the Muses sometimes decorated,—

"So wild'd each muse divine, with violets crown'd."

The central acroterion of the Temple of Egina had female figures on each side, holding a pomegranate flower. *Anthemion* is stated to be the Greek name of the plant *Nigella Damascena*, which was given to it for the beauty of its flower. The term *Ἀνθίμων* is derived from the radical word *ἄθος*, a flower: according to Theophrastus it was the name of a plant, and a term applied to artificial floral ornament by Xenophon. The Grecian architects applied the term *anthemion* to antæ, and on the interior wall of the Erectheum portico, as well as to similar ornaments.\* The parsley was also called in to adorn various edifices at Athens;† and the horse-chestnut has been thought to have suggested the "egg-and-tongue" moulding.

The Romans extended, but did not improve, the ornamentation of Greece. The capitals of the

columns of the Temple of Vesta, at Tivoli,—of the Arch of Septimius Severus,—of Jupiter Tonans, Rome,—were decorated with acanthus.\* These leaves were also used in modillions, mouldings, vases, and in architectural and sculptural ornaments generally. The olive supplied the capitals of the columns of the Arch of Titus, the Temple of Jupiter Stator, &c. Olive and oak leaves, rose, &c., occur in the Arch of Titus; also honey-suckles in the cinctum of the same building. The ivy is visible in the festoons on the entablature of the Temple of Vesta, at Tivoli; and in the festoons in the panels at the sides of the entrance of the Pantheon, at Rome, are branches of fruit and flowers of the vine, oak, pomegranate, olive, bay, &c., elegantly arranged, and executed with the appropriate leaves attached to each.

The Medieval sculptors ornamentally combined natural forms in their works with considerable success, and selected, among many other vegetable productions, the strawberry, vine, billy, woodbine, oak, fir, apple, ivy, avens (or herb benet), fern, broom, euphorium, iris, laurel, ranunculus, sunflower, palm, maple, hawthorn, acanthus, common purple iris, myrtle, lily, dog-rose, red anemone, bistle, wood-sorrel, hirony, mallow, mugwort, hazel, elder, margold, hop, kale, cyclamen, and gazelle's horn, almond-tree, &c. These plants were symbolically chosen and expressed: for instance, the billy (symbol of the Resurrection), was sculptured on the sides of a monument in Chichester Cathedral; the vine, symbol of the Saviour; the ivy, immortality; the oak, virtue and majesty; palm, martyrdom; lily, purity; myrtle, peace; yew, was planted generally to the south of the church, to supply green for the decoration of churches at the great festivals; and the branches of yew trees also served anciently for palms in the procession of Palm Sunday.

In comparatively recent times the resources of the natural kingdom have been successfully employed in the adornment of churches. The stalls of the choir of St. Paul's Cathedral have festoons of foliage, flowers, and fruit, beautifully arranged and sculptured, by Grinling Gibbons, in the most artistic manner, and proving the fallacy of the assertion, "that the more closely that nature is copied, the farther we are removed from producing a work of art."

It will thus be seen that architects and artists have, from time immemorial, selected Nature's gifts, and thought them not unworthy ornaments for the adornment of sacred edifices.

In a little work, entitled "Manuals of Gothic Ornaments," it is stated that "perhaps we also, as they (our ancestors) did, mist in the first instance attain like skill to theirs, by the study of the labours of those who have gone before us, recognising, in the past, however, those principles which are always to be found if diligently sought for, and seeking to work in accordance with these principles rather than slavishly imitating style. As with them, therefore, so with us, first the stone remains of older times, then the freshness of nature to give vigour and originality; and, when power and knowledge are thus obtained, then, but not till then, may we attempt new styles; and the time may not be far distant when, instead of the diagrams, scrawled over with figures and arithmetical calculations, the sculptor will take boughs gathered from the tree, and, arranged to suit his construction, will copy them at once with his chisel. But at present our models must be of stone,—these first, and then nature."

The above advice to sculptors is very questionable; as, without calculation, most lamentable failures frequently occur. Prior to sculpturing a statue,‡ cross, finial, or other ornament, it is absolutely necessary that the altitude of its position in the building should be accurately ascertained. Without this knowledge the sculptor often renders his work either too large or too small, and is seldom, if ever, successful, without the calculation. In illustration of this, we all recollect the well-known competition between Alcamenes and Phidias. These sculptors were each employed to make a statue of Minerva, in order that the finest of them might be chosen, and placed on a very high column. When the two statues were finished they were exposed to the view of the public. The Minerva of Alcamenes, when seen near, seemed admirable, and carried all the voices: that of

\* Virgil alludes to the acanthus in the "Æneid," book i. v. 630 and 711; and in the "Georgics," book iv. v. 122 and 123. Ovid notices this plant (Met. xiii. v. 701).

† It is to be regretted that the author of the "Manuals" has omitted to give definite principles for the guidance of the workman.—W. P. G.

‡ It had been objected that the statues in the west front of Wells Cathedral were unaturally tall; but it had been proved that this was intentional, in order to give them a proper effect when viewed from below.—W. P. G.

\* By Mr. W. Pettit Griffith, F.S.A. Read at the Liverpool Architectural Society, on 26th instant.

† Parker's Manual of Gothic Ornament.

\* See chapter on Grecian ornament, in Stuart and Revett's "Athens," vol. v.

† Stuart, vol. v. p. 53.

Phidias, on the contrary, was thought insupportable—a great open mouth, nostrils which seemed drawn in, and something rude and gross throughout the whole visage. Phidias and his statue were ridiculed. "Set them," said he, "where they are to be placed,"—which was accordingly done, alternately. The Minerva of Alcmenes appeared then like nothing, whilst that of Phidias had a wonderful effect from its air of grandeur and majesty, which the people could never sufficiently admire. Phidias received the approbation his rival had before, who retired with shame and confusion, very much repenting that he had not learned the rules of optics.

Although the Greeks may have extensively borrowed their ideas of conventional foliage and ornaments from the Assyrians, yet it cannot be denied that, in the hands of the Grecian sculptors, ornamentation was matured and perfected, and has never been surpassed.

Interesting as the representations of flowers and other natural objects may be, in the works of the Middle Ages; and addressed as they are to our feelings and love of nature, they (in an educational sense) fall considerably short of the intrinsic beauty of Classic floral decorations. I observed, in 1847,\* that "architecture has not yet reached its *sumnum infantium*. Gothic architecture, now the rage and the fashion, will, in the course of very few years, present a different aspect: the far-famed cathedrals and churches of England, so adored and looked up to with wonder, and restored with precision, will be gazed upon as crude specimens of a not very enlightened age: the ugly gargoyles, the representation of monkish confessions, and other vagaries, will have passed away; and a style, based upon all that is beautiful and good, will rear its head, decked with Nature's gifts in a more Christian-like manner, and with more science and art."

Since the foregoing was written, a decided improvement has been effected; the miserably-executed heads of Mediæval kings—cardinals, monks, and wimpled females,—are now seldom produced, and floral ornaments and other sculptures have been more appropriately substituted.

The Romanesque may be regarded altogether as a transitional period, in which the sculptors introduced in their decorations attempted representations of divine and human figures, animals, birds, foliage, &c., with such incongruity, ignorance, and bad taste, that but little advantage can be derived from a study of their works. They tried to imitate Nature, and studied her, but did not make any progress.

In the thirteenth century the artists had not the capacity to imitate nature, and consequently remained contented with a monotonous trefoiled scroll, which pervaded all their works. In some instances great taste and elegance were achieved, and in every respect the labours of the thirteenth century were wonderfully in advance of all the productions of the Norman era.

During the fourteenth century natural types were very successfully employed upon ecclesiastical and secular buildings: the foliage was well distributed, always upon a system, and considerable vigour imparted throughout. The numerous examples of this period are deserving of study and a careful attention.

The fifteenth century produced works of less vigour, and therefore not so worthy of being studied. The foliage was distributed in too mathematical a manner, which created a formality neither artistic nor pleasing.

In studying, therefore, the works of former ages, we are not so devoid of ideas as to literally copy any one example. The most valuable lesson to be culled from our ancestors' productions is not so much what shall be selected for adoption, as that which is to be avoided.

If Mediæval architecture and sculpture were to be divested of incongruities, of which there are very many, much of its sculptured work being caricatures, a more perfect and beautiful style would necessarily be the result. The Greeks *perfected* their art: the Mediævalists have left their works crude and unfinished. Imagine a cathedral adorned with sculptures, illustrating events in Scripture history, the sculptures being rendered with the same care as that bestowed by Phidias on the Pagan temples. No doubt there is much yet to learn, and that in this country art has not yet reached its culminating point.

During the Middle Ages, at home and abroad, natural ornamentation was cultivated with more or less success: the sculptors sought the fields and the hedges, in lieu of the *plaster casts* and the *books*. Nature was embodied in stone and wood,

in all her loveliness,—not literally copied, as supposed to be by some architects, but so arranged and manipulated as to produce a most harmonious effect. By carefully examining the several churches and other buildings of the present day in which natural ornament is adopted, it will be observed that the leaves and flowers are represented dead, flat, insipid,—no petrified life, no light or shade; and what is the consequence or result? Some writers, of course, object to "copying the forms of nature,"—and others to "the want of force and vigour in nearly all, and the absolute vulgarity of many, of the modern works professedly founded on nature." To successfully embody the works of nature in art-products, care must be taken to design in accordance with natural laws.

In teaching, necessity demands the employment of a mechanical process in setting out ornamental combinations, let it be geometrical or otherwise: the geometrical method is the most natural, as it is self-evident and universal in the floral kingdom. The method adopted in setting out the ornaments in most of the buildings of Rome is alluded to by Taylor and Cresy, in their Architectural "Antiquities" vol. i. p. 10: all these methods, be it understood, are valuable only as a means to an end. The spirit to be thrown into the work must be in the *mind* of the artist.

The projection of each flower, the particular curl of each leaf, the relief of each stem, must be left to the sculptor: he must give the life or the spirit to his work. All the mechanical means in the world will not create a genius: genius is a natural gift; but a correct taste is the result of a good education. It should also be borne in mind that although a man of genius may design and create wonderful productions, yet they may be all in bad taste. To appreciate and to understand the best works of the age of Pericles and the Middle Ages requires education. Thus the importance and necessity of obtaining and possessing examples of correct art for educational purposes are self-evident. Works of genius, unless in good taste, are better avoided—at least, as far as the pleasure to be derived from the examination of beautiful objects is concerned.

Deformities in nature are exceptions to the rule: in the Renaissance and Elizabethan styles, distortions form the rule. It is of importance to distinguish good art from art *per se*: it is an art to sculpture monstrosities. They may be spiritedly executed, and with much talent; but to admire or to encourage such productions would exhibit a morbid taste, to the injury of good or perfect art, and consequently dangerous to art-progress. Examples of correct art should be purchased and preserved, and all had art destroyed—at least, not retained for admiration or imitation.

I take this opportunity of again protesting against the use of Gothic architecture for secular purposes. How can we retain a devotional feeling towards the House of God if our theatres, private dwellings, public vestry-halls, and other secular buildings, be decorated with ecclesiastical architecture? In 1847\* I stated that "the Pointed style of architecture, in a religious point of view, is far superior to every other method of building for ecclesiastical purposes; and, with judicious management, may be adapted to accord with propriety in Protestant churches, by divesting it of all those forms which were used for certain ceremonies which we discard, and using only such as are in accordance with our views and suited to our houses, excise offices, mints, post-offices, museums, banks, offices of assurance, &c., &c., are best adapted for a style of architecture based upon the Classic styles, which, as regards light and convenience, are the best fitted."

Classic architecture requires an educated mind to appreciate it: Gothic architecture appeals more particularly to the feelings. The latter is essentially a Christian architecture, not so much on account of its use in ecclesiastical buildings (as Classic architecture has been similarly employed), but it is not possible for any one to examine the minutest detail of that style without perceiving in it the impress of a Christian mind. In Classic churches we have pagan ornaments used as decorations, even in modern times.

Mediæval architecture (or a style based upon it) is peculiarly fitted for churches, parsonage houses, schools, and other buildings under the surveillance of the clergy; and no doubt the laity would always reverence it: it, however, is an act of extreme egotism for any one to dictate the employment of Gothic architecture for edifices of all denominations, to the entire exclusion of the Classic styles.

The styles of architecture which were common to Egypt, Greece, Rome, and the Middle Ages, are, as it were, dead languages: they belong to the past; and, although a knowledge of them is necessary to enable us to understand the history and feelings of former times, they should not be cherished for reproduction, nor their mutilated and useless and decaying remains preserved (except the intelligible parts in national museums) for *picturesque* studies, either for the painter or poet to muse upon, to the detriment of future progress. Until the system of idolizing *ancient* architecture be banished, we shall never be encouraged to think for ourselves. The Decorated style would not have been produced if the preceding, or Early English, style had been religiously cherished and preserved.

The remains of ancient architecture ought to be carefully measured and delineated, and all sculptures and ornamental portions preserved in museums or proper places built for their reception, so as to form studies for reference, contemplation, and instruction; but not for reproduction in new buildings. To preserve old ruins half-defaced, until every discernible feature of form or expression be effaced by exposure to the elements (which can never be ultimately resisted), would be of no service to the architect, and be only encumbering the earth with picturesque ruins, sublimely unintelligible to all except romantic painters and love-sick maidens.

Although it is much to be lamented that the beautiful works of the Mediæval architects, sculptors, and others, have been (independently of the effects of atmospheric influence) wantonly injured; still, it is a great satisfaction to know of the many examples of early art which have been spared for our contemplation and instruction. The extensive system of *white-washing* every object in the sacred edifice, adopted by churchwardens since the Reformation (until recently, has been of eminent service. To this system we are indebted for the preservation of many finely-sculptured ornaments, which have been thus hidden from the gaze of the ignorant destroyer, until the coming of a more enlightened age.

The cultivation of the fine arts in this country is progressing, and the Government schools will no doubt so far improve the education of the people as to teach the latter at least to respect works of art. The great improvement which has taken place with regard to ecclesiastical architecture has been universally acknowledged. I allude more particularly to its being preserved from mutilation and neglect. The extraordinary ignorance of the beauty of our ancient churches, and the ignorance of its strong terms in the early numbers of the *Ecclesiologist*, and not without reason. There is, however, still existing a want of knowledge of the true principles of Mediæval architecture; and, until this has been properly supplied, not only is the money that is expended upon the so-called restoration of our old churches, and the building of new churches, misapplied; but positive injury is done to the former. The stereotyped excuse for bad architecture is the want of funds. This excuse our ancestors never needed, as they knew how to build their churches in accordance with the money to be expended. When a church or a chapel was erected in the Middle Ages, if the means were small, the building was not crippled. It had not a meretricious front, with the sides and back executed in plain work, but a general uniformity of simple detail was imparted throughout the building. It is not, therefore, the money alone that is required for the production of correct ecclesiastical architecture, so much as a knowledge of first principles and experience.

"One thing there is more needed than expense, and something prior *et cetera* to taste—'t is sense."

I have no doubt that when experience has been gained, through the erection, *inprints*, of many premature new churches, that a proper supply of funds will be forthcoming. It was so in former times. "Pericles," says Müller,\* "induced the Athenian people to expend upon the decoration of Athens, by works of architecture and sculpture, a larger part of its ample revenues than was ever applied to this purpose in any other state, either republic or monarchial. This outlay of public money, which at any other time would have been excessive, was then well timed, since the art of sculpture had just reached a pitch of high excellence, after long and toilsome efforts; and persons endowed with its magical powers, such as Phidias, were in close intimacy with Pericles."

The sculptures and ornamental decorations in ancient cathedrals and churches were usually

\* Ancient Gothic Churches.

\* Ancient Gothic Churches, pp. 9, 9.

\* History of the Literature of Ancient Greece, p. 381.

historical and symbolical expressions, and offered Scriptural instruction. Attention has been directed to the importance of historical sculpture, and notice taken of the angel choir at Lincoln, which gives an epitome of the Advent of the Favour; the 308 pieces in the ceiling of Norwich Cathedral (which illustrate the entire history of Revelation); the Virtues and Vices at Salisbury; and many other valuable examples.

A church, being a material edifice, must be properly proportioned and erected. You may call the construction of a building a mechanical process; its decoration, however, is quite a different matter: in this the artist and sculptor have (as it were) to impart vigour and spirit to the whole work, and thereby render it an intelligent and a living monitor. "A work of art," says M. Fould,\* "is not a thing quite inanimate: life exists really in it: it is that sentiment which is found everywhere, and cannot be assigned anywhere. The ancients have excelled in the art of animating their works, only because they possessed that general and complete instruction which sound studies give."

In conclusion, it is to be regretted that no real progress in architectural sculpture has been made. In 1848,† I considered that the advancement of art towards perfection would be hastened by the establishment in this country of a national academy upon liberal principles, in which, *inter alia*, the art of modelling and sculpturing (upon a large scale) natural ornamentation for all purposes ought to be propounded.

I cannot imagine more instructive and beautiful sources for the inspiration of the sculptor's chisel than the scenes in the Old and New Testament,—subjects scarcely touched upon in the adornment of our new churches.

Prior to anything like excellence being attained in such important subjects as those offered by the Scriptures, our sculptors will have to toil long, and must not enter upon the task without feelings of reverence and respect to holy things.

Useful and beautiful as well executed arrangements of foliage and flowers always are in symbolizing Scriptural subjects, still it must be admitted that they are of minor importance compared with historical sculptures. Floral forms address us through the medium of symbolism, but historical sculptures are at once intelligible to the most ordinary understanding.

Great and praiseworthy efforts have been made at the Architectural Museum to direct attention to the vital importance of historical sculpture, but hitherto not with that success which its advocates so anxiously desired. I have no doubt, however, that ere long our churches and public buildings will receive embellishments of a higher order of art, and not only vie with, but eminently surpass, all former efforts at home and abroad.

**THE FREE PUBLIC LIBRARY AND MUSEUMS, LIVERPOOL.**

THE form in which a citizen of Liverpool has chosen to convey a gift to his fellow-townsmen is a very significant proof of our national development. In the old times the same desire to benefit his generation and posterity would have taken the form of a hospital for the sick, almshouses for the aged poor; or, at the utmost, in an educational direction, schools for a limited number of orphan children. The gift of a free library would have been but a mockery in an age when few could read and still fewer could understand what they read; but now, so exceptional is utter ignorance, and so general is a certain amount of intellectual culture among the working classes, that a public library has been considered the most useful and appropriate donation a wealthy merchant could bestow upon his fellow-citizens: We cannot, however, congratulate ourselves that this ripeness of the fruit Lord Brougham and his fellow-workers have cultivated with so much zealous effort, is general. The same week that saw Mr. William Brown present a library building to Liverpool witnessed a community in sea-port Sunderland calling public meetings, and protesting, with the greatest vigour, against a rate being levied for the purpose of establishing a local free library,—an opposition more to be wondered at as a contribution towards the proper contents of such an establishment, 4,000 volumes of philosophical works, has been recently presented to the town by a private individual. All the more honour to Mr. Brown for leading the van in a movement which cannot fail to exercise a most beneficial influence. This was freely accorded by the dense crowds that kept

Liverpool *en fite*, not only on the inauguration day, but on that preceding it, as well as by a large assembly of the working classes, who, in recognition of the generosity that prompted the good deed, publicly presented, for Mr. Brown's acceptance, a silver shield and a clock. The ceremony of the inauguration we have already spoken of, its processions, deputations, and dinner. In contrast to this all will read with pleasure of the simplicity of the veritable opening of the library, which took place on Monday, the 3rd inst., when the clerk of the works reverently asked for the first book, the *Bible*. The usefulness of the library is enhanced by a comprehensiveness in its arrangements that has included reading-rooms, a lecture-room, a museum, a gallery of inventions, lavatories, and a depot for the safe custody of the parcels with which excursionists seldom dispense. The natural history collection presented by the Earl of Derby will be deposited in the museum. The pictures from the old library, works of the old masters, and copies of royal portraits, are already hung in the principal reading-room. The British and Foreign Bible Society have voted the library copies of the Scriptures in the hundred and fifty languages into which they have been translated; and private munificence has made contributions of scarcely less value. Thus much for the design of the liberal donor, and for the manner in which his aim has been accepted and appreciated. We will now proceed to examine the mode in which the fabric expresses his intention.

In these days, when vigorous efforts should be made to grapple with the evils which exist in all our towns, in the insinuating accumulation of narrow and confined thoroughfares; and when bold measures should be proposed to remedy these evils, which should comprehend sweeping away even acres of fever-breeding tenements to enlarge the lungs—the public squares and main streets,—when evidence of the power and might to do this exists in the case of a great railway company at Birmingham, where to obtain an approach to, and the erection of the great central station, a dash and clearance has been made through a mile or more of closely-packed houses,—we have looked with interest upon the progress which the Corporation of Liverpool has made in this direction, in their co-operation with the donor of the Free Library Building. As to the site of it: almost in the centre, in the very heart of the town, is a space which, if the corporation continue as it has commenced, to take advantage of, would become as grand as a forum in ancient Rome. This space is bounded on the east side by the Limestone railway terminus, and any one of the myriads of visitors arriving here would behold in the centre the solemn huge dark pile—St. George's Hall, and new Assize Courts. To the west of this magnificent new building he would find a strange contrast in the gaunt tower and body of St. John's Church,—a building erected in 1784, in the vilest Churchwarden Gothic. The funeral aspect of this church is made more dismal by its contiguity with the leviathan classic building, and with the ghostly appearance of its large graveyard, where almost every gravestone has been laid flat, and the inscriptions are trampled upon and erased. The removal of the church and the proper inclosure of the vest stony church-yard will be as necessary for the completion of this new aspect of this great forum of Liverpool which we are describing, as was the removal of the old infirmary which stood on the site of the Assize Courts, and the Haymarket adjoining. On the south and west sides the Corporation has yet to exercise, together with private individuals, a discretion which should comprise, for the beautifying of this noble site, the removal of the strange medley of hotels and petty shops, and the re-erection of churches, clubhouses, or public institutions in their place, of the extensive character of the Free Library, which is erected upon the north side. On this same north side the Corporation has wisely commenced a scheme on a grand scale, and it deserves all praise for seconding Mr. William Brown in his noble donation of the Free Library Building. In the alterations in the levels in Shaw's Brow, upon which the building is erected, in the construction of extensive foundations to form the platform upon which the building is placed, and in the terraced approach or platform which is regarded as the high-level road over Byrom-street into Dale-street, a sum nearly approaching 100,000*l.* has been expended,—this amount having been furnished in part out of the surplus revenue of the Corporation, and in part out of money raised upon the security of the Museum rates.

The site which the architect for the Free Library building has had to work upon was most advan-

tageous. And although the east end immediately adjacent is now occupied by an uncovered vegetable-market, with its attendant nuisances, and the rear of ugly tenements is visible adjacent, and although the west end is occupied by vulgar buildings, including a yard for the sale of old building-materials, immediately attached to one of the principal entrances of the museum, we disagree at once with the apologies put forth by the local papers. It is asserted that the surface of the site, a hanging level, is very unsuitable to the style used in the building; and that the architect is not responsible either for the site or the style. We hear in mind the result of the famous competition connected with the designs for this building, when prizemen were displaced, and the local corporation surveyor threw down the gauntlet, and undertook to surpass everything that had been done before in the matter.\* By the adoption of a style which has for the centre of the building a deeply recessed hexastyle Corinthian portico—a diminutive copy of the Temple of Jupiter Stator, in Rome—we are reminded that no condition of site was an obstacle to the ancient Romans; the buildings on the Capitol, and in the great Forum, presenting overcomings of every obstacle as to site in hanging, terraced, or any other levels; and that the corporation surveyor at Liverpool enjoyed a great advantage in the site for the display of the building he should adapt to it.

The general aspect of the building now completed, as seen from all the commanding points of view which are available, is that of a reduced copy of our National Gallery in London, without the pepper-boxes, and with the flanks telescopically folded up. The returns of the wings present the hollow sham of plain brickwork, contrasting disadvantageously with the pretentious appearance of the stone front. The portico has an inner row of four columns, two intercolumniations being omitted to gain width in the entrance; the floor of the portico being attained by steps from the footwalks enclosed within screen walls, and landing at each end of the portico, and not in the middle. The principal entrance doorway is of colossal proportion, and contrasts unfavourably with the simplicity of the rest of the building, by its over-enriched and enlarged ornamentation. The remainder of the front is enclosed with a stone balustrade and iron gates; the form of the balustrade to all the parapets of the terrace being very ugly, and top-heavy, and not unlike the usual upholsterer's leg of a dining-room table.

The two wings have each two Corinthian pilasters, irregularly spaced, the two in the centre standing forward about two feet, and intended, if we may believe the published view, to have colossal figures on the parapets, which would utterly destroy the effect of the building. Between them is a niche, with pedimented cornices on carved trusses; above all are small panels and wreaths. The flanks between the central portico and wings have each five windows, with horizontal cornices or trusses, above which are small panels, with large wreaths in them. The roofs are screened from view by lofty attics on parapet walls.

On entering the building the visitor passes into a vestibule, 31 feet by 23 feet, with a flat paneled ceiling; beyond the vestibule is the central hall; the principal architectural feature of the interior; and beyond the hall is the principal staircase. The central hall is divided at each end from the vestibule or staircase by a screen of two Doric columns in antis. It is 60 feet long, 53 feet wide, and 46 feet high. It is divided basilica-wise, into three portions,—a centre or nave, and the side aisles or corridors; the latter are separated from the nave by an arcade, which supports the gallery floor, and the Ionic columns which carry the roof. At each end of the hall the entablature on these columns is continuous, but at the sides it is broken round each column, and from the cornice spring arches, which are groined into vaults over the gallery. Over the centre of the hall or nave the ceiling is flat, eaved down to the cornice with panels, the mouldings of which are enriched. Three of these panels are glazed, but the principal light is derived from seven round arched windows on each side. Between the columns in the gallery is a stone balustrade. On the ground-floor, to the right of the principal entrance, is the door to the free library, which apartment was opened to the public in the 3rd instant. The reading-room, which is 110 feet long and 50 feet wide, is divided into two portions by two Doric columns in antis near the south end, and here are windows looking into Shaw's Brow. The remainder of the

\* It is asserted that the plan adopted is that of the design selected in the competition; but into this question we are not in a position to enter.

\* In *Journal des Debats*.  
† *Ancient Gothic Churches*, pp. 26-31.

room is lighted by two large skylights, and by windows in an attic raised upon panelled segmental arches. The very heavy appearance of the Doric entablature, which is continued all round the room, and the slight effect of the segmental arches, diminish very much the effect of this room. The proportions are sufficiently massive to have admitted of greater height, and ventilation could have been better provided for. The aspect generally of the room is that of a large cabin on board ship, where height was of the greatest consequence. Adjoining the reading-room is the students' reading-room, 40 feet by 28 feet; and running northwards from this parallel to the principal reading-room, and along the eastern end of the building, is the reference library, 75 feet by 27 feet, fitted up with bookcases, in two tiers, the upper accessible from a light iron gallery; the total accommodation provided is estimated at 100,000 volumes. In the basement of this portion of the building are the rooms for the reception of the books, and for the classification and binding.

On the left of the entrance is the museum, which consists of five rooms upon the ground-floor, and also upon the upper floor. They are being fitted up for the reception of the Derby Museum, the handsome mahogany cases, on carved legs, for the reception of the minerals and fossils being manufactured by Messrs. R. Anderson & Sons, of Bold-street. The basement, under three of the rooms of the museum, have been prepared with solid floors for the reception of sculpture, and other heavy articles; the others will be used as work-rooms by the curator.

In the extreme north-east corner of the building, on the ground-floor, are three class-rooms, and a committee-room; above the committee-room is a lecture-room, 23 feet by 25 feet; and over the class-rooms a larger room, also for lectures, which is intended to accommodate nearly 350 persons.

Not the least important part of the building is that designed to accommodate a collection of specimens and inventions, and now called "The Gallery of Science and Inventions." It occupies 83 feet by 50 feet, a space which was intended to be left for future extensions. Mr. Brown, however, considering that in a town like Liverpool, practical science ought to receive more attention than it was likely to have, unless special provision were made for the purpose, thought it was desirable to convert this space to the purpose. The Gallery of Science and Inventions will consist of a floor on the level of the basement story, and of two galleries on the level of the ground floor and upper floor, each gallery 218 feet by 12 feet.

The entire cost of the building, including the fittings, lighting, warming, and ventilating, will be nearly 40,000*l.*, and the whole will be defrayed by Mr. Brown. The buildings were erected under the direction of the Corporation Surveyor, Mr. John Weightman. Messrs. Holme & Nichol are the contractors for the building. The sub-contractors are—for masonry, Mr. Hugh Yates; slating and plastering, Mr. John Bromley; plumbing and painting, Mr. Thomas Holt; glazing, Messrs. Saul, Moss, & Co.; the plate glass being supplied by the London & Manchester Plate Glass Company; iron work, Messrs. Weher & Co.; the fittings for lighting being executed by the Gas Company, and the apparatus for warming and ventilating by Mr. Alderman Beauett. Mr. Jacob Crivis is the clerk of the works.

The area actually covered by the building is 3,770 yards.

The library was thrown open to the public on the 3rd instant, this being the only portion of the building completed. The approach to this library is temporarily up a back way at the east end of it. The result of the first day's experience was duly celebrated by the local press. We are unable to endorse the glowing account that was given, but are quite willing to believe that in a little time the weak parts of the arrangements will be discovered, and that the Public Library of Liverpool will become all that its munificent founder desires it should be.

#### THE LATE MR. GEORGE BAILEY, ARCHITECT.

We record, with regret, the death of Mr. George Bailey, which took place at 13, Lincoln's Inn-fields, on the 17th inst. Mr. Bailey was a favourite assistant of the late Sir John Soane; and, on the death of that gentleman, was appointed, under the will, the first curator of the Soane Museum. Mr. Bailey was a fellow of the Royal Institute of British Architects, and some years ago acted with great zeal as its honorary secretary.

In the formation of the Architectural Publication Society, in 1818, Mr. Bailey took much per-

sonal interest in it, being present at the first meeting of the promoters, and ever after affording all the information he had collected from time to time, or could procure from the valuable library under his control. Thus most of the biographies of the English architects comprised in the "Dictionary of Architecture," now in course of publication, have been rendered more perfect than was hitherto the case. It is hoped that the honorary secretary for the Dictionary may still have permission to refer to Mr. Bailey's note-books for further accessions to that valuable work.

Mr. Bailey was in his 69th year when he died. He was buried at Highgate on Saturday last.

We would express a hope, without meaning the slightest reflection on the course pursued by the late Mr. Bailey (who did what was considered best), that, in appointing his successor, the trustees of the Soane Museum will seek to make such arrangements as will ensure to the public the freest access possible, and render the collections and books more widely useful than they have been. We have long urged this point, and, we hope, not without effect on the minds of some of the trustees.

#### PROPOSED EXHIBITION IN DUBLIN.

The Royal Dublin Society, on the recommendation of various lovers and owners of works of art, have determined to hold an "Exhibition of the Fine and Ornamental Arts" during May and the three following months of 1861. The object is to collect the *chefs d'œuvre* of painting and sculpture, and to exhibit them with drawings, engravings, photographs, medals, objects of vertu, elaborately wrought plate, works in precious stones and metals, in porcelain, silk, velvet, lace, tapestry, and works in which art forms a material element. The guarantee fund, to cover the expenses in the event of a deficiency in the receipts, was originally fixed at 5,000*l.*, but has already grown to upwards of 9,000*l.*

#### FOUNDATION OF AN ARCHITECTURAL ASSOCIATION IN MANCHESTER.

A NUMEROUSLY-ATTENDED meeting of gentlemen connected with the architectural profession was held on the evening of Monday, the 17th inst., in order to consider the desirability of establishing an Architectural Association in this city.

Mr. G. Shaw Aitken having been called to the chair, it was proposed by Mr. Alfred Darbyshire, seconded by Mr. R. Walker Aitken, and unanimously carried, "That, in the opinion of this meeting, it is desirable that an Architectural Society be formed in Manchester, to be called the 'Manchester Architectural Association.'"

A code of laws was then brought forward and considered; when it was proposed by Mr. Welster, seconded by Mr. Joseph Shaw, and unanimously carried, "That the laws submitted to the meeting be the basis of the Association's constitution."

Office-bearers, and a committee of four, having been elected to serve until the last ordinary meeting in the month of March, the business of the meeting was concluded by a vote of thanks to the chairman.

Mr. R. Knill Freeman is the honorary secretary.

#### SCHOOLS OF ART.

*The Stourbridge School.*—The annual meeting of this school took place in the Corn Exchange, Stourbridge. Lord Lyttelton presided, and there were present in the room some 400 persons. The report of the masters stated that the number of students continued to increase. Since the last council meeting 152 students had attended the classes at the central school, and 622 had received instruction at public and private schools, making a total of 774 under instruction during the year—a larger number, it was said, in proportion to the inhabitants than that furnished by any town in the United Kingdom. Seven medals had been awarded, and sixteen pupils had passed their examination in advanced free-hand drawing, practical geometry, and perspective. Of these eleven had received certificates, and five prizes. Owing to the raising of the standard of excellence, the master recommended that those of the pupils who had remained a certain time in the school should receive prizes and certificates of merit from the Council. The master concluded his report by some remarks upon a letter read by the Duke of Argyll, when addressing a meeting of Associated Mechanics' Institutions in the Free Trade Hall, Manchester, and urged the importance of art to those engaged in the glass trade of the neighbourhood. The fees from pupils during

the year ending the 31st of September last, were 106*l.* 3*s.* 9*d.*; subscriptions, 46*l.* 15*s.*; with sundries, 12*l.* 9*s.* 11*d.*; making a total of 165*l.* 18*s.* 5*d.* The total expenses were 133*l.* 15*s.* 11*d.*, which left an excess of income over expenditure of 32*l.* 2*s.* 7*d.* There is a building debt of 200*l.* The prizes were distributed to the students by Lord Lyttelton.

*The Carlisle School.*—The adjourned annual meeting of subscribers to the Carlisle School was held in the Town Hall. The Mayor presided; but the meeting was exceedingly small, the only other gentlemen present being three, besides the master, the treasurer, and the secretary. The school, however, is now in a somewhat better condition than it has been since its commencement. There are 121 general pupils, 355 pupils taught in public schools, and 84 in private schools. The ordinary receipts during the year were 36*l.* 11*s.* 10*d.*, while the expenditure had been 51*l.* 16*s.* 10*d.*, thus leaving a deficit of 15*l.* 5*s.* The Treasurer stated that hitherto the receipts had been more, but this year an arrear of rent had to be paid. He hoped this deficiency in the revenue account would not be permanent, although they could hardly look to being able to clear their way entirely.—Mr. Lees read a letter which he had received from the Art Union of London, stating that the Council, being anxious to assist in the cultivation of design and the practice of fine art, as applied to manufactures, and especially with reference to the Schools of Art, proposed, with the concurrence of the Department, to set apart the sum of 100*l.* each year, to be offered to the pupils in these schools on certain conditions. There will be five prizes of 10*l.* each, and ten of 5*l.* The subjects of competition suggested are:—Drawings and models of animals or groups of animals from the life; models of clusters of fruit, &c.; a book-case; a sideboard; a bronze candelabrum; clockcase for a mantelshelf; candlestick for ditto; pedestal for reduced bust of Clytie; bust of the Belvedere Apollo; silver prize cup; majolica dish; garden flower vase; tazza, &c. The master said he did not know whether to think of it as a reproach to Carlisle, but they always secured on the point of closing. There appeared to be an apathy as to the school. The public should be made aware that they did not attempt to make artists; they attempted to make useful men. If they got a bricklayer, they wished to make him know the value of his work and make it more ornamental; and the same with carpenters and others. There was no more simple ornament than different colours of bricks; that is a real ornament; and, if they could make a man feel that his work was ornamental and pleasing to the public, they gave an interest to the school which it had not hitherto possessed. He wished they could get the public to feel that they were useful members of society; at present they were only considered ornamental.

#### THE CONDITION OF BRIGHTON.

WITH reference to the recent correspondence on the drains of Brighton, and the remarks in our own pages, a correspondent, "A Resident," says:—

"The most important fact elicited during the discussion on the subject is this—*That there is no medical officer of health in this town.* That is a want which must be deplored on behalf of every locality where the want exists; and, so far as Brighton is concerned, it is to be hoped that the application to the General Board of Health, recently announced, will result in the appointment of a 'sanitary superintendent' for the town. The duties of such a public officer are well described in a paper on 'Public Records of Mortality and Sickness,' read by Mr. H. W. Rumsey, in the Public Health Department of the *Social Science Association*, and printed in the 'Transactions' for 1859.

Much might be done for the improvement of the health of towns by employing the services of a public officer possessing the necessary qualifications for the duties of such an important and responsible post, and entrusted with full powers; much could be done in Brighton, doubtless, as in other places, by enforcing obedience to sanitary laws, which are now neglected because no compulsive agency exists.

The light of sanitary science is beginning to dawn upon men's minds in a degree not contemplated a quarter of a century ago. It is devoutly to be desired that the self-same light may at length penetrate and so far illumine the obscurity in which the deliberations of Town Councils are too generally enveloped; so that the members, individually and collectively, may be enabled to distinguish their true course regarding the vital interests of the several localities over which they preside; and that these bodies—not well esteemed

in general—may, by placing themselves under authoritative direction in matters relating to the sanitary improvement of their respective towns, recover—in one instance, at least—the confidence that they have lost by the mal-administration of municipal affairs with which they are entrusted."

"STAINING WOOD."

OUR correspondents are not unanimous in approval of the recommendation to use the stain before the size, given in a communication signed "G. R. B. Arnott." One of the dissentients, W. H. E., says,

"Timbers stained previously to sizing are of a heavy, dead, blackish tint, instead of the nice varnished light-brown hue produced by the proper treatment [size first, next the stain, then varnish]. Any one using stain and varnish without a size coat, underneath will find any number of coats of varnish entirely thrown away, although the stain will have sunk into the wood as to prevent any amount of scraping from getting it off."

We are disposed to believe that with the best description of stain and the wood the course first recommended is calculated to produce the best and most lasting work. But if common stains be used, or the wood be of unequal texture, the size should be applied before the stain.

WANTED! THE ARCHITECT OF THE EDUCATIONAL BOARD.

SIR,—As the editor of the Builder is supposed to know every thing on every subject, I make bold to ask you to give me some information relative to that mystery, the Education Act, which the Board of Education have just used to call or send to his office in a morning, but, alas! it was a desert. At last, being there at twenty minutes past five, I met with a clerk who had just arrived. Cross-examination soon made clear that the said master were supposed to turn up about two o'clock. Now, as it was then twenty minutes past that hour, and as I have a good deal of business to attend to, I have, therefore, three, I have inclined to believe that it is simply a pleasant fiction of the clerk. We all know how conducive solitude is to the cultivation of the imagination, and I think it is not unfair to attribute his assenting to this cause. The invisible girl, who astonished the good folks of London some few years since, was both amusing and instructive. I am afraid the invisible architect is just the reverse.

ONE OF SOME HUNDREDS WHO WOULD BE GLAD OF THE PLACE, IF TOO HEAVY FOR THE PRESENT OCCUPANT.

THE ADULTERATION OF LINED OIL.

SIR,—The communication from "A Friend to the Unemployed," that appeared on the 1st instant in your valuable journal, has had the effect of causing considerable uneasiness to myself and others interested, who believe your correspondent wrong in remarking that "they (the sellers of lined oil) run no risk and are not responsible for the work spoilt by their rubbish." This statement must assuredly have been made without reflection; and if allowed to pass unrefuted, is, I think, calculated seriously to injure, and not in the least favour, the interests of the unemployed or expectations of the trade.

The Legislature has wisely interposed to prevent the adulteration of food: surely, then, the tradesman, who is bound to uphold his respectability in order to obtain the means of his subsistence, is not to be impoverished and prevented from so doing, or subjected to various ailments, solely upon him, without remedy of some kind. If, however, your correspondent has authority for making his statement, the contrary, then it must be admitted a serious flaw exists in the laws of this country, and all interested should at once petition Parliament to remedy the defect. Unfortunately, there is already abundant proof that the colour merchants generally vend worthless and trashy compounds instead of genuine materials; and this fact being established, it is in my opinion an imperative duty for the painters, as a body, to place themselves in a right position with the public, by proving satisfactory their noncomplicity with the perpetrators of the existing novel yet unprincipled system of fraud. It is idle to argue that the merchant and tradesman are alike victimized by the manufacturer, the former being in a position to ascertain, by reference to his invoice-book, who supplied the adulterated goods; and, failing to institute proceedings to end the nefarious practices of those who have so long and persistently preyed on the honest consumer, I consider the vendor clearly identifies himself with the fraud, and becomes both legally and morally responsible for the loss sustained by his customers. I fully anticipated long since that some eminent and competent authority would have taken the matter in hand; but, assuming the attention of our scientific men to be engrossed by occupations of a more pleasant, though the character, I desire, with your permission, to offer these remarks with the intention of arousing the trade generally to a proper sense of the interests they have at stake, and inducing them to continue a judicious and successful course of investigation, satisfactory mode to all concerned, of submitting samples of the materials supplied during the past twelve months for analysis. It occurs to me, if the necessity of inquiry is more apparent through the medium of the Builder, the proposed movement will at once attain that extent of metropolitan and provincial publicity desirable for the purpose of ensuring active co-operation from all branches of the building trade, and enable the committee, when appointed, to obtain impartial reports from two or more of the most eminent chemists in the kingdom; the only mode, in my belief, calculated to afford satisfaction alike to the employer and employee.

As a case in point, let me instance one among several personal cases of complaint. I ordered from a leading firm one quart of a stock of best quality oil, least standard, paying the highest market price for the articles. With colour prepared from these materials, eight ten-

roomed cup-boarded houses were painted inside and out. Within a fortnight after their completion, I was astounded by the receipt of a note from my employer, stating that he "had lost all confidence in me, and had been compelled to employ a surveyor to go over the work, the tenants having expressed their intention of leaving the houses in their occupation, owing to the smell, appearance, and non-drying properties of the paint used by my men." Feeling from these remarks that my work people had neglected their duty, I immediately visited the place, and cannot find language sufficiently strong to express my feelings of indignation and disgust on discovering the labour well executed, and that the fault lay only with the material. The entire surface was "blotchy and tackey," and, as the only means of saving my reputation, I at once undertook to do the work over again. Fortunately, the surveyor who attended was a gentleman experienced in my business; and, from his favourable representations to the employer, I, after considerable demur, obtained permission to do so. At the present date (nine months after the work has been completed a second time) the light stone fronts present a streaky, dirty, fawn-coloured appearance, and the blotches, after receiving five (and in some cases six) coats, have "sweated out" to such an extent as to render their position too readily describable to the practised eye of a person acquainted with this branch of the building trade. Regardless of time and expense, I made every reparation in my power, for the amoyance occasioned by the colour-merchants supplying me with improper materials; and consequently, as proof of the feeling entertained by employers generally in the matter, I have resolved the morning intelligence that my highly-valued customer has transferred his patronage to another person, who is now actively engaged on work which has for years been entrusted to my care. Having suffered damage to an unascertained extent, I assume I am entitled to recompense from the eminent firm with whom I dealt (who either by complicity or gross neglect, had occasioned me the double loss of money and character); and it is my intention, not to agitate to the utmost, but, whether my brethren join or not in the proposed movement, to submit the question on its merits to the decision of a legal tribunal.

AN INJURED TRADESMAN.

P.S. The secretaries to the Painter Stainers' Company and various metropolitan trade lodges have been written to, and on receipt of their replies a public meeting will be convened, due notice of which will appear in the Builder and daily papers.

Books Received.

The Nuisances Removal and Diseases Prevention Acts of 1855, 18 & 19 Vic., c. 116 and 121. Second Edition. With the Amending Act, 23 & 24 of Vic., c. 77. By W. G. LUMLEY, Barrister-at-Law. London: Knight & Co., 1860.

WE cannot better reply to the correspondents who ask us every week how to get rid of a nuisance than by referring them to Mr. Lumley's edition of these enactments, and by adding, in the words of the appendix,

- 1. Under these Acts any premises in such a state as to be a nuisance, or injurious to health, may be ordered, by two justices in petty sessions, or by a stipendiary magistrate, to be made safe and habitable, to be paved, cleaned, whitewashed, disinfected, or purified; sufficient accommodation, means of drainage and ventilation, may be required to be provided; and while any house or building is unfit for human habitation, in the opinion of the justices, the use of such premises may be prohibited till the causes rendering it unfit for habitation have been removed.
2. Any pool, ditch, gutter, watercourse, privy, urinal, cesspool, or drain, which shall so be a nuisance or injurious to health, may be ordered to be drained, emptied, cleaned, filled up, amended, or removed, and a substitute provided.
3. Any well or cistern kept as to be a nuisance or injurious to health may be ordered to be kept in a cleanly and wholesome state, and, if that be impossible, the animal may be removed.
4. Any accumulation or deposit which is a nuisance or injurious to health may be ordered to be carried away."

Miscellaneous.

ANOTHER COLLIERY EXPLOSION.—A shocking explosion has taken place at Hetton Colliery, near Durham, whereby twenty miners are said to have lost their lives. This colliery is the property of the Hetton Coal Company, and is situated about nine miles south of Sunderland.

DINNER OF ASSOCIATION OF FOREMEN ENGINEERS.—On the 15th inst. the eighth anniversary dinner of the Association of Foremen Engineers took place at their rooms, 35, St. Swinham's-lane, City. About ninety members and friends sat down. In the absence of Mr. H. Grissell, Mr. Joseph Newton, of the Mint, occupied the chair. A report read in connection with the toast of the evening, namely, "Prosperity to the Association of Foremen Engineers," showed that the receipts since establishment in 1852 had been 486*l.* The disbursements were—To unemployed members, 110*l.*; deaths, 40*l.*; incidental, 113*l.* 18*s.* 6*d.* Deducting these disbursements (263*l.* 18*s.* 6*d.*) from 486*l.*, left balance of 222*l.* 2*s.* 6*d.*; with interest, 236*l.* 17*s.* 2*d.* Surely, as we have often before said, there are too many of these societies. If united, the cost of management would be greatly reduced, and the disposable funds would be much larger.

THE BUILDING TRADE AT SOUTHAMPTON.—About 2,000 artisans, mechanics, and labourers, are out of work at Southampton, owing to the slackness of ship and house building. The slackness in the building trade arises chiefly from the high price of bricks, comparatively few having been made this year in consequence of the wet weather.

FATAL ACCIDENT AT CROSTADE.—A St. Petersburg letter states that at Crostade recently a bridge across the entrance to a dry dock suddenly gave way at a moment when thirty persons were passing. As they fell from the height of seventy feet on the granite bottom of the dock twelve were killed on the spot, and the rest so seriously hurt that they are not likely to recover.

STATUE OF SIR WILLIAM PEEL, K.C.B.—Mr. William Theed has executed, in marble, a statue, 7 feet in height, of the late Sir William Peel, K.C.B., of the naval brigade, at the expense of the Right Hon. Frederick Peel, M.P. On the 22nd it was placed in the Painted Hall, Greenwich Hospital.

STREET ROLLING IN PARIS.—Steam rollers have recently been set to work in some of the streets of Paris, forming a great contrast to those unwieldy-looking machines, drawn by eight horses, which every visitor to Paris must have seen at work, crushing down the stones at the Champs Elysees.

THE CO-OPERATIVE MOVEMENT AMONGST THE WORKING CLASSES.—The impetus which has been given to manufacturing co-operative societies by the large dividends that have been declared by the Bacup and Wardle Manufacturing Society, is said to be felt in all directions. There are five co-operative mills in progress according to the Manchester Courier, and a sixth has been projected by the directors of the Callard's Manufacturing Society. This company having an estate of 33 acres, and a river running through its centre, upon which there is already a woollen mill at work, have projected a mill for 20,000 spindles of cotton wool, to be erected on the opposite bank to the woollen mill. The capital now raised is 20,500*l.*, and it is proposed to raise 30,000*l.* more in 5*l.* shares, to be raised in calls of 1*l.*, to be paid in February next, and 1*l.* every six months afterwards, until the whole is paid up. The plan is, however, subject to the approval of the shareholders at their meeting in January next.

MONUMENTAL.—A memorial of the late Mr. Wallace Hall, of Ross, is about to be erected from a design furnished by Mr. G. W. Sadler, of Cheltenham. The design consists of a spiral column, about 30 feet high, wrought in Box-Bath stone, with Forest stone base, having a drinking-fountain attached, with a basin of polished red granite. Messrs. Wingate & Son, of Gloucester, offered to execute the whole for 80*l.*—It has been resolved to erect the Tyndale memorial column on the highest point of Stinchcombe-hill. Sir George Prevost has promised to give the land. The exact shape of the monument has not been decided upon, but it has been resolved that a parabolic reflector should be placed on its summit, as suggested by Earl Ducie.—The Wallace monument executive sub-committee have applied to the town council of Stirling, for liberty to commence the erection of the Wallace monument, the necessary funds being now on hand.—It seems, however, that it is only the main tower which is intended to be erected at present, and which it will take three years to complete. The sum of 1,500*l.*, according to the Falkirk Herald, is still required in order to complete the monument according to Mr. Roched's design.

VALUE OF A "NEW RIVER" SHARE.—Recently, at the Auction Mart, two 36th parts or shares in the king's moiety of the New River Company, being virtually an original half-share, were sold. The auctioneer stated that the undertaking was commenced in 1608 and completed in 1613, and the resources of Sir Hugh Myddelton being exhausted before the work was completed, he applied to the Crown for additional money to carry out the work, and made over half the property in return for half the expenses being paid. In 1636, Charles I. granted his moiety back to Sir Hugh Myddelton on condition of an annual payment of 500*l.* which payment is charged on the king's shares, and distributed over them by the company before paying a dividend. For 18 years after the undertaking was completed there was no dividend paid, and the shares his given away gratis. In 1793, Pennant says his shares sold for 10,000*l.* The lot sold for 8,700*l.*, making the value of a whole share 17,400*l.* This makes the value of the "adventurers'" shares in the property, from not being charged with the payment to the Crown, about 20,000*l.*

ENGINEER OF GREAT WESTERN RAILWAY COMPANY.—Mr. John Fowler, C.E., has been appointed consulting engineer of the Great Western Railway, in the room of the late Mr. Brunel.

THE MANCHESTER OPERATIVE PAINTERS.—A meeting of these operatives has been held to memorialize the masters on the subject of wages. It was suggested in the memorial agreed to that the hour system should be universally adopted, and that payment be at the rate of 6d. per hour. This would be equivalent to an advance of about 10 per cent. in the wages of the men.

CLERKENWELL WORKHOUSES.—For some days past some alarm has prevailed among the inmates of Clerkenwell Workhouse, Cripple-row, in consequence of the subsidence of the front centre wall, which is supposed to have been caused by the excavations carried on along Cripple-hill, for the formation of the Metropolitan Railway. At this point of the line the ground has been excavated to a great depth. Mr. Jay, the contractor, at once adopted measures to prevent any further accident.

RAILWAY WONDERS.—The Times remarks,—"Every year some fresh line is opened which must yield its fresh receipts before fresh revenue can be forthcoming. In 1854, the aggregate of railway capital was, in round numbers, 286,000,000l.; in 1859, it was 331,000,000l.; having increased as nearly as possible to the extent of 50,000,000l. a year. Yet the receipts have not only afforded a dividend on this increased sum, but a better dividend than formerly, and there never was a year more auspicious than the soaking and dreary twelvemonth through which we have just passed."

BURNING OF A SYDNEY THEATRE.—The Australian Mail states that one of the most extensive and disastrous conflagrations that has ever occurred in Sydney broke out on the morning of October 3rd, near the corner of King and Castle-streets, causing the entire destruction of the Prince of Wales theatre and of several adjoining buildings, and resulting in the death of three persons, and in the serious injury of others. One of the adjoining offices was constructed of iron, which was quickly "demoralized," and reduced to wreck, by the intense heat.

EXTENSION OF THE METROPOLITAN UNDERGROUND RAILWAY.—At a meeting of the Paddington representative council, on Tuesday, in last week, the application to be made by the Metropolitan Underground Railway Company, in the ensuing session of Parliament, for an extension of the subterranean line, was brought under consideration. The parish surveyor, Mr. Merry, exhibited plans which had been lodged with the vestry clerk, to ascertain the opinion of the vestry on the proposed extension from Prad-street to Notting-hill-gate, with a branch from Uxbridge-road, under the Broad-walk to Brompton, and with a junction in Hammersmith-road, for the purpose of ultimately extending the same to Hammersmith. The meeting resolved to remain neutral.

THE DRAINAGE AT MALTON.—The drainage works at Malton, noticed in your publication of the 15th inst., are being carried out for the Malton Board of Health, under the superintendance of Mr. John Gilson, architect, Malton, who has prepared a survey of the town to a scale of 10 feet to one statute mile. The drains are laid with glazed stoneware sanitary tubes, socketed at the joints (supplied by Messrs. Barry & Son, of Scarborough), the largest tubes being 18 inches diameter; these are joined with 15 inches diameter, then 12 inches diameter and 9 inches diameter for the trunk drain; branches to blocks of house are 8 inches diameter. In two of the streets the drain will be 12 feet deep for a short distance: the average depth of the drains will be about 6 feet, the estimated expense 1,400l.—J. G.

STRIKE OF THE NAILERS OF SOUTH STAFFORDSHIRE.—A strike has just commenced in the South Staffordshire district, by which some 3,000 men are thrown out of employ. The strike has arisen out of a trades' union dispute. Mr. Walker took on a man not a member of the Horse-nail Makers' Trades' Union. His men thereupon demanded his discharge on an advance of wages. Their demand was not complied with, and the 300 men employed by him left their work. The masters held a meeting a few days ago, and resolved not to give any more work to their men till Mr. Walker's men returned to work. The men upon this throughout the district demanded an advance of 6d. per 1,000 on the nails they make, and thus a general strike has commenced, the masters being determined not to give such a large advance. It is stated a horse-nail makers' wages average 25s. per week.

KILKENNY COUNTY SURVEYORS.—The lord lieutenant, according to the Carlow Sentinel, has appointed Mr. P. Burchall, the county surveyor of Carlow, as successor to the late county surveyor of Kilkenny.

FALL OF A BUILDING.—The barley-chamber of a malt-house, in Newmarket, has suddenly given way; its contents, between 500 and 900 combs of barley, having been precipitated on to the working floor of malt. The beams and joists are said to have clearly indicated that the building was not adapted to sustain the weight of so large a quantity of grain.

PROPOSED CARRIAGE-ROAD ACROSS PRIMROSE-HILL.—At the weekly meeting of the Marylebone vestry, it has been resolved that a memorial be presented to the chief commissioner of public works praying that he would cause a carriage-way to be made from the foot of Barrow-hill, across the eastern side of Primrose-hill, to the junction of the road on the St. Pancras side leading to the Chalk-farm. Mr. Freet, in moving the resolution, stated that the parish of Marylebone had been so built upon that it was a species of *cul de sac*, and some of the districts were blocked up with gates, so that the inhabitants had great difficulty in moving from one place to another. The walks which now existed in what was called Albert-park and once Primrose hill were pleasant enough by day, but at night they were positively dangerous, and scenes of the worst description were taking place there continually.

THE SURVEYOR TO THE BATH CITY ACT COMMITTEE.—A discussion is going on in this committee on a motion that Mr. Parfitt, their surveyor, have six months' notice to quit. The mover and others charge the surveyor with general neglect. The mover, Mr. Cox, stated that he was "not systematic, not methodical, not active, not diligent, and not truthful." Others defended the surveyor, and blamed the surveying committee, who were ever running after him and interfering with his duties. One member said the great difficulty in the case was to know whether the surveying committee had charge of the surveyor, or the surveyor of them. It was not exactly clear; but, at any rate, it seemed that the committee had taken charge of the surveyor. He always had protested against it as an unsound principle. The discussion was adjourned, the understanding apparently being that the surveyor should have time to reply to the charges against him.

ST. BARTHOLOMEW'S HOSPITAL.—On Monday last, a deputation from this famous metropolitan hospital, which was founded upwards of 750 years ago, waited upon the Lord Mayor (Cairns), at the Mansion House, and apprised his lordship that the house committee of the institution had passed an unanimous resolution recommending him to the general Court of Governors as a fit and proper person to fill the office of President of the hospital, which had become vacant by the recent death of Alderman Sir George Carroll. The gentleman composing the deputation were Mr. W. Foster White, the treasurer of the hospital; Mr. Sergeant Payne, Mr. Hooper, Mr. Alexander Jones, Mr. Chas. Hill, F.S.A. Mr. James Bentley, Mr. Daniel Britten, Mr. Win. Gilpin, Mr. Anderson, and Mr. John Morley. The Lord Mayor, while appreciating this mark of confidence and respect, hesitated at first to assume the responsibility of the office; but on the deputation representing to his lordship that the functions incident to the position of president would occupy but little of his time, and that it was simply an honorary distinction they wished to confer on him, he readily and cheerfully consented.—Let us here note that the Lord Mayor's entertainment in honour of Lord Clyde, and at which the Commander-in-Chief, the Duke of Cambridge, attended, passed off in the most admirable manner. The Lord Mayor had a good opportunity and took full advantage of it.

TENDERS

- For six dwelling houses at Saltburn-by-the-Sea, Cleveland; Mr. W. Peachey, architect:—
Robison ..... 4,140 17 4
Allen ..... 1,872 12 8
Kemp & Abdale ..... 1,287 3 0
Brown ..... 1,281 5 0
T. & C. Elwin ..... 1,273 9 0
Whitdale & Son ..... 1,238 13 0
Pearson ..... 1,227 2 6
H. & G. Chapman (accepted) ..... 1,220 0 0
For chambers in Gracechurch-street, Messrs. Wallis & Sparks, architects:—
Henshaw ..... 5,595 0 0
Henshaw ..... 5,234 0 0
Axford ..... 5,810 0 0
Mansfield & Sons ..... 5,230 0 0
Brown & Robinson ..... 5,197 0 0
Ryder ..... 5,132 0 0
Ashby & Sons ..... 5,130 0 0
Cauder ..... 5,090 0 0
Hack & Sons ..... 4,777 0 0

For making a road across the Haling Park Estate, Croydon; Messrs. W. J. Blake & John Berney, joint surveyors:—

- Bull ..... 2650 10 0
Ayers ..... 644 5 7
Stevens ..... 601 14 7
Leeks ..... 590 2 8
Jevons ..... 599 0 0
Collier ..... 571 13 9
Müller ..... 550 14 9
Clark ..... 513 6 0
Gregory ..... 506 0 0
Hawkes ..... 463 0 0
Sharon ..... 459 0 0
Potter (too late) ..... 125 13 0

For repairs, &c., to house and premises, No. 22, New Ormond-street, for Miss Louisa Twining; Mr. H. A. Darbyshire, architect:—

- Brake ..... 2364 10 0
Stephens & Latta ..... 345 0 0
Sewell ..... 337 0 0
Greenwood ..... 295 0 0
Sutton ..... 210 0 0
Green ..... 212 0 0

For the erection of a dye-house at Hoxton, for Mr. J. L. Wilson; Messrs. R. Truss & Chambers, architects. Quantities supplied by Mr. Ruggitt:—

- Lawrence ..... 22,570 0 0
Brass & Son ..... 2,370 0 0
Axford & Co. ..... 5,351 0 0
Deards ..... 2,225 0 0
Coleman & Co. ..... 2,185 0 0
Macey ..... 2,184 0 0
Brown & Robinson ..... 2,138 0 0
Cauder (accepted) ..... 2,115 0 0

TO CORRESPONDENTS.

M. A. B.—J. L.—G. B.—W. B.—W. H. E.—J. A. F.—P. R.—W. W. L.—J. N.—A. W. Dorset case of the "Nuisance Removal and Diseases Prevention Act" of 1855, section 57, for the cause to be proved. There is no specified distance.—R. M.—W. P.—M.—G. C. H.—D. H. (next week).—A. M. (Globe).—P. R.—M. R.—H. W.—A. Competitor.—J. B.—W. T.—R.—B. J. H.—E. J. R.—H. B. T.—M.—W. R.—T. J. H.—G. B.

NOTICE.—All Communications respecting Advertisements, Subscriptions, &c., should be addressed to "The Publisher of the Builder," No. 1, York-street, Covent-garden. All other Communications should be addressed to the "Editor," and not to the "Publisher."

Post-office Orders and Remittances should be made payable to Mr. Morris R. Coleman.

THE BUYER'S DESIDERATUM.—"The buyer's desideratum is to find an establishment where will be presented to him ample choice of artistic designs, without having forced upon his attention a host of more ingenious ones, and destitute of any other merit, with a tariff of prices adapted to the means of the economic or those to whom price is no object. Such an establishment is that of Mr. J. W. Benson, situate at 33 and 34, Ludgate-hill, whose recent enlargement of his premises has made his show-rooms more conspicuous than any other in the neighbourhood of St. Paul's. His four windows contain such a variety of gold and silver watches as to leave nothing to be desired but the money to buy them with. The high standing of Mr. Benson as a London manufacturer must secure him a large amount of public patronage."—Standard.

Benson's Illustrated Pamphlet, post free for two stamps, is descriptive of every construction of watch now made. Watches safe by post to all parts of the globe.—Advertisement.

ADVERTISEMENTS.

MR. WILLIAM ELLISON, CONSULTING SURVEYOR, 14, STAINSBY ROAD, 13, PENCHURCH-BUILDINGS, PENCHURCH STREET, E.C. Has taken Office as SUPERVISOR ON BREACHES OF CONTRACT, DISPUTED ACCOUNTS, &c.

BOROUGH OF TYNEMOUTH LOCAL BOARD OF HEALTH.—APPOINTMENT OF BOROUGH SURVEYOR.—Notice is hereby given that the Local Board of Health of the Borough of Tynemouth will meet on WEDNESDAY, the 10th day of JANUARY next, to appoint a SURVEYOR for the said Borough. The person to be appointed to this Office must be experienced in surveying, and be able to draw plans, make sections, and to prepare estimates of sewerage works, new streets and roads, and other works which it may be the duty of the Board to carry into effect, and competent to judge of the proper execution of such works. He will be required to examine and report to the Board on all plans of buildings and intended new streets, and to inspect the same during their construction; and to advise the Board when he continues to advise BUILDERS, and tradesmen's accounts, and generally to act under the direction of the Council, and of the several Committees thereof. The person appointed will be permitted to take any professional employment within the limits of the Borough, but may, with the consent of the Public Board of Health, undertake such professional engagements beyond the Borough as will not interfere with the proper discharge of his official duties. The salary is £200 per annum. Parties who desire to be considered for the office should send their names to the Town Clerk's Office, 27, Newcastle-street, North Shields, to whom applications and testimonials are to be sent on or before FRIDAY, the 15th day of JANUARY, 1861, at SEVEN o'clock, addressed to "The Public Health Board, Newcastle." By invitation for the office of Surveyor, THOMAS CARE LETCH, Clerk to the Local Board, Borough of Tynemouth, 20th December, 1860.

MR. W. F. HAMMOND, Auctioneer, Land and Estate Agent, 11, Green-street (opposite the Bank railway, W.C.), and OFFICE in his office for well-educated YOUTH, as a pupil. Premium expected.





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